BULLETIN NO. LR-32

SUGGESTED OPERATING PROCEDURES

for the

RECEIPT & PROCESSING OF APPLICATIONS

ONE OF A SERIES OF BULLETINS ON
SUGGESTED OCCUPANCY PROCEDURES

P H A LOW-RENT HOUSING
BULLETIN

PUBLIC HOUSING ADMINISTRATION
HOUSING AND HOME FINANCE AGENCY WASHINGTON 25, D. C.

JULY 1951

LIST OF BULLETINS
WHICH HAVE BEEN PUBLISHED

Bulletin No.	Title	
LR-1	Zoning and Rezoning	
LR-2	Subsurface Soil Investigation	
LR-3	Site Planning	A series of eight Housing Design Notes
LR-4	Site Engineering	
LR-5	Structural Design, Materials and Methods	
LR-6	Architectural Planning and Design	
LR-7	Plumbing, Heating and Ventilation	
LR-8	Electrical	
LR-9	Lawns and Planting	
LR-10	General Design	
LR-11	Selection of Utilities	
LR-12	Construction Contract Documents	
LR-13	Guide Specifications	
LR-14	Equipment Contract Documents	
LR-15	Operation and Repair of Heating Systems (Care of Boilers Out of Service)	
LR-16	Corrosion of Underground Piping	
LR-17	Rules for Boiler Operation	
LR-18	Preparation of Exterior Surfaces for Repainting	
LR-19	Control of Condensation in Crawl Spaces	
LR-20	Glazing	
LR-21	Maintenance of Wood Floors	
LR-22	Basic Specifications for Rural Nonfarm Housing	
LR-23	Operation and Repair of Heating Systems--Boilers (Types, Use and Repair)	
LR-24	Maintenance of Concrete Floors	
LR-25	Indoor Tenant Activity Areas	
LR-26	Routine Care of Lawns	
LR-27	Repainting Exterior Surfaces	
LR-28	Rural Nonfarm Construction Documents	
LR-29	Occupancy Policy Determinations to be Made and Action to be Taken Previous to Opening of Application Office	
LR-30	Suggestions for Selecting and Training Occupancy Personnel for Initial Tenant Selection	
LR-31	Publicizing Occupancy Policies	
LR-32	Suggested Operating Procedures for the Receipt and Processing of Applications	

NOTE: Some bulletins will be issued in parts, of which one or more will be contained in the initial release of each bulletin; other parts will be issued subsequently from time to time as they are completed.

TABLE OF CONTENTS

(Cont'd)

1. Introduction

a. Set forth in Section 408.1 are specific and basic requirements with respect to obtaining, verifying, and documenting data required for the purpose of (1) determining whether applicants meet the eligibility conditions for admission; (2) applying the preference requirements of the Act; and (3) determining the appropriate rent to be charged and the size of unit required. To assemble the required data expeditiously and to avoid confusion and duplication, organized and systematized operating procedures and administrative controls are needed.

b. Carefully planned and well defined operating procedures materially assist in achieving uniformity and orderliness in the application of established policies and in keeping operating costs at a minimum. Setting up operating procedures to be followed by the personnel involved in handling applications for admission calls for specific determinations with respect to (1) the steps to be taken in receiving and processing applications and in selecting tenants; (2) placing responsibility for each step to be taken; and (3) the general progressive order in which the various steps are to be taken. The basic steps involved are the same on a 20-unit project as on a 200- or 2000-unit project. The order in which the steps are taken will in general be the same, except that, the individual circumstances of a family may warrant a digression. The delegation of responsibility to Local Authority personnel for carrying out specific steps, however, will vary and may not be the same in any two instances. The size of the program, the number of employees to be engaged in receiving and processing applications, the quality of the personnel concerned and other variable factors will affect the organizational pattern. In this bulletin the steps involved in carrying out the functions of the occupancy office indicate the progressive order generally followed and, for illustrative purposes, places the responsibility for each step with an individual employee identified for convenience by a job title. Attached as Exhibits 1 and 2 are diagrammatic charts showing the flow of applications and the principal steps to be taken in reviewing and processing applications.

c. Even in the smallest projects a system of administrative controls is needed so that it is possible not only to locate any application concerning which an inquiry may be made but also to know at all times how many applications have been received, the current status of each application, and what needs to be done before final disposition of the application can be made. Establishing procedures for exercising administrative controls over the receipt and processing of applications involves prior determinations with respect to the system to be employed in numbering, classifying, and filing applications. (See paragraph 2a, below).

d. It is suggested that the procedures and administrative controls set forth in this bulletin be considered as guides rather than as specifically recommended operating techniques for in most instances they will require

(Cont'd)

considerable modification and adaptation to make them applicable to the situation and needs peculiar to the locality and program concerned. Modifying them and adapting them to serve local conditions will require amplification in some instances and simplification in others. After determinations are reached as to the procedures to be followed they should be incorporated in an operations manual for the guidance of those persons who will have the initial or continuing responsibility for determining eligibility and selecting tenants.

2. Preliminaries to Taking of Formal Applications

a. Establishment of Administrative Controls

(1) Numbering of Applications. Assigning consecutive numbers to applications as they are received is perhaps the easiest way to have available at all times information as to the total number of applications which have been filed. If applications are being received simultaneously in more than one office a numbering system will have to be devised to prevent duplicate numbers being assigned. If desired, applications received in subsidiary offices can be numbered in the main application office by the same person who is responsible for numbering the applications received there. This system presupposes the daily transfer to the Central Office of applications received in each branch office. In lieu of this, applications received in branch offices may be numbered consecutively as received and a prefix or suffix added to distinguish them from other applications carrying the same numerals.

(2) Classification of Applications. To expedite the handling of applications the classification to which an application is assigned should be carried not only on the application itself (see Exhibit 3) but also on the outside of the application folder and its related Control Card (see paragraph 2a(4), below and Exhibit 4). A suggested classification stamp for the outside of the folder is shown as Exhibit 5. The following suggested system of classfying applications will facilitate the application of the preference factors which the Act requires to be applied in selecting tenants from among low-income families which are eligible applicants for occupancy in dwellings of given sizes at specified rents, (see Section 407.1). This system consists of classifying applications, first, by eligibility status; second, by unit size required; third, by rent to be paid 1/; fourth, by preference rating; and fifth, by urgency of housing need somewhat along the following lines:

(Cont'd)

1/ The classifying of applications by "rent to be paid" is necessary only where ranges of specified rent (see Section 407.1) have been established or where solvency may be in jeopardy.

(a) Eligibility Status

Pending - Coded as P. This classification indicates the need of verifying material to establish eligibility. This classification symbol is carried on the applicant's folder and related Control Card until sufficient data are obtained to establish definitely the applicant's eligibility or ineligibility or until the application is withdrawn.

Eligible - Coded as E. This classification indicates that all the required verifying data have been obtained and that the applicant has been determined to be eligible.

Selected - Coded as S. This classification indicates that the applicant has been selected from among other eligible applicants for assignment to a dwelling unit.

Ineligible - Coded as I. This classification indicates that it has been determined that the applicant for one or more reasons does not meet the conditions governing eligibility.

Withdrawn - Coded as W. This classification indicates that the application has been withdrawn either at the request of the applicant or by the occupancy supervisor due to the applicant's failure to supply requested information.

(b) Unit Size Required. Classification of applications by unit size required is done by indicating the size of the unit (expressed in terms of the number of bedrooms) to which, based on the established occupancy limits, the family will be assigned in event of its admission to the project. Unit size required should be indicated on all P, E, and S applications.

(c) Rent to be Paid. In event the Local Authority has established two or more ranges of specified rent (see Section 407.1) the third factor in classifying an application concerns the rent which the applicant, if admitted, will be required to pay. The entry for this factor is the contract rent indicated by the Schedule of Rents as being applicable to families of such composition and net income as that of the applicant.

(d) Preference Rating. The order of preference to be followed in the selection of tenants set forth in the Act and reflected in Section 407.1 establishes seven preference groups. To facilitate compliance with this statutory requirement the classification of an application should indicate the preference group to which each applicant classified as P or E

(Cont'd)

belongs and on S applications for reporting purposes. Use of numerical symbols to indicate preference priority may tend to be confusing since numerical symbols are used to show unit size required. It is therefore suggested that a coding system such as the one shown below be used to indicate the preference group to which a family belongs. By combining the five code symbols suggested below, the seven preference groups and one nonpreference group can easily be identified.

DF - Families which are to be displaced by any low-rent housing project or by any public slum-clearance or redevelopment project initiated after January 1, 1947, or which were so displaced within three years prior to date of application. (Whenever the applicant qualifies as a displaced family, this symbol is to be placed in front of any of the following four symbols which indicate Veteran or Serviceman status as defined in the Act).

DAV - Families of disabled Veterans whose disability has been determined by the Veterans Administration to be service-connected.

DVS - Families of deceased Veterans or Servicemen whose death has been determined by the Veterans Administration to be service-connected.

VS - Families of other Veterans and Servicemen.

0 - Families without Veteran or Serviceman status. This symbol should also be used until such time as Veteran, Serviceman, or displaced status is verified.

An application bearing the preference rating code of DF-DAV would mean that sufficient verifying data have been obtained to establish the applicant family as that of a displaced, disabled Veteran. An application with a preference rating code of VS would mean that the family did not qualify as a displaced family but that sufficient evidence had been obtained to determine that it was the family of a Veteran or Serviceman.

(e) Urgency of Housing Need. This part of the classification should not be entered until urgency of housing need has been verified and evaluated. The entry should be in accordance with the scoring system adopted by the Local Authority for evaluating the Urgency of Housing Need (see Bulletin No. LR-29).

(Cont'd)

(3) Application Folder File

(a) Physical Arrangement of the Application Folder (see Exhibits 6 and 6a). The sections and subsections into which the application folder file are divided, or the arrangement of folders in the file, should correspond with the factors used in classifying an application. On sizeable projects, establishing an application folder file appropriate to the classification system set forth in subparagraph (2) above would result in the file being divided into five major sections - Pending, Eligible, Selected, Ineligible and Withdrawn. The Pending and Eligible Sections would be subdivided by unit size (i.e. 1 BR, 2 BR, 3 BR, 4 BR, 5 BR) which in turn would be subdivided by ranges of specified rents, provided such had been established by the Local Authority. Within each range of specified rents, application folders would be divided by preference groups. As a matter of convenience it is also suggested that folders within each preference grouping be arranged by descending scores indicating Urgency of Housing Need. In the Selected, Ineligible and Withdrawn sections of the application folder file the applications so classified would be filed alphabetically. Some Local Authorities may prefer to divide the Ineligible section of the file to reflect reason for ineligibility. In event this is done, applications would be filed alphabetically in that subsection of the Ineligible section of the file which indicates the reason for such application having been classified as ineligible. On small or medium size projects the physical detail covered here and illustrated by Exhibits 6 and 6a, for practical purposes, should be modified. One way of doing this is to eliminate all dividers except those showing eligibility status and using visual aids such as are suggested in the following paragraph in lieu thereof.

(b) Use of Visual Aids in Filing. It will be found helpful to use different colored folders to distinguish between displaced and non-displaced families and different colored labels on the folders to indicate Veteran or Serviceman status. For instance, brown folders might be used for displaced families and white folders for non-displaced families. Red labels could be used for families of disabled Veterans, blue labels for families of deceased Veterans or Servicemen, yellow labels for families of other Veterans or Servicemen and white labels for families without Veteran or Serviceman status and for families where conditions justifying the use of red, blue or yellow labels have not been verified or substantiated. It may also be helpful to use the cut of the folder to indicate the size unit required, i.e., use of extreme left-hand cut of five-cut folders for applications from families requiring 1 BR units, 2nd cut from left for 2 BR families, 3rd cut for 3 BR families, and so on.

(Cont'd)

(4) Control Card File. This file, which should be arranged alphabetically, consists of a Control Card (see Exhibit 4) for each applicant bearing the number and date of the application, the name of the family member who is to sign the lease as lessee, the address of the family and the classification assigned to the application. The alphabetical arrangement of the file makes it possible to locate readily the Control Card pertaining to any applicant and the classification entry on the Control Card shows the section of the Application Folder File in which the related application is filed. Since the classification entry on the Control Card is the key to locating an application in the Application Folder File it is essential that the classification entry on the Control Card be changed whenever a change is made in the classification of the application. To assure that the Control Card at all times reflects the current classification of the application to which it relates it is suggested that office procedures require that every application, whenever it is removed from the Application Folder File for any purpose whatsoever, be checked against the Control File before it is refiled so that changes of classification (which are also noted in the application and the outside of the folder - see Exhibits 3 and 5) can be entered on the Control Card. When a change in classification occurs, previous entries should be lined through, not erased. It will be noted on the specimen Control Card attached as Exhibit 4 that ample space has been provided for entering classification changes and address changes of the applicant.

(5) Verification Progress File. This file consists of a Verification Progress Card (see Exhibit 7) for each applicant concerning whom additional information must be secured before a final determination can be made with respect to his eligibility and preference rating.

(a) Method of Filing. This file should be divided into sections indicating the size of unit required and each of these sections should be subdivided into preference categories. This method of filing will facilitate gearing the order in which applications are to be processed to the types of units which will first become available and to preference requirements. For instance, if the first block of units to be released for occupancy consists of only two-bedroom units the first applications to be processed should be those from families in the highest preference rating groups who require two-bedroom units.

(b) Format. This form should make provision for noting the order and type of actions to be taken in processing the application and for recording the progress made in securing the required data.

(c) Use. Time will be saved if, at the time the application is first reviewed, entries are made on the Verification Progress Card specifying the steps to be taken in assembling the information

(Cont'd)

requisite to eligibility and preference determinations and indicating the sequential order (see paragraph 7b) in which these steps are to be taken. This will eliminate the necessity for reviewing the application each time some verifying material is received to determine what other data are needed. Verifying data, however, should be evaluated upon receipt so that the investigation may be discontinued whenever ineligibility is discovered. This card, in effect, is a work sheet supplement to Section I of the Verification Summary form (see Exhibit 8). The card used to indicate the detailed steps to be taken in assembling such data as are required for the purpose of determining eligibility, preference rating, rent to be paid, unit size required, and urgency of housing need. When all necessary action has been completed with respect to any one element this is to be indicated on the Verification Summary form.

(6) Master Card File. If applications are received and processed in more than one office the maintenance of a Master Card File in the central occupancy office will be helpful in preventing duplication. This file consists of a small card bearing the name and address of the applicant (the family member who is to sign the lease as lessee) and the date and number of the application (see Exhibit 9). Such a card should be prepared for each applicant and sent to the central office to be filed alphabetically in the Master Card File. In event duplication is noted, the central office should determine which branch office shall process the application and so inform the branch offices concerned. The branch office which is not to process the application should send it with its related Control Card to the other branch office and maintain a record of all such transfers.

(7) Other Administrative Controls. Other types of administrative controls such as periodic reports from staff members concerning work done or progress made, work sheets to simplify the preparation of required reports, and similar types of internal controls may be needed. No suggested forms to meet these possible needs are attached to this bulletin as conditions calling for such internal administrative controls will vary too much to make such practical. There is attached, however, as Exhibit 10, a PHA form which will be helpful in keeping the Local Authority informed on progress during initial selection and leasing.

b. Inform Interested Agencies, Personnel Departments of Principal Sources of Employment, Veterans and Service Organizations, Labor Organizations, Churches, and Other Interested Groups of the Opening of the Application Office. The purpose of specifically advising such groups of the scheduled opening of the application office is to arrange for disseminating information to potential applicants who might fail to see or hear the public announcement as to when and where applications should be made.

(Cont'd)

c. Issue Notices Concerning the Opening of the Application Office to Registrants, Site Occupants and Other Families Who Have Been or Are About to be Displaced. Prior to making a public announcement of the date on which the application office is to be opened, a form letter similar in content to the one shown as Exhibit 11 should be sent to all persons who have indicated their interest in applying for admission to the project including former site occupants or present occupants of sites selected for low-rent, public slum-clearance or redevelopment projects. Also, if the Local Authority has on file applications from apparently eligible applicants which were received prior to the effectuation of the provisions of PL-171 it may be desirable to notify these families to come into the office and bring their applications up-to-date.

d. Make Public Announcement of the Opening of the Application Office. The opening of the application office, giving the address of the office, the date it is to be first opened, and the hours and days of the week on which it will be kept open, should be announced publicly a few days before the office is actually open. Newspaper writeups, spot announcements on the radio, notices in neighborhood, church, labor publications and similar media will be useful in this connection. Neat signs identifying the application office as such and showing the hours and days which it is to be kept open should be placed in a conspicuous place outside the structure in which the office is located.

3. Reception of Applicants and Persons Seeking Information

a. Treatment of Callers at Application Office. Each applicant thinks that his problems and personal affairs are completely different from those of other applicants and each person seeking information has some reason, vague or obscure though it may be, for requesting such information. In the interest of good public relations the occupancy personnel should, at all times, regardless of how often it has heard the same story or been asked the same pertinent or seemingly irrelevant questions, maintain an interested attitude and accord the applicant or inquirer courteous and individual consideration. Perfunctory treatment of an eligible applicant, the curt dismissal of an ineligible applicant or a brusque, sharp reply to an inquiry received, when related by the person receiving such treatment, may have material bearing on keeping other persons, some of whom may be potentially eligible applicants, from coming to the application office. In short, each person calling at the application office should be courteously received and every possible effort should be made to put such persons at ease. The provision of facilities for the applicant to discuss his affairs in private will be of material assistance in putting him at ease. Also, a brief, simple explanation as to why specific questions are asked and the use to be made of the data obtained will tend to overcome much of the applicant's reluctance to furnish all the information required.

(Cont'd)

b. Action Taken by Receptionist. Skillful questioning on the part of the receptionist will tend to screen out obviously ineligible applicants thereby lightening the workload of the interviewers. On projects not large enough to warrant the employment of a receptionist the actions outlined below will be carried out by the person who conducts the application interview. On quite large projects it may be necessary to have more than one receptionist. The principal actions taken by a person performing the functions of a receptionist in connection with receiving new applications, bringing existing applications up to date, and answering inquiries are as follows:

(1) Obtains the name of the family head, checks with the Master Card File or Control Card File to find whether family has previously applied, inquires as to and records the source 1/ through which the applicant learned of the project;

(2) If application is already on file, so advises the applicant, inquires as to the purpose of his visit, and takes such action as may be required (i.e., referral to interviewer when existing application is out of date and serious changes need to be made, records minor changes to be made in application, and accepts verifying data brought in by applicant);

(3) Routes application changes and verifying material brought in by applicants to control clerk for filing in applicant's folder;

(4) If applicant has not applied previously, enters on application form (see Exhibit 3) name of project preferred, date of application, name of the family member who, according to Local Authority policy, will sign the lease, the country of his birth, his status as a citizen, his address and phone number and fills out Section I;

(5) Fills out the heading of a Control Card (see Exhibit 4) except for application number;

(6) Prepares Master File Card, if one is used (see paragraph 2a(6) and Exhibit 9);

(7) Checks with Site Occupants Relocation Record file (see Section 213.2) to ascertain whether family has been or is to be displaced;

(8) Asks general questions concerning the annual income of the family and its present housing conditions;

(Cont'd)

1/ Such information will be of assistance in determining the most effective media for informing low-income families concerning the project.

(9) Clips Control Card, Master File Card, (if used) and Site Occupants Relocation Record Card,(if there is one for the applicant family) to the application, hand this to the applicant, if he is not obviously ineligible, and refers him to an interviewer;

(10) Informs an applicant who is obviously ineligible as to the reason why he is ineligible, makes appropriate entries on the application form and Control Card concerning the applicant's ineligibility, has the applicant sign the application and advises him to return to the application office in event his disqualifying circumstances change;

(11) Enters a tentative classification in pencil in the upper left-hand corner of applications received from obviously ineligible applicants and routes such applications to supervisor or other designated staff member for review and formal classification after attaching thereto its related Control Card together with Master File Card, (if used) and the Site Occupants Relocation Record Card, (if there is one for the applicant family) and any other material relating to the application; and

(12) Answers inquiries, interprets the eligibility and selection policies of the Local Authority, and refers matters of a controversial nature to the supervisor or other authoritative source for handling.

4. Conduct of the Application Interview. Interviewing applicants for admission to low-rent public housing projects requires skill and tact on the part of the interviewer. Skillful interviewing techniques are needed, not only to elicit the information required for eligibility, preference and rent determinations, but also convey to the applicant the reasons why complete and verified data concerning the composition and income of his family, housing conditions of the family, Veteran or Serviceman status of the family, citizenship of certain family members, and other basic data are required. Interviews will vary in length. Ten minutes may suffice in some cases, whereas, others may require thirty minutes or longer. In this connection it must be remembered that too much time as well as too little time can be spent in interviewing an applicant. To avoid this the interviewer must tactfully direct the interview to prevent the applicant from spending too much time in relating irrelevant details concerning his personal affairs. On the other hand the applicant should never be made to feel that he is being hurried. The application interview should be conducted somewhat along the following lines in a well planned and orderly fashion.

a. The interviewer invites the applicant and any other members of his family who may be with him to be seated and notes the entries made on the application form by the receptionist;

(Cont'd)

b. After identifying the persons present at the interview from the entries made by the receptionist, the interviewer, starting with Section II, fills out the remainder of the application form explaining as the various questions are asked the reason why such information is required and what verifying data the applicant will be required to submit or to assist in obtaining;

c. Obtains and enters sufficient information in Sections II and III to estimate the anticipated income for the ensuing 12 months of all persons who are either currently receiving income or who can reasonably be expected to be gainfully occupied or be the recipient of some form of income during the ensuing 12 months; 1/

d. Enters name and address of each applicant not determined to be ineligible on the heading of a Verification Summary form (see Exhibit 8) and records in the appropriate subsection of Section II of that form any verifying or substantiating data which the applicant may have with him, initials and dates each such entry;

e. Advises any applicant found to be ineligible during the course of the interview of his ineligibility and explains why;

f. Has any family members present at the interview who are qualified to do so, sign authorizations pertaining to the release of information needed (see paragraph 7c(7) and Exhibits 12, 13 and 14) and requests applicant to have such absent family members whose signatures will be needed to come to the application office as soon as possible to execute the required papers;

g. Inquires of the applicant as to the best time of the day and which day of the week is the most convenient to him for a home visit to be made and enters this information in Section VII.B. of application form;

h. Informs the applicant specifically - preferably in writing - concerning any substantiating material which he should bring in for review (i.e. discharge papers, letters from Veterans Administration, court orders, or other papers having a bearing on his eligibility or preference rating);

i. Reads the statement at the bottom of the application form to the applicant and has him sign the application;

j. Interviewer signs and dates the application;

(Cont'd)

1/ It is only reasonable to expect that able bodied unemployed persons particularly those with Social Security numbers will be gainfully occupied during at least part of the ensuing year.

k. When the prospective lessee is of foreign birth and not entitled to the citizenship waiver, has him, if present at the application interview, execute a Citizenship Certificate (Exhibit 15) or if such person is not present requests the applicant to have the foreign born prospective lessee come to the application office and sign a Citizenship Certificate as soon as possible;

l. Explains to applicants not determined to be ineligible that filing an application does not assure acceptance and points out briefly the steps involved in establishing eligibility as well as the preference factors governing the selection of tenants;

m. Assures the applicant that he will receive every possible consideration, requests him to inform the office concerning any change of address, advises him that he will be notified by letter in event he is selected for occupancy in the project and cautions him against making any arrangement for moving until such time as he receives a letter specifically telling him to come in and sign a lease; and

n. Enters a tentative classification in pencil in the upper left-hand corner of the application and routes it, together with its related Control Card, Master File Card, Site Occupants Relocation Record, Verification Summary, and any verifying or substantiating material left by the applicant, to the supervisor or other designated person for review or other appropriate action.

5. Review and Classification of New Applications. To assure uniform interpretation and application of policies and objective treatment of all applicants it is well to channel all applications through one person for review and classification. The staff member of the Local Authority to be vested with this responsibility will vary, based on the size of the program and staff. For the purposes of this discussion the responsibility for performing this function has been assumed to be that of the person employed by the Local Authority to supervise the receipt and processing of applications and the selection of tenants. The steps generally taken by the person responsible for reviewing and classifying new applications are as follows:

a. Reviews applications, entries on Verification Summary form and any other material attached;

b. Determines validity of receptionist's or interviewer's determinations with respect to an applicant's eligibility status or preference rating;

c. Discusses any points of difference with the staff member responsible for the tentative classification;

d. Has letter prepared to applicant informing him of any changes in previous determinations;

(Cont'd)

e. Enters in ink in the first column under "classification" in the upper left-hand corner of the application form the classification of the application;

f. Enters in the first column of Section I of the Verification Summary form (see Exhibit 8) factors wholly verified at time of application and indicates in the last column the date of such verification and by whom, also lines through the items in Section I not pertinent to the application concerned;

g. Prepares Verification Progress Card (see paragraph 2a(5), above and Exhibit 7) for each application to be processed indicating the specific actions to be taken in establishing the applicant's eligibility and preference rating, and any digressions to be made from normal operational pattern (see paragraph 7b, below); and

h. Routes all applications with related materials to the person responsible for setting up and maintaining the Application Folder File, Control Card File, and related files.

6. Preparation of Application Folders and Filing of Applications and Related Materials. Conformance with the requirement that a permanent record be established for each application accepted (see Section 408.1) and the setting up and maintenance of proper administrative controls will be facilitated if the full and complete responsibility for handling such matters is delegated to one specific person. In this discussion the actions involved in carrying out these functions have been placed with an employee bearing the title of Control Clerk. On large operations a Control Clerk will probably need to be assisted by file clerks and on small operations the Local Authority staff member performing the functions of Control Clerk will, of necessity, have to serve in other capacities as well. The specific actions generally performed by the person held responsible for setting up and maintaining application records and administrative controls consist principally of the following:

a. Receives applications and related materials from the person responsible for reviewing and classifying applications and numbers all applications consecutively;

b. Prepares a folder for each application received which is classified other than ineligible or withdrawn, as follows:

(1) Places the appropriate colored label (see paragraph 2a(3)(b), above) on the tab of the folder to show Veteran or Serviceman status and enters identifying information thereon;

(2) Uses Classification Stamp (see Exhibit 5) on the right-hand corner of the outer flap of the folder and enters thereon the classification shown in the upper right-hand corner of the application form;

(Cont'd)

c. Places the Application, the Site Occupants Relocation Record, if any, the Citizenship Certificate, the Verification Summary and any substantiating data submitted by the applicant at time of application in the folder relating to such application, preferably in a predetermined order 1/;

d. Staples any materials relating to an ineligible or withdrawn applicant (other than Control or Master File Card) to his application;

e. Enters the classification assigned to an application, including ineligible and withdrawn applications, on its related Control Card;

f. Files application folders and ineligible or withdrawn applications in the Application Folder File in accordance with the established filing system (for suggested system see paragraph 2a(3), above);

g. Files Control Cards and Master File Cards, (if used) alphabetically in their respective files;

h. Files Verification Progress Card in accordance with locally established procedure (for suggested system see paragraph 2a(5)(a),) above;

i. Sets up and maintains on a current basis a record of applications received and classification assigned.

7. Preliminaries to Verification. To keep operating costs at a minimum and to expedite the work involved in assembling, evaluating, and documenting such information as may be needed to (a) establish an applicant's eligibility and preference rating, (b) determine the rent he should pay and the size of unit required to accommodate his family, and (c) ascertain the urgency of his housing need, specific operational patterns should be developed. Inherent in the development of an operational pattern to be followed in processing an application are determinations with respect to the delegation of responsibility for carrying out the various phases of the process; the sequential order in which the various steps are normally to be taken; the conditions which warrant a digression from the normal pattern or the obtaining of information not usually required; and the mediums to be used in obtaining the necessary data.

a. Delegation of Responsibility for Specific Phases of the Verification Process. To avoid confusion, duplication of work, and omissions, a clear delegation of responsibility for carrying out the specific phases or steps of the verification process should be made. Division of responsibility by

1/ Some Local Authorities have found devices such as U-File-M binder strips to be useful in preventing materials from being lost out of a folder and for maintaining a uniform system of filing within each folder.

(Cont'd)

functions is usually preferable to division of overall application workload. The functional division results in one point of contact between the Local Authority and an employer. Dividing applications received among three staff members to process in their entirety would probably result in three points of contact. On the diagrammatic chart showing one possible routing of application folders during the process of assembling verifying material which is attached as Exhibit 2 and in paragraph 8 of this bulletin responsibility for carrying out specific steps is shown as having been delegated to some individual employee who is identified by a job title which is generally illustrative of the functions which he is to perform. This division of functional responsibility has been made for illustrative purposes only and is not to be taken as a recommendation as to how responsibility is to be delegated to persons engaged in processing applications. On small projects one person may have to perform all the required functions. On slightly larger projects one person may be made responsible for carrying out duties of the Verifier as well as those of the Control Clerk and the Supervisor may need to assume the duties of a Home Visitor. On very large projects several Verifiers may be needed. In other words, the size of local programs, which in essence determines the number of persons who will be needed to receive and process applications, varies too markedly to offer any concrete suggestions as to how functional responsibility should be divided. It is recommended, however, that responsibility for contacting and obtaining information from social, welfare or public assistance agencies be placed with some member of the Local Authority's staff whose background is such as to qualify him in the opinion of such agencies to have access to their confidential records.

b. Establishment of Sequential Order for Assembling Verifying Data. Indicated below is the sequential order which experience has proved generally to be the most desirable to follow in assembling required verifying data in support of applications from families who appear to be eligible in every respect. Suggestions as to the steps to be taken in verifying the factors are set forth in paragraph 8.

First - Preference Rating. The verification of an applicant's preference rating will serve to bring to light those families for whom the citizenship and previous housing requirements are waived (see Section 403.1). In addition to showing factors not requiring verification, the taking of this step first will reveal which applicants have the highest preference rating. This will be of assistance in determining the applications to be processed first.

Second - Citizenship. For foreign born prospective lessees for whom the citizenship requirement is not waived, it is suggested that the second factor verified be that of citizenship.

Third - Income. As more applicants are disqualified because of income than for any other reason it is wise to have this step taken immediately

(Cont'd)

subsequent to the verification of citizenship. This step includes verifying source and amount of aggregate income received by each member of the family, determining on the basis of verified findings amounts to be deducted from aggregate income, and ascertaining from the proper source whether amounts received from the U. S. Government accrue to the family because of a service-connected disability or death of some family member.

Fourth - Other Eligibility Factors not Involving a Home Visit. In the main this step covers matters pertaining to locally established eligibility criteria such as the verification of a family's net assets. There will be instances, however, where it will be necessary to obtain verifying information pertaining to the family such as ages, relationship, health conditions and similar matters from sources other than the family itself. The securing of such data is included in this step.

Fifth - Existing Housing Conditions. Because of its time-consuming and costly nature, this step, which involves a visit to the applicant's abode as a matter of general practice should not be taken until an applicant has been found eligible in all other respects; except that, if at time of application or at some other point during the verification process, it appears that the applicant may be disqualified only because of his present housing conditions, this step should take precedence over the others. Saving this step until the last not only results in home visits or physical inspections of housing conditions being made only when necessary to establish eligibility or urgency of need, but also affords an excellent opportunity to obtain from the family any additional information which may be needed and which has not been or cannct be obtained from other sources.

c. Designation of Mediums to be Used in Obtaining Verifying or Substantiating Data. The mediums most frequently used in obtaining verifying or substantiating data are set forth below, together with some of their advantages and limitations. No one of these devices, no matter how well contrived, will serve in every instance. Form letters will, from time to time, need to be supplemented by a personal interview or telephone call. Review of records, which if found to be poorly kept or inconclusive, will necessitate the use of other verifying or substantiating mediums. In using any medium for obtaining information, assurance should always be given to the recipient of the inquiry that the information supplied by him will be kept confidential. The reason why such information is requested and the use to be made of it should also be made clear.

(1) Form Letters. Form letters, if properly devised, will serve effectively in securing the specific information needed, particularly in those instances where arrangements have been made in advance with those individuals, establishments or agencies which are to be the

(Cont'd)

recipients of such inquiries and where it is reasonable to expect that complete and accurate replies to the questions on the form letter will be forthcoming. Form letters are time-saving and therefore economical. To serve most effectively, a form letter must be designed to meet a specific need and should contain and call for only such information as the recipient of such inquiry is equipped to supply.

(2) Individual Letters. Individual letters should be used whenever a form letter is deemed as being unsatisfactory for the particulars of the case involved or where it is felt that an individual letter will receive attention not given a form letter. Such letters should be courteous, brief, and so worded as to indicate the specific information needed, the reason why it is needed and the use to be made of it.

(3) Personal Interviews. Personal interviews will be necessary when it is felt that written communications will not serve the purpose; where information received in writing is of such a nature as to call for a personal interview to clarify obscure factors or to supplement information obtained; and where written communications have been disregarded. This method of obtaining verifying data is time-consuming, costly, and unless confirmed in writing can result in salient points being overlooked or improperly interpreted.

(4) Telephone Calls. Telephone calls to responsible persons, if later confirmed in writing, may be preferable to written communications or personal interviews in following up on data previously requested or partially obtained or as a means of obtaining information quickly in cases of emergency.

(5) Review of Records. The review or inspection of official records may serve to supply the information needed and eliminate the necessity of using some other method to obtain it. For instance, the submittal of a W-2 form would preclude the need for sending a form letter to the employer for the purpose of verifying the amount he had paid an employee during the period covered by the W-2 form. The presentation by the applicant of a recent letter from the Veterans Administration stating that said applicant family or a specified member of such family is to receive a certain amount a month because of a service-connected disability or death suffered by a member of such family would in many cases obviate the necessity for any further verification of such income or condition. The review of records maintained or possessed by an applicant family is of prime importance in verifying the income of self-employed persons. Such material to be reviewed or inspected includes detailed business records of income and expense and income tax reports.

(Cont'd)

(6) Notarized or Certified Statements. In some cases the use of statements sworn to or certified before a notary may be the only method of obtaining substantiating data; however, it is the least desirable and should be resorted to only when all other methods fail.

(7) Authorization Forms. In some cases essential verifying data may not be made available to the Local Authority unless the release of such data is authorized in writing by the person to whom it pertains. To meet this eventuality it may be desirable to have prepared a rubber stamp reading somewhat as follows:

"I hereby authorize the release of the above requested information to the _____(Name of Local Authority)_____.

_____
(Signature)

Date_____".

Such a stamp may be impressed as required at the bottom of any request for information issued by the Local Authority and obviates the need for preparing specific forms for this purpose.

8. Verification of Representations Made by Applicant and Documentation of Verified Findings. The verification process in general comprises three stages. The first involves obtaining from the applicant family itself such documentary evidence as it possesses which will serve to verify or substantiate representations made on its application for admission, i.e., citizenship papers, discharge papers, pension checks, court orders, Social Security Award Letters, and similar material. The second stage involves contacting and obtaining from sources other than the family, information needed to validate or supplement the unsubstantiated statements made by the applicant, i.e., employers, social agencies, Veterans Administration and other sources qualified to furnish the specific information required. The home visit or physical inspection of an applicant's housing conditions constitutes the third and usually the final stage of the verification process. Carrying any one stage of the verification process through to a successful conclusion involves a number of steps. While the following paragraphs deal with the basic steps to be taken in processing applications it must be remembered that the circumstances of the individual family concerned will constitute the basis for determining the order and the specific steps to be taken in processing that family's application. This means that in processing some applications it will not be necessary to take all the steps discussed below. For instance, not every applicant will claim to be contributing to the support of some person outside the home. Nor will every applicant qualify as the family of a Veteran or Serviceman. On the other hand, there will, no doubt, be

(Cont'd)

steps, other than those indicated, which will have to be taken in processing some applications. This will be particularly true in those instances where the Local Authority adopts eligibility criteria in addition to those set forth in Section 403.1 or where it desires to build up a more complete and detailed history on the applicant family than is required by PHA. In general the process of assembling, evaluating, and documenting verifying data will involve the following actions which for convenience are indicated as being the responsibility of an employee serving in a designated capacity 1/.

a. Actions Taken by Control Clerk

(1) Removes application folders from Pending Section of Application Folder File starting with those having the highest preference rating.

(2) Reviews contents of folder and notes on related Verification Progress Card the receipt of any verifying data called for on the card which has not previously been recorded thereon. The review of the contents of the folder includes a detailed review of the entries on the application form and Sections I and II of the Verification Summary form (see Exhibit 8) as well as any collateral material which may have been received.

(3) If required by Local Authority policy, fills out a clearance slip for each applicant and sends them to the Social Service Exchange. (The forms to be used for this purpose are generally obtainable from the Exchange itself.) The clearance slips when returned by the Exchange will indicate which families have "no record", which families are known only to agencies dealing with matters having no bearing on eligibility for admission to a public low-rent project, and which families are known to agencies which are in a position to furnish valid data on health, domestic relations, family composition, income, and other matters of importance to the Local Authority. In communities where a Social Service Exchange does not exist the Department of Public Welfare may be able to furnish information as to whether a family has ever received any type of public assistance and by what agency such assistance has been given. The returned Clearance Slip is filed in the applicant's folder for such further action as the Verifier may deem to be necessary.

(4) Writes or calls applicant requesting him to bring in such substantiating data as his application indicates him to have in his possession but which, as of the date of the letter, has not been submitted for review. Also advises the applicant as to any family members who should come into the office to sign a Citizenship Certificate or other papers, such as forms authorizing the release of pertinent information.

(Cont'd)

1/ See paragraph 7a.

Verifying data frequently obtainable from the applicant family are birth and marriage certificates, Social Security Awards letters, discharge or separation papers, death notices from Army, Navy, or Air Departments, letters from Veterans Administration, adoption papers, citizenship papers, Court Orders, W-2 forms, income tax returns, and similar official documents.

(5) Notes each action taken on Verification Progress Card and files copies of all letters sent out in the appropriate application folder.

(6) Sends out follow-up letters in event information previously requested is not received within a reasonable time and notes such action on Verification Progress Card.

(7) Forwards applications on completion of these preliminary steps to Verifier or Home Visitor as indicated by the supervisor on the Verification Progress Card and notes transmittal on Control Card.

(8) Upon instructions from applicant, classifies application as W (withdrawn), makes entries on appropriate forms giving authorization and reason for, together with date of withdrawal and files application in Withdrawn section of Application Folder File after noting such action on the Control Card.

b. Actions Taken by Verifier. The Verifier carefully reviews the application, the Verification Summary form and all other materials in each application folder referred to him for processing and, after checking with the related Verification Progress Card, proceeds to take such action, other than making a home visit, as may be required to determine the applicant's eligibility, a preference rating, unit size required, and rent to be charged. Such actions as the following are usually involved:

(1) Sends letter to or makes telephone contacts with such sources as may be needed to verify family composition (if marriage or birth certificates are required these would have been requested by the Control Clerk). Schools, churches, and social or welfare agencies are the sources from which family data can usually be obtained. The purpose of verifying family composition is to assure that the applicant family consists of at least two persons who are related by blood, marriage, or adoption and that all persons in the group reported by the applicant as being minors are actually under 21 years of age.

(2) Verifies Veteran or Serviceman status when applicants are unable to supply the proper documents, by sending inquiry to Veterans Administration, (see Exhibit 14) absent family member, commanding officer, or other source having knowledge of the facts. In

addition to ascertaining whether a family member (living or deceased) has ever served in the active military or naval service of the United States, it is necessary to obtain and verify the periods of such service and the conditions under which such person was discharged or separated from the service. For families of disabled or deceased Veterans or Servicemen, it will be necessary if the family is unable to furnish valid proof of its claims, to obtain from the Veterans Administration a statement as to whether such disability or death occurred in connection with military service 1/. However, when preference considerations are not involved, certifications from Government agencies other than the Veterans Administration, provided such agencies are qualified to attest to the service-connected nature of the disability may be accepted 2/.

(3) Verifies statements made by applicant which would contribute to the urgency of his need for housing not requiring physical inspection of the unit occupied (i.e., contacts local redevelopment agency to verify displacement, obtains doctor's certificate as to health conditions, checks eviction notice, and similar matters). This step serves (1) to establish the family's status with respect to displacement, (2) to determine whether a family's being without housing or about to be without housing as the result of a court order of eviction is due to no fault of its own, and (3) except for making a physical inspection of present housing accommodations, to assemble all other data needed to determine the urgency of the family's housing need.

(4) Reviews citizenship status of family member who will, if the family be admitted to the project, sign the lease as lessee. When such person is of foreign birth or there is any valid reason to doubt his status as a United States citizen and no proof of citizenship has been submitted, the Verifier should write such person advising him either to bring in evidence of his citizenship or in event he does not possess the necessary documentary proof to obtain from the nearest Immigration Service Office a statement as to his citizenship status, except that

(Cont'd)

1/ For preference purposes the disabled or deceased Veteran or Serviceman must have served in the active military or naval service of the United States during one of the periods specified in the Act, but the service-connected disability or death need not have occurred during such periods.

2/ The exemption for eligibility purposes of payments received from the United States Government for disability or death which occurred in connection with military service is applicable to families of all Veterans or Servicemen regardless of when they served in the active military or naval service of the United States.

such action is not necessary for potential lessees who qualify for the citizenship waiver (see Section 403.1). Further action on such applications should be suspended pending verification of citizenship. Families found to be ineligible because the family member acceptable to the Local Authority as lessee is a non-citizen should be so advised, the application classified as ineligible and returned to the Control Clerk to be filed in the ineligible section of the Application Folder File after such disposition has been noted on the Control Card.

(5) Contacts clerk of appropriate court to obtain copies of or ascertain the existance of any court orders, reported by but not available from the family, when such legal documents are required in order to determine the applicant's eligibility or to compute his income. Court records of import will be those pertaining to adoptions, support of persons outside the home, income accruing to the family as the result of a court order (alimony or support of dependents) eviction actions and similar matters.

(6) If required by Local Authority policy, obtains from appropriate social welfare or other agencies a report (see Exhibit 16) on each family who has been indicated by the Social Service Exchange as being known to an Agency whose functions would enable it to furnish any information which might have a bearing on the family's eligibility. The information sought will usually pertain to family composition, employment history, past and present financial conditions, rent paying habits, indebtedness, relations of family members to each other, legal involvements, and similar matters. This report may be filled in by the Verifier with information obtained as a result of conferring with a representative of a given agency or reading the agency's case record by permission. In some instances it may be desirable to submit the report form to a specific agency for completion. This method, however, involves considerable work on the part of agencies which frequently are not staffed to spare the professional and clerical services required to prepare such report. On the other hand, certain social agencies, especially private agencies dealing with specialized problems, may prefer this method so that they may be selective about the material released from their confidential records. This method also has the advantage of eliminating numerous and time-consuming conferences. If the form is to be submitted to an agency for completion the name of the family, the address, the first names, ages, and relationship of all members of the household, also the agency case number and the date of Social Service registration 1/ should be filled in before mailing.

(Cont'd)

1/ Case number and Social Service registration date will be given on clearance slip prepared by Social Service Exchange.

(7) Sends form letters or special letters to present employers, also past employers (if required by local policy), and to other authoritative sources as needed in connection with assembling employment and income data. Upon receipt of reply, estimates in accordance with the established formula for that occupational category the anticipated annual aggregate and net income of the family member to whom such information relates and compares estimate with that furnished by applicant at time of application. If there is a significant difference between the two estimates, both the applicant and the source of verification should be contacted to determine the reason for such marked variations and which estimate should be used.

(a) Estimating the anticipated income of regularly employed, salaried persons, having no overtime work; pensioners; recipients of Social Security Awards; and other persons on a fixed income seldom present any serious problem. Generally speaking, all that is needed to estimate accurately the anticipated income of such persons is cooperation from the source of income and the ability to make accurate mathematical computations.

(b) Estimating the anticipated income for other types of income recipients, however, offers many differing and difficult problems. In many instances factual data will need to be supplemented by sound judgment in order to estimate anticipated income with any degree of accuracy. Seasonal and outside workers, by the very nature of their work, do not work every week of the year. Also, if it is found that such workers receive no form of public or private assistance during their off seasons it is only reasonable to assume that they are engaging in some other forms of work during these off periods or that there is sufficient income being received by other family members to sustain it during such times. In event the application does not indicate supplemental income the applicant should be called into the office to discuss the matter. This may also be necessary for pensioners and other persons reporting an income lower than that required for a bare existence level of living. For instance, on one project, a family consisting of a man, his wife, and invalid son reported an annual income of $720 at the time it applied. The Verifier after having established the fact that the man, a World War I veteran, was receiving a pension of $60 a month and that the family was paying a rent of $30 a month decided that the family must be receiving some other income. On calling the family in to discuss the matter, it was found that the man worked at odd jobs averaging about $20 a week and that his wife sold cosmetic products from house to house and averaged about $10 a week. This particular family had not tried to withhold information concerning its income; it had merely thought in terms of the fixed and regular income of which it was sure.

(Cont'd)

(c) Another matter to be taken into consideration is that of anticipating income for workers or potential workers who may be unemployed at time of application. It is only reasonable to assume that members of a low-income family who are physically able to work and who are of an employable age will seek and obtain some form of employment particularly if they possess a Social Security number. Continued unemployment of such persons should be anticipated only during periods of economic depression or when there is a higher than normal rate of unemployment in the area. Most persons know the type of employment for which they can qualify, the amount of time which they can expect to be gainfully occupied and can give some idea as to the amount of compensation which they probably will receive. Overestimates should be avoided as much as underestimates. An overestimate may disqualify an applicant and an underestimate may result in a family's paying a lower rent in relation to its actual income than that required by the approved Schedule of Rents. It is believed that fairly realistic estimates can be made for these unemployed potential workers. For instance, if there is in the community a factory where young people, upon graduating from high school, generally seek and obtain employment, it seems only reasonable to assume such employment and resultant earnings for low-income applicant families with members who will logically be in a position to take such employment during the 12 months subsequent to admission to the project.

(d) Estimates of anticipated earnings for per diem workers, construction workers, laborers, seasonal workers, even though they may be unemployed at time of application, should be included in the computation of the anticipated net annual income of the family. These estimates should be based on the formulas applicable to the particular employment category concerned. For example, if it has been ascertained that a construction laborer can expect to be employed approximately 36 weeks a year, then the normal hourly rate of pay for the type of work normally performed times 40 hours times 36 weeks would constitute the estimate of anticipated earnings for the temporarily unemployed construction laborer.

(8) Determines and informs applicant family as to type of substantiating data to be submitted for members of the family who are self-employed or who are receiving part or all of their income from a source offering no means of verification other than the person himself. Included in this group are persons operating their own businesses, commission salesmen, concessionaires, taxi drivers, service-station dealers, etc. Also included in this group are waitresses and other persons receiving part or all of their compensation or income in the form of tips or gratuities.

(Cont'd)

(a) Estimating the income of persons whose compensation is dependent primarily on their own enterprise presents many difficult problems due, to a large extent, to the very poor and inadequate records maintained by such persons. Any records kept by persons in these employment categories should be carefully reviewed and evaluated for accuracy and adequacy. In reviewing the income and expense statements of a person operating his own business, it must be remembered that any monies used or set aside for business expansion or for amortizing a capital investment are to be treated as income, not expense. Affidavits pertaining to the income actually being received and setting forth on the basis of such receipts an approximation of the income which it is anticipated will accrue to the affiant, may be used in lieu of or in supplementation of other forms of verifying data when it is felt that the representations thus made are the most valid evidence which can be obtained and that the integrity of the affiant warrants the acceptance of such affidavit as a verifying document.

(b) To judge the validity of the representations made on an affidavit often requires some checking in the field of endeavor concerned. For example, assume that an applicant working as a waitress has submitted an affidavit to the effect that she averaged approximately $10 in tips a week. The matter of tips, without mentioning the worker's estimate, should be discussed with restaurant owners and, if hiring is done through the union, with an appropriate union official. If, from these discussions, it appears that the worker is either diliberately or unwittingly underestimating her income, she should be called in, the matter discussed and a revised estimate obtained. If the worker's estimate exceeds other estimates obtained, it is probably about right and should be accepted unless there is some other valid reason for rejecting it.

(9) Determines need for obtaining credit reports as a means of verifying employment and income and as needed sends letter to Credit Rating Bureau indicating specific type of data required.

(10) Takes such action as may be necessary to ascertain the legitimacy of deductions claimed by the applicant and to verify the annual amount of such deductions. This step concerns all deductions except those verified through the source of employment. The amount of financial support given dependents living outside the home is frequently verified by writing either to the reported recipients of such benefits or to someone in charge of such persons and obtaining from them specific notarized information concerning the cash value of the assistance given per annum. Receipted bills and doctor's statements often provide a basis for estimating the anticipated cost of continuing medical care.

(Cont'd)

(11) Reviews and evaluates adequacy of all verifying material as received and makes such follow-ups as are necessary with applicants and with sources from which verifying data are sought.

(12) Computes annual net income of family and records details of final determination of family's annual net income in Section E of the Verification Summary form (see Exhibit 8). Before estimating the family's anticipated net annual income, the assembled data pertaining to employment and income should be carefully reviewed to assure that all pertinent factors have been considered and that all necessary data have been obtained. Inherent in such review is an evaluation of the verified findings as to adequacy, completeness, and reasonableness. For example, an income verification for a domestic which does not show the number of meals received and whether car fare is paid in addition to wages is incomplete and inadequate for the purpose of determining the worker's net annual income. A test of the reasonableness of the verified findings may often be made by comparing one set of verified data with another. For instance, take two waitresses working the same number of hours, at the same wage rate, for the same restaurant, but who differ markedly with respect to their estimates of tips received. Studied independently, each estimate might appear reasonable but when viewed together questions will arise as to the adequac of the information obtained.

(13) Refers folders of applicants whose income has been verified as being unreasonably low (insufficient to maintain a subsistence level of living) to home visitor to review in light of verified living conditions and standards.

(14) If required by Local Authority policy, contacts proper sources to obtain value of family's assets. This involves checking court records or mortgage companies for property value and amount of equity, obtaining bank statements, and similar materials. Credit rating bureaus may also be utilized in this connection.

(15) Verifies any significant indebtedness, if required by Local Authority policy, through credit agency or by contacting person or firms owed by applicant.

(16) Notes each action taken, date action was initiated, followed up, and completed on Verification Progress Card.

(17) Documents all verified findings and, except for those factors which can be verified only by a home visit or physical

(Cont'd

inspection of the dwelling conditions of the applicant, completes Section II of the Verification Summary form.

(18) Upon discovery of ineligibility, enters in appropriate section of Verification Summary, data substantiating such determination and assigns a tentative classification in pencil in heading of application form and on outside of application folder, routes folder to supervisor after having such transfer of the document recorded by the Control Clerk on the Control Card.

(19) On completion of investigation and documentation of verified findings, assigns a tentative classification in pencil on application and folder opposite those items in the classification block which have been verified and routes applications requiring a home visit or physical inspection to Home Visitor after clearing with Control Clerk, routes applications tentatively classified as eligible which require no home visit or physical inspection to supervisor after clearing them with the Control Clerk.

(20) Classifies applications as W (withdrawn) either upon request of applicant or upon failure of interested parties to supply information needed for eligibility determinations and, after documenting the reason for withdrawal, routes application folder to Control Clerk for proper noting on Control Card and for filing in withdrawn section of Application Folder File.

c. Actions Taken by Home Visitor. An employee when acting in the capacity of Home Visitor is responsible for all phases of verification process which involve a visit to the applicant family or a physical inspection of an applicant's living conditions. The home visit in addition to serving as a means for obtaining certain substantiating data, can serve in some instances as a check on the validity of the estimates previously made of the family's anticipated income. For instance, the presence of a new washing machine, clothes dryer, television set and other more or less costly household appliances in the home of a family with a reported income of only $1800 might indicate that either the family was receiving more income than it had reported or that it was overly in debt. In such cases the home visit should be used to supplement the income verification previously made. In the performance of his job, the Home Visitor usually takes the following actions:

(1) Reviews contents of application folder and Verification Progress Card to ascertain purpose and nature of visit to be made.

(2) Arranges families to be visited by neighborhoods and schedules trips to applicants in such a way as to keep time spent in

(Cont'd)

going from place to place at a minimum. A city map is a useful tool in this connection. The location of families to be visited can be plotted on the map by pins and used as a routing guide by the Home Visitor.

(3) Visits family to obtain such information as may be needed to complete the record on the family and makes a physical inspection of housing accommodations if needed to establish eligibility or determine relative urgency of housing need. The Home Visitor should assiduously avoid assuming the guise of an investigator and should employ interview rather than quiz techniques. Every effort must be made to put the family at ease during the home interview. The Home Visitor should at all times maintain an interested but impersonal attitude toward the family. Questions asked by the family should be courteously answered and policies governing eligibility determinations, rental charges, selection methods and similar matters should be explained, as the need arises, in clearcut, simple language. The Home Visitor however, should avoid making any specific commitments to the family concerning its eligibility status or the likelihood of its being selected for admission to the project.

(4) Makes informal notes of pertinent information obtained during the home visit and upon return to the office documents findings in the appropriate section of the Verification Summary Form and indicates documentary or other evidence which constituted the base for such findings. To attempt to write a full or detailed report while conducting a home interview tends to place emphasis on recording rather than obtaining information. Also, families sometimes feel ill at ease and are reluctant to discuss matters freely if they are made conscious of the fact that everything they are saying is being recorded.

(5) Inspects physical characteristics of dwelling occupied and at time of inspection notes existing condition on form used for recording such information. An entry should be made for every item on the form. Conversely to their attitude toward having extensive notes made on their personal affairs, applicants are eager to have copious notes made of the substandard or undesirable characteristics of the dwellings they occupy. Provision is made in Section II of the specimen Verification Summary Form shown as Exhibit 8 for recording the findings from a physical inspection of the present living accommodations of the applicant. It may be desirable to duplicate this section on a separate sheet to be used in the nature of a work sheet during the inspection (see Exhibit 4, Bulletin No. LR-29). This will not only be found to be a more convenient form to handle in field work, but it will

(Cont'd)

also permit the Verification Summary form to remain in the application folder in the office where it is readily accessible at all times for any purpose.

(6) Evaluates all findings including the rating and scoring of substandard dwellings in accordance with established procedure; also rates urgency of housing need.

(7) Reviews contents of folder after documenting findings from home visit or physical inspection and notes in pencil in the appropriate sections of application and Verification Summary forms recommended action.

(8) Sends folders of applicants requiring further verification to Verifier, indicating any specific data yet to be obtained and informs Control Clerk of such transmittal.

(9) Sends all other application folders through Control Clerk to Supervisor for final review and subsequent action.

d. Actions Taken by Occupancy Supervisor. On the Supervisor rests the responsibility for seeing that the investigation of each applicant is sufficient in scope and is of such quality as to establish unequivocally his eligibility for admission to the project. On programs too small to require the services of more than one person to carry out the functions incident to the initial selection of tenants, such person would serve in all capacities. On very large programs the Supervisor would need assistance in carrying out his functions and fulfilling his responsibilities. Listed below are the actions taken during the verification process by the person normally serving as, or in lieu of, or carrying the responsibility of an Occupancy Supervisor:

(1) Reviews contents of application folder and checks assembled material against Verification Progress Card to determine compliance with instructions previously given and extent of investigation made.

(2) Evaluates verified findings and adequacy of documentation to assure that all actions necessary to the determination of eligibility, preference rating, rent to be charged and unit size requirements have been taken and properly recorded and that conclusions reached on such matters emanated from valid factual data, not opinions.

(3) Returns folders of applicants requiring further verification through Control Clerk to Verifier or Home Visitor with specific instructions as to further action to be taken.

(Cont'd)

(4) Classifies all applications. When classification differs from that suggested and indicated in pencil by Verifier or Home Visitor discusses the matter with such person.

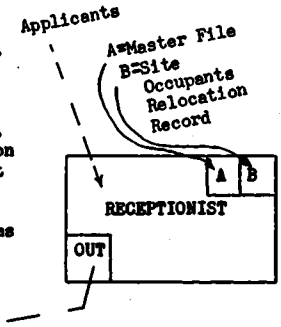
(5) Routes folders of all applicants for whom verification has been completed to Control Clerk for filing in accordance with classification assigned after appropriate entries have been made on Control Card.

9. Disposition of Applications Upon Completion of Verification. After all necessary actions have been taken including documentation of verified findings and the assigning of a final classification, applications from families determined to be eligible for admission should be filed in the eligible section of the Application Folder File. Applicants found to be ineligible during the process of verification should be advised in writi of their ineligibility. In notifying ineligible applicants of their status, it may be desirable in the interest of good public relations to inform them specifically as to the reason for such determination and to invite them to reapply in event the disqualifying circumstance changes.

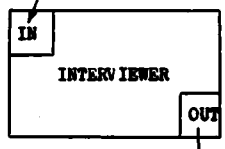
RECEIPT, REVIEW, CLASSIFICATION, AND FILING OF APPLICATIONS

RECEPTIONIST

1. Checks Master and Site Occupants Relocation Record Files.
2. Obtains and tabulates data on source of information re project.
3. Prepares Master File Card and Control Card.
4. Fills in heading, except for application number, and Section I of Application.
5. Asks general questions re income, housing need and citizenship.
6. Informs obviously ineligible applicants re status, enters reason of ineligibility on application and Control Card, has applicant sign application and tells him to return in event his circumstances change.
7. Routes applications from ineligibles together with related forms to supervisor.
8. Hands other applications to applicants concerned together with related forms and refers applicants to interviewer.



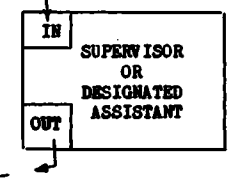
INTERVIEWER



1. Conducts application interview, records information obtained on application and after reading statement at end of form to applicant has him sign form.
2. Enters applicant's name and address on Verification Summary Form, notes in the appropriate section of the form any verifying data submitted, dates, and initials each entry.
3. Makes preliminary determination as to eligibility.
4. Informs ineligibles as to reason of ineligibility.
5. Tells other applicants of steps to be taken in processing applications.
6. Has Citizenship Certificate executed if required and if proper person is present.
7. Enters tentative classification on application, dates and signs it.
8. Routes all applications to Supervisor after applicant leaves.

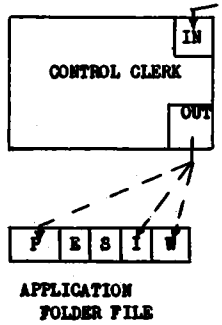
SUPERVISOR OR DESIGNATED ASSISTANT

1. Reviews applications and related materials.
2. Discusses deviations from policies or faulty interpretations with appropriate staff member.
3. Makes appropriate entries in Section I of Verification Summary.
4. Classifies all applications.
5. Prepares Verification Progress Card for all applications to be processed indicating steps to be taken and order to be followed.
6. Routes all applications with related materials to Control Clerk.

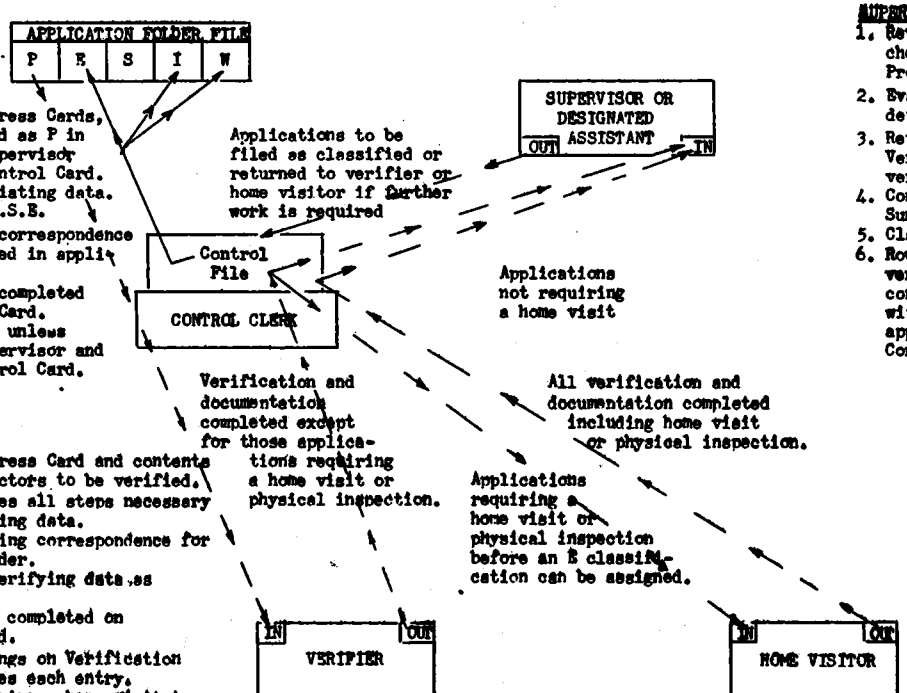


CONTROL CLERK

1. Assigns number to each application.
2. Prepares folders for all except W and I applications.
3. Places application, Site Occupants Relocation Record, Verification Summary and any verifying data received in appropriate folder.
4. Enters classification on outside of folder and on Control Card.
5. Files application folder, Master File Card, Control Card, and Verification Progress Card in accordance with established procedure.



ROUTING OF APPLICATION FOLDERS DURING VERIFICATION AND DOCUMENTATION OF ADMISSION DATA
(Read Counter Clockwise)



A

CONTROL CLERK

1. Reviews Verification Progress Cards, removes folders classified as P in the order indicated by Supervisor and records removal on Control Card.
2. Writes family re substantiating data.
3. Sends clearance slip to S.S.E.
4. Files copies of outgoing correspondence and verifying data received in applicant's folder.
5. Records action taken and completed on Verification Progress Card.
6. Routes folder to Verifier unless otherwise directed by Supervisor and notes transmittal on Control Card.

B

VERIFIER

1. Reviews Verification Progress Card and contents of folder to ascertain factors to be verified.
2. Except for home visit takes all steps necessary to obtain required verifying data.
3. Makes copies of all outgoing correspondence for filing in application folder.
4. Evaluates and documents verifying data as received.
5. Records actions taken and completed on Verification Progress Card.
6. Summarizes verified findings on Verification Summary, initials and dates each entry.
7. Routes applications requiring a home visit to home visitor thru control clerk.
8. Routes all other folders when verification is completed thru control clerk to supervisor.

C

HOME VISITOR

1. Reviews Verification Progress Card and contents of folder to ascertain factors to be verified at time of home visit.
2. Makes home visit and physical inspection as required.
3. Rates and scores physical conditions of dwelling.
4. Records, dates and initials verified findings in appropriate section of Verification Summary.
5. Routes all folders when verification is completed thru control clerk to supervisor.

D

SUPERVISOR OR ASSISTANT

1. Reviews contents of folder and checks against Verification Progress Card.
2. Evaluates verified findings and determines adequacy of documentation.
3. Returns folder thru Control Clerk to Verifier or home visitor if further verification is needed.
4. Completes Section I of Verification Summary.
5. Classifies all applications.
6. Routes all applications on which verification has been completed to control clerk for filing in accordance with classification assigned after appropriate entries have been made on Control Card.

(Face of Form)
(Size 14" x 8½")

Name and Address of Local Housing Authority

APPLICATION FOR ADMISSION

Project _____ Date of Appl. _____ Appl. No. _____
Preferred _____
Prospective Lessee _____ Race _____
Country of Birth* _____ Citizen: Yes ___ No ___
Address: _____ Phone No. _____
Address: _____ Phone No. _____
*If foreign born and citizenship not waived have Citizenship Certificate executed.

CLASSIFICATION

Date Classified	Eligibility Status P	E	S	I	W	Unit Size	Rent Req.	Pref. Rate	Urgency of Need

I. FAMILY DATA

No.	Name of All Persons to Reside in Dwelling	Relation to Fam. Head	Sex	Age	Date of Birth
		Head			

Anticipated Changes in Family Comp. _____

II. EMPLOYMENT STATUS AND CURRENT AND ANTICIPATED RATE OF PAY FOR ENSUING 12 MONTHS

Employment Status, Occupation, or Grade in School	Name and Address of Employer or Source of Income	Ident. or S.S. No.	Rate of Pay and No. of Hrs., Days, Wks., Months, Worked per Year - Regular and overtime - No. meals per Wk., and Rate of any Payments in Kind.

Remarks _____

III. ESTIMATED INCOME FOR ENSUING 12 MONTHS

A. Aggregate Income

Fam. Member No. (From 1st Col., Sec. I)	1 Wages - Regular	2 Overtime Pay	3 Commissions, Fees, Tips, Bonuses	4 Value of Meals or Other Pay in Kind	5 Net Income from Business or Profession	6 Dividends, Interest, Net Earnings from Property	7 Pensions, Annuities, Retirement	8 Serv. Com. Dis. or Death Benefits from U.S. Gov't.	9 Unemployment and Disability Compensation	10 Social Security Benefits	11 Public or Private Relief in Cash or Kind	12 Alimony, Contributions, Gifts	13 Pay and Allowances for Servicemen	14 G. I. Benefits	15 Other (Specify in Remarks Above such as Foster Child Care)	16 Estimated Total Aggregate Income for Ensuing 12 Months

Total Anticipated Aggregate Family Income $ _____

B. Deductions (if authorized by L.A.)

1 Unusual Occupational Expense	2 Compulsory Payroll Deduction for S.S., Ret. Ins.	3 Support of Depend. Outside Home (Not Vol. School)	4 Care of Depend. in Home to Permit Employment	5 Medical Exp. Exceeding 5% of Aggregate Income	6 G. I. Training Allowance	7 Estimated Total Amount of Deductions for Ensuing 12 Months

Total Anticipated Deductions $ _____

C. Net Family Income (Total of Col. A.16 minus Total of Col. B.7) $ _____
D. Exemptions for Eligibility (Total of 1 and 2 below) $ _____
1. For Minors (Not over $100 for each minor listed in Sec. I above) $ _____
2. U.S. Disability or Death Benefits (Total of Col. A.8. above) $ _____
E. Net Income Less Exemptions for Eligibility (Item C minus Item D) $ _____

Sources for verifying deductions not due to employment: _____

(Cont'd)

IV. EMPLOYMENT AND INCOME FOR PAST 12 MONTHS 1/

Fam. Mem. No.	A. Aggregate Income Sources of Income During Past 12 Months	Rate 2/ Amt.	Rate 2/ Per	Period From:	Period To:	Amt. Rec'd at stated rate in past 12 Months

Total Aggregate Fam. Inc. Past 12 Months $

B. Family Mem. No.	Allowable Deductions Type of or Reasons for & sources of verification if not due to Emplymt.	Annual Amount

Total Deductions Past 12 Months $

C. Net Family Inc. Past 12 Mos. (Total of A - Total of B) $

Remarks:

V. NET ASSETS 1/

1/ If Required by L.A.

2/ Record regular and overtime rates on separate lines and work with a "+" if meals, tips, commissions, etc., are received in addition to regular pay.

(Back of 14" x 8½" Form)

VI. SERVICE RECORD OF LIVING OR DECEASED FAMILY MEMBERS WHO HAVE BEEN OR ARE IN MILITARY SERVICE

A. Name and Serial No.	Relation to Fam. Head	Date & Place of Induction	Br. of Service Present Rank, Reserve Status*	Date & Type of Discharge	VA Claim No. ("C") No.	Disabled or Deceased

*Give date of entry in Reserve _____

B. Has disability or death been determined by V.A. to be service connected? 1. Yes___ No___
2. Date of last V.A. determination_____ 3. % Disabled _____

VII. HOUSING AND RESIDENCE DATA

A. Family is:
1. Living in unsafe, insanitary or overcrowded dwelling: Yes____ No____
2. To be displaced by low-rent housing project or by public slum clearance or redevelopment project: Yes____ No____
3. Actually without housing through no fault of its own: Yes____ No____
4. About to be without housing due to a court order of eviction for causes other than the fault of the family: Yes____ No____

B. Description of existing conditions: _____

C. Has family been displaced by a low-rent housing project or by a public slum clearance or redevelopment project? Yes____ No____. If "Yes", state place of residence at time of displacement and date family received official notice to vacate.

VIII. MISCELLANEOUS DATA (Include name and address of 3 persons to contact in case of emergency; and comments on health factors, physical handicaps, etc.): _____

I understand that this is not a contract and does not bind either party. The above information is full, true and complete to the best of my knowledge. I have no objection to inquiries for the purpose of verifying the facts herein stated.

(Signed)_____

Date_____ (Interviewed by)_____

CONTROL CARD

(Form No.)
(Name of Local Authority)
Proj. Name:_____
Proj. No._____
Appl. No._____Date_____

(Face of Form)

CONTROL
CARD

Name_____
Address_____
Address_____
Address_____
Phone No._____

CLASSIFICATION

Date Classified	Eligibility Status P	E	S	I	W	Unit Size	Rent Req.	Pref. Rate	Urgency of Need	Remarks:

Disposition: _____

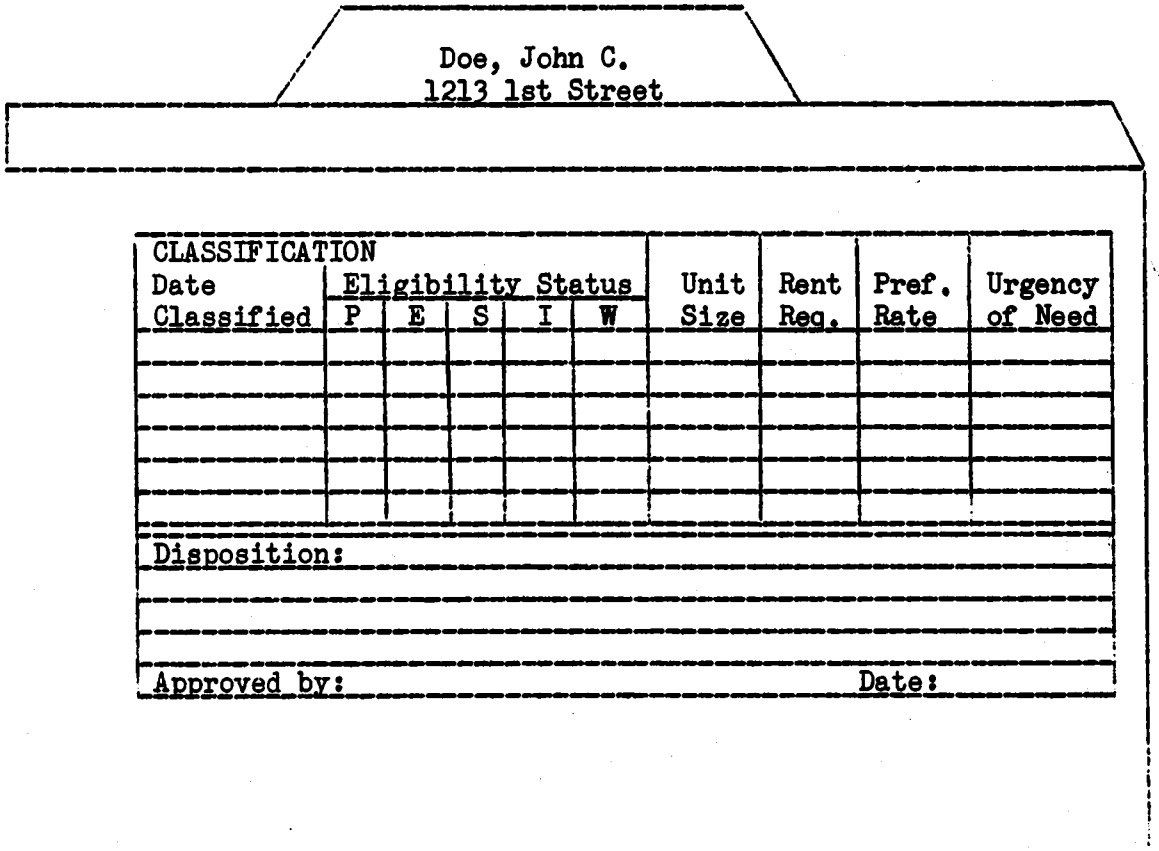
Approved by: _____ Date

(Back of Form)

ASSIGNMENT OF FOLDER

Charged To	Date	Date Returned	Charged To	Date	Date Returned

CLASSIFICATION STAMP FOR APPLICATION FOLDER
and
Position on Folder

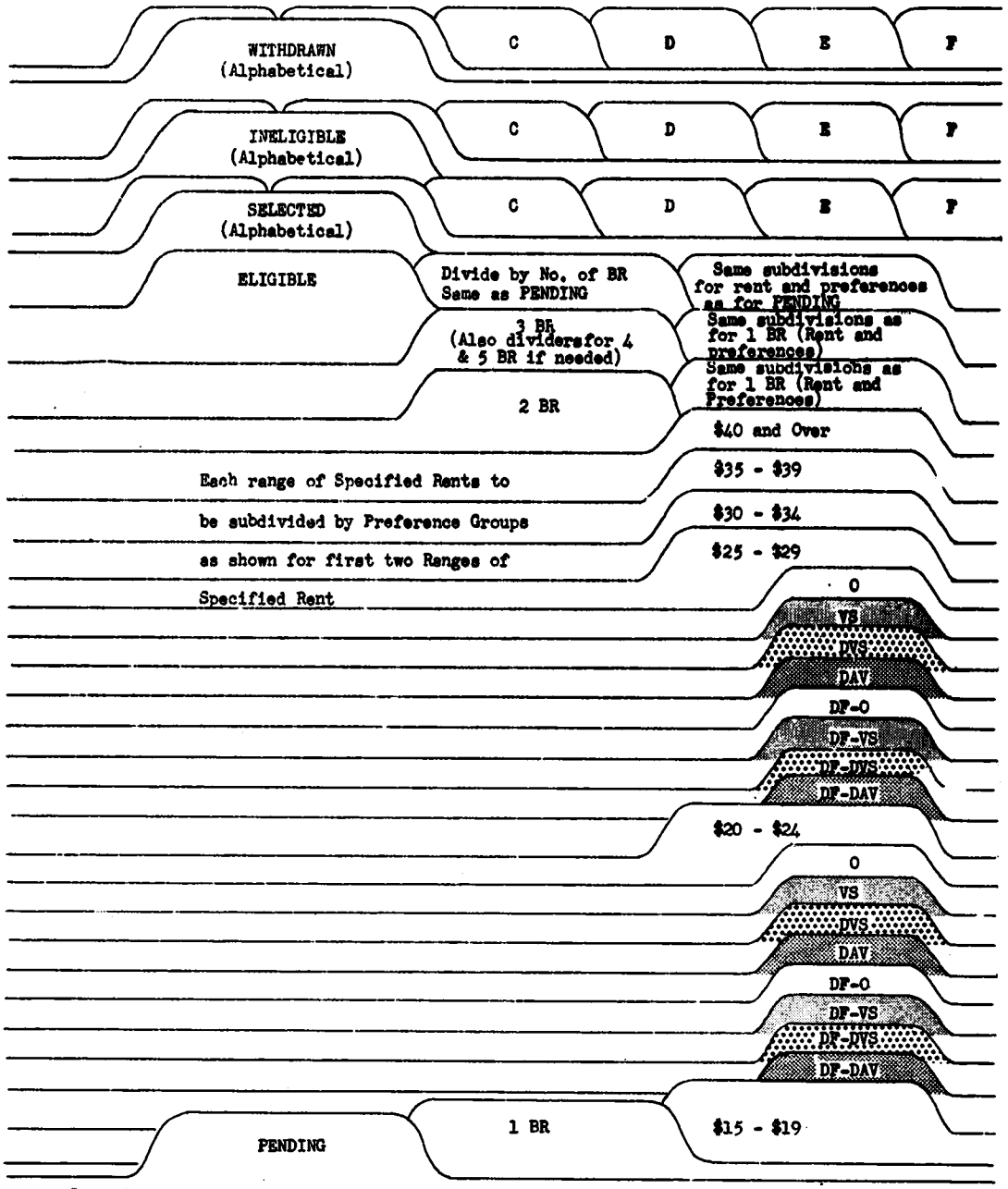


CLASSIFICATION Date Classified	Eligibility Status P	E	S	I	W	Unit Size	Rent Req.	Pref. Rate	Urgency of Need

Disposition:

Approved by: Date:

ARRANGEMENT OF APPLICATION FOLDER FILE
For
Sizable Projects with Established Ranges of Specified Rent

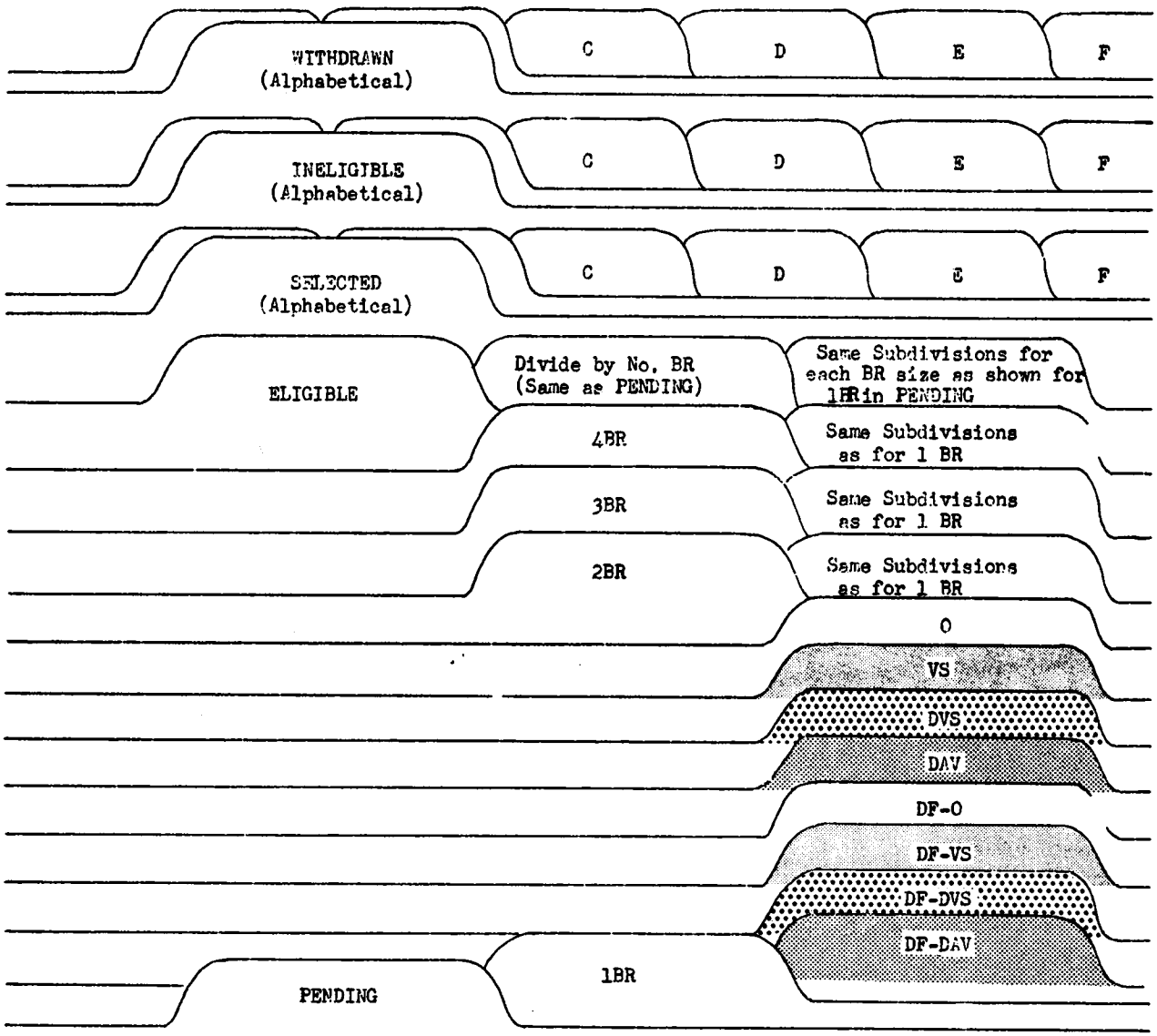


Legend:

DF - Displaced Family
DAV- Disabled Veteran
DVS- Deceased Veteran or Serviceman
VS - Veteran or Serviceman
0 - Other

NOTE: These pages 37 and 38 supersede pages 37 and 38 of Bulletin No. LR-32, dated 7-19-51. Former page 37 was printed incorrectly.

ARRANGEMENT OF APPLICATION FOLDER FILE
For
Sizable Projects without Ranges of Specified Rents



Legend:

DF - Displaced Family
DAV- Disabled Veteran
DVS- Deceased Veteran or Serviceman
VS - Veteran or Serviceman
O - Other

(Form No.)
(Name of Local Authority)
Project
Name: _____
No.: _____
Application No. _____
Date of Application _____

VERIFICATION PROGRESS CARD

Unit Size _____
Preference Rating _____
Name _____
Address _____
Address _____
Address _____
Phone No. _____

Action Required			Source from which Data are to be Obtained	Action Progress Dates - By Whom			
Order	Nature	Purpose		Started	Followed-Up	Completed	Remarks

(Face of Folded Form, Size 8½" x 14")

Name and Address of Local Authority)

VERIFICATION SUMMARY including REPORT ON PHYSICAL INSPECTION

Appl. No._____
Name_____
Address_____
Date of Home Visit_____
Person Interviewed_____

I. CHECK LIST OF VERIFICATION FACTORS	Verified at time of Appl.	Home Visit	Other	By Whom and Date Verified
A. Family Composition				
B. Citizenship				
C. Preference Rating				
1. Displaced Family				
a. Date notified to move and by whom				
b. Address at time of displacement				
2. Family of Vet. or Serviceman				
a. Branch and dates of service				
b. Type of discharge				
c. Claims of serv.-con. dis.or death				
D. Housing Conditions of Applicant				
1. To be displaced by:				
a. Low-rent housing project				
b. Public slum-clearance project				
c. Redevelopment project				
2. Actually without housing				
3. About to be evicted				
4. Living in unsafe, insanitary or overcrowded dwelling				
E. Employment and Income				
1. No.of fam.members receiving income				
2. Source & types of aggregate income				
3. Deductions				
4. Exemptions				
F. Net Assets (If required by L.A.)				
G. Other (Specify)				
H. " "				
I. " "				

II. DOCUMENTATION AND SOURCE OF VERIFYING DATA

A. Family makeup and composition_____

B. Citizenship (specifically the person to sign the lease) _____ Eligible: Yes____ No ____

Eligible: Yes____ No ____

C. Preference Rating

1. Displaced family_____

2. Family of: Disabled Vet.__; Deceased Vet. or Serviceman__; Other Vet. or Serviceman___
Remarks: (Periods of Service, type of discharge, % disabled, date of death, report from V.A. etc.)

D. Housing Conditions: The family is at time of admission:

1. To be displaced by low-rent housing project, public slum clearance, or redevelopment project; Yes____ No____
If "Yes" cite proof _____

2. Actually without housing thru no fault of the family's; Yes____ No ____
If "Yes" describe existing conditions and reason therefor _____

3. About to be evicted thru no fault of its own; Yes____ No____
If "Yes" cite proof _____

4. Living in unsafe, insanitary or overcrowded dwelling unit; 1/ Yes ____ No____

1/ Check and enter details of physical inspection on inside of folder only if conditions set forth under sub-items 1, 2, or 3 are not applicable to the housing conditions of the family concerned, or if physical inspection is needed to establish relative housing need.

(Cont'd)

(Upper Half of Inside of Folded Form, Size 8½" x 14")

a. RECORD OF PHYSICAL INSPECTION OF DWELLING UNIT (Answer each question below and explain condition indicated by answer of "Yes")

ITEM	(a) SUBSTANDARD CHARACTERISTICS	Score 1/	(b) OTHER DEFICIENCIES	Score 2/	(c) DESCRIPTION OF EXISTING SUBSTANDARD CHARACTERISTICS AND OTHER DEFICIENCIES
(1) LOCATION OF DWELLING UNIT	Does location of dwelling unit constitute a major hazard with respect to Fire.....Yes__No__ Health.....Yes__No__ Safety?.....Yes No		Does location of dwelling unit constitute a minor hazard with respect to fire, health or safety?.....Yes__No__ Is play space inadequate?.....Yes__No__ Is environment detrimental?.....Yes No		
(2) CONDITION OF STRUCTURE	Are major repairs needed in Foundations.....Yes__No__ Stairs, ...Yes__No__ Walls, ...Yes__No__ Roof?.....Yes__No__ Is structure constantly damp?.Yes__No__		Are minor repairs needed?.....Yes__No__ Is structure seriously infested?..Yes__No__ Is structure occasionally damp?...Yes__No__		
(3) WATER SUPPLY	Is dwelling unit without potable running water?.....Yes__No__ Are structure & dwelling unit without potable running water?.....Yes__No__ Are entire premises without potable running water?.....Yes__No__		Does dwelling lack facilities for running hot water?.....Yes__No__ Is supply of running hot water inadequate?.....Yes__No__ Is water pressure too low?.....Yes__No__		
(4) SEWERAGE SYSTEM	Are connections lacking between plumbing fixtures and adequate sewage disposal system?.....Yes__No__		Are drains clogged?.....Yes__No__ Are sewer connections faulty?....Yes__No__		
(5) TOILET FACILITIES	Is dwelling unit without usable flush toilet?.....Yes__No__ Are structure & dwelling unit without usable flush toilet?.Yes__No__ Are premises without any toilet facilities?.....Yes__No__		Is toilet in need of minor repairs?.....Yes__No__ Does toilet open off kitchen?....Yes__No__ Is private inside flush toilet located apart from rest of dwelling unit?.....Yes__No__		
(6) BATH FACILITIES	Is dwelling unit without usable bathtub or shower with running water Yes_No_ Are structure & dwelling unit without usable bathtub or shower with running water?.....Yes__No__ Are premises without usable bathtub or shower with running water?...Yes__No__		Are bath facilities in need of minor repairs?.....Yes__No__ Does bath have cold running water only?.....Yes__No__		
(7) KITCHEN FACILITIES	Is dwelling unit without adequate and safe connections for a cooking stove?.....Yes__No__ Is dwelling unit without sink with running water?.....Yes__No__		Are stove connections safe, but inadequate?.....Yes__No__ Does sink have defective plumbing?.....Yes__No__ Is storage space inadequate?.....Yes__No__ Is kitchen located in bedroom?...Yes__No__		

(Cont'd)

(Lower Half of Inside of Folded Form Size 8½" x 14")

(8) ELECTRICITY	Is dwelling unit entirely without electric wiring?.....Yes__No__ Is any part of the dwelling unit not wired for electricity?...Yes__No__ Is installed electrical wiring so makeshift as to be unsafe?Yes__No__		Is electrical system safe but inadequate or inconvenient?.....Yes__No__		
(9) HEATING FACILITIES	Are heating facilities inadequate for healthful living?..Yes__No__ Are heating facilities unsafe?Yes__No__		Is heat inadequate for comfort?.....Yes__No__ Are heating costs excessive?.....Yes__No__		
(10) LIGHT AND VENTILATION	Is there a windowless room in the dwelling unit?.....Yes__No__ Is there more than one room without windows?.....Yes__No__		Do bedrooms or toilet have windows opening only on air-shaft or narrow areaway?.....Yes__No__ Do some rooms require artificial light all day?.....Yes__No__		
(11) SPACE AND PRIVACY	Is there more than one family using a single family accommodation?.....Yes__No__ Do number of persons per square foot of sleeping area exceed approved standards?.....Yes__No__ Is family both overcrowded and doubled up?.....Yes__No__		Are sleeping rooms separated by makeshift partitions?.....Yes__No__ Is it necessary to pass thru sleeping rooms to get to toilet or to get outside?.....Yes__No__ Is closet space inadequate?.....Yes__No__		
(12) BUILDING CODE VIOLATIONS (Specify) NOT COVERED ABOVE					
1/ Score 50 points for any one question in each box answered with "Yes", & score 5 points for each additional question in the same box answered with "Yes" .... Total			2/ Score 1 point for each question answered with "Yes" ..... Total		

b. PRESENT HOUSING COSTS:
Rent: $____ per _____Rent includes _____
Amount of arrears: $_____Reason for arrears: _____

Estimated cost of tenant purchased utilities:
Electricity,$_____ per ___; Heating fuel, ___ $ ___ per ___; Gas, $____ per_____;
Ice,$ _____ per_____; Other, (Specify)_____
Total Housing Costs:$_____ per_____
Remarks:_____

c. HEALTH FACTORS: (Record presence of chronic illnesses or physical impairment and person affected) _____

d. TOTAL SCORE INDICATING URGENCY OF NEED:

EXISTING CONDITION	Check	Score
(1) Family is:		
(a) Actually without housing (Sec.II.D.2.).....	☐	
(b) To be displaced or about to be evicted (Sec. II.D.1. and 3.).....	☐	
(c) Living in unsafe, insanitary or overcrowded housing conditions (Sec. II.D.4.a).....	☐	
(2) Health factors present (Sec.II.D.4.c.).....		
Urgency of Need - Total Score.....		_____

Remarks:_____

(Cont'd)

E. Employment and Income (Computations of Annual Income based on verified data obtained from employers or other authoritative sources.)

	Totals for Individual Family Members					Family Totals
Fam. Mem. No. (Sec. I of Application)						
1. Actual Income Past 12 Mos. (If required by L.A.)						
a. Aggregate Income.....						$
b. Allowable Deductions.....						$
c. Net Income (item a minus item b).						$
2. Anticipated Income for Ensuing 12 Months						
a. Aggregate Income						
(List here the applicable headings shown in Section IIIA of the Application for Admission)						
b. Allowable Deductions — Total						$
(List here the applicable headings shown in Section IIIB of the Application for Admission)						
Total						$
c. Net Income (Family Total from item a minus Family Total from item b)...						$
d. Exemptions for Minors (No. of Minors___ times $_____ per minor).....						$
e. Amounts rec'd. from U.S. Gov't. for service connected disability or death						$
f. Net Income (item c) minus Authorized Exemptions for Eligibility (items d and e)						$

3. Basic Formulas Used in computing Net Income _____

F. Net Assets (If required by L.A.) _____

Total Amount $ _____

Eligible: Yes___ No___

G. Miscellaneous (Including locally established eligibility criteria, if any) _____

Findings reviewed and approved by _____ Date _____

III. CERTIFICATION

On the basis of the verified findings set forth herein, I hereby certify that this applicant is eligible for admission as indicated:

Unit Size _____
Rent to be Paid _____
Preference Category of _____
Urgency of Housing Need _____

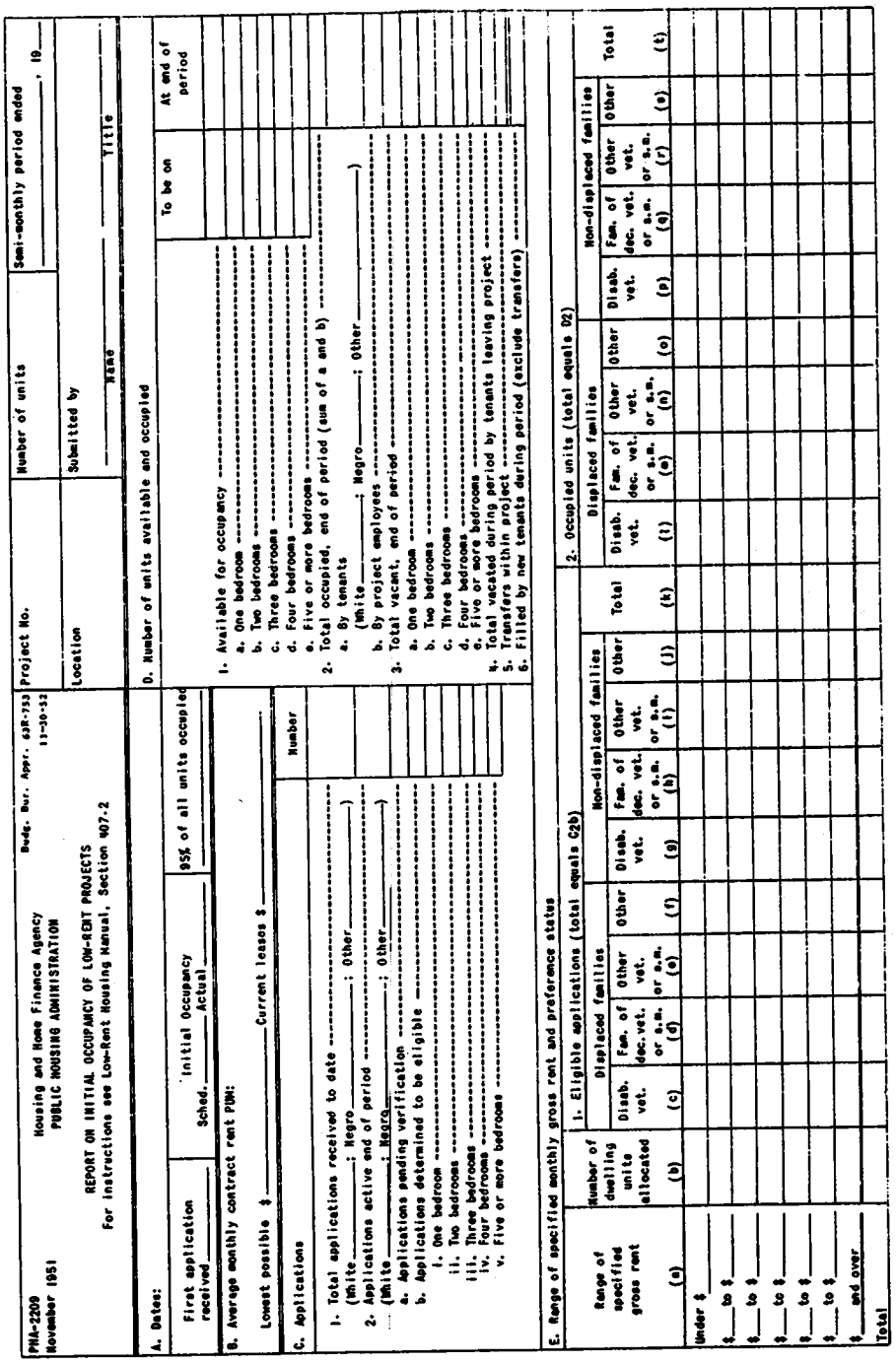
Signed _____
Title _____

Date _____

NOTE: These pages 43 and 44 supersede pages 43 and 44 of Bulletin No. LR-32, dated 7-19-51. Former page 43 was printed incorrectly.

(Form No.)
(Name of Local Authority) MASTER FILE CARD

Prospective Lessee_____
Address_____Phone No._____
Address_____Phone No._____
Address_____Phone No._____
Application No._____Date Filed_____
Office Where Application was Filed:_____
Office in which Application is now on File_____
Remarks:_____



PHA-2209
November 1951

Housing and Home Finance Agency
PUBLIC HOUSING ADMINISTRATION

Budg. Bur. Appr. 62R-732
11-10-52

Project No.

Number of units

Semi-monthly period ended _____, 19__

Location

Submitted by

_____ Name _____ Title

REPORT ON INITIAL OCCUPANCY OF LOW-RENT PROJECTS
For instructions see Low-Rent Housing Manual, Section 407.2

A. Dates:

First application received _____ Sched. _____ Initial Occupancy Actual _____ 95% of all units occupied _____

B. Average monthly contract rent PUM:

Lowest possible $ _____ Current leases $ _____

C. Applications

	Number
1. Total applications received to date	
(White _____; Negro _____; Other _____)	
2. Applications active end of period	
(White _____; Negro _____; Other _____)	
a. Applications pending verification	
b. Applications determined to be eligible	
i. One bedroom	
ii. Two bedrooms	
iii. Three bedrooms	
iv. Four bedrooms	
v. Five or more bedrooms	

D. Number of units available and occupied

	To be on	At end of period
1. Available for occupancy		
a. One bedroom		
b. Two bedrooms		
c. Three bedrooms		
d. Four bedrooms		
e. Five or more bedrooms		
2. Total occupied, end of period (sum of a and b)		
a. By tenants		
(White _____; Negro _____; Other _____)		
b. By project employees		
3. Total vacant, end of period		
a. One bedroom		
b. Two bedrooms		
c. Three bedrooms		
d. Four bedrooms		
e. Five or more bedrooms		
4. Total vacated during period by tenants leaving project		
5. Transfers within project		
6. Filled by new tenants during period (exclude transfers)		

E. Range of specified monthly gross rent and preference status

Range of specified gross rent (a)	Number of dwelling units allocated (b)	1. Eligible applications (total equals C2b)							2. Occupied units (total equals D2)								
		Displaced families				Non-displaced families			Total (h)	Displaced families				Non-displaced families			Total (t)
		Disab. vet. (c)	Fam. of dec. vet. or s.m. (d)	Other vet. or s.m. (e)	Other (f)	Disab. vet. (g)	Fam. of dec. vet. or s.m. (h)	Other vet. or s.m. (i)	Other (j)	Disab. vet. (l)	Fam. of dec. vet. or s.m. (m)	Other vet. or s.m. (n)	Other (o)	Disab. vet. (p)	Fam. of dec. vet. or s.m. (q)	Other vet. or s.m. (r)	Other (s)
Under $ _____																	
$___ to $ _____																	
$___ to $ _____																	
$___ to $ _____																	
$___ to $ _____																	
$___ to $ _____																	
$___ and over																	
Total																	

NOTE: These pages 45 and 46 supersede pages 45 and 46 of Bulletin No. LR-32, dated 7-19-51. The former Exhibit 10 on page 45 has been replaced by a new Exhibit 10 (Form PHA-2209, Report on Initial Occupancy of Low-Rent Projects). Page 46 has been reissued without change.

Form Letter to Registrants and Site Occupants

Letter Head
of
Local Authority

Date _____

_____
_____
_____

Dear _____

On _____(date)_____ we shall begin accepting formal applications for occupancy in ____(name of project)____ at our application office which will be located at ____(address of office)____. If you are interested in filing an application for admission to ____(name of project)____ it is suggested that you call at the application office as soon as you can after it is opened. Office hours will be from ____a.m. to ____p.m. from Monday through Saturday.

It will save you time and possibly other trips to the office if you will come prepared to give us the following type of information and will bring with you any papers or letters you may have concerning these matters.

Name and addresses of the employers of all members of your family and the amount of wages or salary each employed member receives.

If any member of your family receives income from any other source, the records which you have relating to it. This refers to relief payments, Social Security award letters, Veterans' benefits, pensions, alimony or any other kind of regular payments received.

If any member of your family, either living or deceased, served in the military or naval forces of our country, the discharge papers or other records which you have of such service.

If any member of your family is now in the armed forces, information regarding date of entry, grade or rank, serial number, pay and allowances and where stationed.

If the head of your family was born in a foreign country, his United States citizenship papers.

All information supplied by you will be kept confidential and any papers submitted by you will be returned to you if you wish.

Very truly yours,

Signed _____

Title _____

Form Letter to Employer for Verification of Earnings

Letter Head
of
Local Authority

Date: _____
Re: _____
Soc. Sec. No. _____
Badge No. _____

_____
_____
_____

Dear Sir(s):

We are required by law to verify the income of all members of families applying for admission as tenants to the low-rent projects which we operate and to re-examine once each year the incomes of tenant families. This is because occupancy in these projects is restricted to low-income families and rents are based on the amount of the family income.

To comply with this requirement, we ask your cooperation in supplying information indicated on the enclosed Employer's Report regarding the earnings of the person listed above. This information will be held in confidence for use only in determining the eligibility status and rent of the employee's family.

Below is a signed authorization for your release of this information to us. Your prompt return of the information in the enclosed self-addressed envelope will be appreciated.

Very truly yours,

_____
(Title) _____

I hereby authorize the release to the _____ Housing Authority of information relative to my earnings.

_____
(Signature of Employee)

Date: _____

Attachment to Letter to Employer

Employer's Report
to
_____Housing Authority

Employer:
_____
_____
_____

Date of Request: _____
Re: Employee _____
Social Security No._____
Badge No. ..... _____

Instructions for use of this report: Check below only those items which apply to the employee named above and enter the indicated data applicable to this employee for items checked.

1. Earnings (before any deductions.)

☐ Employee has been employed by us 12 months or more.
Total pay of employee for the last 12 months period:
Base rate pay $_____
Overtime pay $_____
Total earnings $_____

☐ Employee has been employed by us less than 12 months.
Date employed:_____
Total pay to date:
Base rate pay $_____
Overtime pay $_____
Total earnings $_____

2. Basis on which present earnings are computed.

☐ Present hourly rate, base pay: $____per hr. Hrs. per week_____
☐ Present hourly rate, overtime: $____per hr. Aver. hrs. wkly._____
☐ Weekly wage or salary: ..... $____per week.
☐ Monthly salary: ..... $____per month.
☐ Piece work: Average earnings: $____per week.
☐ Commissions: Average amount: $____per _____.
☐ Any other compensation not included above (specify for meals, expense allowance, etc.) For_____ $_____ per _____.

3. Employee receives.

☐ Vacation with pay. Amount of time_____per_____.
☐ Sick leave with pay. Amount of time_____per_____.

4. Compulsory payroll deductions:

☐ Social Security: $_____per_____.
☐ Retirement: $_____per_____.
☐ Unemployment: $_____per_____.
☐ Insurance: $____per_____.
☐ Union dues:$____per_____.
☐ ..... $____per_____.

(Do not report any voluntary deductions)

Remarks:_____
_____

Employer_____
Signature_____
Date_____ Title_____

Form Letter to Former Employer for Verification of Earnings

Letter Head
of
Local Authority

Date:_____
Re: _____
Soc. Sec. No._____
Badge No. _____

_____
_____
_____

Dear Sir(s):

We are required to verify the income of all members of families applying for admission as tenants to the low-rent projects which we operate and to re-examine once each year the incomes of tenant families. This is because the laws under which these projects are administered restrict occupancy to low-income families and base rents on the amount of the family income.

To comply with this requirement, we ask your cooperation in supplying information indicated on the enclosed Employer's Report regarding the earnings of your former employee listed above. This information will be held in confidence for use only in determining the eligibility status and rent of the employee's family.

Below is a signed authorization for your release of this information to us. Your prompt return of the information in the enclosed self-addressed envelope will be appreciated.

Very truly yours,

_____

(Title)_____

I hereby authorize the release to the _____Housing Authority of information relative to my earnings.

_____
(Signature of Employee)

Date:_____

Attachment to Letter to Former Employer

Employer's Report
to
_____Housing Authority

Employer:
_____
_____
_____

Date of Request:_____
Former Employee _____
Soc. Sec. No. _____
Badge Number _____

Instructions for use of this report: Check below only those items which apply to the person named above and enter applicable data for items checked.

1. Earnings (before any deductions.)

☐ Employee was employed by us 12 months or more.
Total pay for the last 12 months of employment
Base rate pay $_____
Overtime pay $_____
Total earnings $_____

☐ Employee was employed by us less than 12 months.
Dates employed:
From_____ to _____
Base rate pay $_____
Overtime pay $_____
Total earnings $_____

2. Basis on which earnings shown above were computed.

☐ Hourly rate, base pay: $_____per hr. Hrs. per week_____
☐ Hourly rate, overtime: $_____per hr. Aver. hrs. wkly_____
☐ Weekly wage or salary: $_____per week.
☐ Monthly salary: $_____per month.
☐ Piece work: Average earnings: $_____per week.
☐ Commissions: Average amount: $_____per _____.
☐ Any other compensation not included above (specify for meals, expense allowance, etc.) For_____ $_____ per _____.

3. Employee received.

☐ Vacation with pay. Amount of time _____per_____.
☐ Sick leave with pay. Amount of time _____per_____.

4. Compulsory payroll deductions.

☐ Social Security: $_____per _____. ☐ Insurance: $_____per_____.
☐ Retirement: $_____per _____. ☐ Union dues: $_____per_____.
☐ Unemployment: $_____per _____. ☐ ..... $_____per_____.

(Do not report any voluntary deductions)

Remarks:_____
_____

Employer_____
Signature_____
Date _____ Title_____

BULLETIN NO. LR-51

RENT COLLECTIONS

PHA LOW-RENT HOUSING BULLETIN

PUBLIC HOUSING ADMINISTRATION
HOUSING AND HOME FINANCE AGENCY
WASHINGTON 25, D. C.

JULY 1956

LIST OF BULLETINS
WHICH HAVE BEEN PUBLISHED

Bulletin No.	Title	
LR-1	Zoning and Rezoning	
LR-2	Subsurface Soil Investigation	
LR-3	Site Planning	)
LR-4	Site Engineering	)
LR-5	Structural Design, Materials, and Methods	) A series
LR-6	Architectural Planning and Desing (Part XIII out of print)	) of eight) Housing
LR-7	Plumbing, Heating, and Ventilation	) Design
LR-8	Electrical	) Notes
LR-9	Lawns and Planting	)
LR-10	General Design	)
LR-11	Selection of Utilities	
LR-12	Construction Contract Documents	
LR-13	Guide Specifications	
LR-14	Equipment Contract Documents	
LR-15	Operation and Repair of Heating Systems (Care of Boilers Out of Service)	
LR-16	Corrosion of Underground Piping	
LR-17	Rules for Boiler Operation	
LR-18	Preparation of Exterior Surfaces for Repainting	
LR-19	Control of Condensation in Crawl Spaces	
LR-20	Glazing	
LR-21	Maintenance of Wood Floors	
LR-22	Basic Specifications for Rural Nonfarm Housing (Out of Print)	
LR-23	Operation and Repair of Heating Systems--Boilers (Types, Use, and Repair)	
LR-24	Maintenance of Concrete Floors	
LR-25	Indoor Tenant Activity Areas	
LR-26	Routine Care of Lawns	
LR-27	Repainting Exterior Surfaces	
LR-28	Construction Contract Documents for Small Projects	
LR-29	Occupancy Policy Determinations To Be Made and Action To Be Taken Previous to Opening of Application Office	
LR-30	Suggestions for Selecting and Training Occupancy Personnel	
LR-31	Publicizing Occupancy Policies	
LR-32	Suggested Operating Procedures for the Receipt and Processing of Applications	
LR-33	Do Community Services Programs Pay Dividends?	
LR-34	Refinishing Interior Surfaces	
LR-35	Suggested Procedures for Handling the Relocation of Site Occupants	
LR-36	Demolition Contract Documents	
LR-37	Termite Control	
LR-38	Local Authority Pre-Occupancy Management Check List	
LR-39	Suggested Procedures for Handling the Relocation of Site Occupants	
LR-40	Financial Benefits Available to Veterans and Servicemen, and Their Families, Dependents, and Beneficiaries	
LR-41	Saws--Their Care, Use, and Conditioning	) Out
LR-42	Chisels--Their Use and Care	) of
LR-43	Planes--Their Care, Use, and Conditioning	) Print
LR-44	Detection of Excessive Fuel Consumption in Project Operated Heating Plants	
LR-45	Assistance From Local Community Agencies	
LR-46	Inspection of the Physical Plant by Project Personnel	
LR-47	Recreation Services in Low-Rent Housing Projects	
LR-48	Waterproofing Masonry Walls	
LR-49	Community Services and Tenant Activities in Low-Rent Housing Projects	
LR-50	Protection of Trees	
LR-51	Rent Collections	

RENT COLLECTIONS

1. Introduction. Since rents in low-rent housing projects are established in relation to the families' ability to pay, tenants should be expected to pay promptly and the Local Authority should be able to collect substantially all of the rents charged. It is the purpose of this Bulletin to point out certain principles and techniques for the guidance of Local Authorities.

2. Obligations of the Tenant. Tenant leases are enforceable contracts between the Local Authority and its tenants. They require the payment of the rent in full and in advance on a specified date, usually the first of each month.

a. Interview at Admission. 1/ The tenant should be fully informed of the nature and extent of his obligations. For this reason the importance of an interview with every tenant at the time he signs his lease cannot be overstressed. Where possible, both husband and wife should attend the interview. It should be impressed on the tenant that neither an extension of the rent due date nor acceptance of partial payments will be considered unless he requests such consideration on or prior to the date on which the rent is due (see paragraph 5b below). The key to the success of the technique is the manner in which the interview is conducted.

The interviewer should show some understanding of the problems low-income families have in managing the family income. In simple language and within the tenant's ability to easily understand, the interviewer should explain the objectives of the low-rent housing program in the community, how it works, particularly with respect to (1) Federal and local subsidies, (2) eligibility requirements, (3) why and how rents are related to the income of all members of the family, (4) the provisions of the lease and what he and his family must do to comply with the requirements. Likewise, it should be explained that the rent is related to family income and, therefore, the family's ability to pay; and that it is no more of a hardship to pay rent in advance than in arrears since the rent must be paid sooner or later and extensions do not reduce the amount to be paid.

During initial occupancy it may develop that, although desirable, time does not permit an individual interview with each tenant. In such instances tenants should be interviewed in small groups. Under no circumstances should the interview be passed over.

(Cont'd)

1/ See Section 409.1, paragraph 5 of the Low-Rent Housing Manual dated November 1955, or Section 3.4 of the Small Low-Rent Programs Manual-Operation dated January 1956.

b. Tenant Handbooks. A number of Local Authorities have developed tenant handbooks which give the tenant, in simple language, information on matters which concern him as a tenant. For example, the handbook tells him (1) that his rent is due on the first of each month and where it is to be paid, (2) what is expected from him as a tenant and what he has the right to expect from the management, (3) how to take care of that part of the project for which he is responsible, and (4) how to report such items as changes in family income, sickness, nuisances, fire, and property damage. Handbooks are in addition to, and not in place of, the leasing interview. PHA Regional Offices will be glad to assist in the preparation of such handbooks.

c. Reminders. Some tenants will not be able to absorb all of the information in the leasing interview and the handbook and will require reminders by the project staff from time to time during their stay in the project, e.g. an additional interview the first time the tenant becomes delinquent or is late in paying his rent.

3. Accumulation of Prepaid Rent. Construction workers and others whose income is sporadic may be encouraged to pay an extra amount of rent during the time their earnings are regular, to gradually accumulate an extra month's rent which will tide them over periods of sporadic employment.

4. Security Deposits. If security deposits are required they should be held to a minimum so as not to discourage low-income families from moving into the project. One-half of the average monthly contract rent is usually sufficient. In establishing a policy for collecting such deposits, i.e. lump sum or accumulated over a period of time, consideration should be given to the amounts of other deposits and expenses the tenant must pay at the time he moves into the project.

5. Hardship Cases. Although the rent is established at amounts within the financial reach of the tenants situations will arise, such as loss of job, where the tenant is unable to pay the rent in full on the due date. The management should assist such families in finding ways to satisfactorily meet their obligation. While the tenant may have a justifiable reason for not being able to pay his rent on the date due there is no excuse for his not coming to the office prior to the due date to explain the delay and request an extension or to make arrangements for the acceptance of a payment on account.

a. Welfare Cases. A good working relationship based on mutual understanding must be established with the local public welfare agencies, private charities, and all sources of assistance available in the community to help families in need. These agencies should be informed that the Local Authorities' contribution to the welfare of the community is limited to providing decent, safe, and sanitary housing for low-income families and also that rents are established in relation to the family's

(Cont'd)

normal ability to pay. Management should know the type of assistance provided by the various organizations; some will provide food or other assistance in emergencies, others financial assistance on a continuing basis where needed. Relief agencies generally will not pay rent for any period prior to the month in which they accept the case. Therefore the prompt referral of a case to the proper agency, with the appropriate explanation as to the necessity for eviction if the rent is not paid promptly, often avoids the loss of the current month's rent. Some tenant associations will pay rent and provide other help on an emergency basis to families in distress.

b. Extensions and Acceptance of Partial Payments. Requests to extend the time for payments beyond the due date, or for the acceptance of partial payments, should be approved only in those cases where payment in full on or before the agreed date is reasonably certain. In such cases, Local Authorities may find it desirable to grant occasional extensions of time or to accept partial payments in order to meet emergency situations. Extensions of time beyond the date which will enable the Local Authority to gain possession of the unit prior to the accumulation of another month's rent, should be limited to most unusual cases, such as (1) lost or stolen check, which fact can be verified by calling the payor to confirm that the loss has been reported and to ascertain when a new check will be issued, and (2) a welfare or other allotment check which is held up because of circumstances, which fact can be verified. All agreements should be in writing, state the reason for the extension or partial payment, and specify the date or dates on which payments are to be made. Tenants should be cautioned that extensions will not be granted or partial payments be accepted month after month, and that failure to live up to an agreement will result in eviction. Extensions should be granted on a fair and impartial basis, since nothing is more detrimental to the rent-paying habits of a tenant body than a feeling that management is "playing favorites." Any schedule of partial payments should be so arranged that each payment will be made in advance of the period covered by the payment.

Tenants must not get the impression that extensions or acceptance of partial payments are easily obtained, or that management gives only superficial consideration before approving such requests. It is therefore important that every such agreement be made in writing.

6. Follow-Ups on Delinquent Payments. Prompt attention to delinquent accounts is essential. Occasionally, as previously stated, late payments may be unavoidable but there is no excuse for a tenant not notifying the office of such possibility and arranging for an extension. To avoid the unnecessary nuisance and expense of a tenant habitually paying late, a policy should be adopted limiting the number of late payments any tenant will be permitted. The policy should be more stringent on those tenants who fail to come in before the due date and make arrangements for late payments. In addition a policy of following up on delinquent accounts should contain the following basic provisions: (Cont'd)

a. Reports on the Status of Tenants Accounts. Managers must give constant attention to rent collections and supervisory personnel must be regularly informed as to the status of the tenants' accounts. Those responsible for rent collections should be required to submit weekly reports with complete explanation of any delinquencies. The status of tenants' accounts should be a regular item on the agenda for the Board meetings.

b. Establishing a Time Table for Actions To Collect Rent. If the procedure for collection is carefully designed, the removal of the tenant for nonpayment should occur by the fifteenth of the month. With some variation to allow for differences in local laws and procedures for eviction, the following time table based on the rent becoming due and payable the first calendar day of each month is suggested:

On the fifth (sixth or seventh) day of each month, every tenant who has not paid his rent (or does not have an approved extension in writing) should be sent a notice informing him that if his rent is not paid within two (three or four) days, eviction proceedings will be started against him. This notice should make it clear that if he vacates without paying he is still liable for the rent and that judgment will be obtained.

On the day or the day after the tenant receives the notice a visit should be made to his dwelling or the tenant should be called on the phone and told to come in and pay his rent if he is to avoid the consequences of having the eviction action filed.

If the rent is not paid within the time stated in the notice the eviction action should be started. The date for filing the eviction action should be the tenth of the month but in any event a date which will assure the eviction, if it becomes necessary, before the end of the month.

The time for taking the next action varies considerably in different localities. In some jurisdictions the actual eviction can be made on the fourth day after the eviction papers are served on the tenant. In others it is two weeks before the next action is taken, which results in giving the tenant additional days to pay his rent plus the costs. Partial payments should not be accepted after the eviction action is initiated since such action usually prejudices the case.

7. Penalties for Late Payment. The policy of assessing penalties for late payments has proven successful in some localities and has not been successful in others. Such policy has the danger of leading the tenants to assume they may be late in making payments if they are willing to pay for the privilege.

(Cont'd)

8. Lock Outs and Cutting Off Utilities. Changing the locks and locking the tenant out or cutting off a utility will usually force the tenant to come into the office. However, because of the possible legal implications the advice of the attorney for the Local Authority should be obtained before initiating such policies.

9. Filing Eviction Actions. In most localities the filing of an eviction action and obtaining judgment for the rent due with the proper local court does not require the services of any attorney. Whenever possible it is recommended that this action be filed by the project manager or other employee of the Local Authority. This reduces expense and expedites the final action. If the tenant desires to pay his rent and remain in the project after the eviction action is started, he is required to pay the cost of filing and serving the eviction papers in addition to the total amount of the rent due.

10. Collection of Retroactive Rent. Where the amount of the backcharge is so large as to make it impossible for the tenant to pay the entire amount at once, the Local Authority may permit the tenant to pay off the retroactive rent in monthly installments over a reasonable period. Agreements for installment payments should be in writing setting forth the amounts and due dates.

11. Vacated Tenants Accounts. The Local Authority must use all of its ingenuity and exert every reasonable effort to collect the rent owed by vacated tenants. After applying the amount of the security deposit if any to the account a procedure should be established to follow through to the eventual collection of the balance due.

a. Follow-Up Actions. If the tenant's new address is known a statement of his account including any damage revealed on the inspection of his unit should be sent to the new address and immediate payment demanded. If the account is not paid promptly legal action should be instituted at once if the tenant's circumstances are such that legal action is warranted.

If the tenant's new address is not known, efforts should be made to locate him and the actions suggested above should be taken promptly. Most vacated tenants can be located by a call or letter to his last known employer, from moving permits in localities where they are required, personal references or emergency address shown on the original application for admission, his former neighbors in the project, post office, utility companies, public schools, etc.

b. Small Claims Courts. In many localities the Executive Director or other employee can file suit in a Small Claims Court if the amount is within the jurisdiction of such Court. This method has proven quite successful. Large balances should not have been allowed to accumulate during the tenant's occupancy. Therefore, most cases can be handled by these Courts.

(Cont'd)

c. Collection Agencies. Some Authorities refer cases to collection agencies when they cannot contact the vacated tenant promptly or when their own collection efforts are unsuccessful. In many localities the Authorities have entered into contracts with the collection agencies at fees of 30 to 35 percent of the amount of the accounts referred. The agencies usually collect their proportionate commission from partial payments. In some cases the collection agency may fail to collect because of the ex-tenant's current financial condition but will recommend to the Authority that a suit be entered and a judgment obtained because of the potential improvement in the tenant's position.

BULLETIN NO. LR-39

SUGGESTED PROCEDURES FOR INITIALLY SELECTING TENANTS FROM AMONG ELIGIBLE APPLICANTS

ONE OF A SERIES OF BULLETINS ON
SUGGESTED OCCUPANCY PROCEDURES

PHA LOW-RENT HOUSING
BULLETIN

PUBLIC HOUSING ADMINISTRATION
HOUSING AND HOME FINANCE AGENCY WASHINGTON 25, D. C.

OCTOBER 1951

LIST OF BULLETINS
WHICH HAVE BEEN PUBLISHED

Bulletin No.	Title	
LR-1	Zoning and Rezoning	
LR-2	Subsurface Soil Investigation	
LR-3	Site Planning	A series of eight Housing Design Notes
LR-4	Site Engineering	
LR-5	Structural Design, Materials and Methods	
LR-6	Architectural Planning and Design	
LR-7	Plumbing, Heating and Ventilation	
LR-8	Electrical	
LR-9	Lawns and Planting	
LR-10	General Design	
LR-11	Selection of Utilities	
LR-12	Construction Contract Documents	
LR-13	Guide Specifications	
LR-14	Equipment Contract Documents	
LR-15	Operation and Repair of Heating Systems (Care of Boilers Out of Service)	
LR-16	Corrosion of Underground Piping	
LR-17	Rules for Boiler Operation	
LR-18	Preparation of Exterior Surfaces for Repainting	
LR-19	Control of Condensation in Crawl Spaces	
LR-20	Glazing	
LR-21	Maintenance of Wood Floors	
LR-22	Basic Specifications for Rural Nonfarm Housing	
LR-23	Operation and Repair of Heating Systems--Boilers (Types, Use and Repair)	
LR-24	Maintenance of Concrete Floors	
LR-25	Indoor Tenant Activity Areas	
LR-26	Routine Care of Lawns	
LR-27	Repainting Exterior Surfaces	
LR-28	Rural Nonfarm Construction Contract Documents	
LR-29	Occupancy Policy Determinations to be Made and Action to be Taken Previous to Opening of Application Office	
LR-30	Suggestions for Selecting and Training Occupancy Personnel	
LR-31	Publicizing Occupancy Policies	
LR-32	Suggested Operating Procedures for the Receipt and Processing of Applications	
LR-33	Do Community Services Programs Pay Dividends?	
LR-34	Refinishing Interior Surfaces	
LR-35	Suggested Procedures for Handling the Relocation of Site Occupants	
LR-36	Demolition Contract Documents	
LR-37	Termite Control	
LR-38	Local Authority Pre-Occupancy Check List	
LR-39	Suggested Procedures for Initially Selecting Tenants From Among Eligible Applicants	

NOTE: Some Bulletins will be issued in parts, of which one or more will be contained in the initial release of each Bulletin; other parts will be issued subsequently from time to time as they are completed.

Table of Contents

Exhibit No.

Suggested Procedures for Initially
Selecting Tenants from Among Eligible Applicants

1. Introduction. The process of initially selecting tenants for dwellings of given sizes from a pool of applicants whose eligibility, preference rating, and urgency of housing need have been verified consists principally of the following:

a. Reviewing the make up of the pool of eligible applicants prior to the actual start of selection to determine whether selecting tenants in accordance with the established selection policies will result in the project being initially occupied by a representative cross-section of families of low income in the locality to the extent permitted by project solvency (see Section 407.1);

b. Initiating and effectuating such actions, including revisions in selection policies, as may be needed to achieve the prescribed tenant selection objectives;

c. Selecting tenants from among eligible applicants pursuant to established policies and procedures;

d. Notifying selected applicants;

e. Rechecking the eligibility status of selected applicants where there has been a significant time lag between verification and selection; and

f. Referring selected applicants, subsequent to such rechecking of their eligibility status as may be required to the appropriate official for assignment and leasing (including an interview to acquaint them with conditions of occupancy--see Section 409.1).

2. Timing of Selection. Action incident to the actual selection of tenants from among eligible applicants should be started not later than sixty days before the scheduled initial occupancy date, and notices issued to the selected families at least thirty days before the date on which units will be available for occupancy. Issuing notices of acceptance for occupancy thirty days in advance of the scheduled occupancy date has been found in many instances to be essential to having units occupied as they become available. 1/ A thirty day advance notice of acceptance not only allows the selected applicant the time he needs to cancel his existing rental agreement but it also allows him time to make other necessary

(Cont'd)

1/ Reports from the field indicate that in many areas lease agreements requiring at least a 30-day cancellation notice are in effect between low income families and their landlords.

arrangements for moving to the project. Assuming that applicants are to be given the final notice of their acceptance thirty days prior to the date on which units will be available to them, it can readily be seen that the starting of the actual selection of tenants only sixty days in advance of the scheduled initial occupancy date does not allow the occupancy office any too much time to carry out its selection functions.

3. Review and Evaluation of the Pool of Eligible Applicants

a. Base for Evaluation. In connection with submitting a Schedule of Dwelling Rents to PHA for approval the Local Authority is required to demonstrate that the Schedule which it proposes to adopt is financially feasible (see Section 405.1). Since such demonstration involves a specific allocation of units to the various income levels, it will be known well in advance of the actual start of tenant selection, the number of tenants who, in order to serve as nearly as possible a cross-section of low income families and to maintain project solvency, will have to be selected from each of the various income levels into which Families of Low Income fall. Thus, the distribution of units to the various income levels made for the purpose of determining the financial feasibility of its tentative rent schedule may be used as the base or measuring stick for evaluating the make up of the pool of eligible applicants.

b. Purpose of and Need for Reviewing and Evaluating the Make Up of the Pool of Eligible Applicants. Reviewing and evaluating the pool of eligible applicants prior to starting the actual selection of tenants serves many purposes. Such review will serve the Local Authority first, in ascertaining whether the make up 1/ of its pool of eligible applicants is such as to enable it through the application of its established selection procedures to achieve an appropriate occupancy pattern and second in determining what action, if any, it will need to take to accomplish its overall selection objectives. Also, since such review will almost inevitably encompass a tentative selection of tenants from among eligible applicants it will enable the Local Authority to determine whether through the application of its selection policies solvency can be achieved. In addition to the foregoing, the pre-selection evaluation of the pool of eligible applicants will, in a number of instances indicate the effectiveness of the Local Authority's publicity in disseminating pertinent information to all income levels of Families of Low Income in the locality. For instance, if the review

(Cont'd)

1/ Distribution of eligible applicants by income unit size requirements and preference rating.

of the eligible pool shows that in relation to the estimated number of potential applicants in some of the various low income levels there are relatively few applicants, it will point up the probability that information is not effectively reaching those particular segments of the low income market. For Local Authorities which have not established ranges of specified rent the pre-selection review of the eligible pool will serve to show whether, selecting tenants in accordance with preference factors on a project basis, will result in the project being occupied by a representative cross-section of Families of Low Income and the effect of such selection procedures on solvency.

c. Evaluating the Make Up of the Eligible Pool

(1) Means of Evaluating the Make Up of the Eligible Pool

(a) The make up of the pool of eligible applicants can be evaluated by relating it to the occupancy pattern used in determining financial feasibility. To illustrate how this may be done let it be assumed that the occupancy pattern (expressed in terms of rent groupings) of a hypothetical 200-unit project to be that shown in columns (1), (2), (3), and (4) of the following example and that the make up of the eligible pool has been found to be that shown in columns (5), (6), (7), and (8). For the purpose of this example let it also be assumed that the distribution of units to the various rent levels is in direct proportion to the income distribution of Families of Low Income in the locality and that the average contract rent PUM to be produced by such distribution is not lower than the Lowest Possible Average Contract Rent PUM (see Section 405.2). The example shown below presupposes a 200-unit project comprised of forty 1-BR units, one hundred 2-BR units and sixty 3-BR units. The Lowest Possible Average Contract Rent has been determined to be $25.18 PUM.

(Cont'd)

(b)

Occupancy Pattern — Make Up of Eligible Pool

(1) Gross and Contract Rent	(2) Distribution of Units by Rent	(3) Estimated Monthly Rental Income	(4) Est. Number of Potential Applicants	(5) 1 BR Appl.		(6) 2 BR Appl.		(7) 3 BR Appl.		(8) Total Appl. for Each Rent Group		
				Applicants with Preference	Applicants Without Preference	Applicants with Preference	Applicants Without Preference	Applicants with Preference	Applicants Without Preference	With Preference	Without Preference	TOTAL
$15				0	1	0	3	0	2			
16	24	$ 384.00	85	0	2	0	2	0	4	0	19	19
17				0	1	0	1	0	3			
18				0	1	0	2	0	3			
19				0	0	0	1	0	1			
20	12	234.00	42	0	2	0	4	0	2	0	17	17
21				0	0	0	1	0	0			
22				1	2	3	1	1	2			
23				0	0	7	0	0	3			
24	39	916.50	136	2	1	2	2	6	1	34	20	54
25				1	3	8	1	3	4			
26				2	0	7	1	5	2			
27				7	1	6	0	3	0			
28	45	1,237.50	157	6	3	8	1	3	0	61	10	71
29				3	0	3	1	8	1			
30				5	2	5	1	6	1			
31				0	0	2	0	2	0			
32	43	1,376.00	150	4	0	12	0	8	0	70	8	78
33				1	0	7	0	5	0			
34				6	2	5	2	2	0			
$35 and Up	37	1,295.00 (Computed at $35.)	130	12	5	28	3	12	2	52	10	62
Totals	200	$ 5,443.00	700	50	26	103	27	64	31	217	84	301
				76		130		95				

Average Contract Rent PUM $27.215 (Total of Column 3 divided by total units in project).

(2) Analyzing the Eligible Pool and Determining the Need for and Type of Action Which may be Required. An analysis of the hypothetical eligible pool illustrated above would reveal the following conditions and might call for some of the actions suggested or for other remedial measures.

(Cont'd)

(a) An insufficient number of applications are on file from families in the lowest rental group to fill the 24 units allocated to this rent group. This will also, in all probability be true of the next lowest rent group for even though there are on file 17 applications for the 12 units allocated to this rent group there is a chance of some families dropping out for one reason or another prior to leasing. Should efforts to secure more applicants from these income levels (see paragraph (d) below) within a reasonable period of time be unsuccessful, it is suggested that the Local Authority reallocate these units to the lowest rent grades in which there are surplus applications.

(b) Selection of tenants through the application of the preference factors either within each rent group or on a project basis would not jeopardize solvency.

(c) There are sufficient applications for each size of unit, in the hypothetical example cited. This, however, is not always the case. There have been many instances where the total number of applications received have far exceeded the number of units in the project but the number of such applications which were from families requiring a unit of a certain size were less than the number of such sized units. Where this happens it is usually necessary for the Local Authority to stress in its publicity the availability and features of the particular size unit for which there is a paucity of applications.

(d) The relatively few applications received from applicants with incomes low enough to warrant their paying a monthly rent of $21 or less may indicate that the media or channels used by the Local Authority for disseminating information to potential applicants is ineffectual in reaching the lowest income levels of low income families. In instances where there is a negligible response from low-income families or from any segment of such families, it is suggested that the Local Authority review its methods of publicizing the project to ascertain the reason for this and take such action as it may deem advisable to assure every low income family in the locality becoming informed concerning the project. In some instances use of different publicity media will be indicated; in others, a different approach or slant to the dissemination of information will be called for. If, as suggested in Bulletin No. LR-32, the application office has made a record of the source from which applicants received information concerning the project such data will be helpful in determining the effectiveness of the various publicity media employed. In connection with determining the need for further

(Cont'd)

publicizing the project it must be remembered that a completely adequate job of tenant selection cannot be done merely by receiving enough applications from eligible applicants to ultimately result in the project being occupied by a representative cross-section of families of low income in the locality to the extent permitted by project solvency. Only through the receipt of applications from a relatively high percentage from all income levels of the low income families in the locality and from families living in every neighborhood where substandard housing is known to exist can the Local Authority in selecting tenants from among equally eligible applicants within each preference category be sure that it is admitting to its projects those low income families in the community who have the most urgent housing need.

(e) Assume that the example cited in paragraph 3c(1)(b) above represents a project where ranges of specified rent have not been established and that the distribution of units to rent groups shown in column (2) represents the number of families which would have to be selected from the various income levels of low income families in the locality in order to have the project occupied by a representative cross-section of low income families. Analysis of the make up of the hypothetical pool of eligible applicants shows that to select tenants through the application of preferences on a project basis would not jeopardize solvency but would result in only 17 per cent of the project being occupied by families having an income low enough to entitle them to a rent of $25 or less. In as much as 37.6 per cent of the potential applicants shown in Column (4) are indicated as being in the income strata which would warrant a rent of $25 or less, it can readily be seen that in order to conform with the provisions of Section 407.1 it will be necessary for the Local Authority to establish two or more ranges of specified rent. The establishment of such ranges may be accomplished expeditiously by utilizing the distribution used in demonstrating financial feasibility at the time the rent schedule was prepared (see Section 405.1). Following the establishment of ranges of specified rent within which the preferences will be applied in selecting tenants for units of given sizes, the eligible pool should again be reviewed to determine what, if any, further action will be required to enable the Local Authority to carry out its newly established occupancy pattern.

d. Suggested Method for Facilitating the Review of the Eligible Pool. A determination as to whether the income and preference distribution of applicants in the eligible pool is such as to lend itself to achieving an appropriate occupancy pattern without jeopardizing project solvency

(Cont'd)

can easily be made at any time prior to the actual start of selecting tenants if a current check of eligible applications is maintained. If the Local Authority elects to maintain a running record of the distribution of eligible applicants by income (expressed for convenience in terms of rent to be paid in the project), preference rating, and unit size required, it may find it helpful to set up and use as a work sheet a form similar to that shown as Exhibit 1. Maintaining a current running record of the make up of the eligible pool through the use of a form such as Exhibit 1 merely requires entering for each family determined to be eligible, subsequent to verification, a tally mark opposite the rental range or grouping appropriate to the Net Family Income of such family in the column which reflects the preference status of the family. This suggested form will, incidentally facilitate the preparation of Form PHA-2209, Report on Initial Occupancy of Low-Rent Projects (see Section 407.2).

4. Mechanics of Selection. Assuming that all action necessary to achieve the desired occupancy pattern and project solvency have been taken and that the make up of the eligible pool is such as to assure the accomplishment of these objectives, the actual selection of tenants from among eligible applicants becomes a relatively simple process. In this bulletin the steps involved in the selection of tenants for initial occupancy of a low-rent project are set forth in the progressive order in which they are generally taken and for illustrative purposes are shown as being taken by that member of the Local Authority's staff who is charged with performing these functions of the occupancy office which his job title connotes. The principal steps constituting the selection process are shown graphically on Exhibit 2. The functional division of responsibility indicated herein and on Exhibit 2 is done for convenience purposes only and is not to be taken as a recommendation as to how responsibility is to be delegated to persons engaged in selecting tenants.

a. Order of Selection. The order in which tenants are to be selected from among all eligible applicants or from among those within each established range of specified rent is set forth in Manual Section 407.1 and in the Annual Contributions Contract.

b. Selection Controls

(1) To facilitate compliance with the prescribed order of selection, the classification and filing systems suggested in Bulletin No. LR-32 were devised. The classification system set forth therein eliminates the need to review each application at the time of selection to determine the applicants with the highest preference rating and as among such families those with the most urgent need. The suggested filing system physically implements the classification system.

(Cont'd)

(2) As the actual selection of tenants begins, it will frequently be found desirable to devise some means for readily determining from time to time (a) the number of eligible applicants not yet selected, (b) the number of selected applicants not yet referred for leasing, and (c) the number of applicants referred for leasing who have executed leases. By adapting the title on the work sheet shown as Exhibit 1 to fit each particular stage of the selection process this information can be easily assembled and kept current. For instance, were the heading "Distribution of Selected Applicants by Rent Group and by Preference Rating" to be used and a tally mark entered in the appropriate line and column as an applicant is selected for leasing, it would be possible by totalling the entries thereon and by subtracting the totals thus obtained from the current totals on the work sheet used to tally the distribution of eligible applicants to determine how many applicants were still in the eligible pool. Now, if the heading "Distribution of Applicants Transferred for Leasing" were to be used and a tally mark entered for each applicant transferred for leasing it would be possible by subtracting the totals on this work sheet from those on the selected work sheet to ascertain the number of selected applicants not yet referred for leasing. For the fourth and final step in the selection process which is the execution of the lease agreement, it may be desirable to use a work sheet which will serve not only as a record of leases signed but also as a means of testing for solvency. Shown as Exhibit 3 and 3a are specimen work sheets which will serve this purpose. Exhibit 3 would be used where utility allowances for tenant purchased utilities differed by unit size. Exhibit 3a would serve where the utility allowance was the same regardless of unit size or where contract and gross rent were the same. In the latter instance the 3rd column would be omitted.

c. Principal Procedural Steps in the Selection of Tenants. In general the selection of tenants from among eligible applicants will involve the following steps which for convenience purposes as stated above are indicated as being the responsibility of an employee serving in a designated capacity.

(1) Action Taken by Control Clerk

(a) Upon receiving instructions from the supervisor as to the number and size of units for which tenants are to be selected and the rental ranges, if any, which are involved, removes from the eligible section of the Application Folder File in accordance with preference priority and the urgency of need within each preference group, folders of applicants requiring the size

(Cont'd)

and type of accommodations to be offered for leasing. 1/ Generally the number of folders removed from the file should exceed the number of units to be leased as some families will have lost interest, others will have moved from the community and still others will be found no longer to be eligible.

(b) Sends out a notice to each applicant whose folder has been removed from the eligible section of the file requesting him to come into the office for a final interview (see Exhibit 4).

(c) Places a copy of the notice in the folder, reclassifies the application as S (Selected), notes reclassification on folder and Control Card, and refiles the folder in the Selected section of the Application Folder File.

(d) Maintains tickler file of dates on which applicants are scheduled to report for interview.

(e) Furnishes Receptionist with the folders of selected and notified applicants on the date they are scheduled to report for an interview.

(f) Maintains necessary selection progress controls on work sheets.

(2) Action Taken by Receptionist

(a) Receives the selected applicant and checks his application record to determine the amount of time which has elapsed since the factors contributing to his eligibility were verified.

(b) Refers applicants requiring a recheck prior to leasing (see Section 408.1) to Interviewer and sends folders pertaining to such applicants to Interviewer.

(c) Refers other applicants and related application folders to Supervisor.

(d) At the end of each day returns to the Control Clerk the application folders of any selected applicants who failed to respond to the notification issued. 2/

(Cont'd)

1/ Where ranges of specified rent have been established the selection of folders within each such rental range will be based on the preference rating of the applicants falling in that rental group.

2/ In such instances it will be advisable for the Control Clerk to classify such applications as withdrawn and to so file them after noting such action and the reason for it on the Control Card. This serves to keep the active files relatively free of "dead wood." If at some later date the applicant indicates his active interest in the project his application can easily be reactivated.

(3) Action Taken by Interviewer

(a) Questions the applicant concerning all factors pertaining to his eligibility or preference rating to determine if any changes have occurred which may affect his eligibility status, preference rating, rent or unit size requirements.

(b) To eliminate the necessity of having the applicant call back, verifies his present circumstances by making informal contracts by telephone with the proper source while the applicant is present.

(c) Informs the applicant concerning any factors requiring further review prior to his being accepted for leasing and tells him that as soon as the recheck is completed that he will be informed.

(d) Routes folders of applicants requiring further verification to Supervisor.

(e) Brings Verification Summary Form (see Exhibit 8, Bulletin No. LR-32) up to date. If the applicant's circumstances have not changed such should be indicated on the form for each factor rechecked and the date the recheck was made and the initials of the person making it should be recorded. If the applicant's circumstances have changed the existing entries on the Verification Summary Form should be lined through and the new information entered, together with the date and source of such information and the initials of the person obtaining it. If there is insufficient space on the Verification Summary for recording the newly obtained data the latest verified findings should be documented on a supplemental sheet and attached to the Verification Summary Form after making reference to the supplement on the original form.

(f) Refers applicant and sends related folder subsequent to completing the recheck to the Supervisor unless he has been found to be ineligible.

(g) Informs applicants found to be ineligible during the recheck of their status and the reason for such determination and advises them to call back in event their disqualifying circumstances change.

(h) Sends application records of selected applicants found to be ineligible during the recheck to Supervisor for review and formal reclassification.

(Cont'd)

(4) Action Taken by Supervisor

(a) Checks the Verification Summary Form relating to the selected applicant to be certain that his eligibility status and preference rating have been unequivocally established and conform to Local Authority admission requirements.

(b) Executes the Certification pertaining to the eligibility status of the applicant which appears at the end of the Verification Summary Form shown as Exhibit 8 of Bulletin No. LR-32.

(c) Fills out a Dwelling Assignment Form (see Exhibit 5), gives it to the selected applicant, and refers him to the rental office.

(d) Indicates on the application folder the action taken and routes it to the Control Clerk who will note on the Control Card the action taken before routing the applicant's record to the rental office.

(e) Maintains a control record on units becoming available (see Exhibit 6) and correlates tenant selection activities with construction progress to assure tenants being ready to move in as units become available.

5. Action After Initial Selection of Tenants. Immediately following the completion of selecting tenants for initial occupancy of a low-rent project, letters should be sent to all eligible applicants who were not selected for initial occupancy advising them that their applications are being retained in the active file and that they will be given due consideration as vacancies occur. Due to the fact that an eligible applicant's circumstances may change in such a way as to make him ineligible before his name can be reached on the waiting list, it will be well to have this letter phrased in such a way as to preclude the applicant's thinking that he is being promised a unit at some later date. It is suggested that applicants whose names are to be placed on a waiting list be advised to notify the Local Authority in event they change their address or wish their application withdrawn. Letters should also be sent to any ineligible applicants not previously notified of their status giving a simple explanation of such determination.

(Cont'd)

Distribution of (Eligible Applicants / Selected Applicants / Applicants Transferred for Leasing) By Rent Group and by Preference Rating

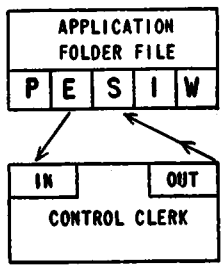
Size of Unit _____ No. in Project _____

Rent Group	Applicants Entitled to Preference								Totals by Rent Group as of:					
	DF - DAV	DF - DVS	DF - VS	DF - O	DAV.	DVS	VS	OTHER	1/					
Totals by Preference as of:														
1/														

1/ Enter date total is obtained.

ROUTING OF APPLICATIONS DURING SELECTION OF TENANTS

1ST STAGE



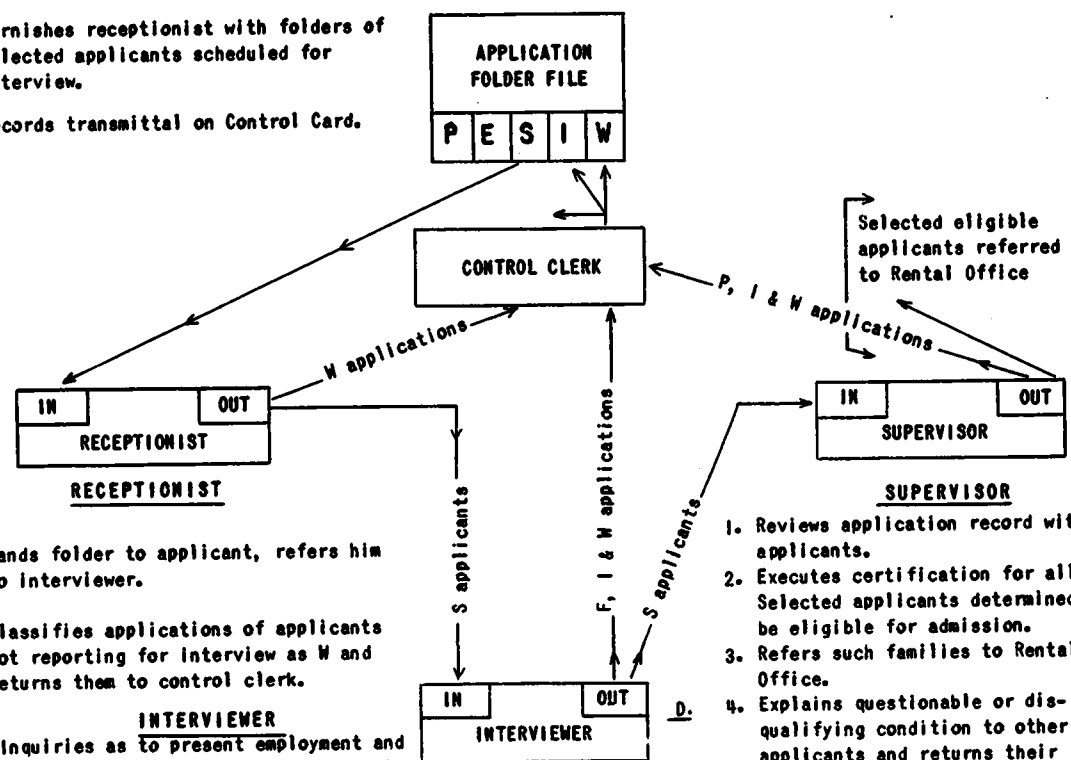
CONTROL CLERK

1. When instructed by supervisor, control clerk removes folders from the eligible section of the application folder file in accordance with Local Authority regulations governing the application of statutory preferences.
2. Sends notices to applicants and maintains a schedule of appointments.
3. Reclassifies applications of notified applicants as S (selected), enters change of classification on Control Card, and files applications in the appropriate subsection of the Selected section of the application folder file.

2ND STAGE

CONTROL CLERK

A.
1. Furnishes receptionist with folders of Selected applicants scheduled for interview.
2. Records transmittal on Control Card.



RECEPTIONIST

B.
1. Hands folder to applicant, refers him to interviewer.
2. Classifies applications of applicants not reporting for interview as W and returns them to control clerk.

INTERVIEWER

C.
1. Inquiries as to present employment and income of all family members, present housing conditions, family composition, etc., and checks replies received against existing verified findings.
2. Takes such actions as may be necessary to verify changed conditions.
3. Refers applicants requiring no further verification to supervisor.
4. Advises other applicants of any further action required, reclassifies such applications, returns them to control clerk, informs supervisor of action taken or required to be taken.
5. Tells P applicants they will be advised of their status when their changed conditions have been verified.

SUPERVISOR

D.
1. Reviews application record with applicants.
2. Executes certification for all Selected applicants determined to be eligible for admission.
3. Refers such families to Rental Office.
4. Explains questionable or disqualifying condition to other applicants and returns their folders to control clerk.
5. Tells P applicants that they will be called back if subsequent to verification of changed conditions they are found to be eligible.

LEASING RECORD FOR TESTING SOLVENCY AND DETERM

(Control sheet for projects where

1. Tally Record of Leases Signed

2. Summary Totals of
a. Periodic Recapitu

Gross Rent 1/	Distribution of Units By Rent 2/	Distribution of Leases Signed by Unit Size and by Gross Rent (Enter in heading No. of Units of each size to be provided) 1 BR -	2 BR -	3 BR -	4 BR -	5 BR -	Date: No. Leases	Gross Rent	Date: No. Leases
$15									
$16	24								
$17									
$18									
$19	12								
$20									
$21									
$22									
$23	43								
$33									
$34									
$35	37 (To be rented at $37 or more)								
$36									
$37									
$48									
$49									
$50									

b. Total Leases Signed and Monthly Gross Rent............................ | $

3. Computation of Average Contract Rent PUM as of date shown under 2a.

a. Estimated Value of Tenant Purchased Utilities

(1) Allowance for 1BR Units $ PUM times No. of 1BR Leases Signed.. $

(2) " " 2BR Units $ " " " " 2BR " " .. $ | $

(3) " " 3BR Units $ " " " " 3BR " " .. $ | $

(4) " " 4BR Units $ " " " " 4BR " " .. $ | $

(5) " " 5BR Units $ " " " " 5BR " " .. $ | $

(6) Total of Estimated Value of Tenant Purchased Util. (Sum of items (1) thru (5)) $

b. Total Monthly Contract Rent (Gross Rent in item 2b minus item 3a.(6)) $

c. Avg. Contract Rent PUM (item 3b divided by No. Leases shown in 2b.) $

4. Difference between item 3a and Lowest Possible Contract Rent PUM of $

a. Amt. by which Avg. Cont. Rent PUM exceeds Lowest Possible Cont. Rent PUM +$

b. " " " " " " PUM is Less than " " " " PUM —$

1/ Entry in this column equals Gross Rents appearing on Schedule of Rents.

2/ Entry in this distribution us

(Cont'd)

INING APPROPRIATENESS OF DISTRIBUTION BY RENT

(Utility Allowance Varies with Unit Size)

Leases Signed and Monthly Gross Rent

lation of Total Leases Signed and Project Income Resulting Therefrom

Gross Rent	Date: No. Leases	Gross Rent	Date: No. Leases	Gross Rent	Date: No. Leases	Gross Rent	Date: No. Leases	Gross Rent	Date: No. Leases	Gross Rent	Date: No. Leases	Gross Rent
$		$		$		$		$		$		$
	$		$		$		$		$		$	
	$		$		$		$		$		$	
	$		$		$		$		$		$	
	$		$		$		$		$		$	
$		$		$		$		$		$		$
$		$		$		$		$				$
$		$		$		$		$				$
+ $	+	$	+	$	+	$	+	$	+		+	$
— $	—	$	—	$	—	$	—	$	—	$	—	$

column equals distribution of units by established Ranges of Rent or in the absence of ranges the
ed in test of feasibility.

(Cont'd)

LEASING RECORD FOR TESTING SOLVENCY AND DETERM

(Control Sheet For Projects with uniform utility allowan

Gross Rent 1/	Distribution by Rent Range 2/	Contract Rent 1/ 3/	Tally Record of Leases Signed by Unit Size and by Rent to be Paid 4/ 1BR	2BR	3BR	4BR	5BR	Periodic Recapitu Date: No. Leases	Rental Income
$15	24	$ 9							
$16		$10							
$17		$11							
$18	12	$12							
$19		$13							
$20		$14							
$21		$15							
$22	39	$16							
$23		$17							
$24									
	43								
$33		$27							
$34		$28							
$35	37 (To be Rented at $35 or more)	$29							
$36		$30							
$37									
		$41							
$48		$42							
$49		$43							
$50		$44							

1/ Copy from Schedule of Rents.
2/ Where Ranges of Specified Rents have not been established, the distribution used in the test of feasibility should be entered in this column.
3/ Omit if Contract Rent is the same as Gross Rent.
4/ Enter No. of Units of each size to be provided.

Total No. Leases Signed and Project Income

Average Contract Rent PUM
Difference between Avg. Contract Rent PUM and Lowest Possible Avg. Contract Rent PUM
1. Amt. PUM in excess of Lowest Possible
2. Amt. PUM Less than Lowest Possible

$
$
$
$

(Cont'd)

INING APPROPRIATENESS OF DISTRIBUTION BY RENT

ce or where all utilities are included in Contract Rent)

lation of Total Leases Signed and Project Income Resulting Therefrom

Date:		Date:		Date:		Date:		Date:		Date:	
No. Leases	Rental Income	No. Leases	Rental Income	No. Leases	Rental Income	No. Leases	Rental Income	No. Leases	Rental Income	No. Leases	Rental Income
	$		$		$		$		$		$
	$		$		$		$		$		$
	$		$		$		$		$		$
	$		$		$		$		$		$

(Cont'd)

Notification of Selected Applicants

Name and Address of Local Authority

Date:

Name and Address of
Selected Applicant

Dear _____:

We are pleased to advise you that, based on the information which we have on hand concerning you and your family, you appear to be eligible for admission to (name of project). If you are still interested in renting a dwelling unit in (name of project) please come to our Application Office at (address), on (date) so that we may bring our records concerning you up to date. When you call at our office we shall advise you as to when you may expect to have a unit made available to you, so please do not make any arrangement for moving at this time.

In event you cannot come to the Application Office on the above date, please inform us as to when you can come in and we shall be glad to arrange another appointment. Also, should you no longer be interested in living in (name of project) we shall appreciate your letting us know so that consideration may be given some other family.

For your convenience, space is provided at the bottom of this letter for you to indicate by a check mark either your desire for another appointment or your wishes to have your application withdrawn. If we do not hear from you and you fail to keep your appointment, it may be necessary to consider your application as having been withdrawn.

Sincerely yours,

_____
(For the Name of Local Authority)

☐ Please arrange another appointment for me, preferably on

(date).

☐ I am no longer interested in renting one of your dwelling units.

_____
(Name of Applicant)

(Name of Development) (5 by 8 card)

DWELLING ASSIGNMENT

Mr. _____, age ____, Mrs. _____, age ____

and sons, ages _____, daughters, ages _____, and others

_____ have been approved to lease a

dwelling of not less than ____ bedrooms at a monthly rental of $_____,

including the following utilities: _____

_____

Occupancy Supervisor

REMARKS (specify any factors affecting location, etc.): _____

_____

Unit Assigned - Number_____ size_____ Rental $_____

Signed_____ Rental Clerk

AVAILABILITY OF DWELLING UNITS FOR OCCUPANCY

1. Record of Units Scheduled to Become Available for Occupancy

Scheduled Date of Availability	Distribution of Units Scheduled for Release by Size and Total						Cumulative Total
	1 BR	2 BR	3 BR	4 BR	5 BR	Total D U	

2. Record of Units Actually Becoming Available for Occupancy

Actual Date of Availability	Distribution of Units Released by Size and Total						Cumulative Total
	1 BR	2 BR	3 BR	4 BR	5 BR	Total D U	

This form serves both as a work sheet for assembling and recording the information needed to prepare Section D of the Report on Initial Occupancy (see Section 407.2) and as a means for determining the rate at which applications must be processed, tenants selected, and leases executed in order for units to be tenanted immediately upon becoming available for occupancy.

6. SPECIFICATIONS FOR PLAYGROUND EQUIPMENT 1/

a. SWINGS

(1) GENERAL. Swings shall be furnished in sets of 2, 3, 4, 6, and 8. Legs shall be spaced 2 swings apart except for the set of 3 swings which shall have legs at the end only.

(a) Height of swings shall be measured from the ground level to the center of the top rail. High swings shall be 10 feet high and low swings 8 feet high.

(b) Spacing of swings: 4 feet of top rail shall be provided for each low swing and at least 4 feet 6 inches for each high swing.

(2) MATERIALS. Pipe shall be standard weight galvanized. Fittings shall be of standard weight galvanized steel pipe or galvanized malleable iron castings. Bolts and fittings shall be steel cadmium plated or galvanized after fabrication. Pipe sizes are inside diameter.

(3) CONSTRUCTION. Top rails shall be 2-inch pipe and legs shall be 1-1/2 inch pipe when swings are grouped in pairs. Top rails shall be 3-inch pipe and legs shall be 2-inch pipe when swings are in a group of three. Legs at ends shall be triple and intermediate legs shall be in pairs.

Provide a 1/2 x 6-inch pin through legs at bottom for anchorage to concrete and extend legs 2 feet below ground. Assembly of swings shall be made without pipe threads.

(a) Fittings for attachment of legs to top rail shall clamp to the top rail and to legs by means of 1/2-inch machine bolts or be tubular welded steel fittings with exposed welds ground smooth and galvanized. 2/ Fittings for legs shall be prevented from turning by bolts through the rails and legs or by knobs interlocking with holes in rails and legs. Connections between fittings, legs and top rails shall be rigid.

(b) Hangers for swings shall be double race ball bearing type with alemite fittings or the oil-less Nigrum bearing type or oil impregnated bronze bearings. Hangers shall be so designed as to retard side motion of swings.

1/ These specifications are presented for the guidance of Local Authorities in the selection of playground equipment. They supplement information on uses of equipment contained in the preceding pages of this Bulletin. Obviously all types of equipment are not included but of the items presented, a sufficient number may be selected to equip play areas adequately. The specifications are based on safety, durability, and satisfactory functioning. Because of danger of serious accident, no equipment should be placed on hard surfaced areas.

2/ Tubular Fittings are difficult to replace.

(c) Suspensions shall be 3/16-inch diameter galvanized chains with an ultimate strength of not less than 2100 pounds or 3/8 x 11-inch galvanized links with an ultimate strength of not less than 3500 pounds. 1/ Length of suspension shall hold seats 18 inches from the ground for high swings and 12 inches from the ground for low swings. Connections to hangers and to seats shall be 3/8-inch steel S hooks or equivalent malleable iron hooks.

(d) Seats 2/ shall be clear edge grain fir, oak, maple, birch, or solid rubber with edges rounded; or strips of heavy rubber belting.

Wood or solid rubber seats shall be 20 to 22½ inches long, 7½ to 8 inches wide and 1½ inches thick for high swings, and 17 to 20 inches long by 7½ to 8 inches wide by 1-1/8 inches thick for low swings. Wood seats shall be sanded smooth and finished with manufacturer's standard finish.

Rubber belt seats shall be not less than 5 x 26 inches with ends doubled and riveted to metal supports.

(4) EXCAVATION AND CONCRETE. Perform necessary excavation and construct foundations for each leg of 1-2½-5 or 2,000 lb. portland cement concrete not less than 2 x 2 x 2 feet square. Finish concrete smoothly and even with top of ground with rounded corners and to drain. Grade earth so that water will not stand within the area occupied by the swings.

b. SLIDES

(1) GENERAL. Slides shall consist of a chute and a ladder giving access to the top of the chute, with accessories as required for use and stability. It shall be arranged for erection on concrete footings.

High slides shall be 8 feet high measured from the ground to the top step and have 16-foot long chutes. Low slides shall be 4 feet to 6 feet high measured from the ground to the top step and have 8 to 12-foot chutes.

(2) MATERIALS. Sheets shall be galvanized iron or copper bearing steel best commercial quality, primes only. Malleable castings shall conform to ASTM Standard A 47-48 and be galvanized. Pipe shall be standard weight galvanized steel pipe. Pipe diameters are inside diameter. Bolts shall be galvanized or cadmium plated.

1/ To avoid bending of links when thrown over top rail, specify short links for top half of chain and long links for lower half.

2/ Specifications for chair seats are not included since the amount of equipment is limited and such swings require an adult attendant.

(3) CONSTRUCTION

(a) The chute shall consist of side rails 3-1/2 to 5-1/2 inches in height and a smooth metal bottom not less than 18 inches wide. Side rails shall be clear maple or birch, 1-3/8 inches thick, or hollow metal, or shall be an integral part of the chute with a handrail approximately 1" O.D. of the same metal and finish of the slide welded to the top edge. Finish welds to match the slide. Hollow metal side rails shall be formed in one piece from not less than 18-gauge galvanized iron or copper bearing steel, be approximately 1-3/8 inches wide with rounded top and flat bottom, be formed or curved to conform to the curve of the bedway. Ends of rails shall be plugged or capped flush.

The bottom of the chute shall be galvanized iron or copper bearing steel or stainless steel not less than 14-gauge when supported only by or integral with the side rails and not less than 18-gauge when supported by cross cleats 16 inches on center. Bottom shall be attached to wooden side rails by use of continuous strips secured to side rails by brass screws. Joints shall be bedded in caulking compound to exclude water. Side rails and chute shall be smooth and free of projections of any sort on surfaces in contact with users. The chute shall be so curved at the bottom as to reduce landing speed.

(b) The ladder shall consist of steel 2-1/2 x 2-1/2 x 3/16 inch angles or 1½-inch pipe or 5-inch channel legs; and malleable iron or at least 12 gauge steel steps welded or bolted to legs not more than 10 inches on center in a manner to prevent turning or tilting of the step. Width of the ladder shall be approximately the width of the chute. Steps shall be not less than 3-1/2 inches wide with anti-slip characteristics cast in the surface. Ladder legs shall be long enough to set 18 inches in the ground.

(c) Hand rails of at least 3/4 inch steel pipe shall be provided from not over 30 inches from the ground to the top of ladder and down to or across the chute not less than 8 inches from the top of the chute. Hand rails shall be at least 24 inches high, measured vertically, above the platform for high slides and at least 18 inches high above the platform for low slides. If hand rails exceed these respective heights, cross bars of at least 3/4 inch pipe shall be securely attached to each hand rail in such manner as to approximately bisect the area between the platform and the top of the rail.

(d) Platform shall be at the top or 7 to 8 inches below the top. It shall consist of a malleable iron, at least 12 gauge steel or equally strong aluminum step of from 8 to 11 inches wide with antislip characteristics in the surface and shall be securely fastened to the ladder.

(e) Assembly of the slide shall be by bolts. Slide shall be shipped in not over 4 sections. Connections of ladder and chute shall be rigid by means of not less than 1/2-inch machine bolts with lock washers or by 1/2" pipe hinge pin. Include adequate means of support to prevent side sway.

(4) EXCAVATION AND CONCRETE. Perform necessary excavation and construct foundations for each leg and support. Concrete shall be 1-2½-5 portland

NOTE: These pages 41-44 supersede pages 41-44 dated 3-20-52. Changes have been made in paragraphs 6b(3)(d), 6c(1), 6d(2), and 6d(3).

cement concrete. Footings shall be not less than 2 x 2 x 2 feet. Finish concrete smoothly and even with the top of ground to a slightly rounded surface to drain water from supports.

c. CLIMBING STRUCTURE

(1) GENERAL. The climbing structure shall consist of vertical or inclined pipes connected at top by fittings or curved pipes and with curved and/or straight pipes in the horizontal plane. Climbing rungs shall be level, spaced in height not more than 24 inches apart.

Height shall be measured from the ground level to the center of the top member. High climbing structures shall be not more than 10 feet 6 inches high and low climbing structures not more than 6 feet high.

(2) MATERIALS. Pipe shall be standard weight. Pipe dimensions given are inside diameter. Fittings shall be malleable castings conforming to ASTM Standard A-47-48. All ferrous parts of the structure shall be hot dip galvanized.

(3) CONSTRUCTION. No pipe in the structure shall be less than 3/4 inch pipe. Connections shall be made by tee or cross shaped fittings bolted through vertical or inclined members and horizontal members, 1 bolt to each leg of the tee or cross; or the structure shall be fabricated in sections by welding, exposed welds ground smooth and the sections galvanized after fabrication; or the structure shall be assembled with 3/8 inch U bolts encircling horizontal pipes and passing through vertical or inclined pipes. Nuts shall be hexagon or cap nuts. Exposed ends shall be cut off smoothly. Vertical legs of sectional structures shall telescope not less than 12 inches to provide stability. Sections shall be so designed that tipping is prevented. Open ends of pipe shall be closed by ball plugs or other acceptable fittings. Vertical or inclined legs shall extend 24 inches in the ground and be provided with 1/2 x 6 inch pins for anchorage to foundations.

(4) EXCAVATION AND CONCRETE. Do necessary excavation and provide footings 12 inches square by 24 inches deep of 1-2½-5 portland cement concrete for each post. Smooth top of foundation, round edges and slope to drain away from pipes. Grade ground under the structure to drain away from the structure.

d. HORIZONTAL LADDER

(1) GENERAL. The horizontal ladder shall consist of 2 pairs of 2 inch pipe posts from 6 feet to 7 feet 6 inches high above grade connected by two 2 inch pipe rails from 12 to 16 feet long and with 3/4 inch pipe rungs spaced 12 inches apart along the horizontal run and with 3 or 4 similar rungs as steps at each end.

(2) MATERIALS. Pipe shall be standard weight galvanized steel pipe. Pipe dimensions are inside diameter. Fittings shall be heat treated malleable iron castings, or steel, hot galvanized.

(3) CONSTRUCTION. Posts and horizontal side rails shall be continuous or shall be connected by bolted fittings engaging the pipe not less than 4 inches with not less than 3/8 inch bolts or shall be assembled with malleable iron elbows with lugs fitting into holes in the pipe, or shall be assembled with flush joints and internal reinforcement held by countersunk bolts, screws or rivets through both pipe and reinforcing or be welded. Bends shall be smooth made without injury to the pipe. Posts shall extend 24 inches below grade and have 1/2 x 6 inch pin for anchorage. Rungs shall be entered in holes drilled in posts and rails and shall be riveted or welded in place to prevent movement. Welds shall be smoothed and painted with rust inhibitive paint.

(4) EXCAVATION AND CONCRETE. Do necessary excavation and provide footings of 1-2½-5 portland cement concrete 16 x 16 inches by 24 inches deep for each post. Smooth top of pier, round edges and slope away from pipes. Grade ground to avoid standing water under the horizontal ladder.

e. HORIZONTAL BARS

(1) GENERAL. Provide a triple set of horizontal bars at height of 54, 66, and 84 inches from grade supported on 4 pipe posts.

(2) MATERIALS. Pipe shall be standard weight galvanized pipe. Pipe dimensions are inside diameter. Caps and fittings shall be heavy heat treated, hot galvanized malleable castings.

(3) CONSTRUCTION. Posts shall be 2 inch pipe long enough to support pipes at levels specified and extend 30 inches in the ground. Horizontal bars shall be 1 inch pipe or galvanized steel tubing or 1-1/16 or 1-1/8 inch cold rolled steel bars. Set 4 posts in line 4 feet apart and attach one horizontal bar in each space, at specified heights by means of clamp type fitting with 3/8 inch bolts passing through fittings, posts and bars. 1/ Close top of posts with ball fittings.

(4) EXCAVATION AND CONCRETE. Excavate for footings 18 inches square and 30 inches deep. Plumb posts and place footings of 1-2½-5 portland cement concrete around each post. Finish top of concrete smooth and to drain away from post. Grade earth to avoid water pockets.

f. OUTDOOR BASKETBALL BACKSTOPS

(1) GENERAL. Backstops shall consist of fan shaped steel banks or die stock supported on steel pipes with goals supported from the banks at a height of 10 feet from the ground. Height of goals shall be adjustable to 8 and 9 feet from the ground. Backstops shall meet all requirements of the National Basketball Committee as published in the Basketball Official Guide.

1/ Bars of fixed heights are specified for safety.

(2) MATERIALS. Pipe supports shall be standard weight galvanized steel pipe. Fittings shall be heat treated, malleable iron or steel castings hot dip galvanized. Banks shall be steel plate not less than 11 gauge or 1/2 inch die stock.

(3) CONSTRUCTION. Pipe support shall be 3 inch inside diameter pipe 16 feet 8 inches long with the top closed by a suitable fitting and with anchorage pin to concrete at the bottom.

Steel banks shall have a reinforcing flange not less than 1-1/4 inches deep with front edge rounded and smooth and back of banks shall be reinforced with steel braces set to shed water and welded to bank, to flange and to a center support which is attached to the pipe posts. Reinforce back of die stock bank with three horizontal and one vertical steel channel struts. Banks shall be mounted on pole by means of 2 fittings attached to the banks by heavy plates or structural shapes. Banks shall be prevented from turning or sliding by positive interlocks.

Goals shall be made of 5/8 inches round steel rods welded to braces and bank supports and provided with seine twine nets.

(4) FINISH. All parts of the backstops not galvanized shall be finished in baked on exterior white enamel.

(5) EXCAVATION AND CONCRETE. Do necessary excavation and provide footings 3 feet square by 4 feet deep of 1-2½-5 portland cement concrete. Smooth top of footing, round edges and slope to drain away from pipes.

g. TURNING POLES

(1) GENERAL. Provide a double set of turning poles at heights of 24 and 30 inches from grade supported on 3 pipe posts.

(2) MATERIALS. Pipe shall be standard weight galvanized pipe. Pipe dimensions are inside diameter. Caps and fittings shall be heavy heat treated galvanized malleable castings.

(3) CONSTRUCTION. Posts shall be 2 inch pipe long enough to support bars at levels specified and extend 24 inches in the ground. Horizontal poles shall be 1 inch pipe or galvanized steel tubing or 1-1/16 inch cold rolled steel bars. Set 3 posts in line 3 feet apart and attach one horizontal bar in each space at specified heights by means of clamp type fittings with 3/8 inch bolts passing through fittings, posts and pole. Close top of posts with ball fittings.

(4) EXCAVATION AND CONCRETE. Excavate for footings 14 inches square and 24 inches deep and place footings of 1-2½-5 portland cement concrete around each post. Finish top of concrete smooth and to drain away from post. Grade earth to avoid water pockets.

h. PLAY LOG

(1) GENERAL. Provide play logs 10 to 12 feet long with bark removed and knots and rough areas dressed smooth. Set logs on 2 vertical supports at heights of from 18 to 30 inches from the ground as directed.

(2) MATERIALS. Logs shall be locust, fir, pine, or other durable wood available. Posts shall be concrete or logs, treated below grade with a preservative similar to pentachlorophenal or zinc chloride (not creosote).

(3) CONSTRUCTION. Set posts 2 feet deep in the ground and shape top of posts to drain by beveling the top to a center ridge crosswise of the log. Flatten logs on the bottom at bearings for stability. Provide two 3/4 inch iron lag screws with countersunk heads reaching 12 inches into each wood post for anchorage and 1, 3/4 inch bolt for anchorage to each concrete post.

Apply a heavy thick coat of white lead and oil paint to top of wood posts before setting logs. Treat above ground with stain mixed with linseed oil.

i. BALANCE BEAM

(1) GENERAL. Provide a balance beam, consisting of a 2 x 8 inch plank and stakes of all heart locust, cypress or dense redwood, 10 to 12 feet long set edgewise for users to walk on top edge.

(2) CONSTRUCTION. Support beam with top 12 inches above grade between 3 pairs of 2 x 4 inch wood stakes 3 feet 6 inches long, set 3 feet in the ground. Bolt through stakes and beam with 2-3/8 inch carriage bolts to each pair of stakes and cut bolts off flush. Bevel top of 2 x 4 inch stakes.

Round off top of beam and sand smooth.

(3) FINISH. Treat all wood with stain mixed with linseed oil.

j. DODGER

(1) GENERAL. This specification and the accompanying drawing entitled "Figure 1, Dodger" shall govern the construction of the dodger.

(2) MATERIALS. Concrete masonry units shall be cement-sand block. Dimensions of block shall be nominal 8 x 8 x 16 inches with half block and closures as required. Mortar shall be 1-3 cement washed concrete sand mortar with 10% to 25% of lime as required for workability.

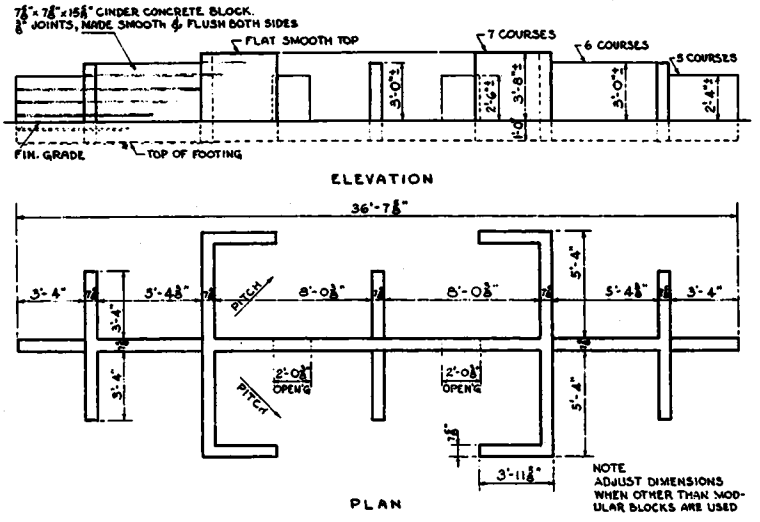


FIGURE 1 DODGER

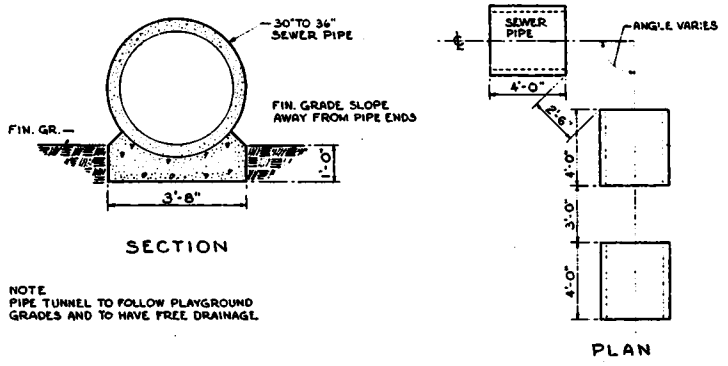


FIGURE 2 PIPE TUNNEL

(3) CONSTRUCTION. See the drawing for plan and dimensions. Provide 1-2½-5 portland cement concrete footing not less than 8 inches deep x 12 inches wide under all parts of the dodger. Set block level and true to line and fill all joints with mortar. Strike joints smooth.

Fill openings in top course of block with concrete or mortar to a depth of 4 inches and form water shed on top of walls 1 inch high in center and slope to edges with concrete or cement mortar.

k. PIPE TUNNEL

(1) GENERAL. This specification and the accompanying drawing entitled "Figure 2, Pipe Tunnel" shall govern the construction of the pipe tunnel.

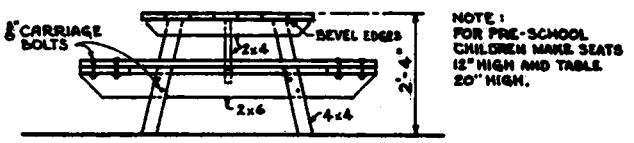
(2) MATERIALS. Pipe shall be any standard concrete or vitrified clay sewer pipe. Clay pipe may have bell and spigot end. Pipe shall be free from irregularities that would cause bruises or cuts to users and shall be rubbed with carborundum blocks if necessary to remove such irregularities.

(3) CONSTRUCTION. See the drawing for details. Provide footings of 1-2½-5 portland cement concrete under pipes as shown. Set and space pipes as indicated or as directed and grade around pipe to drain surface water away from pipes.

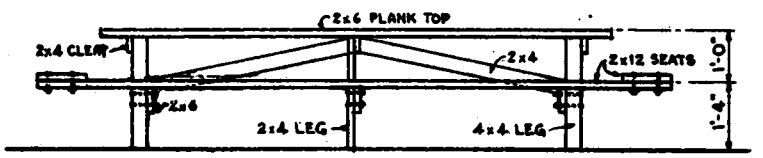
l. CRAFT TABLE

(1) GENERAL. This specification and the accompanying drawing entitled "Figure 3, Craft Table" shall govern the construction of craft table.

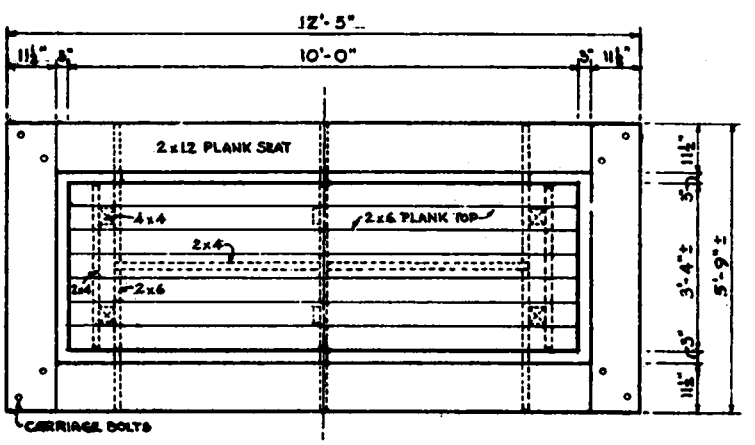
(2) MATERIALS. Lumber shall be No. 1 common fir or yellow pine or other species of grades equivalent to the above, except that the legs shall be all heart selected from No. 1 cypress or cedar or construction heart redwood. Lumber shall be selected to avoid splinters.



END ELEVATION



SIDE ELEVATION



PLAN

FIGURE 3 CRAFT TABLE (SCHOOL AGE CHILDREN)

(3) CONSTRUCTION. Workmanship shall be good with square ends and well fitted joints. Exposed edges of seats and tables shall be rounded and sanded and rough spots dressed smooth. Edges of strips forming the top and places inaccessible for painting shall be primed before assembly. Nails in top shall be set 1/8 inch deep and puttied.

(4) HARDWARE. Bolts and nuts shall be cadmium plated or otherwise treated to resist rust. Nails shall be galvanized.

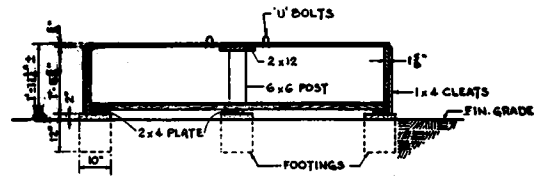
(5) PAINT. Paint all over with 1 coat of exterior oil primer, Federal Specifications TT-P-25 and finish with 2 coats of exterior enamel Federal Specifications TT-E-489 color as selected.

m. SAND BOX

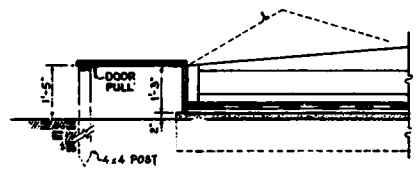
(1) GENERAL. This specification and the accompanying drawing entitled "Figure 4, Sand Box" shall govern the construction of sand boxes including excavation, concrete and woodwork and accessories.

(2) MATERIALS. Lumber shall be all heart selected from No. 1 cypress or cedar or construction heart redwood. The cover shall be exterior grade plywood conforming to Commercial Standard CS-45-48 Grade A-B. The floor liner shall be tempered presdwood. Exposed lumber shall be selected to avoid pieces having splinters.

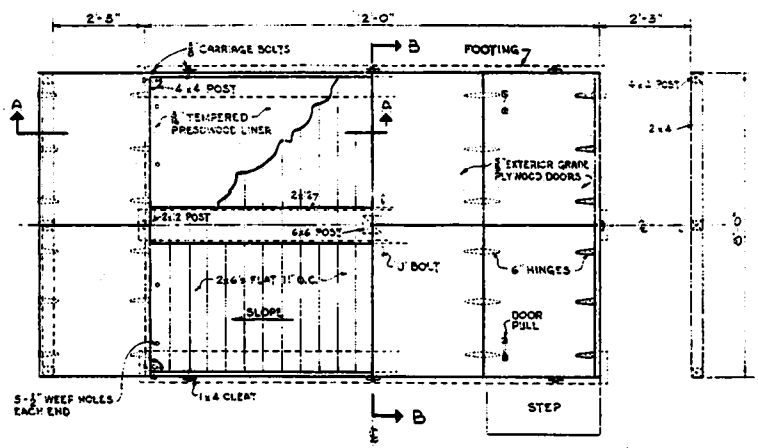
(3) CONSTRUCTION. Workmanship shall be good with square joints. Exposed edges shall be rounded and sanded and rough spots dressed smooth. Frames shall be bolted to corner posts and stiffeners with 3/8 inch carriage bolts. Fasten presdwood floor in place with flat head No. 5, 3/4 inch brass screws 11 to 12 inches on center both directions. Places inaccessible to painting shall be primed before assembly.



SECTION B-B



SECTION A-A



PLAN

FIGURE 4 SAND BOX

(4) EXCAVATION AND CONCRETE. Perform necessary excavation and construct foundations of 1-2½-5 or 2,000 lb. portland cement concrete as indicated on the drawings. Finish concrete surfaces smoothly. Grade earth surface so that water will not stand under the sand box.

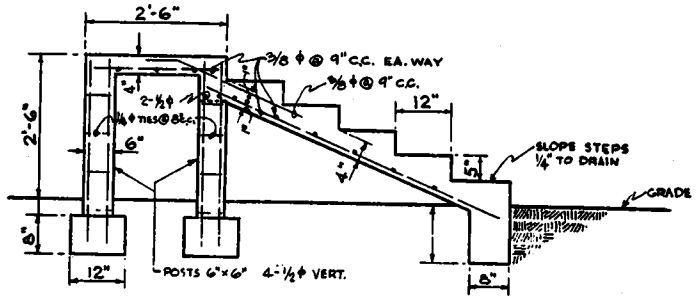
(5) HARDWARE. Hinges, handles and nails shall be galvanized. Bolts and nuts shall be cadmium plated or otherwise treated to resist rust. Provide 3 six inch strap or tee hinges as required for each door, a 5 inch door pull and a 3/8 x 4 inch U bolt for each pair of doors. Provide a chain of 3/16 inch wire links long enough to pass through all 4 U bolts and equip chain with end links for padlock. Furnish a 2 inch brass or bronze padlock for each chain; all padlocks to be keyed alike.

(6) PAINT. Prime wood and presdwood all over with 1 coat of exterior oil primer Federal Specifications TT-P-25 and finish exposed surfaces with exterior enamel Federal Specifications TT-P-489 color as selected.

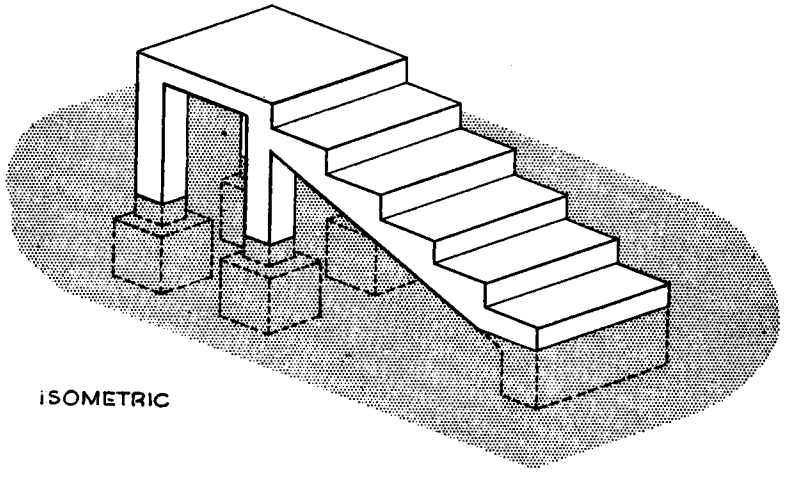
n. STEPS AND PLATFORM

(1) GENERAL. This specification and the accompanying drawing entitled "Figure 5, Steps and Platform" shall govern the construction of concrete steps and platform.

(2) MATERIALS. Cement shall be portland cement. Sand and coarse aggregate shall have hard, durable stone particles equal to the best locally available concrete aggregate. Steel shall be medium grade deformed reinforcing bars. Concrete shall be 1-2-4 concrete or 2,000 lb. ready-mix concrete.



SECTION



ISOMETRIC

FIGURE 5 STEPS & PLATFORM

(3) CONSTRUCTION. Construct to details indicated on the drawings.

(a) Forms shall be rigid, smooth and braced in place. Wet before placing concrete. Provide strips at corners for chamfer.

(b) Bend and place reinforcing steel as indicated and wire in place.

(c) Mix concrete thoroughly with a slump of 4 to 6 inches. Spade and work concrete in place around steel so as to fill all corners and provide smooth surfaces.

(d) Finish top by floating with a cork or carpet float. Finish sides by removing forms and rubbing surface with a carborundum stone and brushing with cement grout.

- -

SITE ENGINEERING

PART VII - WATER DISTRIBUTION

1. SCOPE

An ample supply of potable water is indispensable to "decent, safe and sanitary housing" built under the United States Housing Act. Water must be available at adequate pressure, as well as in sufficient quantity, for domestic consumption, fire fighting, lawn sprinkling, and incidental uses.

Urban low-rent projects are always supplied from operating water works systems and it is expected that nearly all rural nonfarm projects will be so served. Should a project be proposed in a place where there is no operating utility, decision as to source of water supply must obviously be made at the time of site selection. The responsibility of operating a water supply plant is one which the Local Authority should avoid, if possible.

Since water supply works, if any, in low-rent housing will be exceptional, these notes deal with water distribution only, and this generally is a simple engineering problem. Nevertheless, competence and attention to detail are essential in developing an efficient layout and specifying proper materials. The engineer's work often includes a check on the adequacy of the public water supply at the site.

2. EXISTING MAINS; WORKING PRESSURES

The site utility map furnishes certain information on existing water mains and working pressures needed for distribution system design. However, it ordinarily shows only the mains within or immediately adjacent to the site and, unless these lines are of ample size and are connected to nearby feeders, they may not provide an adequate supply for the project, particularly for fire protection.

In any event, the engineer must be accurately informed regarding working pressures and capacities of existing mains, and the most reliable information can be obtained by fire-flow tests made at hydrants near the site. Upon request by the Architect, the Local Authority may have such tests made by the local water works or fire department.

3. METHOD OF WATER SERVICE; METERING 1/

Local regulations, unusual rate structures, or other conditions sometimes necessitate installing a meter on the service to each dwelling unit, or to each building. Usually, however, water can be purchased at considerably less cost through a master meter by the Local Authority, than through individual meters by tenants; so the former is the method commonly employed and, for

1/ See Bulletin No. LR-11, "Selection of Utilities".

the most part, that referred to in this discussion. Generally speaking, check meters on tenants' services, when water is purchased wholesale, are not economical.

Water may be supplied (1) through a single master meter, (2) through two or more meters off different mains, with the lines interconnected for security against interruption of service, or (3) through "group meters" -- a separate meter for each group of buildings or dwellings. Under the last two methods arrangements should be made, if possible, to consolidate the meter readings and thus obtain a lower rate. In principle, the problem in each case is to determine the method of water service which, within the rate structure and any concessions negotiated, will result in minimum annual costs, water rentals, operating costs, and debt service considered. The distribution system design obviously cannot be undertaken until agreement is reached with the water department (company) as to the method of water service, and the point(s) of delivery and metering.

4. DOMESTIC WATER SUPPLY

a. Water Consumption. The average daily water consumption in public, low-rent projects varies widely with climatic conditions, type of dwelling, and habits of occupants, ranging from about 100 to 300 gallons per dwelling. For a specific project, the figure can best be based on records from existing projects (if any) in the locality, although 200 gallons is a fairly safe allowance except in more or less arid regions.

Water consumption, however, is usually not an important figure in project distribution system design. It is employed in studying the methods of water service described above, and in rare instances in considering special water storage facilities.

b. Peak Domestic Demand. Domestic water supply lines are sized to furnish the "maximum momentary demand" which may be expected to occur occasionally, due to the simultaneous opening of a number of faucets. The peak varies with local conditions such as climate, type of project, operating pressure in the mains, tenants' customs and occupations, etc., and cannot be estimated with any accuracy. Nevertheless, from data derived from various sources, Figure 1 has been prepared to show roughly, for design purposes, the maximum flows for varying numbers of dwelling units. The indicated flows are doubtless somewhat liberal for high-density projects and probably light for low-density projects in semi-arid regions, where the lawn-sprinkling demand is quite heavy. For cold-water distribution only (hot water distributed from central or group heating plants), about 25% may be deducted from the demands shown.

c. Residual Pressure.[1/] For sizing domestic water supply lines, the requisite minimum pressure at the building wall must be determined for each

1/ See Bulletin No. LR-7, Part XI, "Water Supply Systems in Buildings"

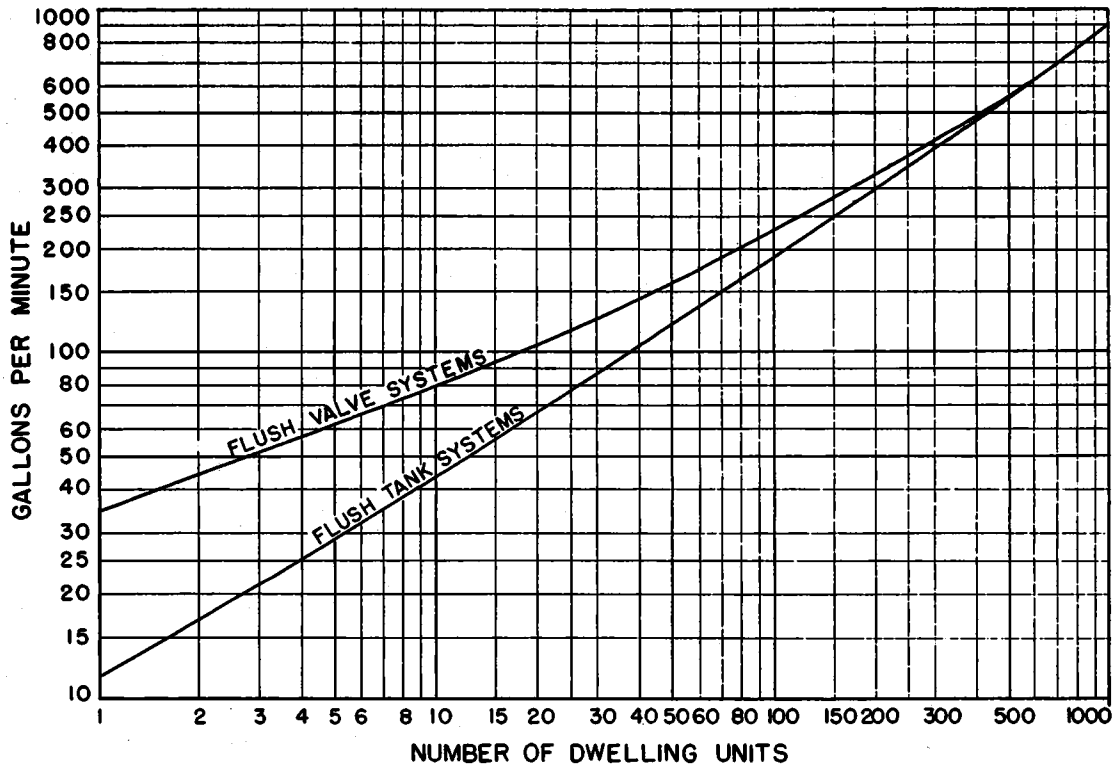


FIGURE 1 ESTIMATED PEAK DEMANDS FOR DOMESTIC WATER SUPPLY

type of building proposed. This involves decision (or agreement between the distribution system designer and the building piping designer) as to how the available pressure drop will be split up, that is, how much will be expended in the distribution system and how much within the building. It will generally be found desirable, when practicable, to supply the peak domestic demand at building walls, at not less than the following pressures:

Service to one or two dwelling units only: 25 p.s.i. for one-story buildings; 30 p.s.i. for 2-story; add 5 to 10 p.s.i. in each case for flush valves.

Single service to a 2- or 3-story building: 30 p.s.i. for 2-story; 35 p.s.i. for 3-story; add 5 to 10 p.s.i. in each case for flush valves.

Service to multi-story building: A pressure as high as feasible, that is, with negligible pressure drop in service line.

5. WATER SUPPLY FOR FIRE PROTECTION

a. Fire Flows. The flow of water required for fire protection depends on the characteristics of the project - its size, type and spacing of buildings, nature of construction, etc. - also on fire risks from adjoining properties and on the capacity of available pumpers. Subject to adjustment for these conditions, and to modification in the light of advice received from the local water department or from engineers of the fire insurance bureau in the state, the following flows may be regarded as average requirements:

Type of Project	Fire Flow (Single Fire)
Three-story apartments or combinations	750 GPM from any one hydrant 1500 GPM from any two adjacent hydrants
Two-story row houses or flats	(Same as preceding)
Single-story row houses or two-story closely spaced semi-detached houses	750 GPM from any one hydrant 1/ 1000 GPM from any two adjacent hydrants
Detached or semi-detached houses, generally	750 GPM from any one hydrant 1/

Multistory building projects are usually in metropolitan areas where requirements regarding fire flows are well established. Rural nonfarm projects may be in places having limited water supply and distribution facilities; in such cases the designer should (1) provide a degree of fire protection consistent with that generally available in the community, and (2) recognize the fire risk in spacing buildings and choosing building materials.

b. Total Fire Demand. The preceding discussion referred to the flow at any specific location. For a large project, especially one on an outlying site, the total demand for water for fire protection should be related to the size of the project. This demand can be approximated from the following table: 2/

1/ Adequate protection may be afforded by 500 GPM, especially if housing is of fire-resistant construction. However, most fire department pumpers are of 750 GPM capacity, and the supply at each hydrant should be such that a pumper cannot cause negative pressure in the mains.

2/ Based on "Table of Required Fire Flow," the National Board of Fire Underwriters' "Standard Schedule for Grading Cities and Towns."

Approximate Number of Dwelling Units	GPM Required
250	1,000
500	1,500
1,000	2,000
1,500	2,500
2,500	3,000

c. Residual Pressure. At fire hydrants, the residual pressure at times of maximum fire flow can hardly be figured safely at less than 15 p.s.i. for engine streams. It should not be so low as to cause negative pressure at any plumbing fixtures in the project. When hydrant streams are direct, the residual pressure at hydrants should, if possible, be not less than 50 p.s.i.

d. Fire Hydrants and Hydrant Spacing. Fire hydrants in housing projects are commonly spaced 300 to 400 feet apart and, when practicable, are so arranged that every building can be reached from two hydrants with a maximum hose length of 300 feet from each. A good check on hydrant spacing may be made by noting the area served by each hydrant: it should not exceed 120,000 sq.ft. for low-density and 100,000 sq.ft. for high-density projects. (The preceding statements apply to fire protection by engine streams. For direct hydrant streams, a special determination, based on the available residual pressure, is necessary.)

To permit pumper connection by a single length of suction hose, hydrants should be located not farther than 7 feet from a surfaced roadway. However, when the roadway does not have curbing, it will be to the interest of safety to set hydrants back about 6 feet from the edge of the surfacing. Hydrants should never be located within 25 feet of the building protected; fifty feet is the preferred distance.

It is important that the local fire department be consulted regarding the type of fire hydrant and the hose-coupling thread to be specified, also the proposed locations of hydrants. Hydrants installed in housing projects usually have a 5-inch valve opening, two hose nozzles, one pumper nozzle, and 6-inch connection to the main.

6. GENERAL LAYOUT OF WATER LINES

a. Fire mains, as a rule, can best be located along streets and main drives, since that is where the hydrants are set. To facilitate repairs, they should be in the grassed area at one side of the pavement and at a generally uniform distance from the curb. An irregular layout, with mains angling here and there across yard areas, should be avoided. Preferably fire mains should be looped, in order to eliminate dead ends. Consultation with the local fire or water department regarding water main location and sizes is generally advisable.

b. Domestic supply lines should, in general, be laid out in whatever way will minimize pipe quantities, but their location must be carefully coordinated with that of other utilities -- sanitary sewers, storm sewers, and gas. For row-house projects, comparative layouts and estimates are

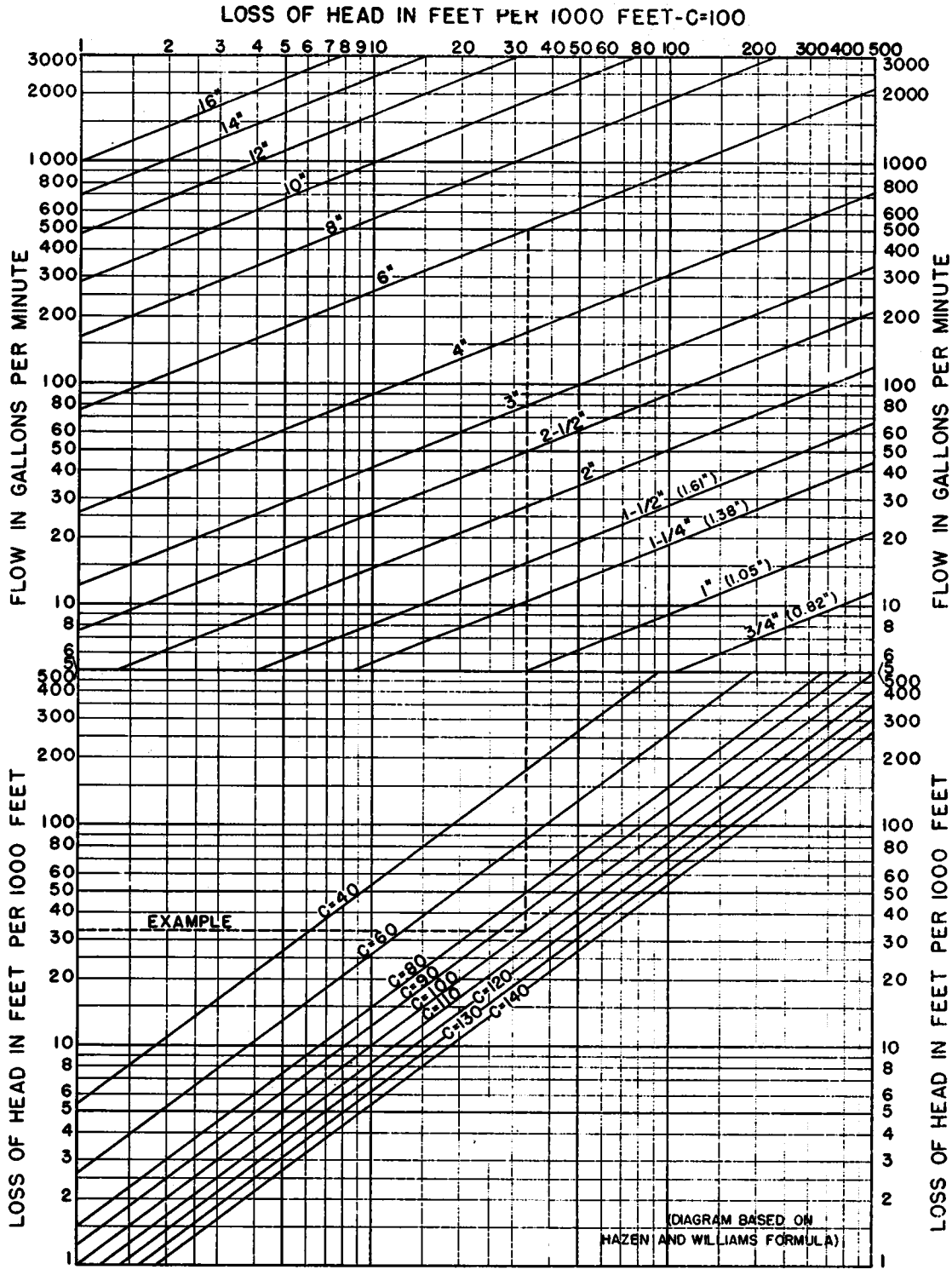


FIGURE 2. FLOW OF WATER IN PIPES

- -

needed to determine the arrangement of utilities that will be most economical, with building spacing and grade conditions taken into account. The various utilities should be spaced sufficiently to permit laying each in a separate trench.

7. HYDRAULIC CALCULATIONS

a. Flow Diagram. For convenient reference, a comprehensive flow diagram, Figure 2, "Flow of Water in Pipes," based on the Hazen and Williams formula, is included in these notes.

The value of the coefficient "c" to be assumed in using the diagram must take into account the probable reduction in carrying capacity of the pipe during a period of at least 40 years. While this is quite difficult to estimate, the determination must obviously be made jointly with the selection of pipe materials 1/ and it should be based on information as to how city distribution lines have sustained their carrying capacity over long periods. Such experience cannot supply conclusive evidence concerning pipe that has come into use during comparatively recent years. For the latter, the chemical analysis of the water, its aggressiveness as measured by its action on other kinds of piping, and any short-term experience will serve as guides. In any event, conservative assumptions are warranted, since water lines lose capacity from sedimentation, mineral deposits, and vegetable and animal growths, as well as from corrosion. Moreover, the coefficient must cover loss of head due to valves and fittings; and cement lining, when used, reduces appreciably the sectional area of flow. It is suggested that only where there is good evidence to the contrary, the coefficient assumed for tar-coated cast iron pipe be not higher than 80, and that for no other material be higher than 110.

b. Available Loss of Head. Pipe sizing is of course based on the available pipe-friction loss between the point of supply and that of delivery within the project. The loss is fixed by (1) the initial pressure, that is, the minimum pressure which ordinarily may be expected at the point of supply during hours of high water consumption, (2) the pressure loss through the master meter, (3) the requisite residual pressures at building walls and at fire hydrants, and (4) the pressure gain or loss due to difference in ground elevation.

c. Pressure Loss Through Meters. Figure 3, "Pressure Loss through Water Meters," shows approximate pressure losses through disc, compound and fire-service meters at different rates of flow. Compound meters are most often installed as master meters in housing projects. Meters may frequently be one size smaller than the line in which they are installed.

d. Line Sizing. It may be assumed safely that the domestic water supply demand will be comparatively light in case of a serious fire in the

---

1/ See paragraph 8, "Pipe Materials".

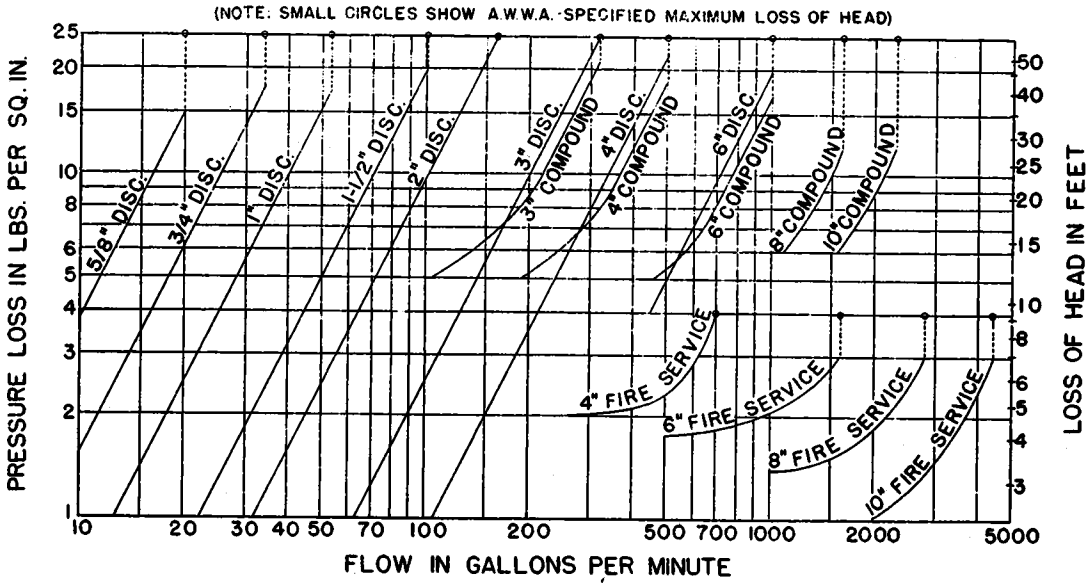


FIGURE 3. PRESSURE LOSS THROUGH WATER METERS

project; and that, for other than large projects, the average domestic demand is negligible in comparison with the maximum fire demand. Generally, therefore, mains on which fire hydrants are located may be sized for the peak fire demand; then, with the sizes of these mains known, the remaining lines may be sized for the maximum domestic demand, with no allowance for fire flow. The following is a suggested procedure for determining domestic supply pipe sizes:

(1) Select first the longest run of piping from the point of supply to a building or dwelling unit.

(2) Note the number of dwelling units served at critical points along this line and from Figure 1 find the maximum momentary demand at each such point, thus determining the maximum flows in various sections of the line.

(3) Assume pipe sizes and determine corresponding pressure drops, repeating the process until the total drop approximates the available pipe-friction loss in the line.

(4) Follow the same procedure for shorter runs in the system, but maintain reasonable uniformity in sizing.

8. PIPE MATERIALS

Obviously, underground water pipe should, if practicable, be of materials which will not require replacement for a period of at least 40 years. In

principle, the selection of materials should be based on comparative estimates of annual costs - interest, replacement and maintenance. Practically, the most economical pipe materials are generally those which quite certainly give the longest service. Trenching and pipe laying comprise a considerable part of the total cost of the pipe installed, and a definitely superior material may add but a small percentage to total cost. It is most important to avoid a perfunctory choice of pipe materials, without thorough consideration of all available information.

Any discussion of the theory of corrosion or the various conditions (of soil and water) influencing its rate, is beyond the scope of these notes, which are confined to a brief summary of special considerations and suggestions as to practice.

a. Internal Corrosion and Incrustation. Generally speaking, soft water (1 to 60 p.p.m. of hardness), such as found in New England and along the south Atlantic coast, are quite corrosive, while harder waters are less so, the alkaline salts being precipitated to form a protective coating on the pipe wall.

(1) For water mains, cast iron pipe has been used generally in projects. The pipe has been cement-lined in some cases, but more often has had coal tar pitch coating. Tar-coated pipe is known to tuberculate rapidly with very aggressive waters. Unless local experience indicates that with such pipe the coefficient "c" will not drop below about 80 during a 40-year period, cast iron pipe with cement (or enamel) lining, or cement-asbestos pipe, may best be used. It should be practicable, economically, to specify a material for mains that will render satisfactory service for the life of the project.

(2) For services and other small-sized lines (3/4-inch up to 2-1/2-inch), the problem may be more difficult, as to both perforation and chokage. Small piping used in existing projects has, in large part, been Type K copper tubing. However, lead, brass, galvanized wrought iron, and cast iron have been laid in many cases. (The use of galvanized steel pipe for underground lines was confined mainly to war housing.)

(3) The possible effect of pipe material on the quality of the water, due to the dissolving of minute amounts of the metal (iron, lead, or copper) requires consideration in some cases. Protection against iron discoloration ("red water"), where such protection is necessary, can be had by cement lining. Lead pipe should be specified only when local experience or experiment has proven that it can be used safely, since lead may be picked up by very soft waters high in carbon dioxide and its salts are very poisonous. (U.S. Public Health Service Drinking Water Standards state that lead present should not exceed 0.1 p.p.m.). Copper also may be attacked by soft, acid waters. The amount of metal dissolved is unlikely to approach the 3.0 p.p.m. permitted under U.S.P.H.S. standards, but a much smaller quantity may be objectionable in staining fixtures and laundry, also in causing perforation of the tubing.

b. External Corrosion. This topic refers mainly to soil or galvanic corrosion, as electrolysis is seldom a problem in piping laid within project sites.

(1) Resistance to Corrosion. Extensive tests have shown that: (1) the commonly used ferrous pipe materials do not differ greatly in their resistance to soil corrosion; (2) the rate of pitting, however, decreases with time -- hence additional thickness of metal adds, in greater than direct ratio, to the life of the pipe; (3) in most soils, copper and red brass (85% copper, 15% zinc) corrode much more slowly than do iron and steel, and the corrosion is more uniform; (4) wet, organic soil in which sulphites are present is especially corrosive to copper; and (5) lead generally corrodes more rapidly than copper but more slowly than ferrous metals.

Soil corrosion, like internal corrosion, should seldom be a serious problem with water mains, since the wall thickness of the pipe (if cast iron) is sufficient under ordinary conditions to withstand pitting for a long period. With services and other small domestic supply piping, wall thicknesses are less and the possibility of complete penetration is much greater.

(2) Conditions accelerating soil corrosion include variation in moisture content and in soil characteristics, and dissimilarity of materials (electrically connected). An example of the latter is copper tubing connected, without insulating coupling, to cast iron pipe. Corrosion of the iron will be accelerated. However, when the copper (cathodic) area is very small in comparison with the iron (anodic) area, e.g., a brass valve in a ferrous service line, the corrosive effect may be slight.

(3) Cathodic Protection. 1/ When the soil at the project site is known to be corrosive, the Local Authority may well retain a corrosion engineer to (1) advise regarding gas and water distribution system materials, (2) determine whether cathodic protection is necessary and, if so, (3) decide whether for the gas system only or for both gas and water, and (4) design and supervise the installation of the cathodic protective system.

Cathodic protection of water lines will become far more important, should emergency regulations prohibit the use of copper pipe. Although the cathodic protection may not be installed until some time after general construction is completed, the possible need for it must be foreseen when the distribution system is installed, so that jumper wires can be provided around cast iron pipe joints, and the project piping can be insulated from the public water works system.

c. Local Experience. The corrosion of underground water lines, internally and externally, is caused by numerous interrelated factors, and it is impossible to predict with accuracy the effect of a given water or soil on

1/ See Bulletin No. LR-7, Part V, "Safety Considerations in the Installation of Gas Piping."

different pipe materials. However, the city water works system is in effect a laboratory in which various kinds of piping have been tested, often over long periods, and the results of such tests should comprise the most reliable guide in the selection of pipe materials. This is not to imply that local practice should be followed perfunctorily, that all pipe materials will have been tried out adequately, or that recommendations received may not be influenced by personal preferences. Expert interpretation of results may be needed, with attention to special soil conditions at the site, and to possible future changes in local water purification methods.

A few Local Authorities have initiated corrosion detection and control programs and may have formed sound opinion as to the kinds of water piping that should be installed for additional projects.

9. DISTRIBUTION SYSTEM APPURTENANCES 1/

a. Meter Installation. Master meters are provided sometimes by the water department, sometimes by the Local Authority; in either case, the installations must meet water department requirements. Master meters should have by-passes and, if service is through two or more meters at different points in the project and with interconnecting lines, a check valve should be provided at each meter. Meters are occasionally located in building basements, but more often in concrete vaults. Vaults should be drained by a pipe leading to the ground surface nearby or to a storm sewer (if there is no possibility of backwater); or a dry well may be provided.

b. Valves. Valves (including stops) are recommended (1) at intervals of not more than 800 feet in all mains, (2) in branch lines near their points of take-off from larger lines, and (3) in all services. As a rule, valves in hydrant branches may be provided or omitted, according to local practice, but they should be installed wherever hydrants are connected to important feeders or are so located as to be particularly subject to accidental damage by traffic. A uniform position of valves throughout the project --for example, in line with curbs, street sidewalks, or buildings-- should be maintained.

10. PROTECTION OF WATER SUPPLY

Since water for low-rent housing projects is obtained almost always from public water works, it may be assumed to meet local health department standards and to be safe and potable. While the possibility of its becoming contaminated within the project distribution system may seem negligible, water mains are not necessarily always under pressure and they cannot be kept absolutely watertight, especially at joints. The following precautionary measures are, therefore, recommended:

1/ See "Fire Hydrants and Hydrant Spacing," paragraph 5d.

a. Design Measures. These consist of requirements to be incorporated in the drawings and specifications.

(1) Lay water lines and sewers generally in separate trenches and keep the trenches well separated.

(2) In the event sewer and water lines must be laid in the same trench, bench the water piping on undisturbed earth well above the sewer and make the sewer water-tight.

(3) Lay water lines, so far as practicable, at a higher elevation than sewers; provide adequate support where one line spans the trench of another.

(4) Avoid using stop-and-waste cocks; in any event, do not install them below ground water level or at less than adjudged safe distance, soil conditions considered, from a sanitary sewer.

(5) Avoid any direct connection between the water distribution system and the sanitary sewer system. (This refers to water connections to flush tanks, sewage pumps, etc., and sewer connections to meter vaults, fire hydrant drains, etc.)

(6) Size fire mains large enough to deliver, under positive pressure, the maximum draft that will be imposed on them by fire department pumpers -- this to obviate the possibility of polluted ground water being drawn into the mains through minute leaks.

(7) Use sterile yarning material; if braided hemp, sterilize it on the job. Do not use jute.

(8) Provide for thorough flushing and effective sterilization of the distribution system after completion.

b. Precautionary Measures in Distribution System Installation. These are covered in Division 24, "Utilities (Sewers, Water and Gas)", of the Guide Specifications, Bulletin No. LR-13. They include all customary precautions to keep pipe and appurtenances reasonably free from dirt and trench water while they are being installed.

c. Health Board Regulations. The drawings and specifications for the water distribution system should, of course, comply with state or other health board requirements and any requisite approval be obtained.

PUBLIC HOUSING ADMINISTRATION
HOUSING AND HOME FINANCE AGENCY WASHINGTON 25, D. C.

4-3-51 Low-Rent Housing Bulletin Transmittal No. 40

Insert in Low-Rent Housing Bulletin No. LR-4, SITE ENGINEERING:

1. Part VIII, Gas Distribution, dated 4-3-51.

SITE ENGINEERING

PART VIII - GAS DISTRIBUTION

1. APPROACH TO DESIGN

Gas main extensions in urban areas can seldom be sized with precision since population growth and future uses of gas are extremely difficult to foresee. It is considered better practice to install pipe a little larger than necessary than risk its proving too small. In public low-rent housing, however, the situation is somewhat different: the exact number of families to be housed is known and the uses of gas are predetermed. From this basic knowledge a reasonable approximation of the peak demand is possible and a closer determination of pipe size is warranted. Gas lines must be sized amply as a safeguard to life and property, but wasteful overdesign avoided.

The method herein recommended for sizing gas distribution system piping is described in some detail, since engineering reference books contain little directly usable material on the subject. The gas-flow diagrams supplied are like hydraulic tables and diagrams, in that they obviate the need for detailed computations.

The sizing of mains, however, is but one feature of the preparation of drawings and specifications for gas distribution systems. The task should not be performed perfunctorily, as careful study and investigation are required in many details. The principal points to be considered, together with recommended practice, are outlined in these notes which refer to piping for natural and manufactured gas distribution. (A forthcoming bulletin will dealwith Liquefied petroleum gas installations.)

2. EXPLANATION OF TERMS

a. Gas distribution pressures are classified as follows:

Low — up to about 15 inches of water colums, generally 3 to 9 inches (one inch of water column equals 0.578 oz.per sq. in.)

Intermediate — from 1 lb. to approximately 15 lbs. per sq. in.

(High pressure mains, which generally carry pressures of 50 lbs. per sq. in. or more, are not used in public housing projects.)

b. The specific gravity of gas is the ratio of its weight to that of air, with air at 1.00. Manufactured gas generally has a Sp. Gr. of from 0.40 to 0.70; natural gas from about 0.55 to 0.65 for "dry" gas, and 0.65 to 0.85 for "casinghead" gas. The capacities of meters and regulators, and the flow of gas through piping, vary inversely with the square root of the

Sp. Gr. of the gas. Thus, with equipment capacity ratings based on 0.60 Sp. Gr., factors such as follow should be applied to the ratings:

For Sp. Gr. of 0.45, a factor of 1.15
For Sp. Gr. of 0.85, a factor of 0.84

c. The heating value of gas is expressed in Btu per cubic foot at 60° F, and 30 inches of mercury. The heating value of manufactured gas in the United States ranges roughly from 400 to 600 Btu and that of natural gas from 900 to 1200 Btu per cubic foot.

d. One therm equals 100,000 Btu.

3. METHOD OF GAS SERVICE 1/

a. Wholesale Purchase. The gas supply for public housing projects is usually obtained by wholesale purchase, the utility company delivering the gas at a metering station or stations located near the border of the site. These notes apply mainly to that method of service.

b. Number of Connections. Gas may be supplied through a single connection, with its master meter or meters, or through several independent connections - one for each block or group of buildings. Where there are existing gas mains in various abutting streets, the "group-metering" method may result in considerable saving in initial cost. However, unless meter readings can be consolidated, the resultant higher gas cost may far outweigh the possible saving in first cost. A centrally located point of delivery will minimize project distribution system costs, but no one existing main may be of sufficient capacity to deliver the entire supply at a single point.

c. Service Contract. The service contract with the utility company will stipulate (1) the point or points at which gas will be delivered, (2) the maximum and minimum pressures that will be maintained on the project side of the meters at the delivery point, and (3) the minimum Btu content of the gas. This information is prerequisite to distribution system design.

4. LOW-PRESSURE vs. INTERMEDIATE-PRESSURE DISTRIBUTION

Intermediate-pressure distribution (Generally available with natural gas only) permits using much smaller piping than for low-pressure, whereas with the latter no pressure regulators are required and there is less possibility of gas leakage. In general, intermediate pressure (where it is available at the site) gives a much more economical installation in low-density projects, while low-pressure distribution may be preferable for high-density projects. Further, the smaller mains which can be used with intermediate pressure cost less to protect cathodically against corrosion.

1/ See also Bulletin No. LR-11, "Selection of Utilities"

5. LAYOUT OF MAINS AND SERVICES

a. The radial system of distribution provides for the flow of gas by one route only. It results in the most direct runs of piping from the point of supply to the buildings served and, therefore, in lowest costs.

b. The loop system permits gas flow by two or more routes. Secondary distributors are sometimes connected at each end to a main distributor. Looping tends to provide slightly greater security of service by absorbing high unbalanced demand and by maintaining a supply of gas by one route, should that from the other be cut off. However, a main distributor virtually encircling a project, and sized to supply practically the entire peak demand through either leg, is wasteful and unnecessary, especially in low-pressure distribution.

c. Coordination with Other Utilities. The location of gas lines must be coordinated carefully with that of other utilities — water, sanitary sewers and storm sewers. For row-house projects, comparative layouts and estimates are needed to determine the arrangement that will be most economical, building spacing and other conditions taken into account.

d. Separate Trenches for Gas Lines. Gas piping should not be laid in the same trench with any other utility. Leaking gas, if any, may enter sewers and sewer manholes, endangering the life of maintenance men and causing fire or explosions. Further, gas may seep through backfilled earth in trenches for considerable distances; when the gas lines are laid in separate trenches, adequate precautions can be taken to prevent such seepage from entering basements or crawl spaces. 1/

6. PEAK-HOUR GAS DEMAND FOR COOKING, WATER HEATING, AND REFRIGERATION

a. The peak demand for gas varies with climate, customs, occupations, etc., and is not susceptible of accurate estimate. Some gas companies have done considerable research on demand rates, and their practice should be a reliable guide in project design in their localities. For use elsewhere and for checking purposes in any case, Figure 1, based on information obtained from numerous sources, shows approximate peak loads for varying numbers of dwelling units and different uses of gas (except space heating). Although the loading is expressed in peak-hour rates, the maximum rate of demand may occur for only a few mintues.

b. Appliance ratings, on which the peak demands shown in Figure 1 are based, are noted on the diagram. They are approximate averages for appliances of different makes. Variations from them will ordinarily not affect pipe sizing.

1/ See Bulletin LR-7, Part V, "Safety Consideration in the Installation of Gas Piping."

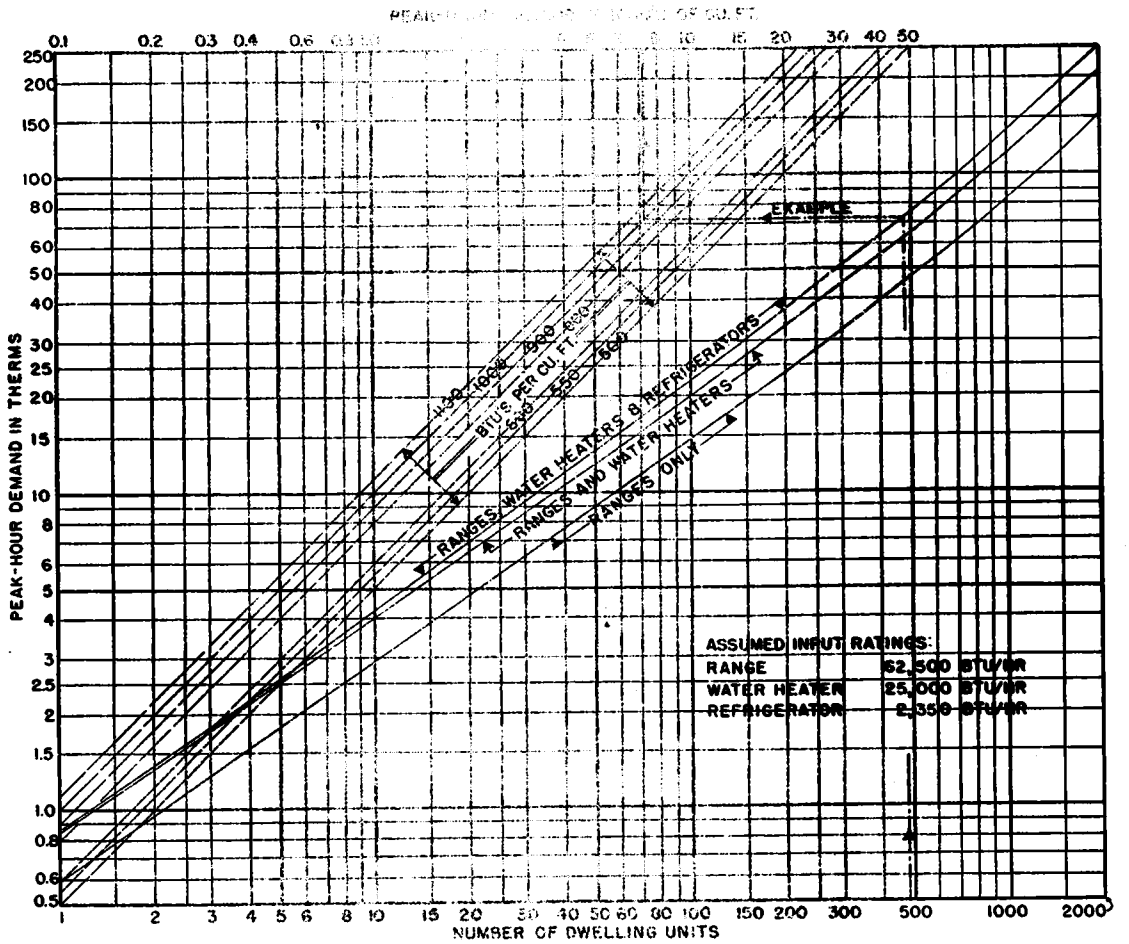


FIGURE 1 PEAK-HOUR GAS DEMAND FOR COOKING, WATER HEATING AND REFRIGERATION

c. Range Ovens for Space Heating. The demands derived from Figure 1 can be considered to include but little allowance for the incidental use of ovens for space heating. If dwellings will be "tenant-heated" and gas for cooking "management-supplied," some allowance should be made for this possible extra demand.

7. PEAK-HOUR DEMAND FOR SPACE HEATING

It must be assumed that in extremely cold weather practically all space heating appliances will be operated simultaneously during early morning hours. However, it is extremely improbable that the peak heating load will occur simultaneously with the peak cooking load, except possibly in very small groups of units. It is recommended, therefore, that the combined peak-hour demand be determined (1) by applying the percentages noted below to the

total of the input ratings of connected heating appliances, and (2) by adding to the peak-hour load for heating, so determined, that for other uses of gas as derived from Figure 1 (or as otherwise estimated):

Number of DU's	Percentage of Total Input Ratings of Heating Appliances
1	100%
10	90%
100	85%
1000	80%

Obviously the designer must be informed as to the input ratings of all space heating appliances to be installed, including those in community facility buildings. The input ratings of gas-fired space heaters in low-rent projects vary from about 30,000 to 45,000 Btu, those of gas-fired furnaces from 60,000 to 80,000 Btu, per dwelling unit.

8. AVAILABLE PRESSURE DROP

a. Residual Pressure. The available pressure drop to be used in pipe sizing is, of course, the guaranteed delivery pressure on the project side of the master meter less the requisite residual pressure at the building wall (or house regulator). For intermediate-pressure distribution, a minimum pressure of 2 lbs. per sq. in. at the house regulator is recommended. For low pressure distribution, the minimum desirable pressure at the building wall may be determined as follows:

	Inches of Water Column	
	Manufactured gas	Natural gas
Minimum pressure at appliances	2,3*	4.6*
Pressure drop in building piping	0.3	0.3
Pressure drop through check meter	0.5	0.5
	3.1	5.4
or approximately	3	5 1/2

* These figures should be checked against local practice in adjusting appliances.

b. Differences in Ground Elevation. Gas pressure increases roughly 0.1 inch of water column for each 15 foot rise in elevation. Obviously this has a measurable effect solely in low-pressure distribution; and only in multi-story buildings, or in the unusual case of buildings being materially lower than the point of gas supply, need the factor be taken into account.

9. GAS-FLOW FORMULAS

With the exceptions noted below, the gas-flow diagrams, Figures 2 and 3, are based on the Spitzglass formulas for "end-to-end" flow of gas in pipes:

(1) for low pressures (not exceeding 1 lb. gage):

$$Q = 3550\ K\ \left(\frac{h}{SL}\right)^{\frac{1}{2}}$$

(2) for intermediate and high pressures (exceeding 1 lb. gage):

$$Q = 4830\ K\ \left(\frac{Pa}{SL}\right)^{\frac{1}{2}}$$

in which:

Q is the quantity of gas in cu. ft. per hour, at 30 inches mercury and 60 degrees F.

K is a constant based on the pipe diameter (see below)

h is the pressure drop in inches of water column

P is the pressure drop in lbs. per sq. in.

a is the average pressure (absolute) in the pipe line, in lbs. per sq. in. (absolute pressure in gage plus atmospheric; latter is 14.7 p.s.i. at sea level

S is the specific gravity of the gas

L is the length of pipe in feet

K is equal to $\left(\frac{D^5}{1 + \frac{3.6}{D} + 0.03D}\right)^{\frac{1}{2}}$

D is the actual internal diameter of the pipe in inches.

For low pressures, however, the "Pole" formula was used for pipe sizes larger than 4-inch, since in those sizes it gives more conservative results than the Spitzglass formula. The Pole formula (symbols as above) is:

$$Q = 2338\ \left(\frac{D^5 h}{SL}\right)^{\frac{1}{2}}$$

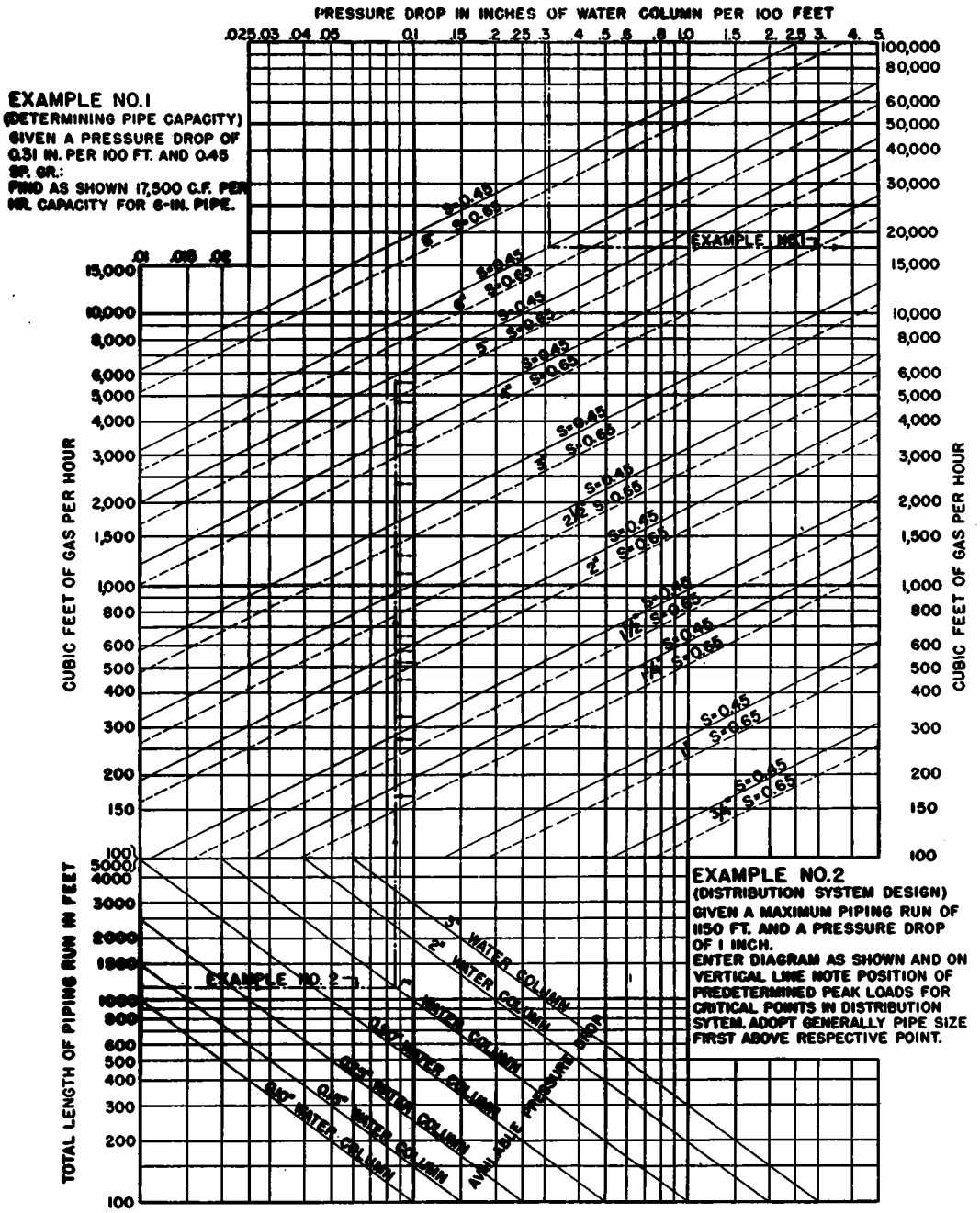


FIGURE 2 GAS LINE SIZING DIAGRAM-LOW PRESSURE

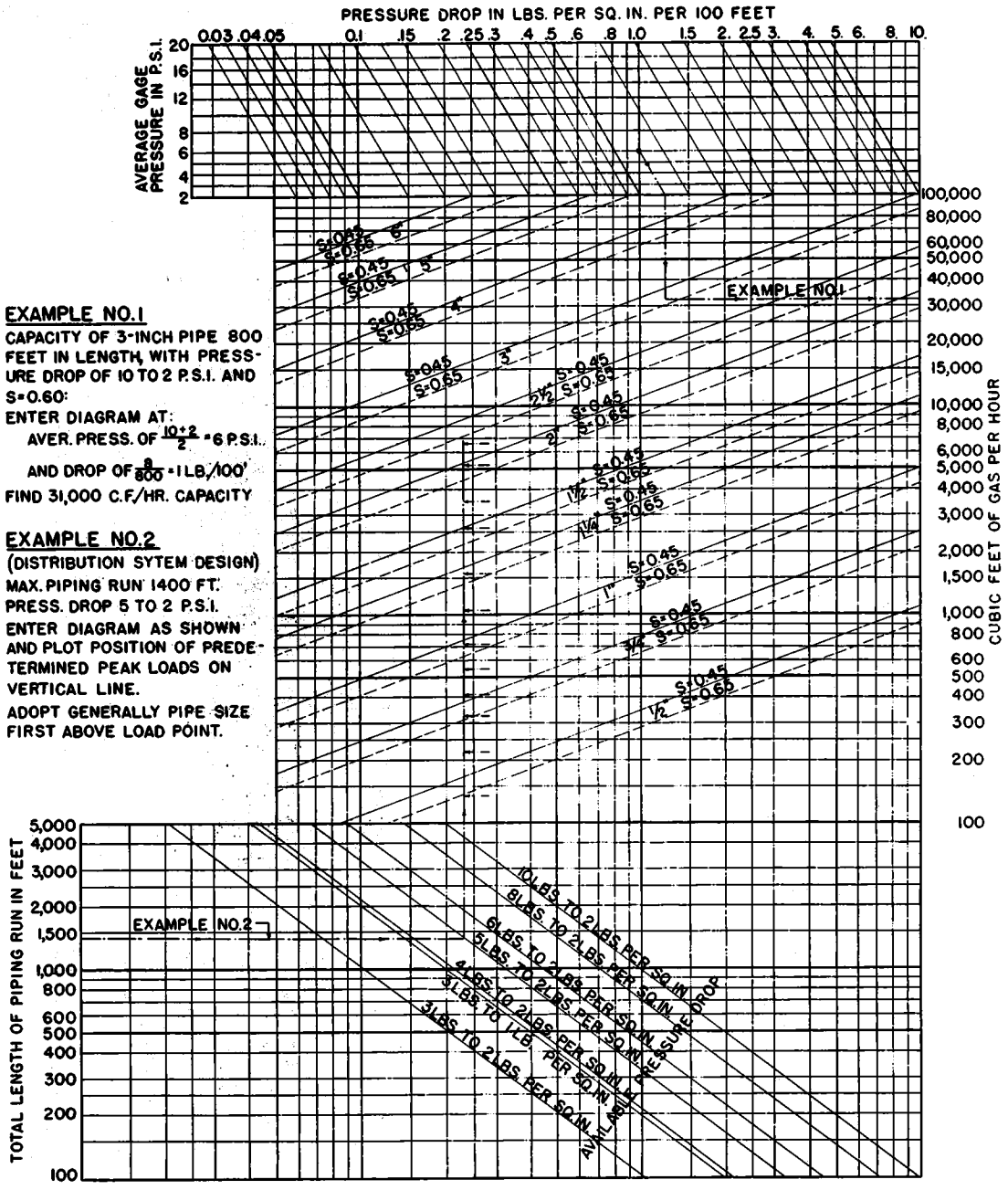


FIGURE 3 GAS LINE SIZING DIAGRAM - INTERMEDIATE PRESSURE

10. PIPE SIZING

a. Gas-Flow Diagrams. Figure 2 is for low-pressure distribution, Figure 3 for intermediate. Example No. 1 in each diagram shows the solution of a simple gas-flow problem, and Example No. 2 illustrates the practical use of the diagram in distribution system design.

b. Procedure. Following is a recommended rational procedure for distribution system pipe sizing:

(1) Determine as described above, the available pressure drop in the system.

(2) From Figure 1, and with adjustment for space-heating appliances if any, determine the peak gas demands above all "critical points" (principal junctions of lines, etc.) in the system, thus determining the flow for which each line should be sized.

(3) Select first the principal (and preferably the longest) run of piping in the system and, proceeding as illustrated in Example 2 in each diagram, read off pipe sizes for every section of the line.

(4) (Optional) Increase slightly the diameters thus determined for piping near the point of supply and decrease those toward the upper end of the line. Compute pressure drop section-by-section, readjust sizes if necessary, and recompute, until the total drop approximates that available. (This step tends to give more uniformity in the computed sizes of branch lines. The procedure corresponds to that usually employed in sizing water lines.)

(5) Note the "remaining pressure drop" at each of the above-mentioned "critical points," thus fixing the available pressure drop for each branch.

(6) Size the branch lines in the same general way as the principal line.

c. Sizing Looped Lines. It was previously noted that loops may serve to absorb unbalanced demand and maintain a supply of gas from one end of the loop, should that from the other be cut off. To insure fulfilment of the latter function, the following procedure in pipe sizing is suggested:

(1) Find by inspection the approximate location of the "point of no velocity" in the loop.

(2) Size each leg as though it were an independent line.

(3) Increase the size of the intermediate part of the loop so that, with a load approximating 50% of the peak, service can be maintained through either leg.

11. PIPE MATERIALS; CORROSION CONTROL

It is obviously desirable that the project distribution system be installed so as to serve without extensive replacements for a period of at least 40 years.

In most projects this can be accomplished, practicably and economically. Gas leakage with its attendant hazards can be minimized and general relaying of lines (with resultant damage to site improvements and inconvenience to tenants) can be avoided.

The principal problem is that of controlling soil corrosion, and the solution lies in proper pipe coating and, in many instances, in cathodic protection.

This bulletin contains no discussion of the theory of soil corrosion, the characteristics of corrosive and non-corrosive soils, or the design of cathodid protection systems. 1/ It outlines, rather, certain steps to be taken, in connection with gas distribution system design, to gain effective corrosion control.

a. Determination of Soil Corrosivity. It is essential, first, to ascertain the degree of corrosiveness of the soil at the project site. From the local gas company the engineer should be able to obtain valuable information concerning the lasting qualities of different pipe and coating materials in local soils, although the possibility of exceptional conditions at the site, particularly as regards the ground water level, old fills, etc., should be considered. Further, unless such investigation indicates strongly that soil at the project site is not corrosive (or only mildly so) electrical resistibility tests should, if practicable, be made at intervals over the area. Information so obtained serves the following purposes.

(1) Aids in determining the kind of pipe coating to be applied.

(2) Indicates whether cathodic protection is necessary. (Generally needed if electrical resistivity is less than 3000 ohm-cms.; may be needed for higher values.)

(3) Indicates, in case cathodic protection is necessary, whether a sacrificial anode system will be satisfactory or a rectifier system should be installed. (Latter advisable for electrical resistivity of more than 4000 ohm-cms.)

(4) Shows, if a rectifier system is needed, the area or areas of lowest resistivity, where the ground beds can best be installed. (It is desirable that these be at least 150 feet from the piping to be protected.)

(b) Corrosion Engineering Services. When the distribution system will be laid in corrosive soil, the Local Authority should, as a general rule, obtain competent corrosion engineering advice at an early stage of the project planning. The services (not a part of those rendered under the Architect's Contract), which a corrosion engineer can perform, include (1) making the above-mentioned resistivity tests, (2) supplying expert advice on the need

1/ See Bulletin No. LR-16, "Corrosion of Underground Piping (General Treatise)."

for cathodic protection, (3) determining the type of protective system (galvanic anodes or rectifier), if any, to be provided, (4) checking on available and suitable locations for anodes, and (5) advising regarding pipe materials and coatings. (These services may cover both the gas and water systems.) Further, if a cathodic protection system is found advisable, the corrosion engineer can design it (after project construction) and supervise its installation. Moreover, he can train management personnel in its inspection, testing and maintenance.

In the case of very small projects, the employment of a corrosion engineer during the project-design stage may not be considered entirely necessary, even though the soil on the site is known to be corrosive. In such instances, the utility company may be able to make preliminary soil tests and furnish a report; otherwise, the tests can be deferred until the completion of project construction. In the latter event, specifications for the underground piping and coating will necessarily be based on general local experience, and the piping installation should be adapted to cathodic protection. The protective system, if and when later determined necessary, can be designed and installed at such time.

c. Pipe Material. This discussion is predicated on the use of steel pipe, since that is the material generally specified for underground gas lines in public housing projects. Steel costs less than cast iron and copper, and is safer against fracture than cast iron. Moreover, in most projects, the major part of the piping is small-size, not obtainable in cast iron; further, the development of cathodic protection has worked to the advantage of steel pipe. Nevertheless, the fact that the Guide Specifications 1/ cover steel only is not to be construed as a recommendation against the other materials, which generally have a longer life than steel without cathodic protection. Cast iron pipe, however, should not be laid in unstable ground, nor copper in cinders or wet organic soil.

d. Pipe Coating. The amount and kind of pipe coating required on steel pipe depend on soil corrosivity and mechanical soil action (soil stresses). For extraordinarily severe conditions the covering may be such as follows: 1/16" enamel, glass wrap, 1/32" enamel, tar-impregnated felt, 1/32" enamel, and kraft paper, respectively. On the other hand, in alkaline soils of very high electrical resistivity, bare steel pipe may last indefinitely. Most engineers, however, prefer some sort of coating under practically all circumstances. Ample protective covering is particularly desirable for service lines, since these have less wall thickness than mains and they are generally laid close to the surface, where they are more liable to attack due to surface water (from lawns and roofs) percolating through the soil.

The Guide Specifications cover but two types of coatings: (1) factory-applied bituminous enamel with tar-impreganted felt and kraft paper (the latter to protect the coating and to show up damage in handling), and

1/ Bulletin No. LR-13.

(2) a field-applied, coal-tar-base coating. However, there are various other more or less widely used protective coverings on the market, and specifications may be drawn in the light of local experience, with special regard to possible coating damage from soil movement. It is preferable to avoid reference to proprietary products. Field-applied coating is likely to be more practical than factory wrapping for very small projects, requiring limited quantities of pipe.

There is no unanimity of opinion as to the coating that should be used in connection with cathodic protection. Some engineers consider bituminous enamel with one layer of asbestos felt, or glass wrap, sufficient. A good degree of insulation is desirable to minimize the electrical energy required for the protection and increase the life of sacrificial anodes.

e. Protection of Pipe Coating. The Guide Specifications include the customary requirements for uniform bearing for pipe, refilling with sand the trench bottoms cut in rock, care in pipe handling, careful backfilling around pipe, etc., all directed toward preventing damage to the pipe coating and obtaining an even distribution of earth pressure against the coated surface. The enforcement of all such requirements is most important.

f. Adapting the System to Cathodic Protection. Unless local experience or resistivity tests prove, beyond doubt, that the gas distribution system will be laid in non-corrosive soil, the system should be installed to facilitate cathodic protection. The requisite measures (covered in the Guide Specifications) include: (1) insulation of the system from the gas company supply main, (2) provision of jumper wires around mechanical couplings or other joints that do not provide electrical contact, and (3) installing insulating couplings in service lines at buildings (unless both gas and water systems will be cathodically protected). The cost of this work is negligible in comparison with the expense of doing it at a later time.

12. DISTRIBUTION SYSTEM APPURTENANCES

a. Master Meter and Regulator Station. The master gas meters and the pressure regulators (if any) on the main supply are usually provided by the gas company. Housing for the equipment is sometimes provided by the company, sometimes by the Local Authority. The housing, whether it consists of a separate building or of a utility room or rooms in the project, should be of fire-resistant construction with special provision for ventilation. Meters and regulators should be of ample capacity.

b. Valves and Cut-Offs. Valves are little used in low-pressure mains because the flow of gas can be stopped effectively and easily by means of bags or stoppers. They may be provided, however, in small secondary distributors near their point of connection to mains. In intermediate-pressure lines, valves are recommended (1) at convenient intervals in loops, and (2) in secondary distributors at their points of connection to the mains. A stop should be provided in each service, whether low-pressure or intermediate pressure, at a point where it will be accessible in case of fire.

c. Service Regulators. Service (or house) regulators, as needed in intermediate-pressure systems, may generally be placed to serve two, four or more dwelling units. However, careful check should be made of the manufacturers' recommended working capacities of the regulators against the maximum rate or gas demand. It is important that the specifications state accurately the requisite capacities and pressure reduction for the regulators required.

d. Drip Pots. To prevent accumulation of condensate which will obstruct the flow of gas, distribution lines for manufactured or mixed gas should be sloped to drip pots at low points. Gas services also should be sloped, if possible, so that condensate will flow back to the mains. Otherwise, a drip pipe, outside the building or in the basement (if any), should be provided.1/ In natural gas systems, drips should be provided at a sufficient number of low points to permit blowing out all lines.

13. LOCAL PRACTICE

While the responsibility for the efficient planning of the gas distribution system lies with the engineer, the advice of local gas company officials on various matters should be obtained. The company's experience under actual conditions of soil, climate and gas characteristics will be most valuable, and its practice concerning various details can often be followed to advantage. Following is a summary, in part covering points mentioned in the preceding pages, of the information which it is generally desirable to obtain from the local company.

(1) Description, including rated working capacities, of the master meters and regulators which the company proposes to install for serving the project.

(2) Specific gravity of the gas.

(3) Peak-hour gas demand data, if any available; extent to which range ovens are commonly used in the locality for incidental space heating.

(4) Corrosivity of local soils; experience with different pipe coverings.

(5) Type of joints currently used in steel pipe of different sizes.

(6) Minimum pipe size used for house services.

(7) Depth to which mains and services are laid.

1/ Failure to observe this design precaution was a contributory cause of an explosion wrecking a multi-family building in a low-rent project.

(8) Pressure for which appliances are customarily adjusted.

(9) Practice as to provision of drip pots in intermediate-pressure mains; design of drip pots.

(10) Makes of service regulators employed (if any are to be used in the project); minimum pressure maintained at service regulators.

The preceding is in addition to the information to be set forth in the contract for gas service, namely, (1) the point or points at which gas will be delivered, (2) the maximum and minimum pressure of supply to the project, and (3) the minimum Btu content of the gas.

PUBLIC HOUSING ADMINISTRATION
HOUSING AND HOME FINANCE AGENCY WASHINGTON 25, D. C.

4-11-51 Low-Rent Housing Bulletin Transmittal No. 42

Insert in Low-Rent Housing Bulletin No. LR-4, SITE ENGINEERING:

1. Part IX, Sanitary Sewer Design, dated 4-11-51.

SITE ENGINEERING

PART IX - SANITARY SEWER DESIGN

1. GENERAL

A water-carriage system of sewerage is recognized as necessary for "decent, safe and sanitary dwellings" constructed under the United States Housing Act. The need has been met generally, in completed projects, through connection to public sewerage systems, although in occasional instances other means of sewage disposal have been employed. Experience has shown that if public sewers are not available, the sewage disposal problem should be solved at the time of site selection: a feasible method of disposal, acceptable to local health authorities, must be found and adopted if the site is to be utilized.

This discussion comprises, first, some observations regarding alternative methods of project sewage disposal, noting points to be investigated during site selection and project planning; and, second, an outline of recommended bases of sanitary sewer design, together with suggestions derived from project maintenance experience.

2. PROJECT SEWAGE TREATMENT PLANT

Rarely have permanent public housing projects been built on sites where "project" sewage treatment plants were required, although this method of sewage disposal was of necessity widely used in the war housing program. It may be necessary to employ it for some rural nonfarm, if not urban, projects under the current program. However, the method involves relatively high initial cost and operating expense and, generally speaking, can be justified only for a site which, lacking public sewerage facilities, otherwise possesses remarkable advantages. If and when such a site is considered for acquisition, an experienced sanitary engineer should be retained and information obtained as to the type and cost of a sewage treatment plant which will meet the approval of local health authorities. Design of the plant should also, if the site is selected, be entrusted to a competent sanitary engineer.

3. SUBSURFACE SEWAGE DISPOSAL

Sewage from a few projects has been disposed of by means of small septic tanks and tile beds, each installation serving a single dwelling or, more often, a group of three or four units. The results have been generally unsatisfactory, notwithstanding successful use of the method for private houses in the same localities. In varying degrees, the fault apparently has lain in inadequate soil investigation, inadequate space for tile beds, and tenants' carelessness.

Nevertheless, consideration may occasionally be given to sites, especially for rural nonfarm projects, that have outstanding merit, but no public sewerage

facilities. In any such instance, it is strongly recommended that: (1) subsurface sewage disposal be considered only for a very small project - so small that a project treatment plant would be too costly to build and operate; and (2) the method be adopted only after competent engineering investigation, and when soil percolation tests, topographic conditions, and ground water levels, indicate strongly that the method will prove satisfactory and there will be no possibility of contaminating any water supply, public or private. Prior approval of the method should be obtained from local health authorities.

4. CONNECTION TO PUBLIC SEWERAGE SYSTEM

Sanitary sewers available at public housing sites are usually adequate to serve the projects. (A few exceptions, not discovered or fully recognized before project completion, have caused serious difficulty in the past.) Reliable answers to the following questions should be obtained at the time of site selection and verified during project design:

a. Are existing sanitary (or combined) sewers of sufficient capacity and in satisfactory condition to receive project sewage?

b. Are existing sewers deep enough to serve the entire site by gravity flow? If not, from what portion of the site must sewage be pumped or buildings excluded?

c. If existing sewers require extensions or other improvements in public streets, what part (if any) of the cost must be borne by the project?

d. If public sewers are available only at some distance from the site, will it be economically feasible to provide the necessary connections to them?

Project sewage should be discharged into a public sewerage system unless the cost is prohibitive. Only under extraordinary circumstances should the local authority assume the responsibility and expense of sewage disposal by any other means.

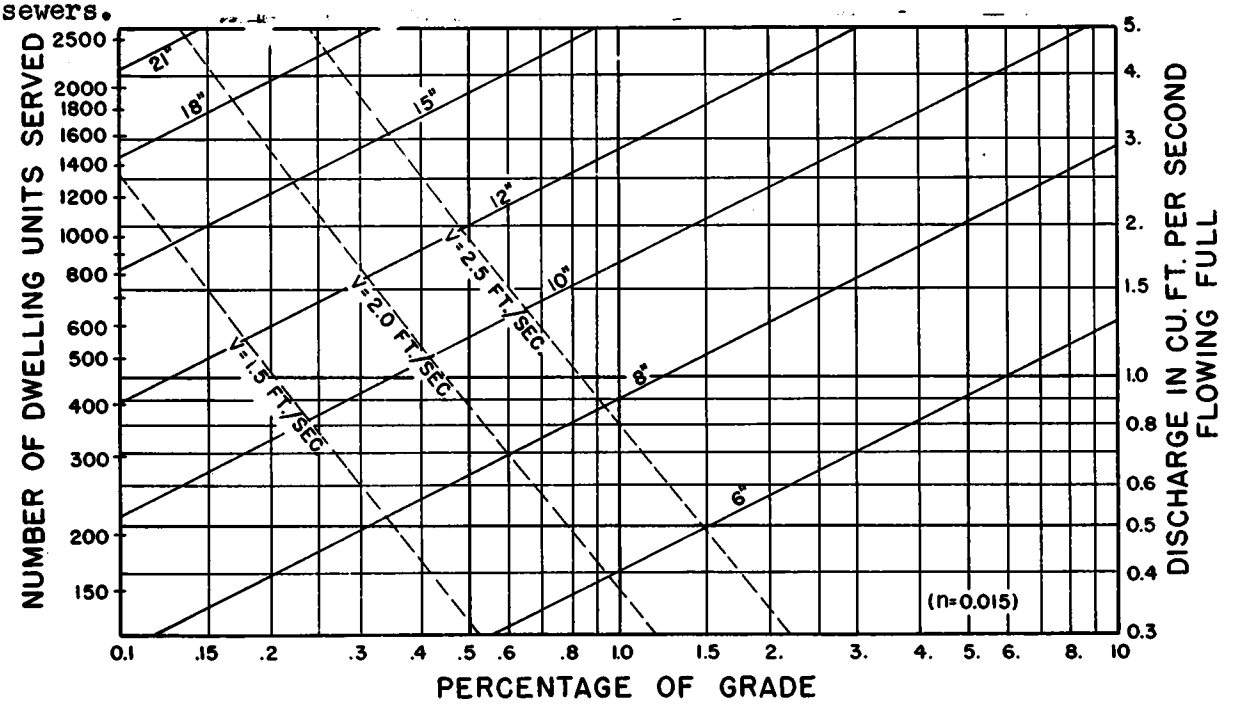
5. TYPE OF SEWERAGE SYSTEM

When storm water drains are required, the type of system, "separate" or "combined", to be constructed in the project will generally be that in use locally. However, if the municipality is working toward separation of sewage from storm water, public interest may be better served by paying the necessarily higher cost of separate sewers, even though public sewers at the site are of the combined type. This is a matter for special determination. A separate system of sewers within a project may afford better protection against sewage backing up into basements.

6. MAXIMUM RATE OF SEWAGE FLOW

While water supply systems must be capable of meeting the maximum momentary demand, sanitary sewerage systems have an impounding capacity which levels off all minor peaks. (The cubic contents of the sanitary sewers in a project may equal the average sewage flow for a period of 3 hours or more.) Thus, the maximum rate of sewage flow is much less than the maximum momentary demand for water, except in the case of very large groups of dwellings.

The sewage flow consists not only of domestic sewage, but of infiltration and surface water entering the sewers around manhole lids or elsewhere. While, in general, there should be no storm water connection to sanitary sewers, it is preferable, if municipal regulations permit, that garbage collection platform drains connect to sanitary sewers rather than to storm sewers.



SANITARY SEWER CAPACITIES

Recommended design rates of flow in sanitary sewers serving public low-rent housing projects are as follows:

from 400 gallons per capita per day, or approximately 0.25 cu.ft. per second per 100 DU's, for 100 DU's or less.

to 300 gallons per capita per day, or approximately 0.19 cu.ft. per second per 100 DU's, for 1000 DU's or more.

The above flows are for sewers flowing full and should be sufficient to cover a moderate amount of infiltration. When sewers are to be laid below the ground water level or in areas subject to flooding, the maximum allowable leakage should be stipulated in the specifications. A maximum infiltration of 8,000 to 12,000 gallons per day per mile of sewer, depending on soil conditions, is suggested. (The figure may be fixed by local regulation.)

The diagram on page 3 shows sanitary sewer sizes for varying numbers of dwelling units and different pipe slopes. It is based on the above-recommended design rates of flow and on n = 0.015 in the Kutter formula.

7. MINIMUM GRADES FOR SANITARY SEWERS

Standard practice calls for slopes which will produce a velocity of at least 2 feet per second in sanitary sewers flowing full or half full. For n = 0.013, following are the corresponding rates of grade:

Pipe Size	Minimum Grade
4"	1.10%
6"	0.60%
8"	0.40%
10"	0.28%
12"	0.22%
15"	0.16%
18"	0.12%

However, when little additional trenching cost will result, it is desirable to base minimum grades on n = 0.015. Such grades are approximately 50% higher than the preceding, and may be taken from the diagram.

On the other hand, grades lighter than tabulated above must be used frequently to avoid sewage pumping, since periodic sewer flushing is likely to cost much less than the maintenance and operation of a pumping station. In such cases, it is important to work out the grades consistently to use to best advantage all of the fall that is available. The velocity of flow should not be less than 1-1/2 feet per second with sewers flowing full.

8. MINIMUM DIAMETERS FOR SANITARY SEWERS

Four inches is the recommended minimum diameter for house connections, 6 inches for short laterals not located in streets, and 8 inches for other lines. Under standard practice in many cities, 6-inch pipe is used in house connections and 8-inch or larger in all laterals.

9. SANITARY SEWER LAYOUT

Design objectives which are in part peculiar to public, low-rent housing projects, include the following:

a. Locating sewer mains and laterals in street areas, preferably not under pavements, where practicable, so that the project will be relieved of the maintenance of the lines if the streets are dedicated.

b. Locating the sewers to avoid existing trees 1/, and coordinating the sewer layout and the planting design so that new trees will not be planted over or near sewer ditches.

c. Coordinating the sanitary sewer lines with the locations and grade elevations of other utilities: storm sewers, steam and hot water conduits, and gas and water lines. The various utilities should be spaced sufficiently to permit laying each in a separate trench and, where possible, sewers should be laid below water lines.

10. MANHOLES AND CLEAN-OUTS

The usual practice of providing manholes at all breaks in line or grade, and at all junctions in lateral sewers, is not followed rigidly in public housing projects. The reason is that irregularity in the arrangement of buildings, also rugged topography, would often necessitate an excessive number of manholes; moreover, manhole castings in lawn areas create some difficulty in maintenance operations. The maximum recommended manhole spacing is 300 to 400 feet, depending on the grades at which connecting sewers are laid, and the diameter of the sewer.

Cleanouts can generally be substituted for manholes at the upper end of sanitary sewers and at changes in the alignment of short laterals. They are sometimes terminated about one foot below finished grade, to save cost and avoid metal frames and covers in lawn areas. However, this practice has met some objection, and should be followed only where the ground never freezes to an appreciable depth.

11. SEWER PIPE AND PIPE LAYING

Engineers for public housing have usually specified only pipe and bituminous joint material for sanitary sewers. Detailed recommended requirements for materials and workmanship are contained in Division 24 of the Guide Specifications, Bulletin No.LR-13, for Urban Housing, and in Division 16a of the Basic Specifications, Bulletin No.LR-22 for Rural Nonfarm Housing.

Pipe in deep trenches requires special attention in both design and construction supervision. The trench load varies with the square of the trench width at the top of the pipe; hence, the trench should be as narrow as practicable at that level. Generally speaking, if the trench load will exceed about 3/4 of the "sand-bearing" crushing strength of standard-strength clay sewer pipe, extra-strength pipe should be employed or concrete cradles provided. 2/

1/ See Bulletin No. LR-9, Part II, "Preservation of Existing Trees."

2/ See "Trench Loading Tables", published by the Clay Sewer Pipe Association, Inc., Columbus, Ohio

Pipe in shallow trenches may require protection against damage by construction operations (grading and trucking), if not afterward. On flat sites, sewer house connections and the upper ends of laterals must often be laid quite close to grade. When existing ground levels or finished grades are such that sewers will have less than about 2-1/2 feet of cover at all time during construction, it is recommended that the pipe be encased in concrete or cast iron pipe substituted. (Breaks in pipes have remained undiscovered in some cases until long after project occupancy.)

Adverse soil conditions have been a source of difficulty in a number of projects. It is the engineer's responsibility to inform himself fully on site soil conditions and to design accordingly. Sewers in very unstable soil may consist of cast iron pipe supported on two-pile bents or hung from building walls, or of tile pipe with continuous concrete beam supports. When conditions are less severe (for example, when trenches are in saturated sand) a base of gravel or crushed rock on a floor of 2-inch plank may afford a satisfactory bearing.

12. SEWAGE PUMPING STATIONS

Project maintenance experience has shown that the following points merit special attention in the design of sewage pumping stations, when such are required:

a. Investigating the possibility, where the sewage lift is slight, of avoiding pumping entirely. This may sometimes be accomplished by deep trenching, additional length of sewer line, or omitting buildings from the lowest part of the site. Obviously, the point should be investigated at the time of site selection.

b. Selecting a pumping station location as far from dwelling buildings as practicable, especially if the station will have screens which require cleaning, and locating the station where it will be accessible from a surfaced roadway.

c. Preparing a complete and accurate statement of operating conditions in order to obtain equipment which will operate most efficiently.

d. Using the dry-well, rather than wet-well, type of centrifugal pumps.

e. Providing, where feasible, an overflow from the wet well, for use in emergencies.

f. Providing stand-by power, where an overflow is not feasible. (This may not be essential in all cases, but the possible need for it should be considered.)

g. Keeping the motor room floor well above possible flood level of sewage, should the pumps fail.

h. Constructing a superstructure over the station to facilitate proper care of the equipment.

i. Providing a positive system of ventilation of the pump room, also the motor room unless it is within the superstructure enclosure.

j. Providing a bar or basket screen in the wet well, unless pumps or ejectors are of a type not requiring screens; providing a manhole in the wet-well roof directly above the screen.

k. Extending valve stems, including those on the drainage sump valves in the pump pit, to the motor room floor or to a platform located above the highest possible sewage level.

l. Using guides, in lieu of tubes, for the floats.

m. Providing flexible pipe connections on the suction and discharge sides of the pumps; using no sewage piping smaller than 4-inch.

n. Avoiding connection of any kind between potable water lines and the pump or sewage piping.

The preceding points apply principally to centrifugal-pump installations. When only a small amount of sewage will be handled, pneumatic ejectors may be preferable.

For the usual duplicate-pump installation, it is recommended that the capacity of each pump be 25% to 50% greater than the maximum estimated sewage flow. However, when sewers will be laid generally above ground water level, it should be safe to base pump capacity on a rate of flow about 20% lower than that recommended for pipe sizing. Between high and low sewage levels, the wet well should provide at least 10 minutes' storage at the average rate of flow, but the width of the wet well should be not less than 5 feet. Dimensions of the dry well should provide adequate working space around the pumps.

PUBLIC HOUSING ADMINISTRATION
HOUSING AND HOME FINANCE AGENCY WASHINGTON 25, D. C.

4-16-51 Low-Rent Housing Bulletin Transmittal No. 44

Insert in Low-Rent Housing Bulletin No. LR-4, SITE ENGINEERING:

1. Part X, Storm Sewer Design, dated 4-16-51.

SITE ENGINEERING

PART X - STORM SEWER DESIGN

1. GENERAL

Drainage conditions have frequently received too little attention in site selection, and have occasionally not been understood fully during project design. Moreover, although storm sewers are not essential on all projects, efforts to economize by their omission have sometimes been ill-advised.

For these reasons, in part, numerous projects have been damaged by flooding or erosion, and costly corrective work has been necessary; tenants have been inconvenienced; and, in a few instances, sewage from combined sewers has backed up into basements or flooded yard areas, creating insanitary conditions.

This bulletin consists mainly of: (a) a brief discussion of basic information on drainage conditions, needed in site selection and project design, (b) an outline of the "rational method" of calculating storm water runoff, in its application to housing projects, and (c) recommendations on other features of storm sewer design, all based largely on project maintenance experience.

2. DISPOSAL OF STORM WATER

Storm water from projects is disposed of by one, or a combination, of the following means:

a. By discharging it through project storm sewers into existing storm or combined sewers. This method is almost always employed to some extent where existing sewers are available. It is essential for large, high-density projects.

b. By discharging it through project storm sewers into a nearby open water course. This method is employed occasionally, when a well defined water course is available. The observation, often made, that a site has "good natural drainage" is no indication that there is a water course into which project storm sewers can be discharged.

c. By merely grading the site to permit surface drainage into abutting public streets. This method is employed to a greater or less extent on all sites. It can be used as the sole method of disposal only for comparatively small sites where topographic conditions are entirely favorable.

d. By drainage wells. Deep drainage wells have been used in only one locality, where certain rarely found conditions exist. Generally speaking, shallow "dry wells" are altogether ineffective for surface drainage, including that from roofs.

- -

3. EXISTING DRAINAGE FACILITIES

The following is a brief check list covering points on which general but reliable information is required in site selection, and detailed accurate information is indispensable for project design:

a. If existing storm or combined sewers are to be utilized for project drainage, are they structurally and otherwise in good operating condition?

b. About how often and to what extent are such sewers surcharged? (Neighborhood inquiry may be necessary to obtain a reliable answer to this question, particularly as to whether back-flow into basements ever occurs during heavy rains.)

c. Just how will the surcharge of existing sewers affect the planning and operation of the project? More specifically, will any part of the site be subject to flooding and, if so, can the project be so planned that the storm water will cause no appreciable property damage or serious inconvenience to tenants?

d. If existing sewers are of the combined type, would their overloading cause insanitary conditions in the project?

e. If existing sewers are inadequate to serve the project, to what extent, if any, will their enlargement be provided without cost to the project?

f. If a natural water course or open ditch is the obvious and only outlet for project storm sewers, is it at a low enough elevation to serve that purpose? Can project drainage, if and as increased by the site development, be discharged into such water course or ditch without causing damage to the site or adjoining property?

4. EXTENT OF PROJECT STORM SEWERS

The need for storm sewers is, of course, related to physiographic conditions - soil, topography and rainfall. However, the extent of the storm sewer system in a specific project is governed more directly by: (a) the grade design, which establishes automatically the locations of most sewer inlets, and (b) the decision as to whether sewer connections are to be extended to downspouts, and to crawl spaces, if any. The storm sewers must be laid out in the most economical way to reach the predetermined points of storm water collection.

The sewer designer should be alert to the possibility of grade changes that would simplify the storm sewer installation. (The grade study and the storm sewer design, both basically concerned with site drainage, may be regarded as largely a single design operation.) Further, some adjustment in the site plan may be found advisable to accommodate storm sewers and other utilities in the most efficient manner.

5. RATIONAL METHOD OF DESIGN

As in the case of other utility systems, storm sewers can be designed with greater accuracy for housing projects than for urban areas generally, since the physical characteristics of the site will be subject to little or no change during the life of the project. Careful sizing of storm sewers is requisite from the standpoints of safety and economy.

Under the rational method of design, the storm-water runoff in cubic feet per second is the product of: (a) the drainage area in acres, (b) the rainfall intensity in inches per hour, and (c) the runoff coefficient.

The drainage area for all or any part of the site may readily be taken from the grading drawings; the rainfall intensity is the estimated maximum in the locality for storms of an assumed frequency and of a duration equal to the "time of concentration"; the runoff coefficient is fixed by determing the proportion of the area which has an impervious surface, and then fixing the respective coefficients for pervious and impervious surfaces. The storm water flow should be calculated for every sewer inlet and junction point in the system.

The rational method of design may be considered directly applicable to either storm or combined sewers, since in housing projects the storm water flow during heavy rains, generally, so far exceeds that of domestic sewage that the latter may be disregarded.

6. TIME OF CONCENTRATION

Much of the time required for storm water on a housing site to reach a specific point is consumed in slow flow over unsurfaced areas. Only in the case of large projects is there likely to be any important difference between "inlet time" 1/ and the "time of concentration" 2/ for the entire area.

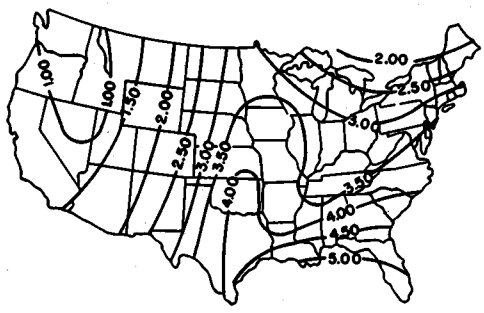
Inlet time may vary between 5 to 20 minutes, or even wider limits, depending upon surface slopes, nature of the soil, and inlet spacing. It has been found that 10 minutes is a fair estimate of this period for many projects, with 15 minutes as the time of concentration. Therefore, the rainfall-intensity diagrams (Figure 1) are for a 15-minute duration, although it may be necessary to employ a shorter duration in some instances, particularly for individual inlets located at critical points.

1/ "Inlet time" is the maximum period required for storm water to flow to an inlet from any point in the area it drains.

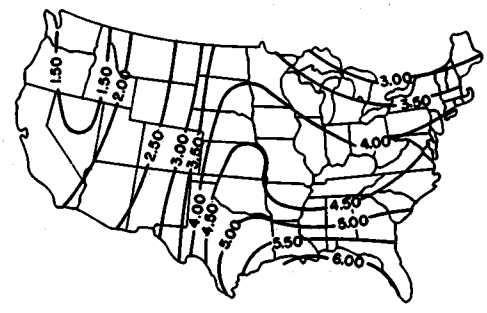
2/ "Time of concentration" is inlet time plus the period of flow in the sewers.

7. RAINFALL FREQUENCY

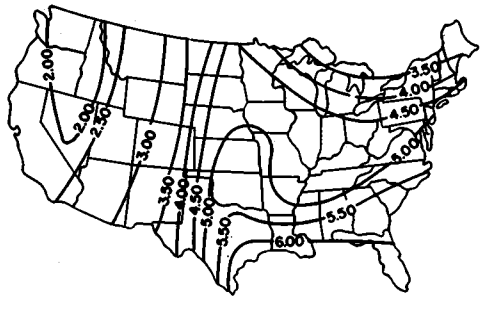
In housing projects, as in cities generally, cost considerations usually preclude building storm sewers large enough to handle the runoff during rains of maximum intensity. In principle, the rainfall frequency employed in storm sewer design should result in an approximate balance between first cost and probable future damage.



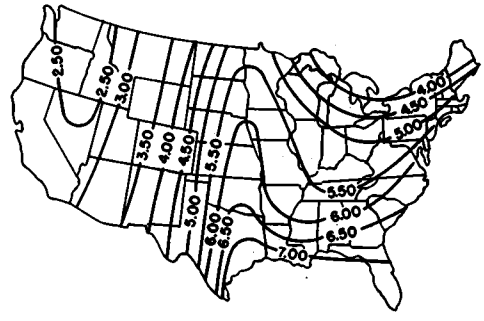
15-MIN. RAINFALL - IN.-PER-HR. RATE TO BE EXPECTED ONCE IN 2 YEARS



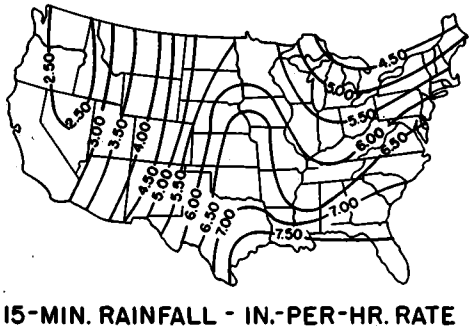
15-MIN. RAINFALL - IN.-PER-HR. RATE TO BE EXPECTED ONCE IN 5 YEARS



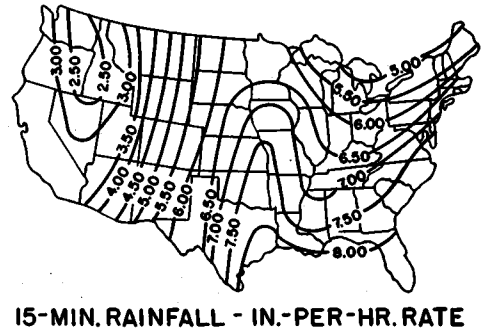
15-MIN. RAINFALL - IN.-PER-HR. RATE TO BE EXPECTED ONCE IN 10 YEARS



15-MIN. RAINFALL - IN.-PER-HR. RATE TO BE EXPECTED ONCE IN 25 YEARS



15-MIN. RAINFALL - IN.-PER-HR. RATE TO BE EXPECTED ONCE IN 50 YEARS



15-MIN. RAINFALL - IN.-PER-HR. RATE TO BE EXPECTED ONCE IN 100 YEARS

FIGURE I RAINFALL INTENSITIES

If the surcharge of a certain sewer would surely cause basement flooding or severe erosion, a rainfall frequency of 25 years or more may justifiedly be adopted. If, conversely, it would result in little more than ponding of storm water between street curbs, a frequency of about 2 years may be assumed. A surcharged condition is likely to be more objectionable in combined sewers than in storm sewers.

8. RAINFALL INTENSITY

Having determined the rainfall frequency and the time of concentration to be employed, the corresponding intensity of rainfall may be derived from local weather station data or taken from Figure 1. (The diagrams in Figure 1 were reproduced, in slightly altered form, from a much more complete series given in "Rainfall Intensity-Frequency Data," 1/ by David L. Yarnell.)

Figure 2 supplies a convenient means of converting 15-minute rainfall rates to rates for longer and shorter periods. (For example, if the rate for 15 minutes is 4 1/2 inches per hour, that for 30 minutes is approximately 3.1 inches.)

9. COEFFICIENT OF IMPERVIOUSNESS

The proportion of the site covered by buildings and surfacing tends to vary directly with project density. However, it varies with certain other design features. Thus, this factor - the "coefficient of imperviousness" - should be determined for each project (or each part of it separately considered) by taking off the surfaced and building-coverage areas from the approved site plan.

Following are <u>average</u> coefficients of imperviousness for a large number of existing projects. The figures are intended for checking purposes and preliminary estimating, and should not be employed for final design:

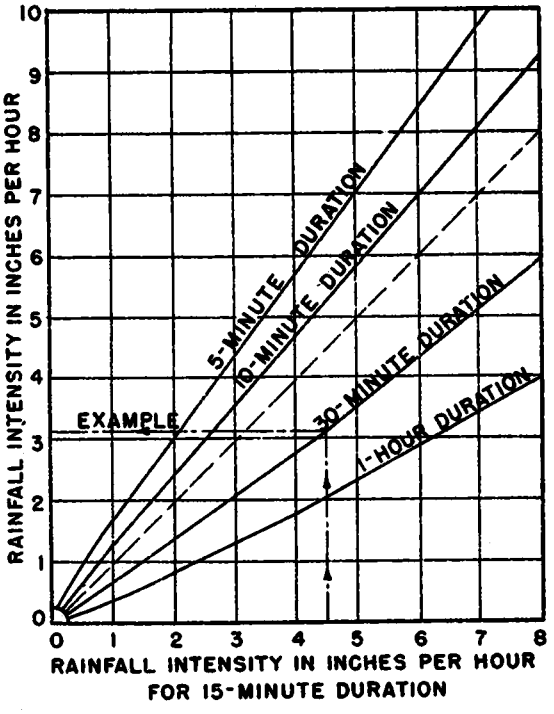


FIGURE 2 RELATION OF 15-MINUTE RAINFALL INTENSITIES TO INTENSITIES FOR OTHER DURATIONS

1/ Miscellaneous Publication No. 204, Unites States Department of Agriculture.

Density 1/	Approximate Coefficient of Imperviousness
10	0.30
15	0.35
20	0.40
30	0.50
40	0.60
50 and over	0.65

10. COEFFICIENT OF RUNOFF

a. For impervious areas, recommended runoff coefficients, depending on slopes and various other conditions, are:

With downspouts connected to sewers	0.75 to 0.85
With downspouts not connected to sewers	0.60 to 0.75

b. For pervious areas, the coefficient will vary widely with surface slopes and nature of the soil. However, the following should serve as a reasonable design guide, although the upper and lower limits may not meet extreme conditions:

For very light slopes and sandy soil	0.10
For moderate slopes and clay subsoil	0.25
For steep slopes and non-porous subsoil	0.50

c. The combined coefficient of runoff is the weighted average of those for pervious and impervious areas respectively. Based on the above coefficients of imperviousness, the runoff coefficients for projects of varying density are approximately as follows:

Density	For very light slopes; sandy subsoil	For moderate slopes; clay subsoil	For Steep slopes; non-porous subsoil
10	0.30	0.45	0.60
20	0.375	0.50	0.65
30	0.45	0.55	0.70
40	0.50	0.60	0.725
50	0.55	0.65	0.75

The combined coefficient should be carefully computed for each project - preferably for each part of it considered in pipe sizing. The preceding values are suggested for checking, preliminary estimates and similar uses.

1/ DU's per acre of developed project area within property lines.

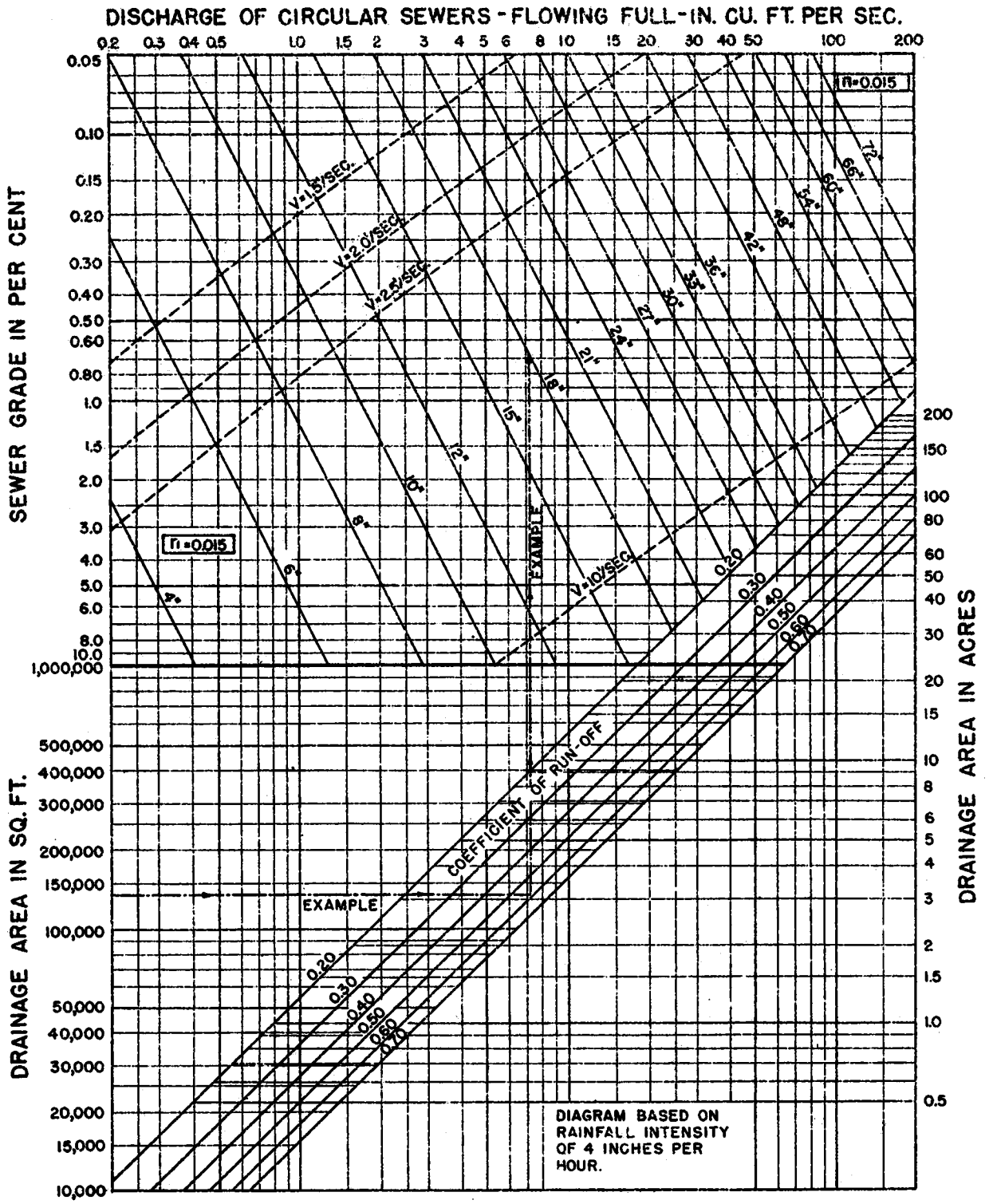


FIGURE 3 STORM-SEWER PIPE SIZING DIAGRAM

- -

11. STORM SEWER SIZES

Figure 3 shows requisite diameters of storm sewers in relation to drainage area, combined runoff coefficient, and hydraulic gradient. The diagram is based on a rainfall rate of 4 inches per hour and on Kutter's formula, with n = 0.015. For other rainfall rates, the diagram may be employed by increasing or decreasing the drainage areas proportionately. For n = 0.013, sewer discharges are 15% greater than those shown; the value of 0.013 may be assumed for lines larger than 24-inch, while for lines 24 inches or less in diameter a value of 0.015 is recommended.

Storm sewers should be of sufficient diameter, not only to handle estimated storm water flows, but to be reasonably secure against stoppage by grit, stones, trash or other material that can get into them through the particular type of inlet provided. Gratings, of course, afford considerable protection in this regard, at least as compared with open-throat inlets, but catch basins with trapped outlets are the most effective. Following are recommended minimum diameters for storm sewers connected to different types of inlet:

Sewers receiving drainage from catch basins with trapped outlets	8 inches
Sewers receiving drainage from plain inlets with grating type opening	10 inches
Sewers receiving drainage from plain inlets with side opening (open throat)	15 inches

In sizing sewers, the designing engineer should put his calculations - covering pervious and impervious areas, run-off coefficients, discharges, etc. - in suitable tabular form for checking uses and permanent record.

12. MINIMUM GRADES FOR STORM SEWERS

To be self-cleaning, storm and combined sewers should be laid at grades which will produce a velocity of at least 2 1/2 feet (preferably 3 feet) per second with pipes flowing full. Flow velocities in relation to grades for various pipe sizes are shown in Figure 3.

13. SEWER PIPE AND PIPE LAYING

Engineers for low-rent housing projects have usually specified clay pipe for combined sewers, and either clay or concrete pipe for storm sewers. Division 24 of the Guide Specifications, Bulletin No. LR-13, gives detailed, recommended requirements for materials and workmanship. Design problems related to trench loading and adverse soil conditions are identical with those described in Part IX, "Sanitary Sewer Design", of this bulletin.

14. SEWER INLET TYPES AND LOCATIONS

a. Types. Storm sewer inlets may be catch basins or plain inlets, and either such form of chamber may have a grating or a side-opening (or curb) inlet, or both. These types, illustrated in Figure 4, are discussed briefly below.

b. Inlet locations, as previously noted, are fixed largely in the project grade study. Nevertheless, the storm sewer design should include a check on the locations proposed, in both yard areas and streets, to ascertain whether: (1) the inlets will be necessary and effective at such points, and (2) the locations are the best possible for economy in the sewer layout. Further, inlet capacity should be checked against the calculated storm water flow at each inlet location. Inlets at street intersections are, as a rule, better located at one end of the curb return than near its center.

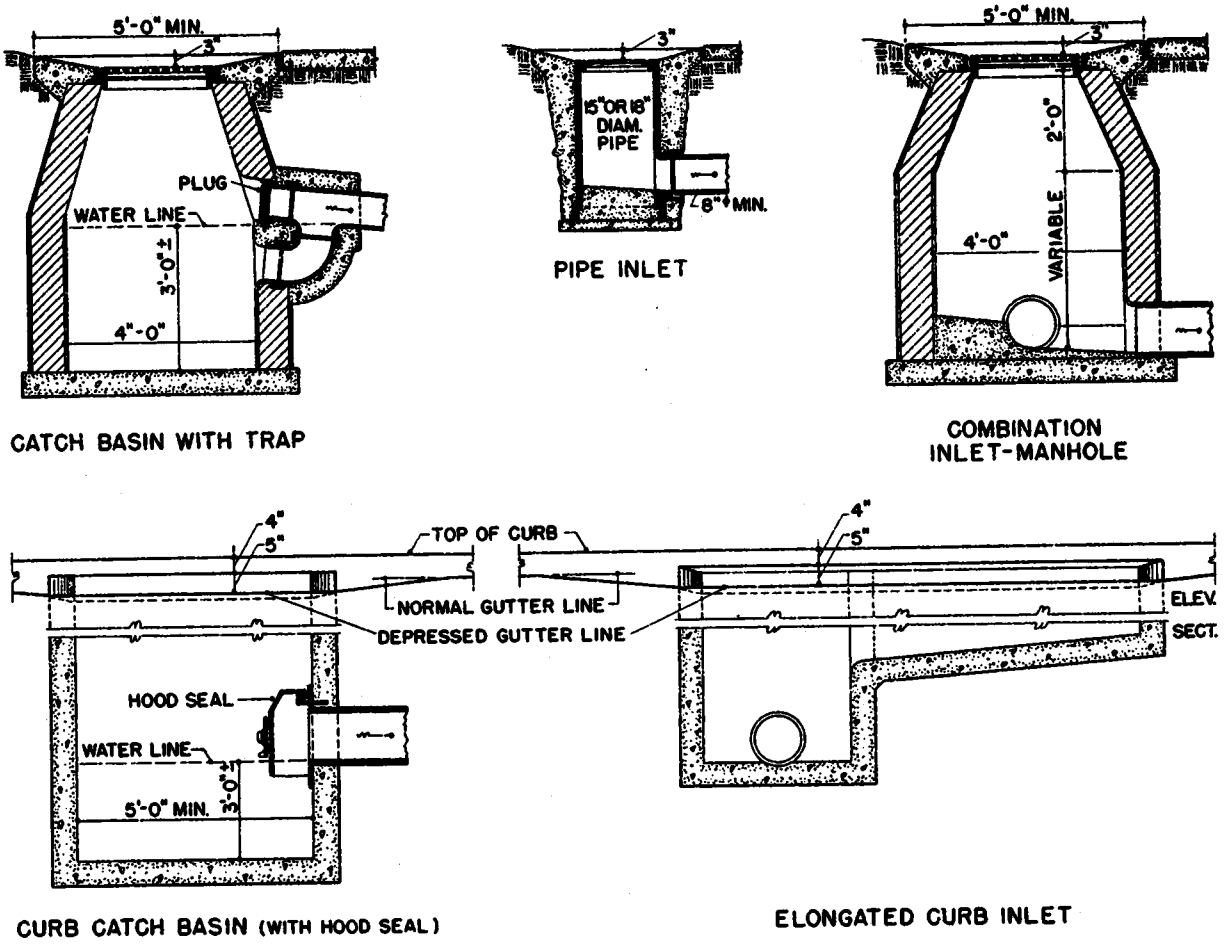


FIGURE 4 DRAINAGE STRUCTURES

15. INLET CHAMBERS: CATCH BASINS VS. PLAIN INLETS

a. Catch basins with trapped outlets are necessary on combined sewers; and catch basins, with or without trapped outlets, should be used on storm sewers having grades which may not produce a self-cleaning velocity of flow. A trapped outlet is useful in preventing the entrance into the sewers of sticks pushed through gratings by children. However, catch basins are decidedly objectionable in several respects: they require occasional cleaning; cleaning is sometimes neglected until stoppage occurs; the basins are likely to become foul and breeding places for mosquitoes; and the water seal in the trap may freeze during severe winter weather.

b. Plain inlets afford little protection against sewer stoppage, but they do not have the objectionable features of catch basins; and plain inlets may serve as manholes (which catch basins can not), with one inlet connected to another, thus effecting considerable economy. Such inlets are recommended, therefore, when:(1) sewers are not of the combined type, (2) sewer grades will produce a flow velocity of at least 2 1/2 feet per second, and (3) sewers are amply sized as protection against clogging (see paragraph 11).

c. Inlet chambers in surfaced areas should be of concrete or brick; in grassed areas they may be of such materials or of tile pipes set on end. However, it is preferable that inlets be large enough for a man to enter. Pipes with gratings resting in their bells are not satisfactory.

16. GRATING-TYPE INLETS

Grating inlets are of necessity used in grassed and plane surfaced areas, also in roadways of dished cross section, and may be used in gutters along curbs (either solely or in conjunction with curb openings). Several points regarding their design merit emphasis:

a. Except in gutters along curbs, a circular grating is preferable to a rectangular one, since the circular casting can not fall through the frame.

b. To allow for partial stoppage by leaves, paper, etc., the grating area (gross) should be not less than about three square feet per sec. ft. of storm water flow.

c. Gratings should be heavy enough not to be removable by children; otherwise, lock bolts should be provided.

d. The design should permit using standard gratings, cast in the locality. The engineer should check on the form, dimensions and weights of such products.

e. Gratings should always be set in depressions 2 to 3 inches below finished grade. This applies to gratings in lawns, roadways, and other surfaced areas. (Lack of attention to this point, in project drawings and construction, has resulted in poor drainage in many cases.)

f. Grating frames in grassed areas should have concrete collars not less than 12 inches wide. When adjoining walks, the outer edge of the collar should be about 1/4 inch below the walk edge.

g. Rectangular gratings in roadway gutters should have their bars parallel to the direction of flow. This gives maximum inflow capacity and non-clogging characteristics. Such gratings should be of ample length. Inlet castings should always be gratings - not perforated covers.

h. Occasionally, where service drives cross sidewalks at sidewalk grade, a grate-covered trough (such as used around gasoline service stations) may be extended wholly or partially across the drive. This will generally intercept the water more effectively than a standard sewer inlet, and may cost no more.

17. SIDE-OPENING INLETS

Side-opening inlets usually provide more effective openings than do gratings, and are much less subject to stoppage, but they are obviously suitable for use only in roadways or other paved areas having curbs.

The most important objective in their design is diversion of the flow from the gutter into the curb opening. This involves forming a shallow depression in front of the inlet and, especially on slopes, adjusting the length of the opening to the flow. It is essential that the storm water flow to each inlet be calculated.

Only comparatively recently has the subject of inlet capacity been receiving the attention it needs, and much research remains to be done. Following, however, are approximate figures on the intake capacity of side-opening inlets located along gutters with different longitudinal slopes: 1/

(1)	(2)	(3)	(4)	(5)
Length of Inlet	1% slope	3% slope	5% slope	10% slope
4 feet	0.75 c.f.s.	0.50 c.f.s.	0.40 c.f.s.	0.30 c.f.s.
6 feet	1.30 c.f.s.	1.00 c.f.s.	0.75 c.f.s.	0.55 c.f.s.
8 feet	1.85 c.f.s.	1.50 c.f.s.	1.15 c.f.s.	0.80 c.f.s.
10 feet	2.40 c.f.s.	2.00 c.f.s.	1.50 c.f.s.	1.10 c.f.s.

1/ Based largely on data contained in Engineering Experiment Station Bulletin No. 30, North Carolina State College.

The preceding figures should be used with caution, and only for conditions which approximate the following:

a. An inlet slot at least 5 inches high and without vertical bars or other obstruction.

b. An 18-inch gutter having a cross slope of 1 1/2 inches to the inlet slot.

c. The gutter depressed an additional 3 inches immediately in front of the inlet opening, with adjoining pavement surface warped accordingly. (With a 6-inch curb elsewhere, this gives a curb height of 9 inches - the maximum desirable - in front of the inlet.)

If the inlet is located in a pocket in the roadway, with flow to it from both directions, its capacity may be double or more than given in column (2) above.

Side inlet capacity may be increased materially by a grating set in the gutter, and this combined type of inlet is standard in many cities. It is more costly than the simple side inlet and becomes less effective with increasing slopes.

There is generally some advantage in following local standards, and it is necessary to do so in the case of streets to be dedicated; but this does not lessen the importance of checking inlet capacity against storm water flow.

Weep holes for subgrade drainage are sometimes provided in roadway inlets on the roadway side of the chamber. Located just below subgrade level, they are especially desirable in the case of inlets located at low points in the street grade.

STRUCTURAL DESIGN - MATERIALS AND METHODS

INTRODUCTION

This Bulletin is one of a series of eight technical Bulletins, designated as Housing Design Notes. These Bulletins are divided into parts, each of which will deal with some element of technical design.

The following Parts are issued with this Introduction:

PART I - STRUCTURAL DESIGN, GENERAL
PART II - CONDENSATION IN DWELLING STRUCTURES, ITS CAUSES AND CONTROL
PART III - CONCRETE CURING METHODS
PART IV - ROOF TRUSSES
PART V - SOLID PLASTER PARTITIONS
PART VI - SLAB ON GROUND FLOOR CONSTRUCTION
PART VII - TERMITE CONTROL THROUGH STRUCTURAL DESIGN
PART VIII - CRACKS IN FRAMED CONCRETE FLOOR SLABS
PART IX - STRUCTURAL AND OTHER LUMBER, CONTROL OF DECAY

Other parts will be issued, from time to time, as they are completed.

This series of Housing Design Notes contains technical data, notes, observations and recommendations relating to design problems in connection with low-rent housing, based on continuing observation and intensive study of public housing projects which have been in operation for more than ten years. It should be noted that all recommendations are advisory only, except to the extent that they refer to or reflect the mandatory requirements of the current, published PHA Standards for Low-Rent Housing.

These Bulletins are not offered as textbook material, or with any pretense that they deal exhaustively with any particular subject. In many instances they express opinions which may be subject to challenge, and they are written with a frank acknowledgment that many readers--particularly professionals--may be as well informed in specific fields as the writers, perhaps more so. The PHA believes, however, that careful consideration of the experience recorded and the suggestions offered should result in the avoidance of certain shortcomings which have been noted in existing projects and in profiting from the knowledge of the many good characteristics which have been observed and studied.

NOTE: This Introduction supersedes the Introduction to Bulletin LR-5, dated 3-24-50. Corrections and revisions have been made.

STRUCTURAL DESIGN, MATERIALS, AND METHODS

PART I - STRUCTURAL DESIGN: GENERAL

1. GENERAL. This Bulletin and other releases to which it refers do not include the mathematical analyses or principles of design found in standard textbooks. They do, however, record experience with the many types of design which have been used in public housing and attempt to point out some of the more important factors which should be given thoughtful consideration in the preparation of structural designs for low-rent housing projects. Each project is an individual problem. Subsurface soil conditions govern the type of foundations to be used; climatic conditions influence the type of enclosing walls to be used; and the framing systems will largely be selected from an economic standpoint. These decisions should generally result from recommendations made by the engineer, drawing on his experience and studied judgment.

Structural studies should be started in the earliest stages of architectural planning, and the structural engineer afforded the opportunity to participate in the consideration of all problems related to project structures. To wait until the plan studies are "frozen" may preclude the possibility of making adjustments which might be required to provide the most economical structural design. Likewise, the mechanical and electrical design requirements should be studied and coordinated with the structural and architectural designs.

The following factors must be given careful consideration: (1) structural safety, (2) economy in initial cost with minimum maintenance cost, (3) protection against corrosion, rot and termites, and (4) protection against fire, and (5) low insurance rates. In providing a safe design it is equally important that it not be over-designed, thereby adding unnecessary cost. A proper balance between construction cost and future maintenance charges must be a prime consideration. To select a structural frame and specify structural materials that will incur abnormally high and continual maintenance for the life of the buildings is obviously poor engineering practice, particularly because of the limited budget which can be allowed for maintenance. The structural elements of a dwelling, (foundation, walls, frame, floors and roof) represent more than one-half the cost of the building. This gives the structural engineer not only the opportunity but the responsibility of exercising resourcefulness in effecting economies.

In addition to ingenuity, the engineer must watch the many details relating to structural framing which are often overlooked or not properly covered. As examples: Since no structure is stronger than the connections used in the assembly of the various structural elements, details must be provided which clearly show what is required by the design. Chases in masonry walls should be dimensioned and located

NOTE: This Part I supersedes Part I of Bulletin LR-5, dated 3-24-50. Parts of paragraphs 3, 4, 5, and 6 have been revised. Additional Parts or Supplements to Parts of this Bulletin, treating various subjects in more detail, will be published from time to time. Corrections and revisions have been made throughout this Part.

so they will be built into the construction where they belong and not be cut out later, thereby weakening the wall. In regions where there are termites or excessive dampness, requiring that wood framing be given special treatment, fireproof construction should be weighed against the cost of such treatment.

As a general rule, all buildings must be designed according to local building codes. When local codes are less restrictive that the PHA Standards for Low-Rent housing, the latter shall govern. If local codes or building regulations and standards are not specific or do not cover all the design principles involved, the current issues of the following nationally recognized code regulations should be followed:

a. "Building Regulations for Reinforced Concrete" of the American Concrete Institute, or

b. "Recommended Practice for Design of the Joint Committee on Standards Specifications for Concrete".

c. "Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings" of the American Institute of Steel Construction.

d. "Specifications for the Design of Light Gage Steel Structural Members" of the American Iron and Steel Institute.

e. "Code for Arc and Gas Welding in Buildings", American Welding Society.

f. "Code" issued by Steel Joist Institute.

g. "American Standard Building Code Requirements for Masonry", National Bureau of Standards, A-41-1.

Should local codes be more restrictive than the above and to the extent that they are considered unnecessarily costly, every reasonable effort should be made to have them waived or relaxed to conform to the above listed standards.

If the Local Authority or Architect, in preparing plans and specifications, wishes to propose the use of materials and methods not covered by local or national codes, such materials and methods should be submitted with all available supporting evidence, including approval by the local code authority, to the PHA Field Office for review and approval. The PHA will give appropriate recognition to modern trends and developments.

2. FOOTINGS. Simple spread concrete footings have been used on many public low-rent housing projects, although soil conditions have at times required the use of piles, concrete mats, or caissons. The latter are much more expensive and represent an abnormal proportion of the total allowable cost for the dwelling

units in a low-rent housing program. Factors which control the selection of foundations are:

a. Subsurface soil conditions, bearing levels, soil bearing value.

b. Superstructure loads.

c. Lateral earth pressure.

d. Water conditions involving water penetration and hydrostatic pressure.

e. Basement or crawl space requirements.

f. Costs (comparison between equally suitable types).

It is important, therefore, to have a preliminary examination made of the subsurface soil conditions of a proposed site, to determine whether expensive foundations will be required. In fact, the data obtained will not only influence or determine the type of foundations required, but may dictate the type of framing for the superstructure and the location of buildings. A high water table may seriously affect the cost of providing basements for laundries, heater rooms, and storage. Existing buildings on or near the site often give helpful clues as to soil bearing values and the presence of water. City records on excavations for neighborhood sewers and utilities is another source of information. Where explorations disclose questionable bearing soils, test loadings should be made. Unless the cost of the land is low enough to absorb the excess cost of expensive foundations, basements, etc., it may become questionable whether the site should be given further consideration. See Bulletin LR-2.

That spread footings will have some settlement is relatively unimportant, provided the settlement is uniform. On a number of projects the soil bearing design values have varied from building to building, and even under the same building. The dead load of a masonry and concrete structure is so great when compared to the actual live loads carried, that usually the best practice is to design footings for dead load only, keeping the total live and dead load bearing within the prescribed unit soil pressures.

When deep excavation is required to reach suitable bearing soil, grade beams and piers are commonly used, rather than continuous foundation walls. Experience indicates that, generally, a continuous footing is more economical if the excavations do not exceed a depth of approximately 4'-6".

The lack of adequate subsurface investigation has frequently resulted in abnormally high extra costs during construction, where the design of footings had to be modified and their elevations lowered due to conditions disclosed by the excavation. The cost of an adequate soil investigation would have been only a fraction of such foundation extras.

3. FRAME. In selecting a structural framing system, one of the first considerations is the choice between skeleton and wall-bearing construction. Experience in low-rent housing has shown that for concrete and masonry framing of one, two, and three-story buildings, wall bearing design was cheaper. For a detailed study and comparison of these two systems see a forthcoming bulletin on wall

bearing vs. skeleton construction, with the relative advantages and comparative costs. The choice between wood frame or fireproof construction will depend on a number of considerations, such as local building and zoning regulations, the type of dwelling structure, its height, appearance, availability of material locally, insurance rates, and cost including maintenance. The wood frame is usually limited to two stories although three stories with the upper two of wood have been built, where the first floor, halls and stairs were of fire-resistant construction. All buildings over three stories are required to be fireproof.

As far as it is economically possible and regardless of the framing system used, every effort should be made for duplication in the size and arrangement of structural members. This materially reduces costs, and is especially true in concrete construction where it permits reuse of formwork. Design computations must, therefore, be accurate or the errors will multiply to a serious extent on similar buildings.

When wood framing is used, care must be exercised to obtain uniform shrinkage at all floor levels. Balloon framing should not be used for the exterior walls with platform framing for interior bearing partitions. Furthermore, only balloon framing should be used with brick veneers or stucco-faced walls.

Structural steel framing has not been used to any great extent for housing. One exception was the six-story apartments of a project in New York, where the interior columns and girders were of plaster encased steel with exterior masonry bearing walls. High structures are of fireproof construction, in which case a reinforced concrete frame has proven cheaper. However, only by the preparation of alternate designs of various satisfactory framing systems and estimated costs for a typical wing of a typical building, can the engineer justify the design he has selected as being the most economical type.

4. FLOORS. Consideration should be given to local practices in selecting a type of floor system, but this should not be followed too closely. Comparative designs and cost estimates should be the basis on which a choice is made. A favorable difference of no more than a few cents per square foot offers a substantial saving on the acres of floors in an average project. Most of the more common types of floor systems have been used, including:

a. Wood joists, sub and finished floor.
b. Steel joists and concrete floor.
c. Precast concrete joists and concrete floor.
d. Solid concrete slabs with cement floor finish and painted ceilings.
e. Concrete joist slabs with tile fillers.
f. Concrete joists with metal pan fillers.
g. Girderless concrete flat slab.
h. Solid concrete slabs on the ground.
i. Combination tile and concrete slab on the ground.

Types a. and b. should not be used directly over damp crawl spaces. Experience has shown that the former will quickly rot and decay, and with the latter it is impracticable to protect joists against serious rusting. Type c. usually has an objectionable unfinished appearance when the joists are left exposed, and if a plastered ceiling is added, the cost is considerably higher than for Type d. Type d. has a definite economy because of the omission of the plastered ceiling and applied flooring common to most other types. Types f. and g. have not been so economical for the short spans and light loadings which are characteristic of housing design. Some of the above floor systems are much deeper than others and this is reflected in materially increased costs for the added heights of enclosing walls, pipe risers and stairs. Concrete floors laid directly on the ground have given considerable trouble when the subgrade was improperly prepared, in that floor coverings, such as rugs and linoleum have rotted from moisture rising through the slab by capillarity. A 6-inch bed of coarse gravel, stone, or slag, has been found quite satisfactory in preventing capillarity, while sand or cinders have been quite the opposite. The wall perimeter edges of these slabs should also be insulated against heat loss in cold climates.

Adequate ventilation should be provided for crawl spaces to reduce the dampness that usually accumulates in these areas, thereby reducing the definite hazard of rotting of wood floor construction above it, as well as the termite hazard. Because of the importance of keeping the vents open during the cold weather of northern climates, the wood framed first floors above these crawl spaces should be insulated.

Considerable trouble has been experienced with the use of metal forms and reinforcing bar supports which were not galvanized; in such cases rust stains from the metal tended to burn through the ceiling paint. Spot painting these rust stains with aluminum paint before applying the decorative paint has proven effective. Plywood forms have given good service, with as many as ten re-uses in some cases.

When concrete porch floors or entrance steps were supported on the outside grade, they invariably settled and became unsightly. This condition is expensive and difficult to correct. These slabs should be supported by the building foundation wall and on concrete struts that penetrate through the backfill to firm bearing soil. A common method for doing this is by using a post hole augar, making a hole down to load bearing soil and immediately filling it with concrete. Using these pier supports, the reinforced concrete porch slab can be laid on the earth fill, thereby eliminating form work and deep perimeter foundation walls. Because the fill will settle away from the slab, shallow perimeter walls should be built monolithic with the porch slab to prevent the accumulation of rubbish and harboring of rodents.

Similar experience has occured with concrete curb walls for basement window areas. These curbs should be cantilevered out from the basement wall, or supported on small concrete stub columns in the manner described above for porch slabs. An optional and economical method, when the curbs are not large or deep, is to use galvanized corrugated metal such as semi-circular sections of corrugated pipe, which can easily be reset should they settle away from the building.

Concrete porch canopies have a tendency to crack. Water that penetrates through these cracks stains the ceilings below, resulting in a very unsightly condition with subsequent maintenance. These canopies should be covered with metal.

Concrete spandrels exposed on the face of exterior walls are subject to shrinkage cracks and painting maintenance, as they stain quickly from the rain water that runs down the masonry walls. It is more economical to conceal them with a veneer of masonry.

With wood framed floors, maximum economy is obviously obtained when the joist spans correspond to stock lengths of lumber. However, this should not be permitted to penalize a good plan design for a dwelling unit since the cost of a limited amount of wasted joist material is a comparatively small item, and other uses can usually be found for short pieces.

5. WALLS. Practically all types of masonry and wood frame exterior walls have been used in public housing projects, and are described in detail in Bulletins on masonry exterior wall construction; general discussion; types of construction and wood framed walls. In the selection of a wall type, consideration must be given to its strength, impermeability, insulating quality, availability of local materials, initial cost, and maintenance. Since climatic conditions vary, it is well to note the wall types that have been used successfully in the locality. In some areas, for example, 12-inch masonry walls require furring; in others an 8-inch wall may be plastered without furring. Leaking masonry walls are not only a considerable source of annoyance to tenants but the cost of repairing them may be very expensive. The insurance against this condition is a good design, proper materials and, especially, good workmanship-the essence of which is solidly-filled mortar joints.

Cavity walls have been used with considerable success to obtain impermeability, and a detailed study of them will be given in a bulletin on cavity walls.

Concrete masonry block walls are not only economical, but will give good service if the blocks are of a proper quality and protected by a properly applied cement paint coating.

Masonry walls have given considerable trouble by cracking near the roof lines and at the upper story floor slabs; this is largely attributed to differential movement between the slab and the wall upon which it bears. These wall cracks have occurred in both wall bearing and skeleton frame construction, though more prevalent in the former.

When masonry walls are over 150 feet long or where buildings have long wings at right angles, expansion joints are recommended. They should provide a complete separation of foundation walls, exterior walls, partitions and floor and roof slabs. Parapets have been a source of considerable maintenance expense, because of their creeping movement and leaks through the copings. If possible, they should be omitted, or anchored securely to the roof slab by dowels or stub columns of concrete. Spandrel flashings are of questionable effectiveness. They provide a positive break in the bond between the wall and the floor or the spandrel which they bear on, and this encourages a differential creep of the former.

Unless the end laps of the flashings are soldered or sealed, they are not effective. Membrane flashings have frequently deteriorated from contact with mortar and, in consequence, have proven worthless.

Wood framing of both the platform and balloon types are satisfactory and each has certain advantages. In areas of high winds, the latter lends itself to greater stability and anchorage to foundations. Platform framing should not be used in connection with brick veneer or stucco framing, since its vertical shrinkage is much greater than for the facing materials; this causes separations at door and window openings and tends to buckle the brickwork or stucco at the floor line.

Diagonal sheathing, primarily used to resist racking wind stresses, should be used on the end walls of buildings if diagonal corner braces are omitted, but should not be needed on sidewalls which are more than 75 feet long. Vertical siding has been the source of considerable leaking because, with the shrinking of the wood, the joints open and the covering battens cannot be kept effectively tight.

All wall chases, pipe ducts, etc., should be carefully sealed against vapor at the floor line directly above the crawl space. Otherwise, as experience has shown, they will act as flues and permit moisture to rise from the crawl space to the attic, saturating the ceiling insulation, damaging the plaster ceiling, and rotting the wood framing. A surprising amount of moisture will rise by capillarity through the soil, if a flue action in these ducts exists.

As a general rule, unfurred masonry walls have been given a coat of damp-proofing before applying the plaster. Experience with such damp-proofing has varied considerably. Usually troweled mastic has been more effective than when sprayed, as the latter easily develops pin holes and air bubbles. One project used a 3/8 inch cement grout for water proofing applied with a cement gun. It was entirely successful although more costly than the mastic waterproofing.

When basement walls are located in clay or water bound soils, positive drainage should be provided by installing drain tile around the perimeter of the building. Concrete basement walls, when the concrete is properly mixed, placed and cured, should need no additional waterproofing. Masonry walls which are in contact with wet soils may be waterproofed in one of several ways.

6. ROOFS. Both flat and pitched roofs have been used with wood or concrete framing. The flat roof is usually cheaper and can be of the same general types used for framed floor construction, but the pitched roof appears to have had considerable less maintenance expense, and offers attic spaces for storage. Flat roofs have also been much more susceptible to leaking, which in turn has destroyed or impaired the rigid insulation immediately under the roofing. Masonry exterior walls have had much more structural cracking caused by differential movement, when flat concrete roofs were used. When wood or steel joists are used for framing flat roofs, care must be taken to provide through ventilation in the joist space to prevent condensation which will rot or rust these joists. Pitched roofs offer another advantage in that louvers can be built into the gable ends of buildings to provide proper ventilation of the

attic space. In this connection, it should be recognized that when insect screening is used to cover louvers or any ventilating opening, the screen wire reduces the gross opening by at least 35 percent. As the screens become covered with dust and cobwebs the net effective opening becomes only a fraction of its original size.

In the design of pitched-wood-framed roofs a light wood truss, which has considerable advantage in economy over the usual rafter framing, was developed by the PHA. These trusses are usually placed 2 feet on centers, with spans up to 27 feet, and permit buildings to be roofed before the interior partitions are installed.

7. PARTITIONS. Partitions are usually of wood studs when wood frame construction is used, or of tile, gypsum, concrete masonry unit, or solid plaster when construction is of a fire resistant type. The latter has also been sucessfully used with wood frame construction. Glazed tile or brick are commonly used for stairhalls. In an effort to effect a maximum conservation of the floor, roof, and wall area for dwelling unit, the 2-inch solid plaster partition came into common use. It cost no more than wood stud partitions, and saves 65 percent of the floor space occupied by the latter. Both have approximately the same fire resistance rating and resistance to sound transmission. The plaster partition, however, cannot be used as a structural load bearing member. Neither should it be used between dwelling units because it is not adequate in sound resistance or fire resistance for this purpose. When this type partition was first used, it had several objectionable features, such as excessive cracking due to the unsatisfactory methods of fitting door frames into it. Many improvements in design have been developed since then, and this type of partition is giving very satisfactory service.

Bearing masonry partitions have been used on some projects, in lieu of interior columns and girders, but they have cost more and their thickness requires considerable additional floor space. They also have the objection of delaying the speed of construction for the same reasons that a wall bearing frame makes for slower progress than skeleton frame construction.

Concrete block partitions, with a decorative paint in place of plaster, have proven unsatisfactory. The blocks become chipped under normal handling which results in non-uniform, unsightly mortar joints that the paint does not conceal. The cost is also considerably higher than for a 2-inch solid plaster partition.

8. FIRE RESISTANCE. Fire resistive construction is required by PHA standards for all buildings over three stories in height; but the cost differential between fireproof and frame construction should always be given full consideration.

Where individual heating plants are located in basements, the floor above should be of fireproof construction or have fire resistant ceilings. Individual basements should be separated by fire resistant partitions or have incombustible facing materials on them.

For a detailed study of this important subject involving the safety of life and protection of property, see Bulletin LR-10; also the American Standards Association A-51 Building Code Requirements for Fire Protection and Fire Resistance, and the National Bureau of Standards BMS-92, Fire Resistance Classification of Building Construction.

9. INSULATION AND VAPOR SEALS. The increasing use of insulation in buildings has developed many complications affecting the types of materials used and methods of installation. Buildings are being constructed much tighter than formerly, with storm windows and doors, weatherstripping, etc., all of which constitute a barrier to the escape of moisture-laden air. When this vapor condenses in areas containing insulation, the effectiveness of the latter is destroyed and the adjacent wood members begin to rot.

10. MATERIALS AND SPECIFICATIONS. A good structural design requires equally good specifications to insure construction in accordance with the designer's plans. To this end, should be written or approved by the structural engineer. The materials to be used and the methods and quality of workmanship to be employed should be specified in unmistakable terms. The material requirements are set up in applicable Federal or A.S.T.M. Specifications are recommended.

Performance requirements rather than a specified procedure or method of construction are often advisable; this gives the contractor more latitude to use his skill and experience and at the same time holds him responsible for the end product. For example, concrete specified to be of a certain strength as required in each case, rather than a specified mix, is available in most localities from plants operated under careful and accurate supervision, and its quality is usually uniform.

The inclusion of a layer of roofing felt between subfloor and finish floor will provide protection against penetration of mop water and accidental overflow downward. The Report on Tests for Condensation on Reflective Insulation Under Wooden Floor reported in Housing and Home Finance Agency Technical Bulletin, No. 12, January 1950, indicates that condensation on this underfloor reflective surface would not be probable during any winter condition because of the existence of minor leaks in the layer of insulation making an upward draft which will overcome a tendency for water vapor to penetrate downward from the living space.

When the floor construction is solid concrete, the problem of providing insulation under the floor is complex and expensive. Either reflective insulation or fiber insulation would need furring or other means of attachment. Some forms of sprayed fibrous insulation mixed with asphalt have possibilities but they have not yet been applied at a price consistent with the cost of insulation as applied to wood floors.

If concrete floors are constructed of concrete joists with wood strips attached to the bottom of the joists before they are placed, a sheet of reflective insulation could be attached to the wood strips as easily as to the wood joists. When underfloor spaces are completely enclosed with masonry walls, and with heating pipes well insulated or without heating pipes, the temperatures in the center of the crawl spaces in winters along the forty-first parallel of latitude have been observed as being about 50° to 55°F. If the heating pipes are not well insulated, temperatures in the center of the underfloor spaces will be up to 65° or higher, and with such temperatures no floor insulation is needed.

Completely enclosed underfloor spaces with vents closed are very damp when over fine grained soils such as clay or loam. If the vents are opened, the temperature of the crawl space will drop depending on the amount of ventilation. It is possible to ventilate unheated spaces enough to cause cold floors. In such cases, insulation can be applied to the underfloor surface when practical (to wood joists or factory applied wood strips on concrete joists). For solid concrete slabs, it is more practical to take precautions to keep air in the crawl spaces dry, such as concrete slabs on the surface of the ground with bituminous coverings if necessary, or roll roofing laid over the ground surface and held in place when necessary with a little sand. With crawl spaces dry, the ventilators can be reduced to a point where the temperature differences between the dwelling and the crawl space will not be critical.

When gas lines are present, continuous crawl space ventilation is essential as a safety measure. The designer cannot, in that case, base his design on a closed crawl space. See Bulletin LR-7, Part V.

NOTE: These pages 7 and 8 supersede pages 7 and 8 of Part XI, Bulletin LR-5, dated 4-24-50. Corrections and revisions have been made on both pages.

Floors over cold crawl spaces may be insulated, as indicated in Appendix D, with insulation which is capable of safely supporting the load of the slab without excessive compression. "Foamglas" is stated by the manufacturer to have an ultimate bearing strength of 150 psi and a k factor of .40.

c. Floors on the Ground. A considerable proportion of low-rent housing has been constructed with concrete floors on the ground. In areas of mild climates they have proved generally acceptable. In areas of severe climates they have met with some criticism as being cold, and instances have been noted where winter condensation occurred on the floors near exterior walls. Insulation of the edge of the floor should be thick enough to keep the floor temperature above 60° and to reduce heat losses. Since the drop in temperature from a warm area to any point between the warm and cold areas is directly proportional to the heat resistances of the respective interposed materials, it is possible to estimate the surface temperature of concrete floors under various conditions of insulation. When the exterior temperature is zero, the temperature drop from interior to exterior is 70°. The resistance along the median path from interior floor at the edge to the exterior air should be 7 x .83, or 5.80 or more, to insure that the surface temperature of the floor does not drop below 60°. When exterior temperatures are likely to be below 0°, more insulation is required. Serveral possible designs for edge insulation are illustrated in Appendix D. Other designs can be developed.

It is considered that edge insulation of concrete floors, as illustrated in Appendix D, should be included in all areas north of the North Carolina-Virginia, Arizona-Utah line, with allowances for local influences such as high elevation or climatic conditions.

Test conditions with exterior temperatures of 32° with slabs on grade, insulated and uninsulated, are reported in BMS 103.

7. STORM WINDOWS. In any study of possible heat savings by insulation, the value of storm sash will be evident. The heat conductance factor U through windows with winter sash is about 40% of the U through single glass. The actual savings will be less than this, because some ventilation of bedrooms and kitchens through windows is always necessary.

8. HEAT TRANSMISSION CO-EFFICIENTS. Heat transmissions co-efficients of most building materials are given in the Guide of the American Society of Heating and Ventilating Engineers. Appendix C, attached, lists building materials in a different form, which may be found convenient.

9. DEGREE MAP. A Degree Day Map of the United States is attached as Appendix E.

APPENDIX B

Various polished metal surfaces and some surfaces made from metallic base paints or coatings absorb only a small percentage of the radiant heat falling on them. They also resist emission of heat from the surface. These are called reflective insulating materials. An airspace lined with such a surface on one side is an effective insulator, and it makes no difference which side of the space is reflective. The ratio of heat absorbed or emitted by such a surface to the heat absorbed or emitted by a perfect black body, is called the emissivity of the surface and is denoted by the small letter "e".

Various reflective insulating materials have emissivities of from .05 to .30 or more. The emissivity of surfaces such as plaster or wood or gypsum lath is here taken as .90. The emissivity of aluminum foil is usually taken as .05. The emissivity of other reflective insulating materials should be checked with the manufacturers. Reflectivity = 100 - emissivity, both expressed as percentages. The effective emissivity (E) for an airspace (not of a surface) is determined by the formula:

$$E = \frac{1}{\frac{1}{e_1} + \frac{1}{e_2} - 1}$$

when e_1 and e_2 are the emissivities of the surfaces of the airspace. Capital E must not be confused with small e. Figure 1-B is a graphical solution of the above equation.

Conductance. Empirical information concerning the conductance of double or triple air spaces faced with one reflective surface of aluminum foil is given in the Guide published by the American Society of Heating and Ventilating Engineers, but the information for single air spaces with reflective insulation is not so complete, particularly as to heat flow upward and downward. To supply this deficiency and to furnish information for varying temperature differences across the air spaces, the conductance values for single air spaces faced with reflective insulation shown in Figures 2-B and 3-B were computed at the Bureau of Standards.

Conductance values obtained by calculation instead of observation were chosen, because they fell intermediately among various experimental results indicating reasonable agreement with such results. The use of a formula permits the construction of a table giving more consistant values than scattered experiments by various investigators who may have used varying materials.

NOTE: These pages B-1 and B-2 supersede pages B-1 and B-2 of Part XI, Bulletin LR-5, dated 4-24-50. Corrections and revisions have been made on both pages.

The values shown on the attached Figures 2-B and 3-B are for air spaces at a mean temperature of 40°F. The variation in conductance value for mean temperatures of from 10°F to 80°F (not shown on the chart) are within 4% of the values for 40°F mean temperature. Consequently, the values shown on the chart are considered accurate enough for temperatures encountered in buildings. These values have been compared by the Bureau of Standards with values quoted by the Guide and other authorities, and in cases where comparisons seemed legitimate, agreement within 10% was obtained. The data in the tables and shown by the graphs on Figures 2-B and 3-B are believed to represent the best estimate of conductance values for single air spaces faced with reflective surfaces that can be made with existing available information. The values can be used for multiple air spaces by multiplying the resistances by the number of air spaces or by adding the resistances of various air spaces together when E is different for different air spaces.

The conductance values for vertical air spaces with horizontal heat flow in Figure 3-B are considered accurate enough for heat lost calculations for air spaces of from 3/4" to 4". They are based on calculations of radiant heat transfer and transfer by convection. With convection present, conductance through the air would not be a factor. The conductance values for heat flow up or down in horizontal air spaces are limited to the widths indicated on the chart.

For horizontal air spaces, heat transfer downward occurs largely by conduction and therefore varies markedly with the width of the air space. For heat flow upward and for horizontal heat flow in vertical air spaces, convection is preponderant and the variation of conductance with width is less marked. A great deal of experimental work on various thickness of horizontal air spaces is needed to develop complete information concerning variations of conductance with width of air spaces.

Figures 1-B, 2-B and 3-B give a graphical means of obtaining conductance values for air spaces faced with one or two reflective surfaces. They are based on E, the effective emissivity for the air space. E may be read from Figure 1-B, when the number and the emissivity "e" of the reflective surfaces are known.

The conductance of an air space, of width within the limits indicated, may be read directly from Figures 2-B and 3-B. If there are several air spaces in a group and some have two reflective surfaces, enter the charts on Figures 2-B and 3-B with the proper E for the material and one or two surfaces and read the conductance for each air space directly.

The temperature difference across an air space can be approximated from inspection of the building section and the conductance read from the curves. When the total resistance of the section is determined, the temperature difference across an air space can be corrected since the temperature drop is proportional to the resistance fraction represented by the air space or any other insulating element. One or two trials are sufficient

APPENDIX B

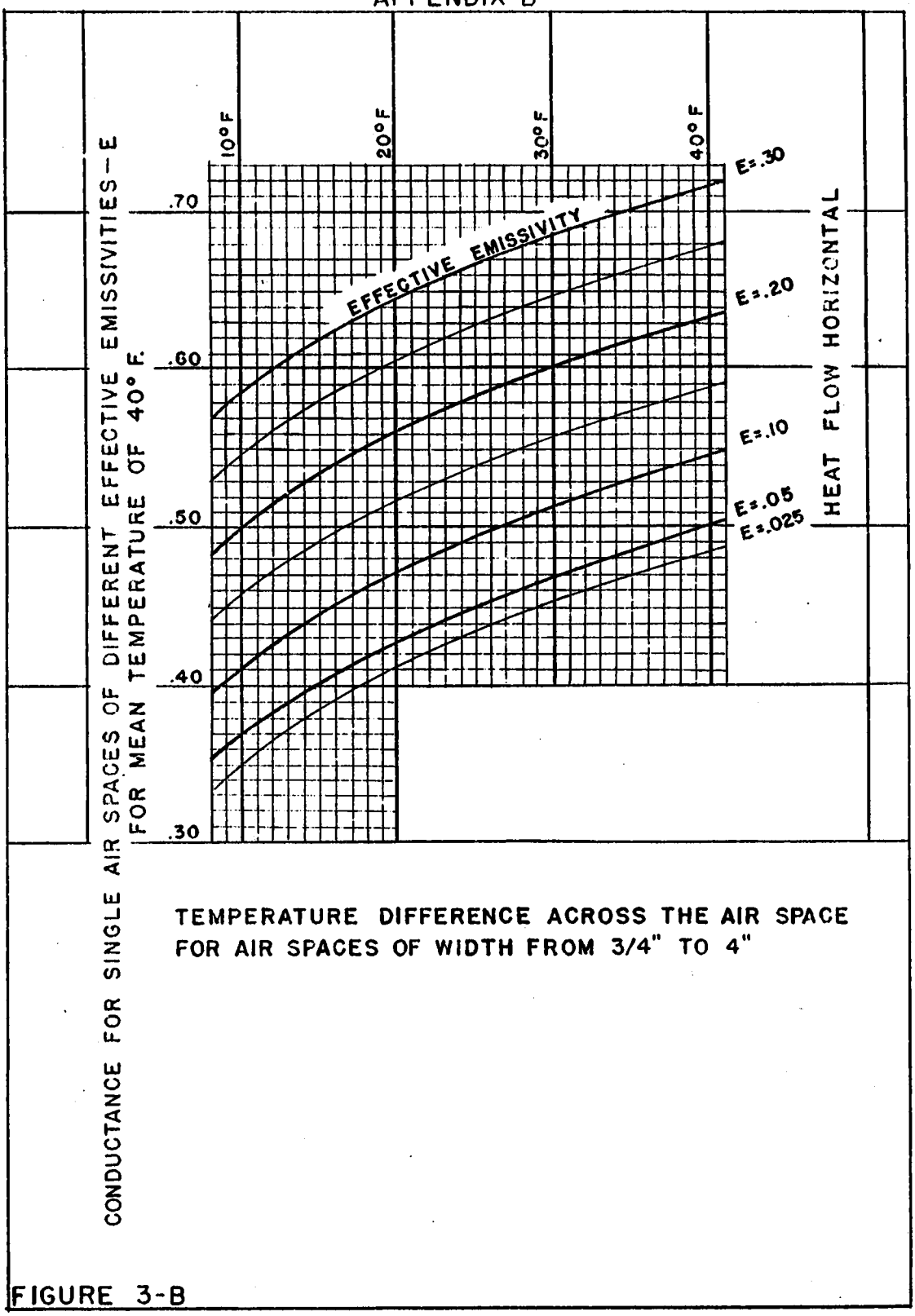
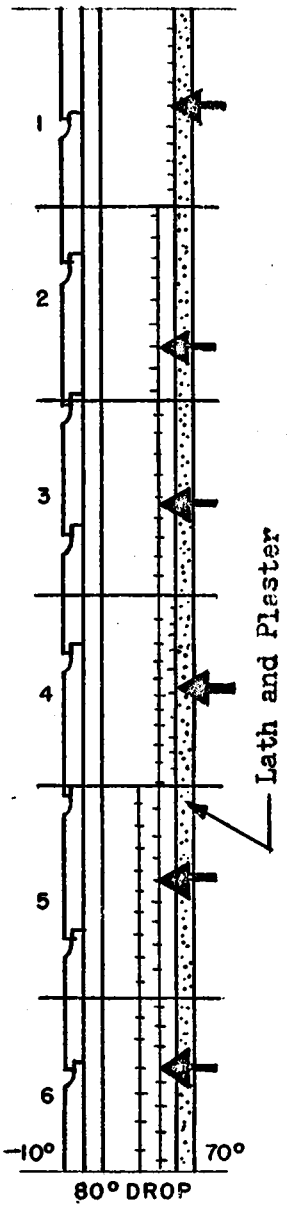


FIGURE 3-B

NOTE: These pages B-7 and B-8 supersede pages B-7 and B-8 of Bulletin No. LR-5, PART XI, dated 4-24-50.

APPENDIX B



Wall No.	1	2	3
Interior still air	.61	.61	.61
Vapor Barrier			
Lath and plaster	.42	.42	.42
Air space without foil	--	.91	--
Air space with one foil	2.13	2.20	2.28
" " " " "	--	--	2.28
Sheathing and siding	1.85	1.85	1.85
Exterior still air	.61	.61	.61
Total resistance R	5.62	6.60	8.05
Resistance inside barrier	1.03	1.94	3.31
% R inside vapor barrier	18.3%	29.4%	41.2%
Temp. at the vapor barrier	55°	46°	37°

Wall No.	4	5	6
Interior still air	.61	.61	.61
Vapor Barrier			
Lath and plaster	.42	.42	.42
Air space without foil	--	.91	--
Air space with one foil	2.30	2.32	2.38
" " " " "	--	--	2.38
Air space with two foils	2.36	2.40	2.46
Sheathing and siding	1.85	1.85	1.85
Exterior still air	.61	.61	.61
Total resistance R	8.15	9.12	10.71
Resistance inside barrier	1.03	1.94	3.41
% R inside vapor barrier	12.6%	21.3%	31.8%
Temp. at the vapor barrier	60°	53°	45°

		Single Glass	Window with Window sash
Interior still air	Vapor Barrier	.61	.61
Glass		.10	.10
Air space		--	.91
Glass		--	.10
Exterior still air		.61	.61
Total resistance R		1.32	2.33
Resistance inside barrier		.61	.61
% R inside vapor barrier		46.2%	26.2%
Temp. at the vapor barrier		33°	49°

ONE REFLECTIVE SURFACE
TWO REFLECTIVE SURFACE
LOCATION OF VAPOR BARRIER

Good design requires that probable temperatures on the warm side of the vapor barrier shall be higher than the temperature on the warm face of window glass (single glass in warm areas and double glass in cold areas) to insure that the vapor barrier will be dry as long as the glass in windows is dry. When condensation occurs on windows ventilation of the room is indicated and condensation on the vapor barrier should be unlikely.

FIGURE 4-B

MASONRY MATERIALS (Cont'd)	Thermal Resistence R.	Reference
Sand and gravel concrete per inch	.08	Guide 1/
Cinder Concrete	.22	"
10" Cavity Wall		
4" Hard Brick, 2" Cavity, 4" Tile	2.35	.44 + .91 + 1.00
14" Cavity Wall		
4" Hard Brick, 2" Cavity, 8" Tile	3.02	.44 + .91 + 1.67
6" Speedbrik Wall	1.31	BMS-86
8" Speedbrik Wall	1.64	BMS-86
INSULATING MATERIALS		
Mineral Wool per inch	3.70	Guide 1/
Cotton Insulation " "	3.77	Bureau of Stds.
Glass Wool " "	3.70	Mfr.
Fiber Insulation Board " "	3.03	Guide 1/
Kimsul " "	3.70	Peebles
Palco Wool " "	3.22	Bureau of Stds.
Foamglas " "	2.50	Mfr.
Thermax " "	2.17	Peebles
Corkboard " "	3.33	Guide 1/
Gravel	Variable	See the ASHVE Guide
Earth	"	" " " "

Certified test reports of nationally recognized testing laboratories may be accepted by Local Authorities as establishing the K factor of insulating materials or tests by the National Bureau of Standards may be arranged through the Technical Branch, Public Housing Administration, Washington 25, D. C.

1/ Refers to the Heating, Ventilating and Air Conditioning Guide published by the American Society of Heating and Ventilating Engineers.

NOTE: This page C-3 supersedes page C-3 of Part XI, Bulletin LR-5, dated 4-24-50. Two items have been added to the list of Insulating Materials.

APPENDIX D

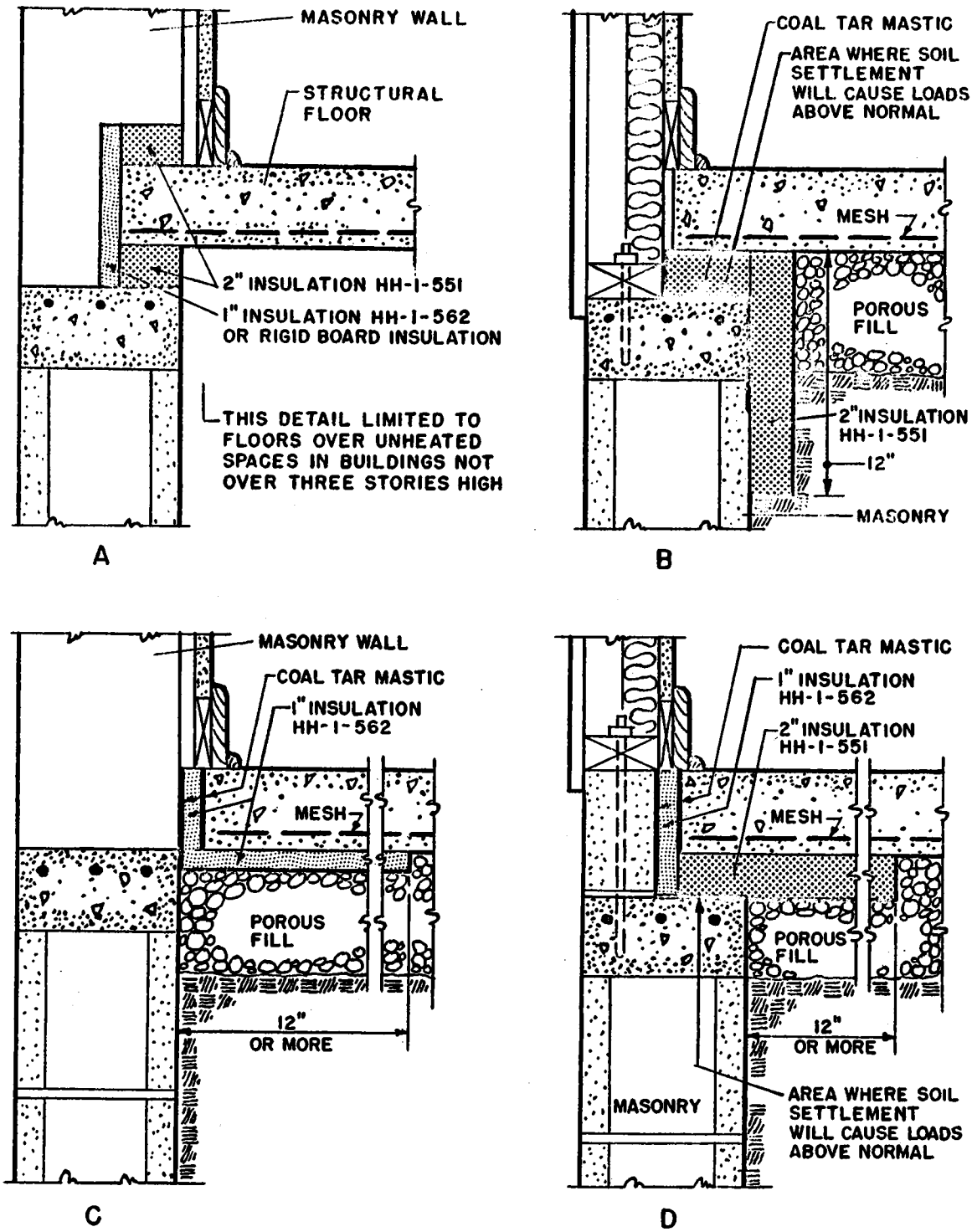


FIGURE I-D DESIGNS FOR FLOOR EDGE INSULATION FOR EXTERIOR TEMPERATURES OF 0°

NOTE: This page D-1 supersedes page D-1 of Bulletin No. LR-5, PART XI, dated 12-12-51.

STRUCTURAL DESIGN - MATERIALS AND METHODS

Part II - Supplement 1

EVIDENCE OF DESTRUCTIVE CONDENSATION IN LOW-RENT HOUSING

1. GENERAL

There are many known cases where condensation of water in walls and roofs, caused by damp air or steam within the dwellings, has resulted in major damage to roofs, walls, and paint, due to the careless installation of insulation and vapor barriers in walls and roofs, or lack of proper and adequate ventilation, or both. Such cases have been noted in all types of housing, private and public, but the latter cases are especially serious because of the compelling necessity to avoid undue maintenance expense in connection with Federally-aided public housing.

These facts have been publicized, but many designers have not seen or had firsthand knowledge of destructive condensation—and this is equally true as to Local Authorities, contractors, installers and inspectors of insulation.

Many well designed installations of insulating materials have been spoiled by careless and inefficient workmanship and inspection. Instruction sheets covering the installation of insulation, which are packed by the manufacturer with the material, are often disregarded and can be found lying on the floor or ground within a few feet of the installation which is being made completely at variance with the instructions.

The purpose of presenting the reproductions of photographs (see Figures 1, 2, 3, and 4) is to sharpen the awareness of designers, inspectors, and others, to the serious results and dangers which are inherent in poor design and workmanship in the utilization of thermal insulation and vapor barriers in dwelling construction.

2. CAUSES OF FAILURES

The conditions shown in Figures 1, 2, and 3, do not present enough detail to show the exact conditions responsible for the formation of excessive moisture which cause the precipitation of water of condensation. They do, however, show clearly that condensation occurs in improperly designed or constructed buildings, and that the trouble is serious with resulting expense and inconvenience. On-the-spot inspection of these and other similar cases indicate that violations of good design and practice which were immediately responsible for the moisture in these roof and wall spaces can be summarized as follows:

a. Damp crawl spaces.
b. Openings in floors which permit dampness to rise through the house.
c. Lack of vapor barriers in walls and ceilings.
d. Improper installation of vapor barriers in walls and ceilings.
e. Impermeable non-breathing exterior wall coverings.
f. Lack of attic or roof space ventilation.

The failure of paint as shown in Figure 4 was partly due to the absence of a vapor barrier in the walls. In addition, the habit of some tenants of keeping the house closed tightly all day and night and using a gas range for heating, aided in the overall damage. The two dwellings shown were similarly constructed, but one shows blisters and failure of the paint coating to a much greater extent than the other. Both dwellings had damp, poorly ventilated crawl spaces, but in one house the tenant provided ventilation and followed a rational heating method, which reduced condensation and so avoided wet siding.

There is a considerable volume of literature which explains at length how improper practices operate to cause the troubles and damage mentioned above. No effort is made to duplicate that material in this short Bulletin Supplement. These publications are not in complete agreement as to details of the cause and cure of condensation problems and difficulties, and no one of them contains all of the information available. Collectively, however, they cover the subject adequately. The following publications deal with this subject and constitute valuable references for designers and others:

Condensation Control in Dwelling Construction
Housing and Home Finance Agency
Superintendent of Documents
Government Printing Office
Washington 25, D. C. Price 20¢

How to Control Moisture in Homes
National Mineral Wool Association
2906 RKO Building, Rockefellow Center
New York 20, N. Y. Price 25¢

Bulletin No. LR-5, Part II
Issued by the Public Housing Administration
(To which this release constitutes Supplement 1)

3. NECESSARY PRECAUTIONS

An abstract of the precautions which will prevent most if not all of the troubles and damage illustrated in Exhibits 1, 2, 3, and 4, and the difficulties due to conditions listed in paragraph 2, follows:

To prevent moisture from damp crawl spaces from penetrating house walls and attic or roof space, the best precautions are drainage of the crawl space if standing water or wet conditions exist, and the installation of heavy, asphalt saturated felt over the entire crawl space area.

The Table of Recommendations which follows and the map which constitutes Figure 5 serve to summarize recommendations covering installations which are necessary in order to control the unfavorable conditions listed in paragraphs 2c, 2d, 2e, and 2f. The recommendations are, perhaps, a little "on the safe side," which we believe is desirable. The advantage of pitched roofs over flat roofs, in designing to eliminate condensation, is to be noted. More damage has been observed in flat roof construction than where roofs are pitched.

TABLE OF RECOMMENDATIONS

for Attic Ventilation
and for Vapor Barriers Under Insulated Attics

(Refer to Figure 5 for Condensation Zones)

TYPE OF ROOF	CONDENSATION ZONES I	II	III
Flat - Slope less than 3 in 12	Net area of ventilation should be 1/600 of attic area at each eave, plus a vapor barrier and free circulation of air from eave to eave.	All requirements same as Zone I	All requirements same as Zone I.
Pitched - Slope 3 in 12 or more	Net area of ventilation should be 1/600 of attic area at each eave and 1/300 near ridge, plus a vapor barrier.	Same ventilation at eaves as Zone I. Vapor barrier included unless ventilation near ridge is included as in Zone I.	Same ventilation at eaves as Zone I. Vapor barrier not needed.

NOTE: The above recommendations are adapted from "Condensation and Control in Dwelling Construction", which is listed in paragraph 2. That publication also recommends that walls with a "U" factor of less than 0.25 in any zone, or walls with exterior covering or sheathing with a water permeability of less than 5 perms in Zones I and II, should have vapor barriers. This covers plywood siding or sheathing. If these recommendations are followed, structural damage will be avoided in most cases. There are occasions when even uninsulated walls and freshly painted lap siding will show evidence of condensation damage and paint failure. However, these are unusual cases and in the final analysis it is more economical to treat them on the interior of the dwelling with a vapor resistant paint or similar treatment than to install vapor barriers in all walls.

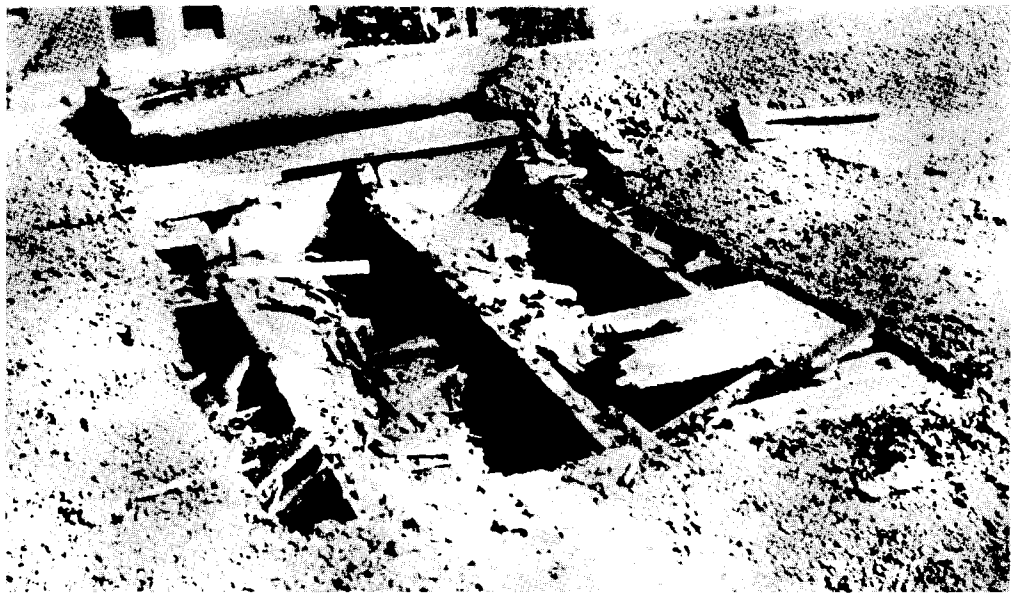


FIGURE 1. SHOWING DESTRUCTION OF ROOF CONSTRUCTION BY CONDENSATION

FIGURE 2. SHOWING ROOF STRUCTURE DESTROYED BY CONDENSATION

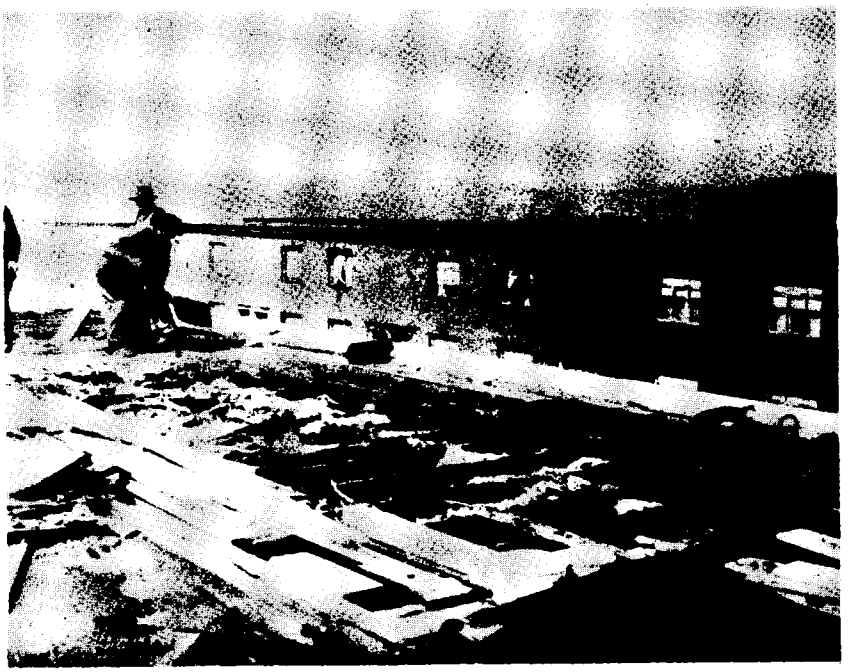


FIGURE 3. SHOWING REPLACEMENT OF DAMAGED ROOF STRUCTURE

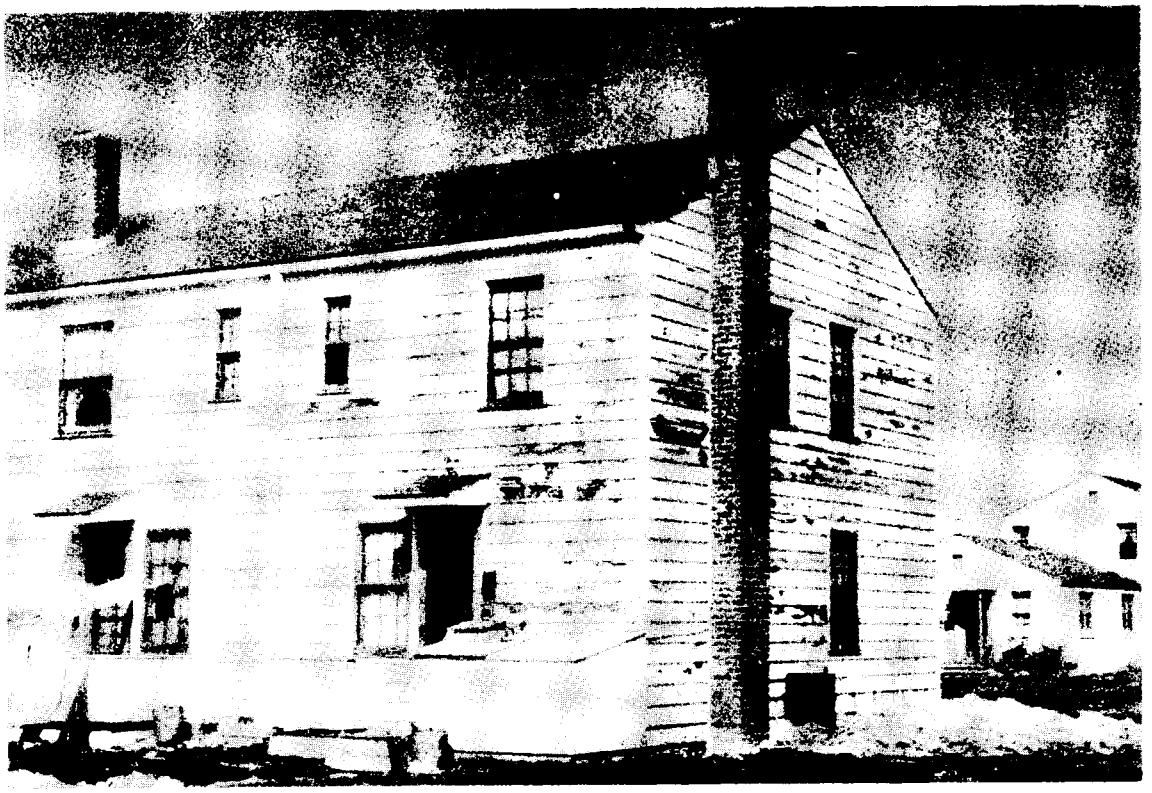
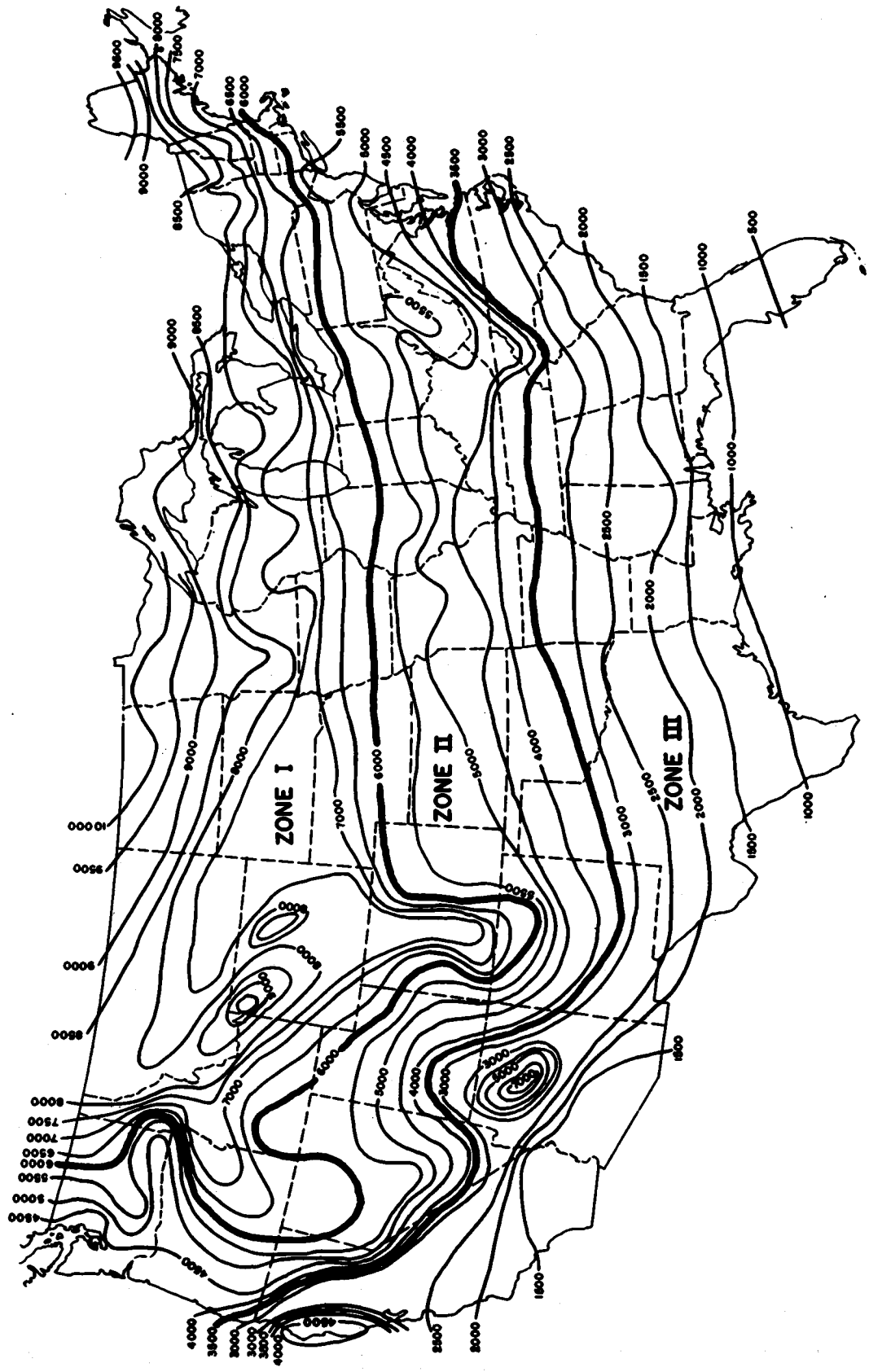


FIGURE 4. PAINT BLISTERING DUE TO CONDENSATION



DEGREE DAY MAP OF THE UNITED STATES AND CONDENSATION ZONES I, II & III

FIGURE 5

GPO 83-55098

- -

STRUCTURAL DESIGN, MATERIALS AND METHODS

PART VI - SLAB-ON-GROUND FLOOR CONSTRUCTION

This Bulletin does not deal with the relative advantages and disadvantages of slab-on-ground construction as compared with other types; that problem will be discussed in another Bulletin. However, it is pertinent to note that at least part of a rather general prejudice against slab-on-ground construction has come from failure to recognize the inherent problems involved in its use and to take proper steps to meet them. This Bulletin is intended as an aid in that direction. 1/

Slab-on-ground floors fall into two general classifications: self supporting slabs where the ground below is a temporary form, and slabs permanently supported on the ground.

For abnormal cases where the natural ground is subject to volume changes due to its moisture content or where the soil used for fill is of such nature that it cannot be thoroughly compacted, self-supporting slabs should be used. Fills, in such cases need only be compacted sufficiently by sprinkling, hand tamping, or rolling to insure stability while the concrete is hardening. After a period of time such fills shrink, forming a dead air space under the slab that will aid insulation, and also stop moisture in the fill from rising by capillarity into the slab. A tough waterproof paper should be laid directly on the finished grade before pouring concrete to keep cement grout from seeping into the soil and weakening the concrete. The depth of these fills may vary according to the materials used and with the degree to which they are compacted, but should be limited to 5 feet. Specifications should state clearly the contractor's responsibility for compacting the soil sufficiently to carry the slab until it has sufficient strength to support itself and construction loads that may be placed on it. The slab thickness, reinforcing, etc., of these concrete floors must be designed to carry all superimposed loads.

Floors permanently supported on the ground are of two general types: (1) solid concrete (2000 psi) reinforced, and (2) a combination tile and concrete slab. Both are laid on a prepared subgrade. Where fill is required, it is necessary to insure against settlement and permanent compaction of the fill is the most important requirement.

The importance of proper compaction of earth fill cannot be over-emphasized. All soils settle under load and, therefore, the all important factors are that this settlement should be as <u>small as possible</u>, and be <u>uniform under the entire area of the slab</u>. The compaction of fill becomes doubly important where part of the slab rests on virgin soil and the balance is on a filled area.

NOTE: These pages 1 and 2 supersede pages 1 and 2 of Bulletin No. LR-5, Part VI, dated 3-24-50. Figure 1 on page 2 has been corrected and revised.

1/ While this particular Bulletin is addressed primarily to concrete floor construction within a dwelling, it applies also to outside slabs such as terraces, porches, and stoops.

The natural ground should first be cleared of all topsoil, wood vegetable matter, debris, etc., and large stones that cannot easily be compacted in 6-inch layers. The filling material should be sufficiently granular to compact well and no large lumps of clay that cannot easily be crushed should remain. If necessary, granular material should be added to clay to aid in obtaining the desired density. Where sand or sandy loam is used, the required compaction may generally be obtained by saturating the 6-inch layers with water. Fills up to 5 feet in depth have proven satisfactory for supporting floor slabs when they were laid in 6-inch layers, sprinkled and rolled with a 5-ton roller, making four passes over each layer. Fills one foot or less may be rolled compactly or tamped by hand methods; fills over 5 feet are not recommended.

Experience has shown that it is usually more economical to prepare the subgrade over the entire building area, and excavate for pier and wall foundations later.

Solid concrete slabs should not be laid directly on fill. To interrupt capillarity which causes mildew and rot in floor coverings, it is necessary to interpose other materials between the earth and the slab. (See Figure 1.) Laboratory tests have shown that coarse gravel, crushed stone, or slag (graded from 3/4" to 2") are excellent barriers to capillarity. Conversely, sand and cinders have little or no value. Waterproof kraft paper should be laid on the 6-inch bed of stone or gravel before placing concrete, to keep the cement grout from filling the voids and reducing the concrete strength. The four-inch concrete slabs should be reinforced with a wire mesh having #10 wire spaced 6 inches both ways.

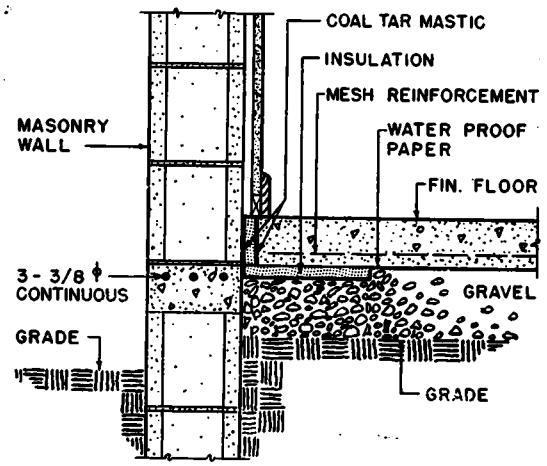


FIGURE 1

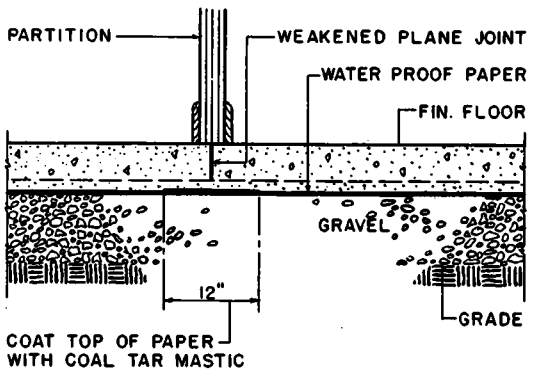


FIGURE 2

To minimize cracking in floor slabs due to normal shrinkage of the concrete, weakened plane joints may be used. (See Figure 2.) This is done by cutting the concrete slab down to the reinforcing before the slab has set. These cuts, across the width of the building, should be about 30 feet apart and can usually be located under partitions. To provide against termites entering the joint, the waterproof paper under the slab should be mopped with coal tar pitch in a strip about 8 inches wide.

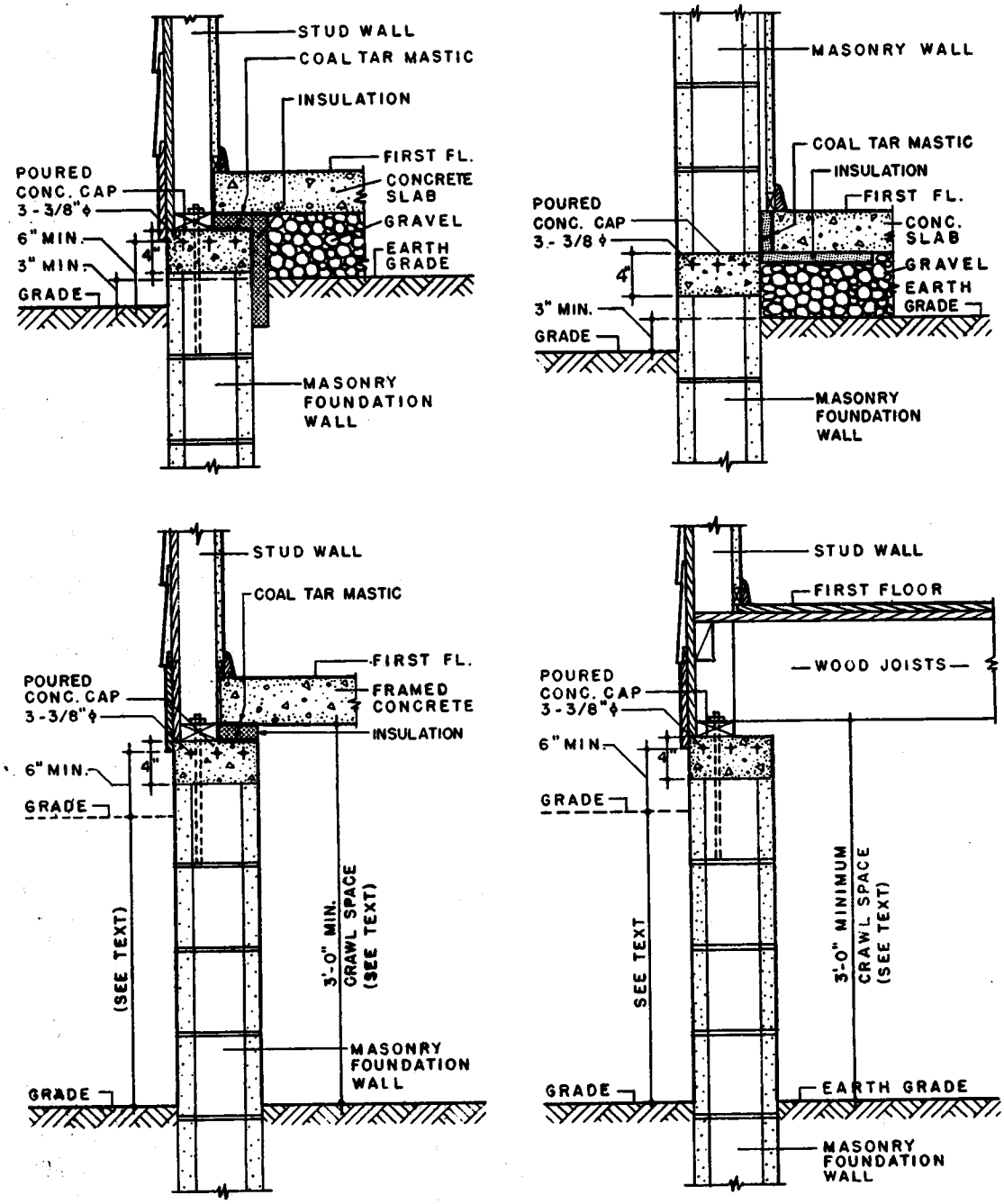


FIGURE I WALL CONSTRUCTION DETAILS FOR TERMITE CONTROL

NOTE: These pages 3 and 4 supersede pages 3 and 4 of Bulletin No. LR-5, Part VII, dated 3-24-50. Figure I on this page has been corrected and revised.

For more detailed information on termite behavior and their control, the following publications of the United States Department of Agriculture will be found helpful:

1. Leaflet #101, Injury to Buildings by Termites.

2. Farmers' Bulletin #1911, Preventing Damage to Buildings by Subterranean Termites and Their Control.

3. Farmers' Bulletin #1472, Preventing Damage by Termites or White Ants.

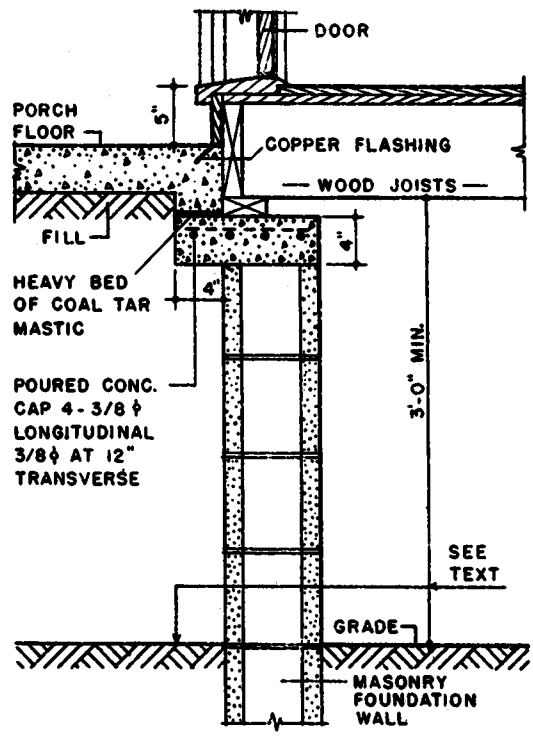


FIGURE 2 PORCH CONSTRUCTION FOR TERMITE CONTROL

APPENDIX D

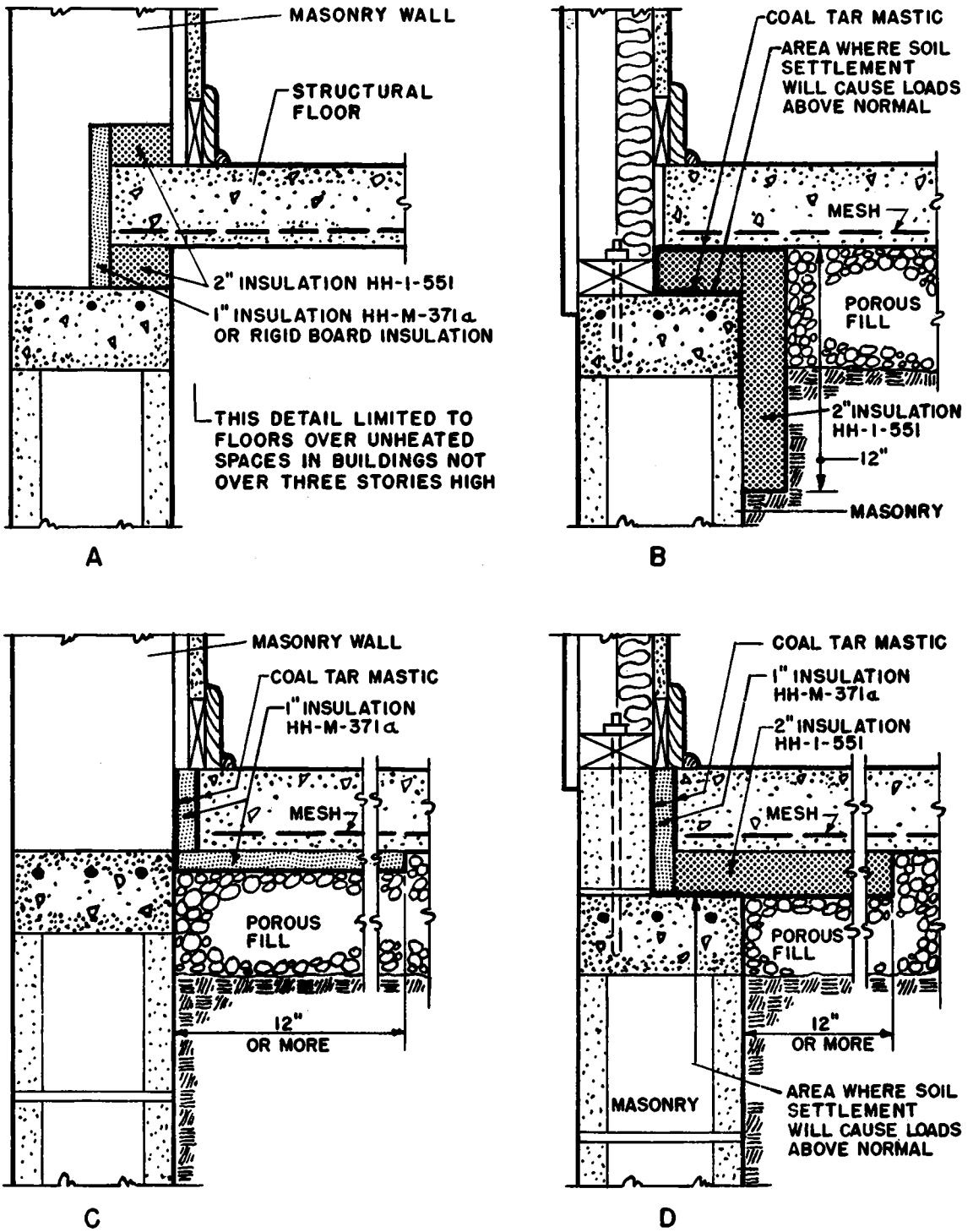


FIGURE I-D DESIGNS FOR FLOOR EDGE INSULATION FOR EXTERIOR TEMPERATURES OF 0°

NOTE: This Page D-1 supersedes Page D-1 of Bulletin No. LR-5, Part XI, dated 4-24-50.

11. SUPPLEMENTARY NOTES--SPECIAL PRECAUTIONS TO BE TAKEN

Bulletin LR-5, Part XV, Cavity Walls, contains the best information on the subject available at this time and, if followed with extreme care in design and construction, should produce satisfactory results. Experience indicates that the design suggestions have been followed, but there is some evidence of unsound practices in construction.

This Part contains (in Paragraph 9) the following, the importance of which cannot be overemphasized: "The cavity must be kept free of mortar droppings which might clog up the weep holes or become lodged on the ties and form a means for water to bridge the air space. With reasonable care, this is accomplished by the use of a wooden slat placed in the cavity to catch the loose mortar; the slat is lifted out and cleaned just before the next tier of ties is placed in the wall." The cavity wall, with crimped metal ties, was developed because previous types of hollow masonry walls had used masonry units to bond the inner and outer wythes together, and this allowed rain water to span the cavity and thus penetrate the inner wythe. Permitting mortar droppings to fill the cavity will produce a similar condition and thereby defeat the entire purpose of the cavity wall. Inspectors on the construction of cavity walls should insist that slats placed to catch the mortar be used at all times, and that they are of the proper width to retain all the mortar that drops from either wythe.

Another condition that must be avoided, because it would create a definite hazard, is the placing of utility pipes, particularly gas lines, in the cavity of such walls. These pipes would not be accessible for repairs without impairing the structural stability of the wall, and if leaking gas should explode, the floors might easily collapse for lack of bearing on a shattered inner wythe. Any venting of the top of the cavity to permit possible gas leaks to escape is also objectionable, since these vents, in combination with the weep holes at the bottom of the wall, produce a flue action that makes the wall feel considerably colder. In colder climates this would require the extra expense of furring or insulation, to provide a livable condition in the building. Therefore, under no circumstances should any utility pipes be placed in the cavity space of these walls.

STRUCTURAL DESIGN, MATERIALS AND METHODS

PART XVI - EXPOSED CONCRETE BEAMS, COLUMNS, AND FINS

1. OCCURRENCE

The collection of dust and the occurrence of mildew and mold in the winter time on the interior surfaces of concrete beams and columns of dwellings has plagued many tenants and housing managers and is a recurring source of maintenance expense in many projects. Dampness and warmth in the presence of organic paint coatings operate to favor the growth of micro-organisms which feed on and destroy the oil in the paint and discolor the finish by the growth of areas of dark mold.

a. The immediate cause of this dampness on the concrete is a distillation process present in all dwellings. Water is evaported to the air by washing, cooking, breathing, the use of unvented gas burning equipment and other means, and the resultant steam is condensed on any surface cold enough to cool the air in contact below a critical temperature called the dew point. The water and fog present on window glass on cool mornings illustrate the process. The prime causes of the trouble are walls which are too low in insulating value to maintain interior surfaces above the dew point common to most dwellings or construction, and materials which lower the temperature of the interior surface by increasing the normal rate of radiation to the exterior air.

Examples of wall constructions which are too low in insulating value to prevent condensation under normal conditions in cool climates are concrete beams and columns uncovered on both exterior and interior surfaces. Examples of construction which cause trouble by excess radiation of heat to the exterior are cantilever concrete balconies and eave overhangs integral with concrete floors and roofs. These act like fins on air cooled engines by increasing the area by which the wall can lose heat.

b. The growth of mold and destruction of paint, and sometimes of plaster, is not only a major source of maintenance expense, but a source of criticism of public housing design and maintenance. If environment has any effect on the morale and the vigor of tenants - and such an effect is scarcely to be doubted - then the decayed appearance of moldy and ragged walls will help to defeat some of the purposes of low-rent housing.

2. CONTROLS

Any methods of construction or design which will insure interior surface temperatures of walls or beams which are above the dew point temperature usually found in low-rent housing will usually avoid condensation on the walls. Sometimes unusual conditions of interior temperatures and humidity will be found, but an occasional cold snap should not cause trouble because the dampness must be frequent to provide conditions favorable to the growth of mold.

a. Usual winter temperatures and humidities found in low-rent housing are considered as not exceeding 80°F and 50% relative humidity. This corresponds to a dew point temperature of 60°F and means that when the wall surface temperature is 60°F or higher condensation on the wall will be unusual.

Since we need to design against normal exterior low temperatures only the design temperature used for the locality by local heating engineers may be used as the limiting low temperature. The difference between the design temperature for the locality and the usual limiting interior temperature, will be the temperature drop from interior to exterior, and the difference between 80°F and 60°F, the permitted temperatures at the wall, will represent the temperature drop to the interior wall surface. Since temperature drops through the various layers of a wall are proportional to the thermal resistances of those layers, the U factor needed to maintain the surface temperature at or above 60° can be computed as follows:

Let U = the thermal conductance of the wall = $\frac{1}{R}$

Let R = the thermal resistance of the wall

Let F = the interior surface resistance, normally .607

Let T = temperature drop from 80° to the design temperature

and 20° = permitted temperature drop to interior wall surface

The general formula becomes $R = \frac{.607 \times T}{20}$

Solving for R, when the design temperature equals 0°;

$$U = \frac{1}{R} = \frac{20}{.607 \times 80} = .41$$

Using this formula, the required U factors for various design temperatures to prevent surface condensation on the walls are as follows:

Design temperature	Required U Factor
0	.41
-10	.37
-20	.33

Bare concrete beams and columns may have U factors as high as .70 for 8 inches of concrete and .50 for 16 inches of concrete. Comparison with the above U factors indicates the danger in their use. Surface temperatures on these concrete beams, when exterior temperatures are 0°F, may be as low as 40°F for 8 inch beams and 56°F for 16 inch columns.

The U factor of a wall section consisting of a 4-inch facing brick, an air space and an 8-inch concrete beam is .36, which indicates that such a wall would remain dry at a 10°F exterior temperature. While observations are incomplete, experience seems to confirm that deduction. Concrete columns and spandrel beams, when covered with brick veneer and without projecting fins, will remain generally free of surface condensation. This statement, of course, has no reference to U factors which are required to attain minimum or desirable heat losses.

b. Preventive measures for new buildings can be any otherwise suitable means of raising the U factor of the wall to .37 except in the very coldest areas. Approximately equal in thermal effectiveness are exterior brick veneer and interior furring with lath and plaster. In a typical 2-bedroom apartment unit the area of brick veneer required may be about 120 sq. ft., costing perhaps $.80 per sq. ft. or $96.00. The cost of inside furring and plaster over concrete beams and columns, if continuous with wall furring, may well be less than $96.00 but the appearance of the buildings with exposed concrete spandrels and beams will be less satisfactory to most people. Exposed concrete has further disadvantages. It is difficult and costly to bond masonry walls to these beams and spandrels and make the joints waterproof. Furthermore, unless the concrete surfaces are kept waterproof by periodic applications of cement water paint, moisture may penetrate to the reinforcing steel and result in unsightly spalling in freezing weather or when the steel has rusted. Exposed concrete elements also get streaked by soot and rains which requires continual maintenance if they are to be kept attractive.

c. Corrective measures on existing buildings are difficult. Added coverings on the exterior are **not** practicable, because of cost and appearance. Treatment on the inside is restricted to adding furring and plaster, or wall board, or sheets of insulating board. The weakest spot in either case is the possibility of water vapor penetrating the furred space or the insulating board and condensing on the cold concrete which is then colder than when exposed to the air of the room. Nevertheless furring and covering or covering with insulating board are the only means we know for providing a warmer surface. A successful installation in either case depends on extreme care in preventing vapor penetrating the cover and condensing behind the surface. When insulating board is used, a type which will remain stable when damp should be used, all cracks should be carefully pointed smooth, and the surface vapor-proofed by two coats of aluminum paint before applying the usual paint coat. Cracks caused by contraction and expansion or other causes must be promptly repaired. An alternate method would consist of Sanitas or Walltex coated fabric covering over the insulation board, lapped on the adjoining surface when practicable, and coated with varnish if further vapor resistance is needed.

The use of sill ventilators in casement windows will assist in better ventilation by the tenant but ventilation enough to keep the beams dry at surface temperatures lower than about 60°F will not be always attained. The design of windows is discussed in Bulletin LR-6, Part VII, and the use of ventilation as a means of decreasing condensation in the dwelling is discussed in Bulletin LR-5, Part II.

The interior surface of the glass on windows is colder than the interior surface of concrete beams. It follows that ventilation of the dwelling structures by tenants, when used to an extent adequate to prevent most of the condensation on glass, will prevent condensation on the concrete beams. The measures recommended in this Bulletin are necessary because adequate ventilation by tenants is not always secured.

d. Except in warm climates, the large radiating surfaces of overhanging, integral, concrete eaves present problems which the use of furring on the wall surfaces only will not cure. It will generally be necessary to continue the furring across the ceiling until the thermal resistance along the shortest path of heat flow equals about 2.75 or the equivalent recommended heretofore for walls. The width of overhang and wind exposure will also affect the radiation from the fins. A successful and economical design involving such variables will be extremely difficult.

3. RECOMMENDATIONS

Because of the difficulty of making corrections on existing buildings, it is recommended that in cool climates concrete beams and columns always be covered by masonry with a definite air space between the concrete and the masonry. The dividing line between cold and warm climates is not easily defined. Probably a design temperature of + 20°F would indicate a climate south of which the dampness, due to winter condensation, would not be serious.

The PHA has pointed out in other Bulletins the danger in the use of projecting concrete fins such as balconies or projecting concrete eaves. Whatever artistic or utilitarian purpose they may fulfill, there is no doubt of their tendency to accelerate cooling and consequent dampening of interior concrete surfaces in cool climates.

When it is considered essential that a projecting eave be provided as a sun or weather shade, the purpose can be achieved with wood so finished as not to require added painting or with concrete covered on top with insulation and roofing and underneath with an air space with some insulation and asbestos cement sheets. Concrete forms for a projecting fin are not too difficult on skeleton frame buildings, but are a nuisance on wall bearing buildings.

Figures 1, 2, and 3 illustrate designs which include high resistance to heat flow. Other designs are, of course, possible and may be equally or more acceptable and economical.

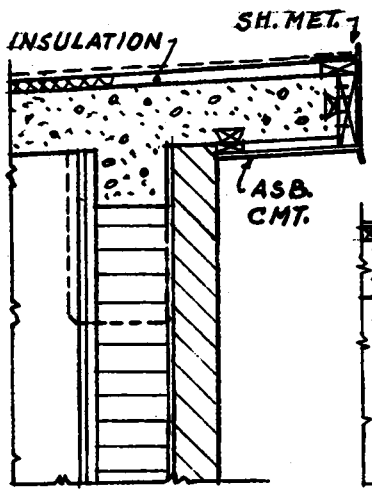


FIG. 1

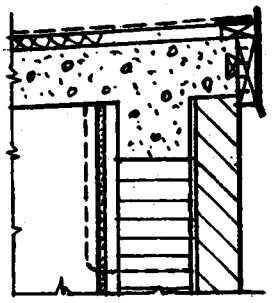


FIG. 2

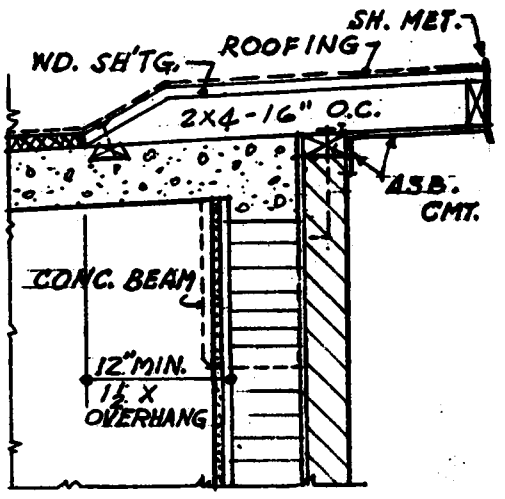


FIG. 3

ARCHITECTURAL PLANNING AND DESIGN

PART XII PLANNING THE KITCHEN-DINING ROOM

1. GENERAL

The streamlined kitchen, which has become one of the most distinguishing features of the modern American home, reflects, perhaps to a greater extent than any other part of housing design, the increasing tendency toward compactness, efficiency, and attractive appearance. These objectives have been met partly through the ingenuity and skill of manufacturers in the design of fixtures, equipment and finishing materials, and partly through studies made by researchers, home economists, and planners. The product tends to become not only more efficient for use, but luxurious in appearance.

Public low-rent housing cannot afford luxurious kitchens nor can it afford not to profit by advances contributing to basic efficiency and to a reasonable degree of amenity. Within the limits of modest standards and proper cost limitations these objectives can be met, but this is not possible unless as much or more thought and skill is applied to the problem as is given to the design of kitchens in more costly housing.

Increasingly, and especially in the case of low-income families, the housewife does all or most of the kitchen work herself; if the nature of the kitchen requires that these tasks consume a disproportionate share of her time or energy, then that much less remains for equally important items or orderly housekeeping, child care, and necessary recreation.

The planning problem, therefore, concerns selection and arrangement of standardized equipment of a kind and in a manner that will conserve time and energy and facilitate sanitary practices. Simplicity, sturdiness, and efficiency are the objectives to be sought in the selection of equipment. Mere reduction of size will not, in itself, produce an efficient arrangment; the smaller the kitchen the greater the need for skill in its planning. (Railroad dining car kitchens are not workable merely because they are small, but because every inch of space is used and every piece of equipment is placed with regard to its function and sequence in use.)

Changing economic conditions have drawn the kitchen and dining room more closely together. The combined kitchen-dining room has become a definitely established feature in modern homes and is generally preferred by low-rent tenants.

The multiple use of the kitchen and its relationship to other functions and facilities must receive more than normal attention if the limited areas and provisions are to serve their purpose effectively.

2. FUNCTIONS INFLUENCING THE KITCHEN-DINING PLAN

a. Preparation and Serving of Food. Housewives do not go about their tasks in precisely the same order of routine, and individual customs and taste will affect the extent to which the kitchen layout serves or detracts from efficiency. Hence, there are many factors which operate against even the best plan arrangement. Nevertheless, there is a natural sequence and order of operation in food preparation which should be recognized in kitchen plans and arrangements. Not only should this sequence of operation be considered in fixing the location and arrangement of equipment, cabinets, and dining furniture, but all should have sufficient clearances for ease of installation, repair and replacement, and, above all, for convenience in use.

An inventory of items found in most kitchens - china, cooking ware, miscellaneous utensils, and various foods - is amazing in its length. Intelligent planning, therefore, requires the designer to have a fair idea of their kind and bulk, and a general knowledge of the sequence of use in the natural flow of kitchen operations, in order to make proper provision for their storage.

Although the processes in the preparation of a meal involve much crossing and recrossing, there is a general line of flow: from storage to counter adjacent to sink, preparation at sink and adjacent work surface; to the range, to dining table for cooked foods and from work surface and refrigerator to dining table for uncooked foods; and, for after meal clean-up, return to work surfaces; to the sink and to storage and refrigerator. Thus, a rational arrangement of fixtures and equipment would be (left to right, or right to left): range (or refrigerator), sink and tray, work table, and refrigerator (or range), as shown in Figure 1. For larger units, the arrangement would be (left to right, or right to left): range (or refrigerator), work table, sink and tray, work table, and refrigerator (or range), as shown in Figure 2.

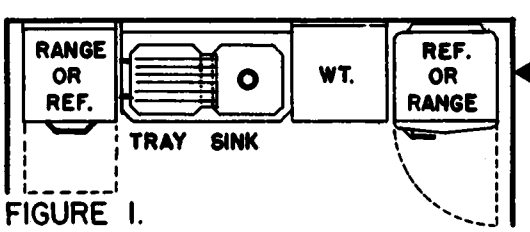
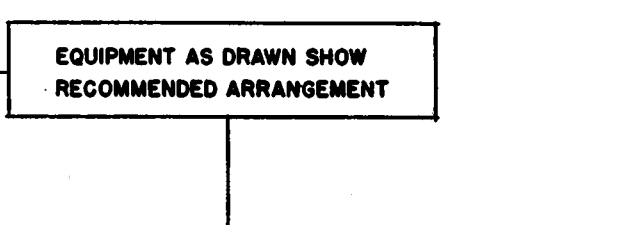


FIGURE 1.



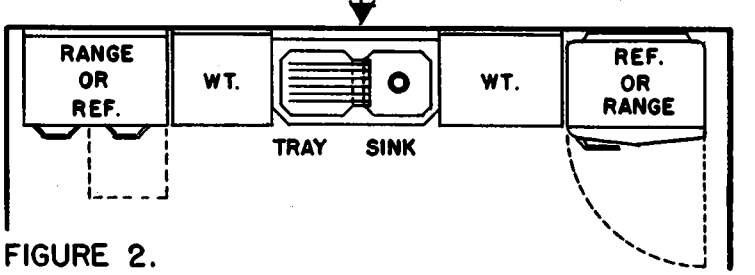


FIGURE 2.

It will not always be possible to have the kitchen fixtures, equipment and cabinets follow this simple and ideal "in-line"(or "strip") arrangement. This is particularly true in larger dwelling units, where full advantage must be taken of minimum space requirements, when dining is combined with the kitchen. In such instances, this problem may be solved by arranging the equipment and cabinets along two walls, provided general continuity of operations can be maintained. When it is necessary to depart from the "in-line" arrangement, care should be exercised in locating the range and refrigerator to avoid interference with adjacent work areas, and to provide sufficient free access space in front of this equipment when the doors are opened. (See Figures 3, 4, 5, and 6.)

b. Laundry Work. Where no other laundry facilities are provided, the tenant will generally do all or most of the laundry work in the kitchen; even when such facilities are available elsewhere in the dwelling, much of this work will be done in the kitchen. Hence, unless there is a central laundry or the dwellings contain basements with laundry trays, the unit plan should recognize this probability and provide a suitable space to keep a washing machine; generally, in the storage area adjacent to the kitchen. Regardless of where the washing is done a large percentage of the ironing is handled in the kitchen.

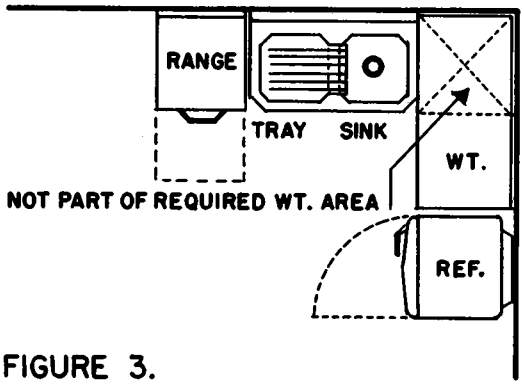


FIGURE 3.

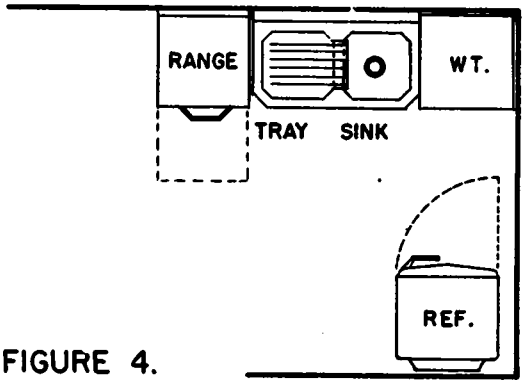


FIGURE 4.

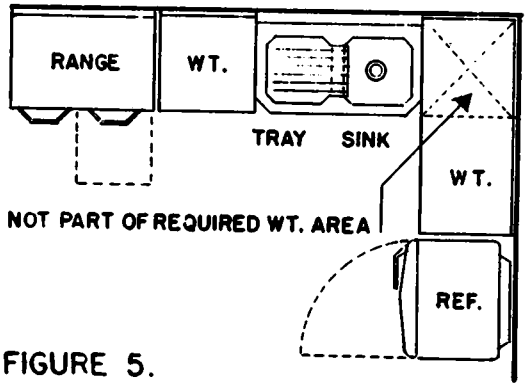


FIGURE 5.

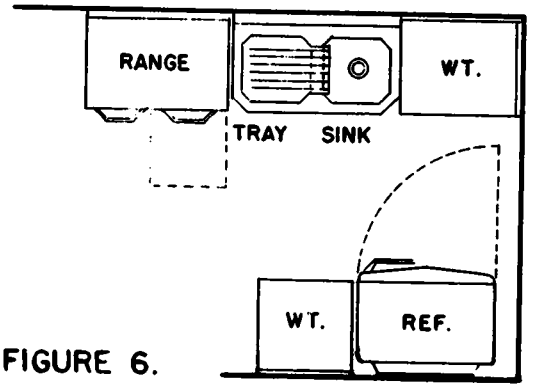


FIGURE 6.

Note: In the "L" type plan as shown in Figures 3 and 5 the work top area which closes the corner at right of sink is not to be considered as part of the base cabinet requirement.

c. Dining Space Use in Combination with Kitchen. Although the majority of low-rent tenants prefer the combined kitchen-dining room, the combination of living-dining (in some instances the separate dining room) is planned occasionally. This preference for the dining space as a part of the kitchen is primarily based on two things: (1) the proximity and convenience of the dining table to the food preparation area, which makes for ease in serving and clearing; and (2) the desire to restrict the food preparation and consumption to one easily cleaned area, and to preserve the living room in comparative tidiness for relaxation and entertainment.

The open space of the combined kitchen-dining room, in addition to being used jointly for food preparation and consumption, can be utilized for many other household activities. When laundry work is performed in the combined kitchen-dining room, it is much more convenient than to work in the confined space of the small single-purpose kitchen. Many housewives in low-rent housing prefer to do much of the laundry in the kitchen, even though laundry facilities are provided elsewhere than within the dwelling.

While most of the uses noted here are most conveniently performed in the combination kitchen-dining space, the single purpose kitchen should also be planned to facilitate these purposes as far as possible. Regardless of planning, the housewife spends a large percentage of her time in the kitchen; washing, ironing and cooking are tasks which consume much time and demand her frequent presence in this room. In view of this, she must perform other duties there. Some care of infants is inevitable, supervision of older children from this room is necessary; at least part of the sewing or repair work is done here; meals are often planned in this room; the space may be convenient for between-task relaxation; and the kitchen-dining room may even serve as the place for receiving casual visitors. These things may not seem important to the planner, but they are vital to the housewife; if some thought is given to them by the planner it is believed that the space will serve better.

d. Planning the Dining Space. Like all other minimal areas, the minimum dining area will not function unless care is taken in planning. In addition to the space required for the proper size table and sufficient number of chairs to accommodate all members of the family, the kitchen-dining room should be arranged to allow proper clearances between dining facilities and kitchen equipment, and for free movement of the occupants, especially in the larger units where two or more workers may be engaged in meal preparation or other kitchen tasks.

Since it is possible, within reasonable limitations of room size, to provide the necessary space in the combined kitchen-dining room to accommodate the majority of the various sizes and shapes of dining furniture customarily in the possession of tenants, space to accommodate oversized tables and chairs or complete dining suites is not justified.

Dining tables vary in shape (round, oval, square and oblong), but the types most commonly used are square or oblong. While the size of these tables will vary slightly according to the individual designs produced by furniture manufacturers, it has been found that many, currently produced, fall within the sizes listed in the PHA Standards.

When planning dining space in the kitchen, it is advisable to avoid dining nooks or areas confined by partitions. While such spaces (see Figure 7) may be adequate to accommodate normal size tables and chairs with proper clearances, they are not as flexible as open dining spaces (see Figure 8) which are expansible.

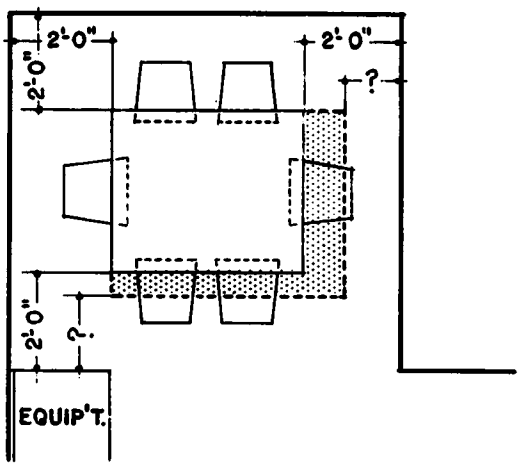


FIGURE 7.

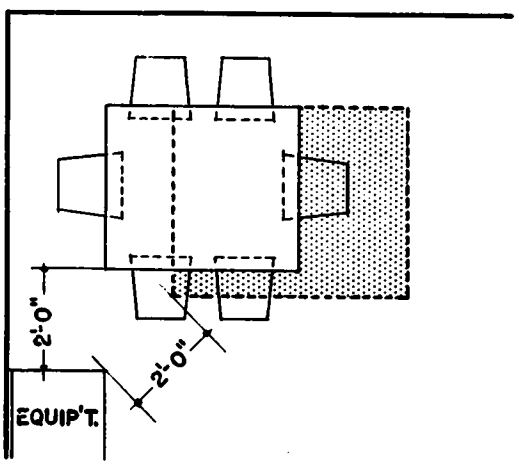


FIGURE 8.

To provide adequate space for circulation, there should be at least 3'-6" clearance when the dining table is directly opposite any kitchen equipment, and at least 2'-0" between the table and adjacent walls, where chairs are to be accommodated. It is desirable to have the dining space located so that the table can be placed at or near a window. (See Figures 11, 12, 13, 14 and 15.)

e. Cooking and Refrigeration Equipment. Bulletin LR-10, Part II, sets forth the sizes and capacities for ranges and refrigerators recommended for various size dwelling units, and as Local Housing Authorities generally prefer to procure the ranges and refrigerators under separate contract, sufficient space should be allowed (in planning the kitchen) to permit the installation of the specific type and capacity range and refrigerator produced by the manufacturers.

f. Ranges. For kitchens in dwelling units for occupancy by six or more persons, there is a growing trend to increase the size of the range from the standard apartment type to the larger cabinet model, which has additional top working surface and storage compartment for large pots and pans. (See Figures 10, 13, 14 and 15 for space and clearances.) When coal ranges are installed

in kitchens adjacent to non-fire-resistant walls, they should be placed at safe distances away from such walls, as required by local fire and safety regulations, or as recommended in Bulletin LR-10, Part II.

g. Refrigerators. The space requirement for the various capacities of electric, gas and ice refrigerators does not present such a problem in the planning of kitchens, as the space requirement for ranges, because leading manufacturers of refrigerators have coordinated their efforts to produce refrigerators very nearly the same dimensional size as their competitors. (See Figures 10, 11, 12, 13, 14 and 15 for sizes and clearances.) Careful consideration should be given to swing of refrigerator doors.

h. Sink and Tray Combination. The PHA Standards require that, unless laundry trays are elsewhere provided in the dwelling, the sink shall be combined with a deep tray for laundry use whether or not central laundry facilities are provided. A laundry tray is provided, since nearly every family (especially where there are children) does some laundry work in the dwelling.

The sink and tray combination fixture has been standardized by leading manufacturers, and is available with the sink on the right or left hand, as a flat rim unit for counter mounting, or with roll or apron rim with or without splash back. The sink and tray combination with a splash back approximately 6" high is preferred, and should be provided with a removable hardwood drainboard which fits over the tray compartment and is used for dish draining. It should be set at the generally acceptable height of 3'-0". (See Figure 9.)

i. Base Cabinets. Refer to PHA Standards for sizes of base cabinets, which should be in accordance with the number of occupants of the dwelling unit. For efficient operations, the base cabinet should be located at the right of the sink; however, in kitchens of larger dwelling units and where planning dictates that the equipment and fixtures be placed on two or more walls, it may be found that a more flexible working arrangement can be obtained by using two base cabinets, with the larger section on the right of the sink. The use of two separate base cabinets is not confined to equipment located on adjacent or opposite walls. For instance, the four lineal feet of counter required in a three-bedroom unit could be divided into two cabinets and arranged as in Figure 2.

The work top of the base cabinet should be of a material which will withstand the normal amount of abuse associated with meal preparation and clean up activities. While the so-called white metal materials are considered ideal for work top surfaces, the cost of these materials may limit or prohibit their use. However, there are many other materials, such as the hard pressed fiberboards with plastic finished surfaces, oiled hardwood, and with a reasonable amount of care linoleum covered work surfaces, which have proved to be satisfactory.

One intermediate shelf should be provided in the cabinet for storage of large cooking utensils and, if the width of this shelf is carried to within 6" of the cabinet door it will permit storage of tall bottles and other articles on the bottom of the cabinet.

As shown in Figure 10, the 24" wide base cabinet should have one drawer, divided into sections for storage of table silver and cutlery and equipped with a pull-out board directly under the counter top, for cutting and chopping.

The wider base cabinets should have 2 drawers, one of which should have no division strips, for storage of kitchen linens and other miscellaneous articles. (See Figure 10.)

j. Wall Cabinets. Many kitchen experts favor adjustable shelves, but these are not practicable in low-rent housing. The shelves might be removed and used for other purposes, thereby creating a replacement cost.

As the height of the ceiling in most projects will vary only slightly from the accepted standard of 7'-10", the wall cupboards should be carried to the ceiling to eliminate any dust pockets.

All wall cupboards should have doors covering the two top shelves, with the lowest of these two shelves placed at a height of 5'-10", which is about the limit of reach and which will permit the cupboard doors to swing open above the heads of most women. Cupboard doors should not be rebated where they meet, but should be designed to open independently. The balance of the shelving should be open to permit easy access to everyday dishes and other items used most frequently in meal preparations. The bottom shelf of the cupboard over the sink and tray should not extend out from the back wall more than 5½" in order to permit better visibility and not interfere with the normal angle of sight of a person standing at the sink. The clear space between this bottom narrow shelf and the first full width shelf immediately above should not exceed 9", which is ample room allowance for the storage of small items such as soap, scouring powders and condiments.

A comfortable free working space, between the top of the work surface of the base cabinet and the bottom of the wall cabinets above, is considered to be 13", except at the sink, where the space to underside of the first full width shelf should be a minimum of 23 inches.

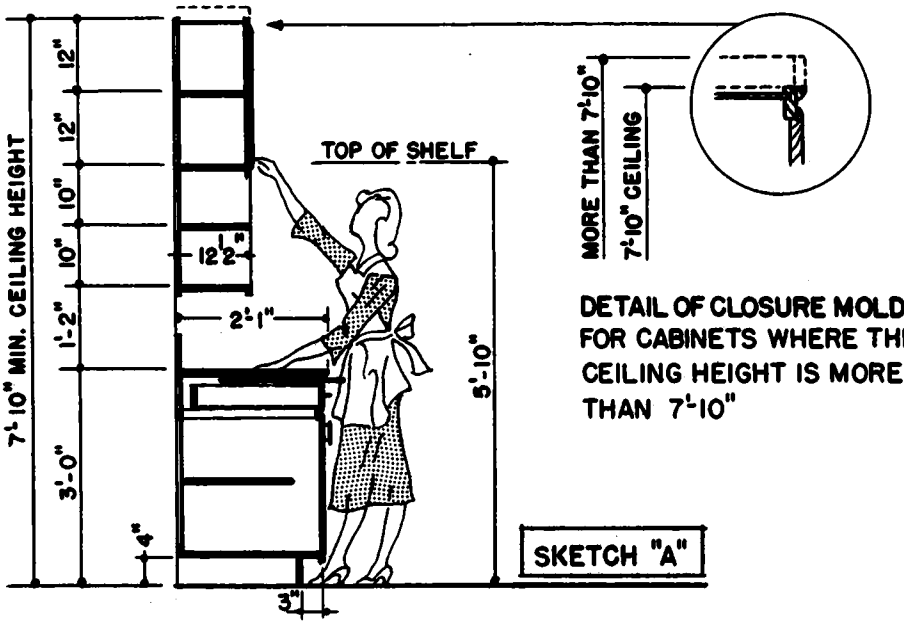
As the recommended standard type of combined sink and laundry tray has a splashback approximately 6" high, it would seem reasonable to carry up on the back wall a similar height splashback over the work surface of the base cabinet. This will afford a protection of the lower portion of the back wall of the free working space between fixtures, equipment, and upper cabinets. The remaining unprotected plaster surface of the back wall from the top of the sink and base cabinet splashbacks should be protected by the application of an unpainted material which will stand frequent cleaning. Linoleums, finished steel and plastics are examples of materials suitable for this purpose. (The reason for this precaution is that housewives frequently clean this oversink and work top surfaces with the same abrasive powder used to scour the sink and work counter.)

k. Finishes. All walls, ceiling, cabinet work and interior trim of kitchens and kitchen-dining combinations should have finished surfaces which are impervious to grease fumes, steam, and heavy moisture laden air, and will withstand

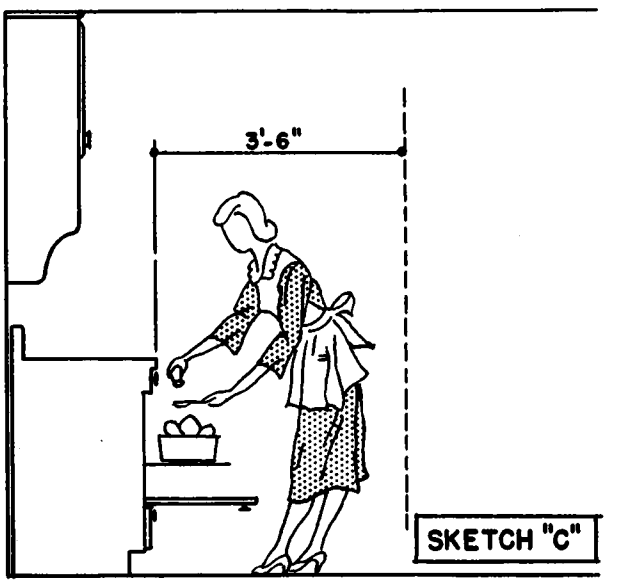
normal cleaning and usage. Recent developments of paints with enamel and various plastic bases have made available many acceptable products which produce satisfactory finishes from the standpoint of durability and offer a wide selection of color combinations. As the average housewife spends the greater part of her time in the kitchen, careful selections of color schemes will help to make her work more enjoyable, and the decoration of kitchens could well be patterned after the present trend of using more color, in an effort to depart from the monotonous, all-over white, sterilized effect so common in the past.

Kitchens and kitchen-dining combinations should have finished floors of materials which can be easily cleaned and polished, will not be damaged by grease spatterings, soap and water solutions, and will resist heavy foot traffic. Concrete floors have not been satisfactory in project kitchens, as many tenants complain that concrete floors are porous and are tiresome and too cold for small children to play on. Further, stains and grease spots are almost impossible to remove. While wood floors satisfy some of these objections, they will not withstand repeated scrubbings, stain easily, and therefore need periodic refinishing.

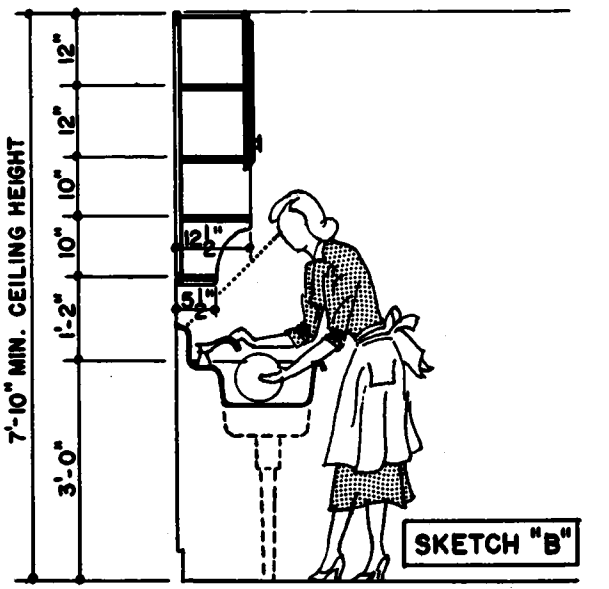
Experience indicates that a good grade of linoleum or asphalt tile is preferred by the majority of the tenants, has proved more durable, requires the minimum of effort in cleaning, and is available in a wide range of colors and patterns.



SECTION OF BASE AND WALL CABINET SHOWING WORKING LIMITS OF REACH



WORKING LIMITS AND SPACE REQUIREMENTS AT THE RANGE



SECTION AT SINK AND WALL CABINET SHOWING WORKING LIMITS

FIGURE 9 KITCHEN–DINING EQUIPMENT AND CABINET DETAILS

The shelves for the wall cabinet over the base cabinet (Sketch "A") and the sink (Sketch "B") should be spaced to accommodate the stacking of dishes and, except for the top shelf, be within the reaching range of the average woman. The bottom shelf should not extend below the critical point indicated in order to allow sufficient clear working space between bottom of wall cabinet and top of work table and sink. The bottom shelf of the wall cabinet over sink (Sketch "B") should not be more than 5½ inches wide, to increase the work and vision area over the sink. A minimum space between range (Sketch "C") and other fixed equipment or wall, in front of which it is frequently necessary to stoop or bend over, should not be less than 3'-6".

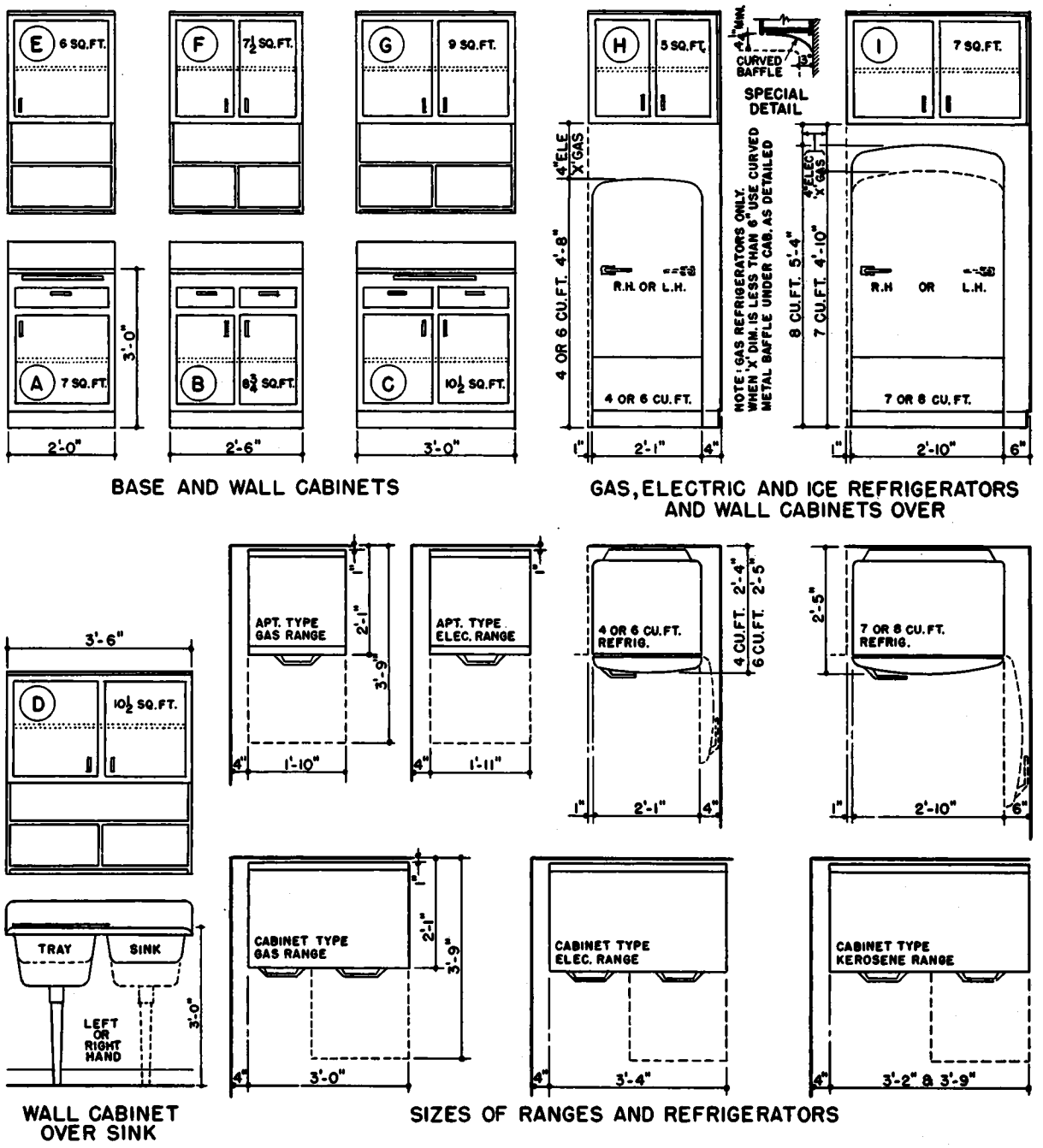
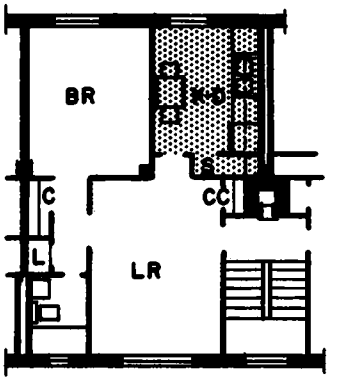
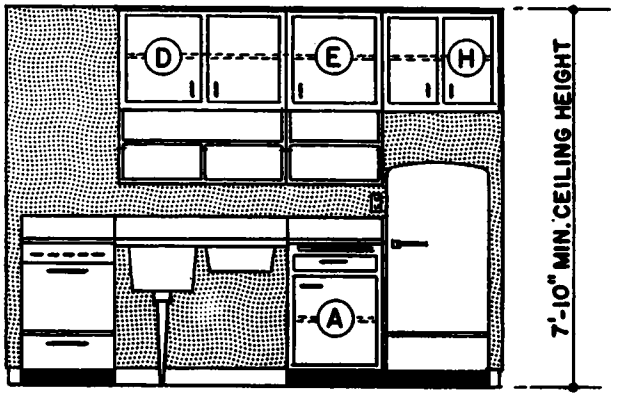


FIGURE 10 TYPES & SIZES KITCHEN CABINETS RANGES & REFRIGERATORS

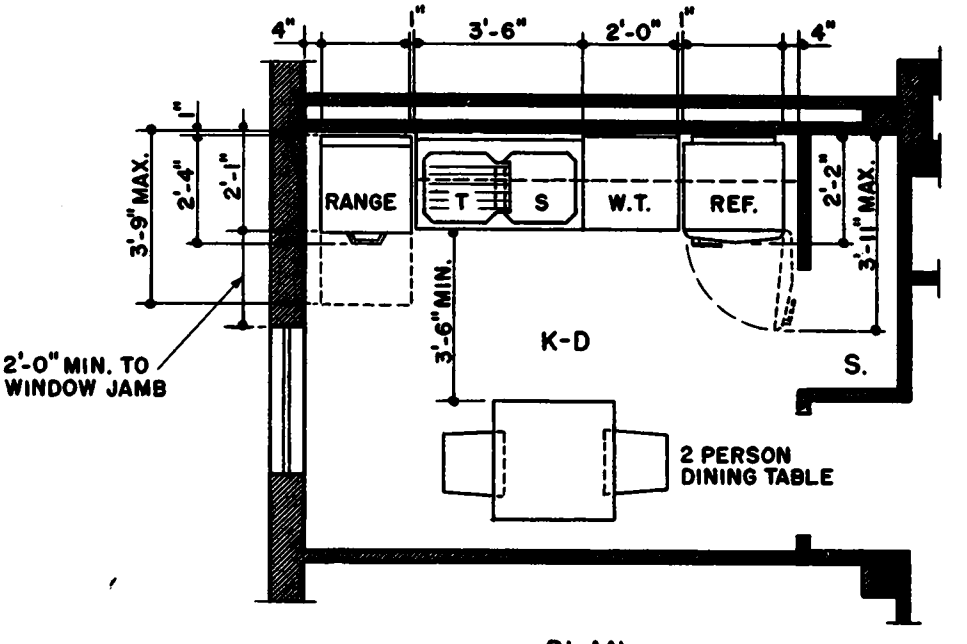
Note: Base and wall cabinets are designed as basic units, and for strips, L or U planned kitchens, in small or large kitchens. A high degree of standardization is represented with very little change in the sizes currently produced. Production standardization will depend principally on the degree of acceptance of those standards by Local Authorities. The indicated clearances for refrigerators are in accordance with manufacturers' requirements. For ranges, they permit sufficient space, between range and wall for cleaning and for pot handles to extend beyond the range.



1 BR. APARTMENT



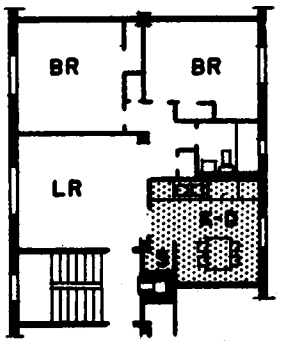
ELEVATION



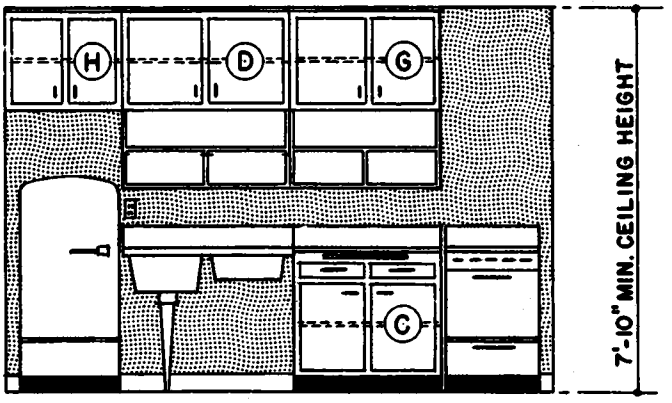
PLAN

FIGURE 11 KITCHEN-DINING ROOM ONE BEDROOM UNIT

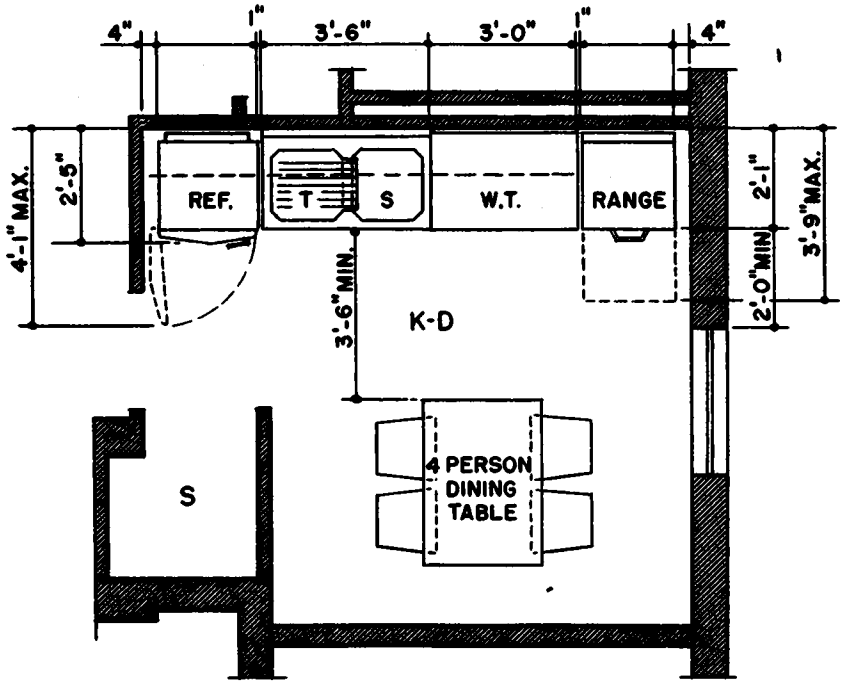
The strip kitchen is an efficent arrangment for one and two bedroom units. Note repetitive use of basic cabinet units in this and the following kitchen-dining rooms of one-to-five-bedroom dwelling units.



2 BR. APARTMENT



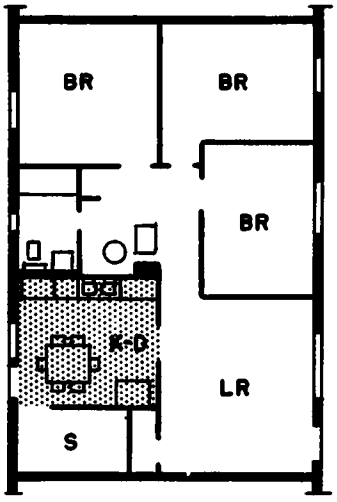
ELEVATION



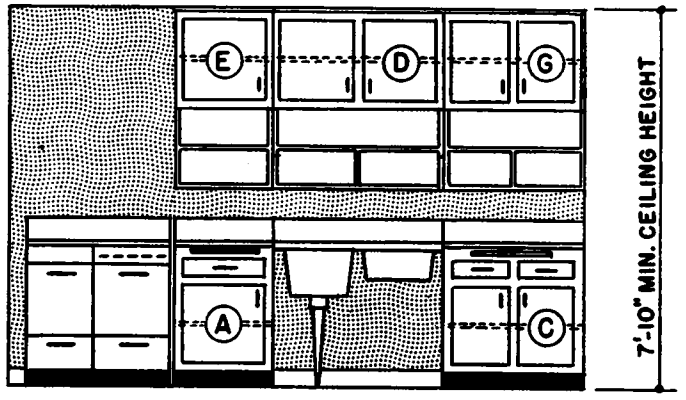
PLAN

FIGURE 12 KITCHEN-DINING ROOM TWO BEDROOM UNIT

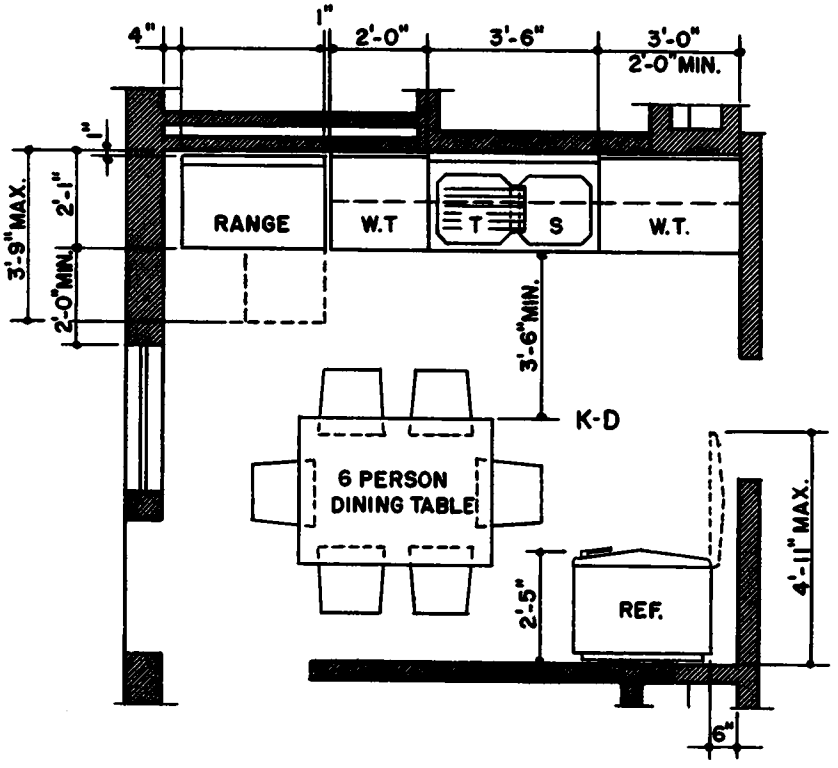
The increased work top area permits the strip kitchen arrangement for the kitchen-dining room of most two-bedroom units, without impairing the space for dining.



3 BEDROOM HOUSE



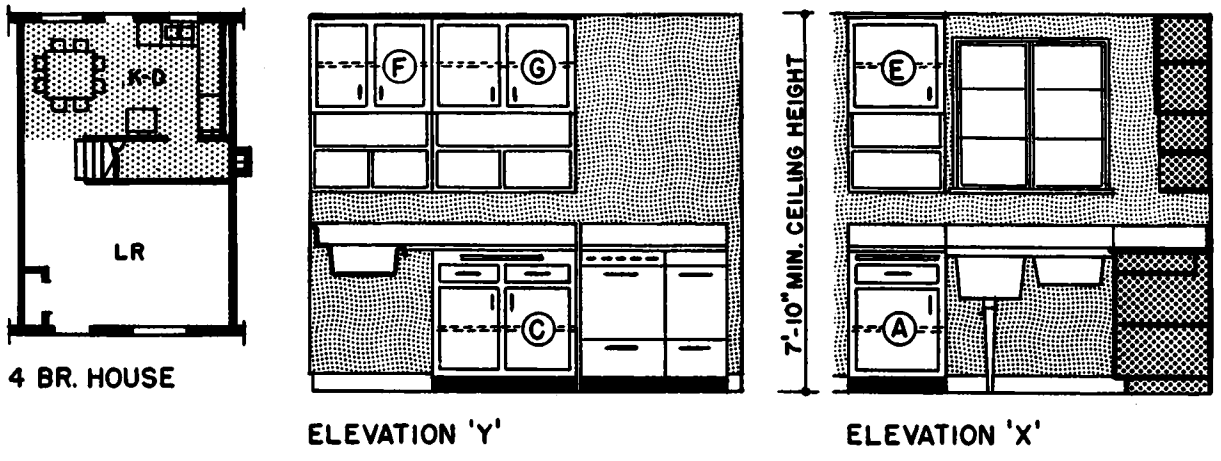
ELEVATION



PLAN

FIGURE 13 KITCHEN-DINING ROOM THREE BEDROOM UNIT

With the recommended increase in the size of the range, and extra work top area required for the three-bedroom unit, the refrigerator has been moved to the opposite wall to reduce the length of the kitchen-dining area and provide a proportionate space for the dining table.



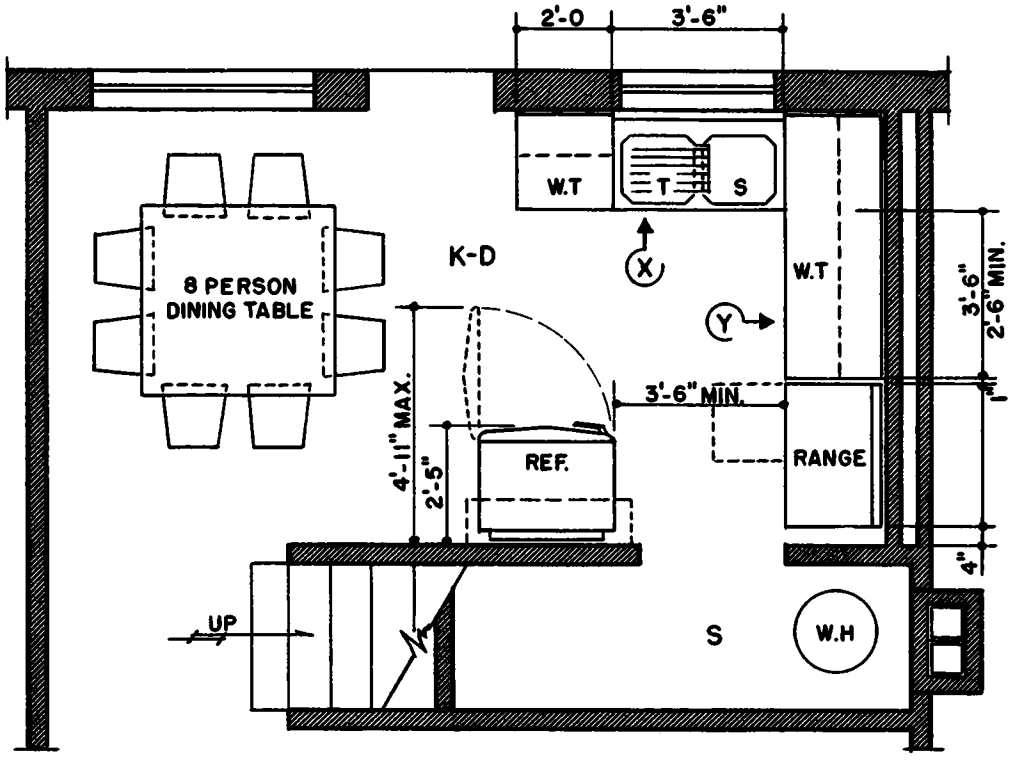
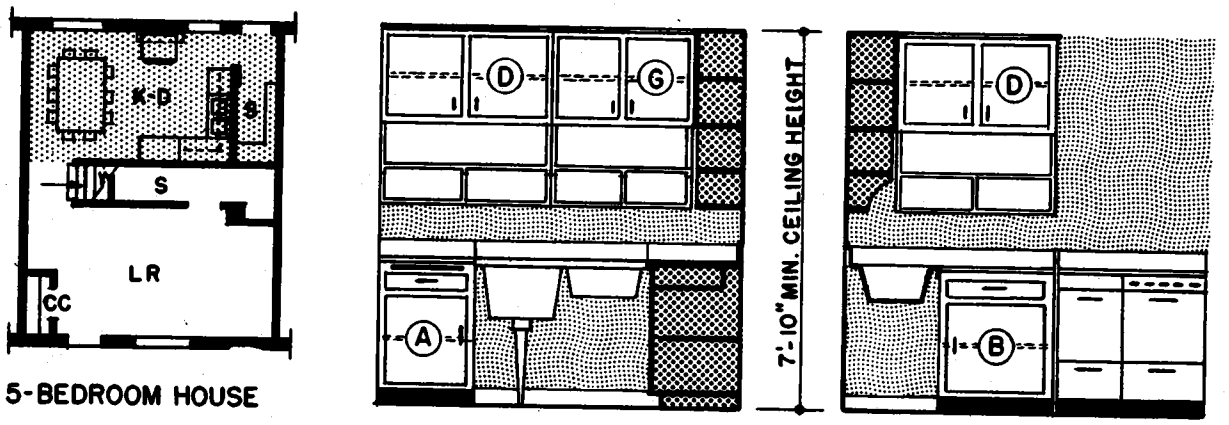


FIGURE 14 KITCHEN-DINING ROOM FOUR BEDROOM UNIT

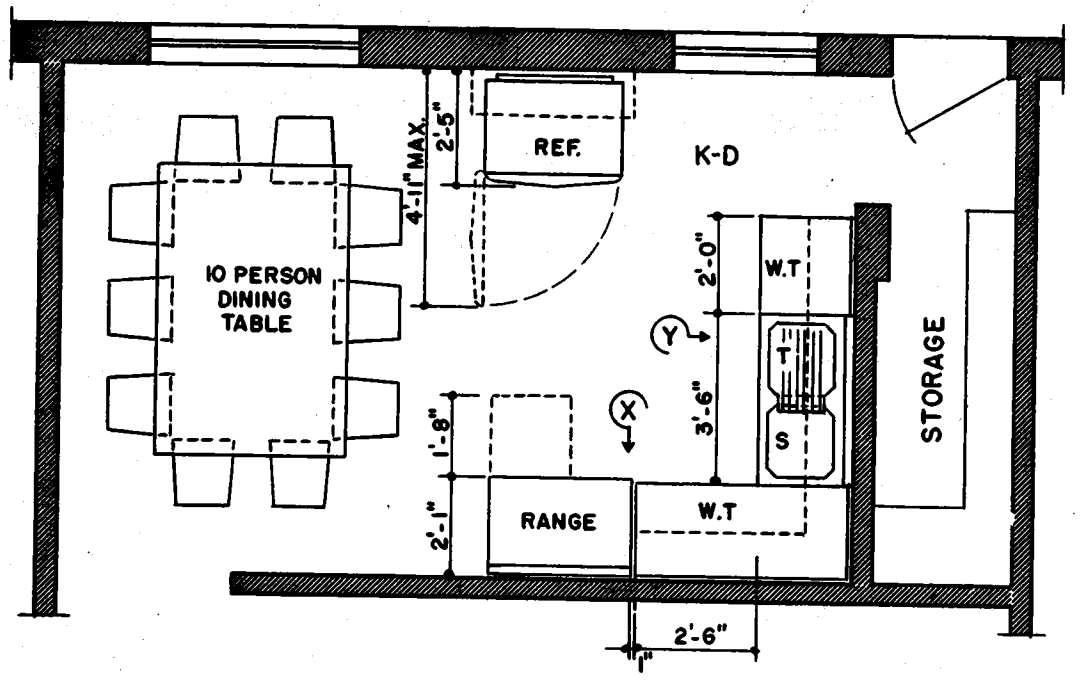
To best utilize wall space, the sink and tray has been placed under the window with the required wall cabinets on either side. The range adjacent to the long base cabinet and the refrigerator placed on the wall separating the storage closet from the kitchen area, results in an efficient "U" type arrangement of the kitchen equipment.



5-BEDROOM HOUSE

ELEVATION 'Y'

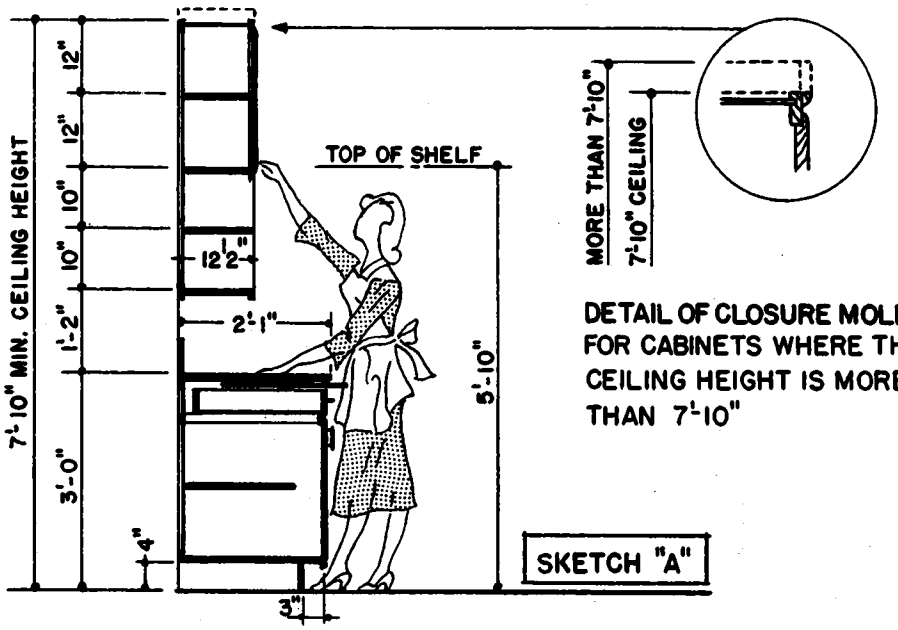
ELEVATION 'X'



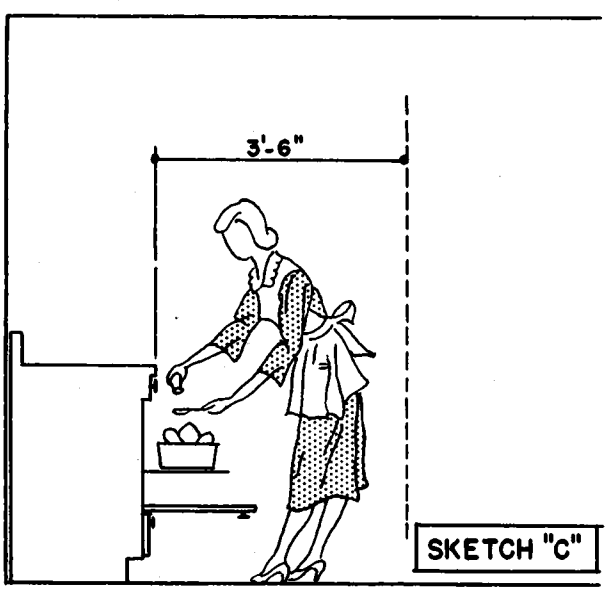
PLAN

FIGURE 15 KITCHEN-DINING ROOM FIVE BEDROOM UNIT

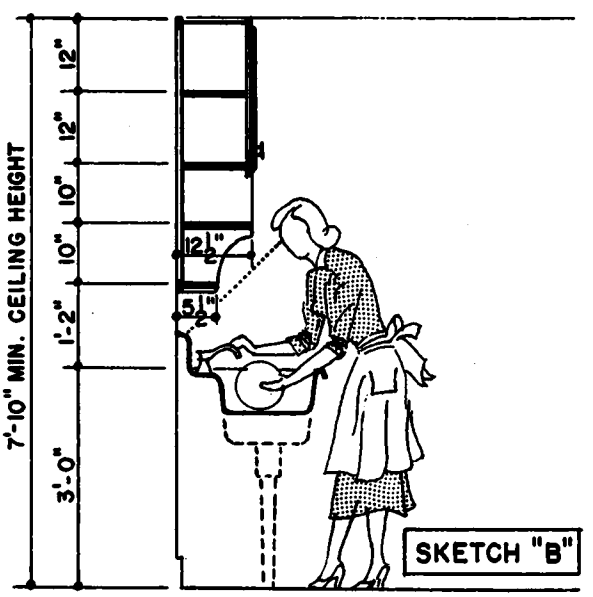
This "L" type arrangement with the refrigerator placed on the exterior wall, results in a compact arrangement, and leaves the remaining area of the room for the 10-person dining space.



SECTION OF BASE AND WALL CABINET SHOWING WORKING LIMITS OF REACH



WORKING LIMITS AND SPACE REQUIREMENTS AT THE RANGE



SECTION AT SINK AND WALL CABINET SHOWING WORKING LIMITS

FIGURE 9 KITCHEN – DINING EQUIPMENT AND CABINET DETAILS

Shelves for the wall cabinet over the base cabinet (Sketch "A") and the sink (Sketch "B") should be spaced to accomodate stacking of dishes and, except for the top shelf, be within reach of the average woman. The bottom shelf should not be lower than dimension shown, to allow sufficient clear working space between bottom of wall cabinet and work top and sink. The bottom shelf of wall cabinet over sink (Sketch "B") should not be more than 5½" wide, to increase the work and vision area. A space of not less than 3'-6" should be provided between the range and any other fixed equipment or wall.

NOTE: These pages 9 and 10 supersede pages 9 and 10, of Bulletin No. LR-6, Part XII, dated 1-19-51. The drawings on both pages have been corrected and revised.

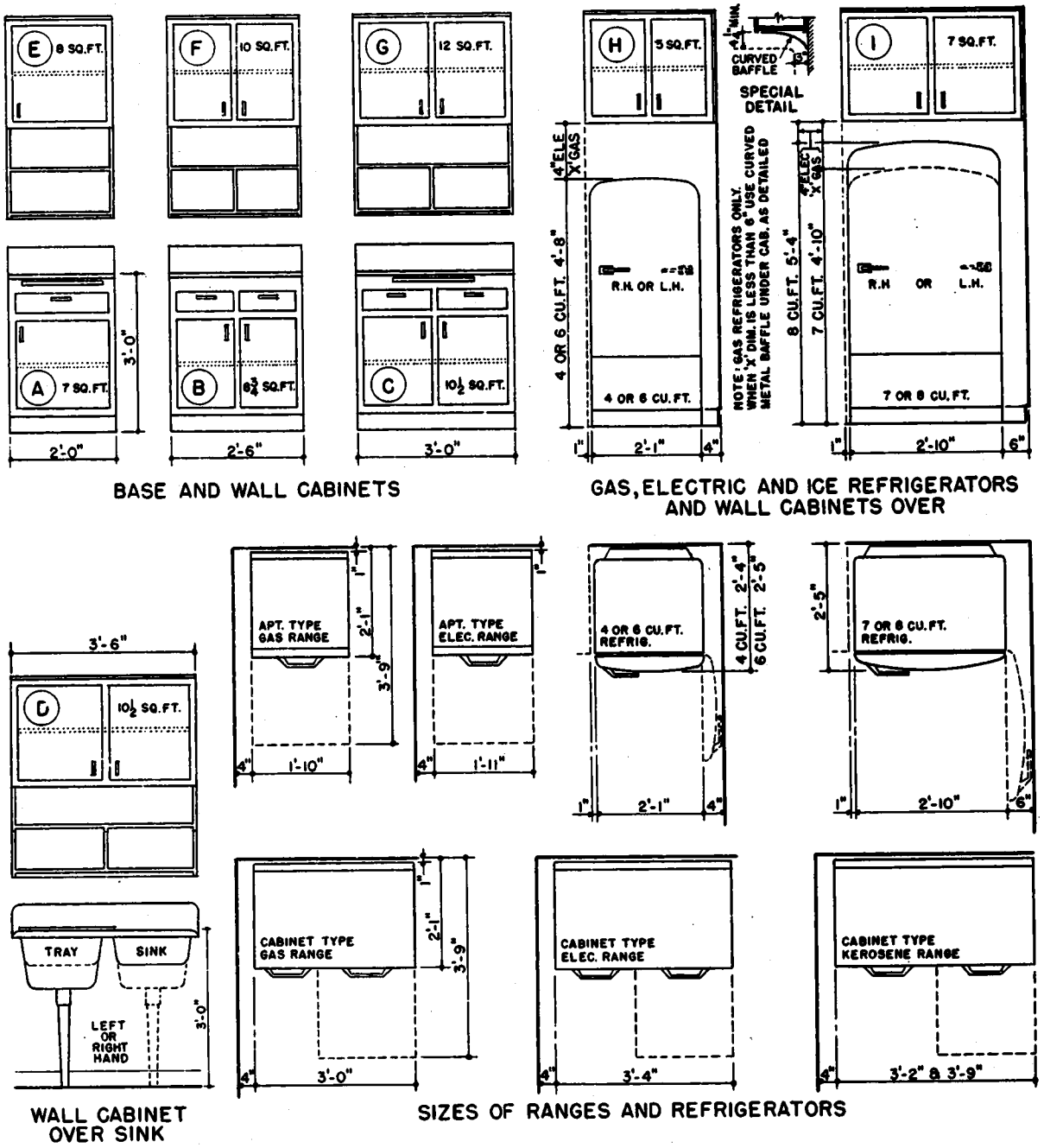


FIGURE 10 TYPES & SIZES KITCHEN CABINETS RANGES & REFRIGERATORS

Note: Base and wall cabinets are designed as basic units, and for strips, L or U planned kitchens, in small or large kitchens. A high degree of standardization is represented with very little change in the sizes currently produced. Production standardization will depend principally on the degree of acceptance of those standards by Local Authorities. The indicated clearances for refrigerators are in accordance with manufacturers' requirements. For ranges, they permit sufficient space between range and wall for cleaning and for pot handles to extend beyond the range.

PUBLIC HOUSING ADMINISTRATION
Housing and Home Finance Agency

3-21-52 Low-Rent Housing Bulletin Transmittal No. 7

Insert in Low-Rent Housing Bulletin No. LR-6, ARCHITECTURAL PLANNING AND DESIGN:

1. Part XIII, pages 1 through 3, dated 3-21-52.

HHFA-PHA, Wash. D.C.

- -

GUTTERS AND DOWNSPOUTS

1. GENERAL

Current controls on metals prohibit the use of sheet copper for gutters and downspouts. Because of this and the increasing demands by the armed forces for copper and other metals, it is advisable to consider what materials are available for such construction.

2. AVAILABLE MATERIALS

Materials which are available for gutters and downspouts are galvanized steel and aluminum (within certain limitations) and wood.

a. Galvanized Steel. Ready made galvanized steel gutters and downspouts of 28 gage metal may be purchased as a "B" product at approximately 16 cents per foot as of this date. There should be no objection to 28 gage downspouts but if 28 gage gutters are considered too light, heavier gutters can be made up from sheet material. Sheets are, however, an "A" product and the metal can only be procured by allotment after application to PHA on Form CMP-4C.

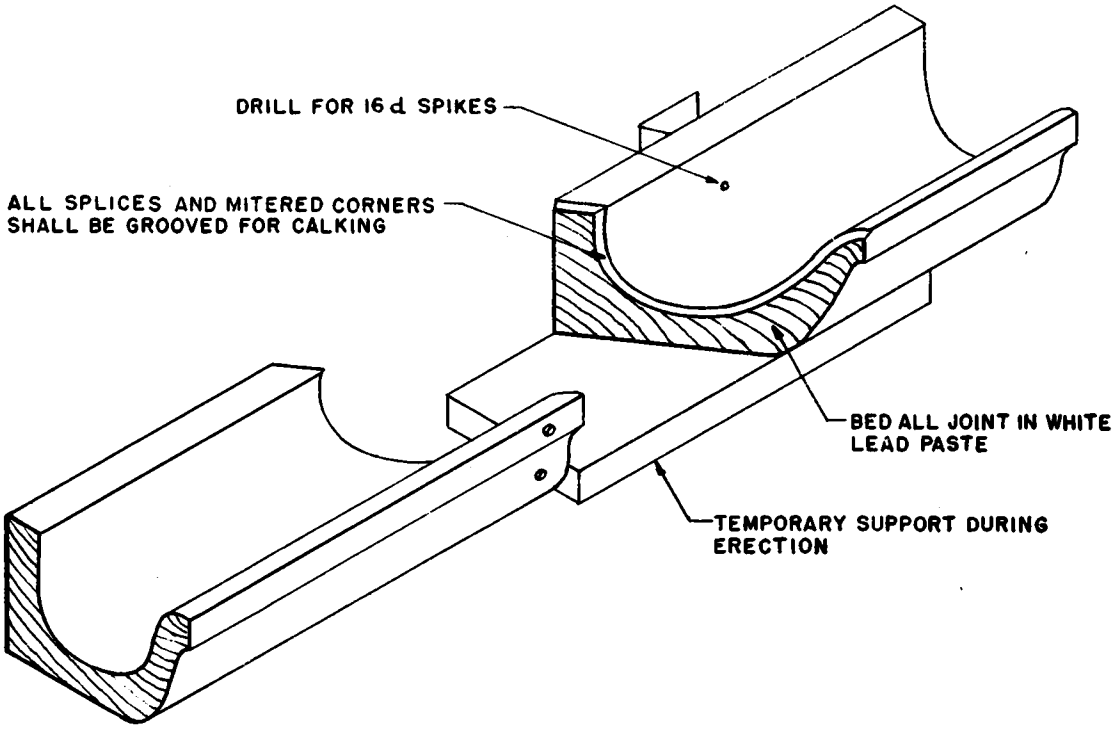
b. Aluminum. Aluminum gutters and downspouts are currently available as a "B" product and may be purchased at approximately 32 cents per foot as of this date. Aluminum gutters are usually .027 inches thick and downspouts .020 inches thick.

c. Wood. Wood gutters and downspouts are manufactured and installed as shown in Appendix A, Figures 1 and 2 of this Bulletin. Various types and sizes of wood gutters are milled and standard patterns are shown in Book No. 14, Standard Grading and Dressing Rules, as published by the West Coast Lumbermans Association. Wood gutters should be sloped to drain to prevent accumulation of water and dust. The outside of wood gutters should be either painted or stained and varnished. The interior may be painted or left unpainted as determined by prevailing local practice.

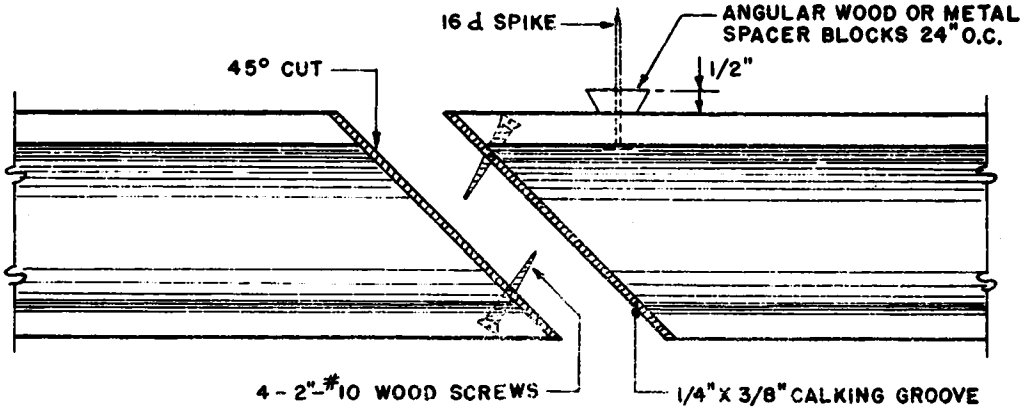
3. DETAILS

Details of wood gutters and downspouts installation follow as Appendix A.

NOTE: These details are generally adapted from publications of the West Coast Lumbermans Association.



ISOMETRIC SHOWING SPLICE

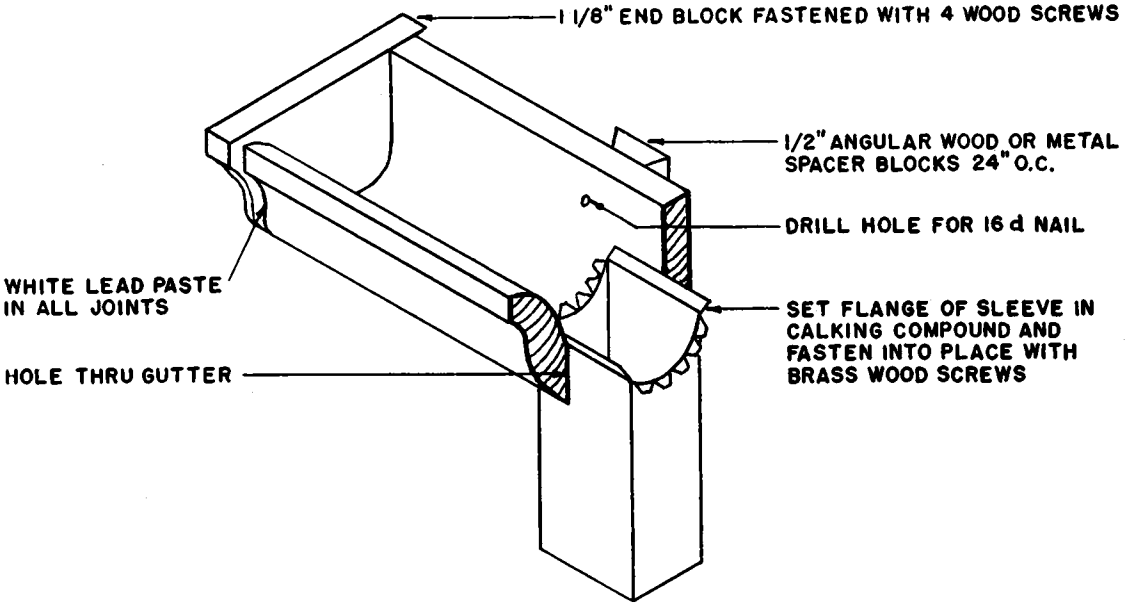


PLAN SHOWING SPLICE

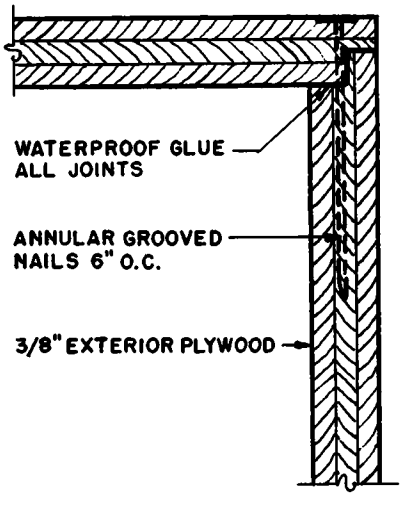
WOOD GUTTERS ARE MADE OF CLEAR ALL HEART FIR IN FOUR SIZES, NOMINALLY 3 X 4, 3 X 5, 4 X 5 AND 4 X 6. CAPACITIES COMPARE WITH METAL GUTTERS APPROXIMATELY AS FOLLOWS:

WOOD		METAL, 1/2 ROUND
3X4	=	2.6"
3X5	=	3 1/4"
4X5	=	4 1/4"
4X6	=	4 3/4"

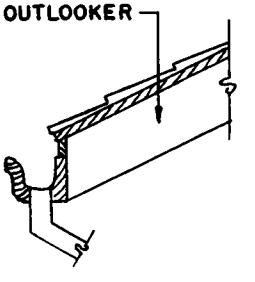
FIGURE 1 APPENDIX A



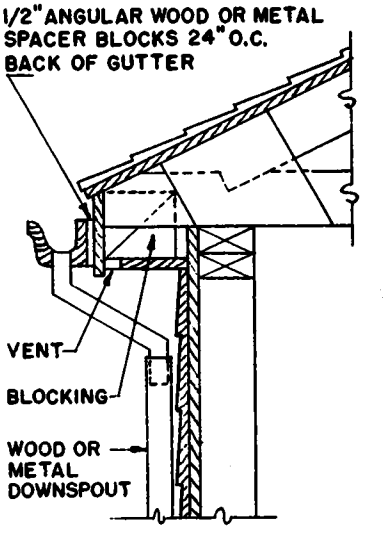
ISOMETRIC OF SLEEVE CONNECTION



F.S. DETAIL OF WOOD DOWNSPOUT



INSTALLATION OF WOOD GUTTER WHEN APPLIED TO EXPOSED ENDS OF OUTLOOKERS



METHOD OF INSTALLING WOOD GUTTER TO BOX CORNICE

FIGURE 2 APPENDIX A

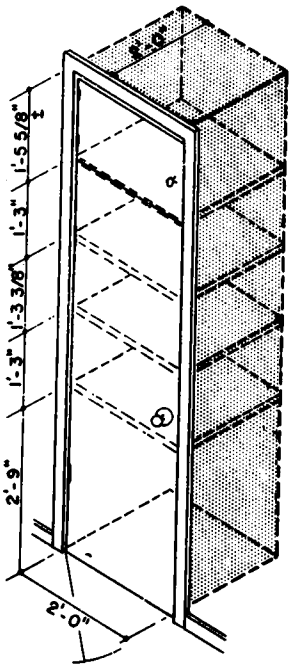


FIGURE 4

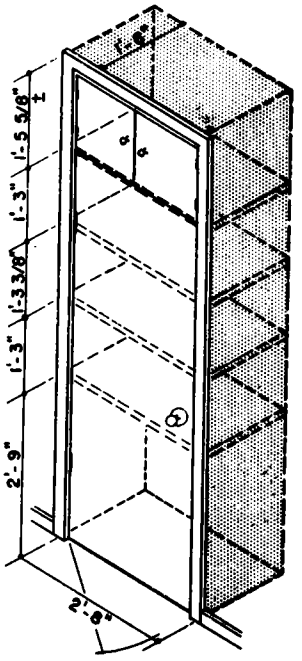


FIGURE 5

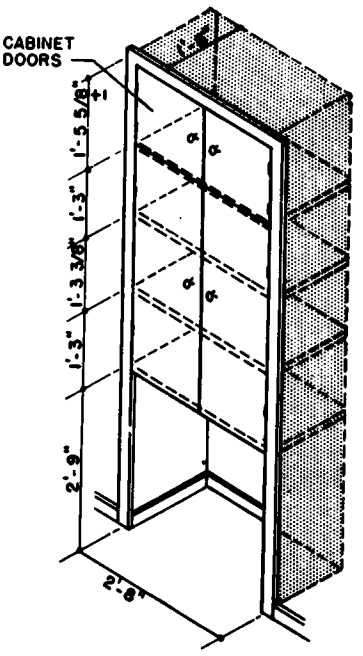
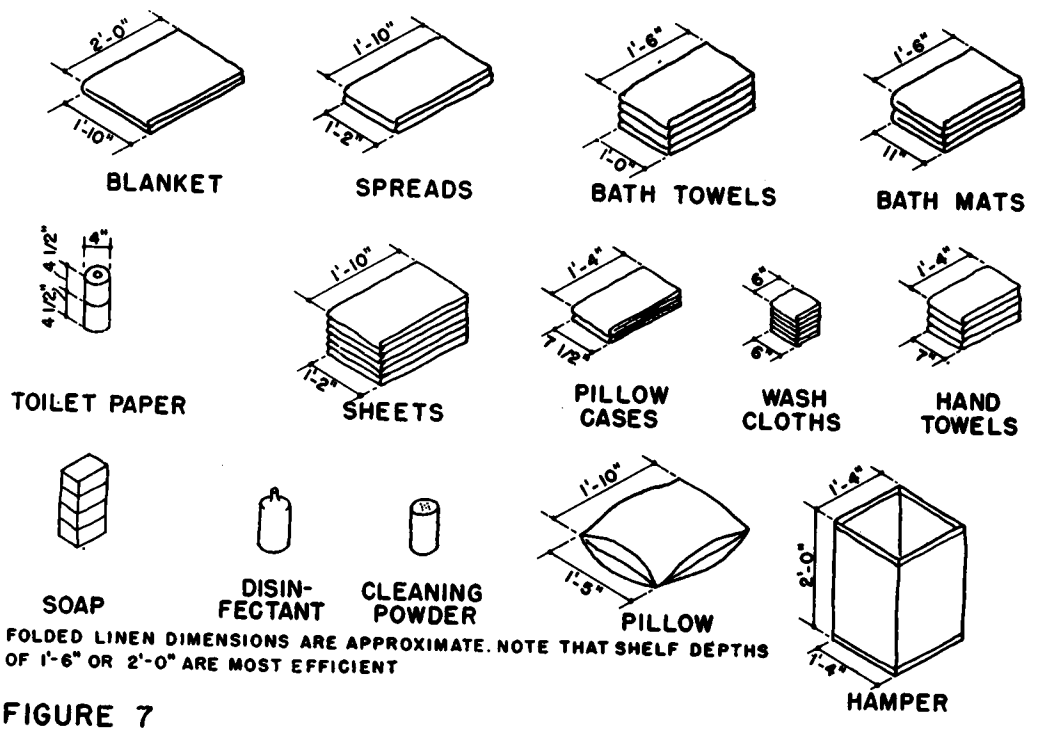


FIGURE 6



FOLDED LINEN DIMENSIONS ARE APPROXIMATE. NOTE THAT SHELF DEPTHS OF 1'-6" OR 2'-0" ARE MOST EFFICIENT

FIGURE 7

NOTE: These pages 5 and 6 supersedes pages 5 and 6 of Bulletin No. LR-6, PART XI, dated 12-21-50. Figure 6 on page 5 and the first paragraph on page 6 have been corrected and revised.

Figures 4 and 5 show linen closets with cabinet type doors above and stock door below. Figure 6 shows cabinet type doors above and below with space for clothes hamper open for convenient use and ventilation. Where doors are omitted a curtain pole located 2 inches from the ceiling should be included. Tenants object to the doorless linen closet more than to the absence of doors on other closets, but the same consideration as to economy should apply in making the decision to include or omit this door.

5. GENERAL STORAGE

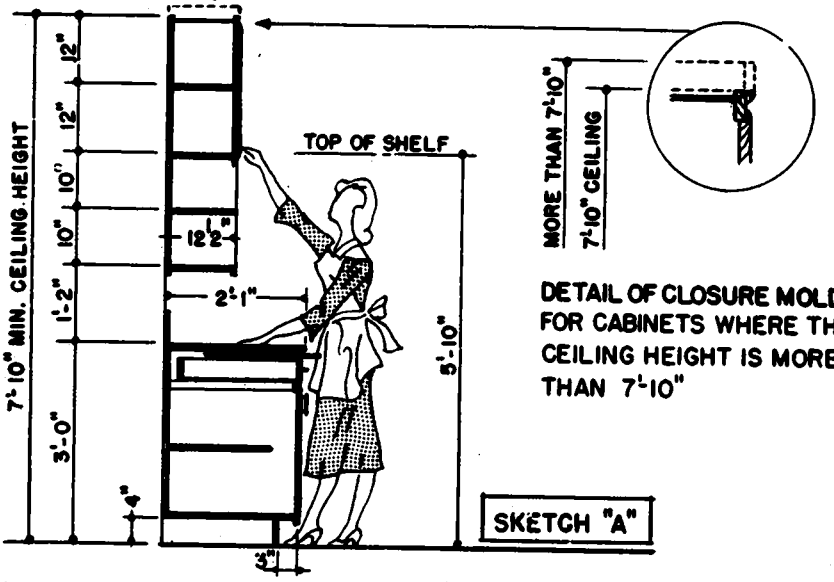
The general storage space shown in Figure 8 is designed for a two-bedroom dwelling without basement or without apartment house central storage facilities. Its most convenient location is just off the kitchen opening directly into the kitchen, or near the entry. The latter also provides desirable ventilation of the storage space. The opening should be 3'-0" wide (in the clear) to allow for passage of a washing machine. A door is desirable, particularly if the storage space can be seen from the living room.

Floor area alone does not solve the storage problem economically. The space must be carefully proportioned to accommodate the kinds of articles stored in locations appropriate to frequency of use. For example: the broom, mop and other items in daily use should be readily accessible, (space marked "A" on Figure 8) and the washing machine and items used occasionally are next in order (space "B"). Trunks and other dead storage articles are placed in the least accessible locations. The wide shelf at the rear (space "C") is intended for this dead storage as it leaves the floor free for maneuvering the washing machine, pram, bike, or other large pieces. Canned goods, extra cooking utensils, etc., may be placed on shelves (space "D"). A space for work clothes and shoes should be provided.

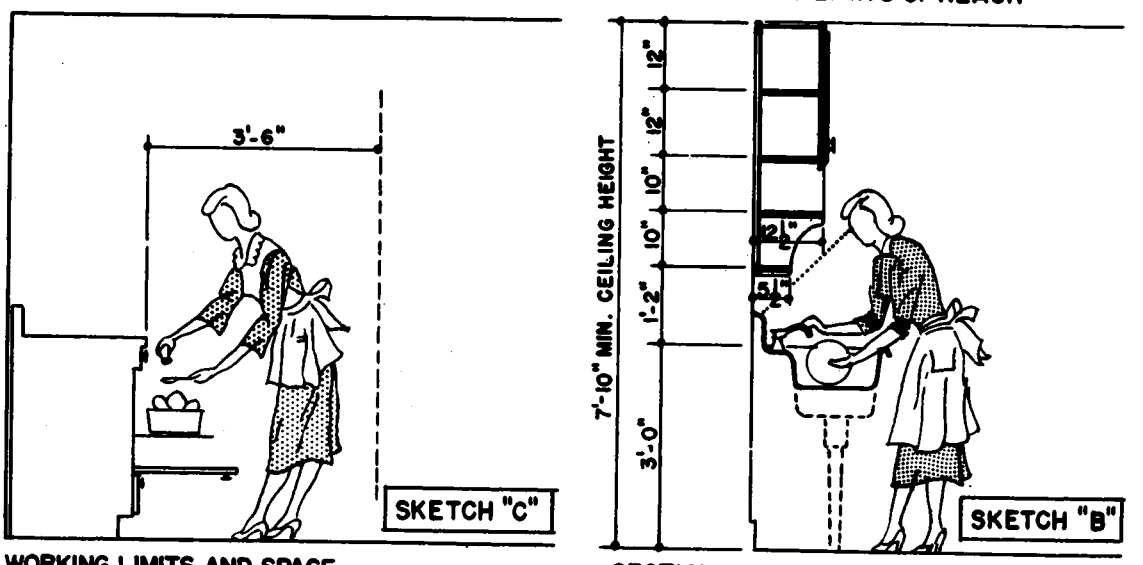
Figure 9 shows some of the typical storage items which vary as to kind, size and quantity.

When it is necessary to split the storage space within a dwelling unit or when, as in some apartments, group storage provides for part of the storage outside the dwelling unit, it should be divided according to use as nearly as can be anticipated. See the PHA Standards for the amount to remain in or adjacent to the kitchen. As an illustration, the portion marked "A" on the plan (Figure 8) is designed for articles in daily use, and in any division of storage this should be located in or adjacent to the kitchen. This space should include shelving for the storage of large kitchen utensils not used daily and which often will not fit in kitchen cabinet and for the storage of extra canned goods and preserves, particularly required in some areas where home canning is heavy. When laundry facilities are within the dwelling unit but not in a basement, additional space should be provided for the washing machine when not in use.

Also, in accordance with the PHA Standards, additional space is required in rural nonfarm areas due to the large quantity of food obtained from gardening and home canning. Storage space for these items should be included within the dwelling unit.



SECTION OF BASE AND WALL CABINET SHOWING WORKING LIMITS OF REACH



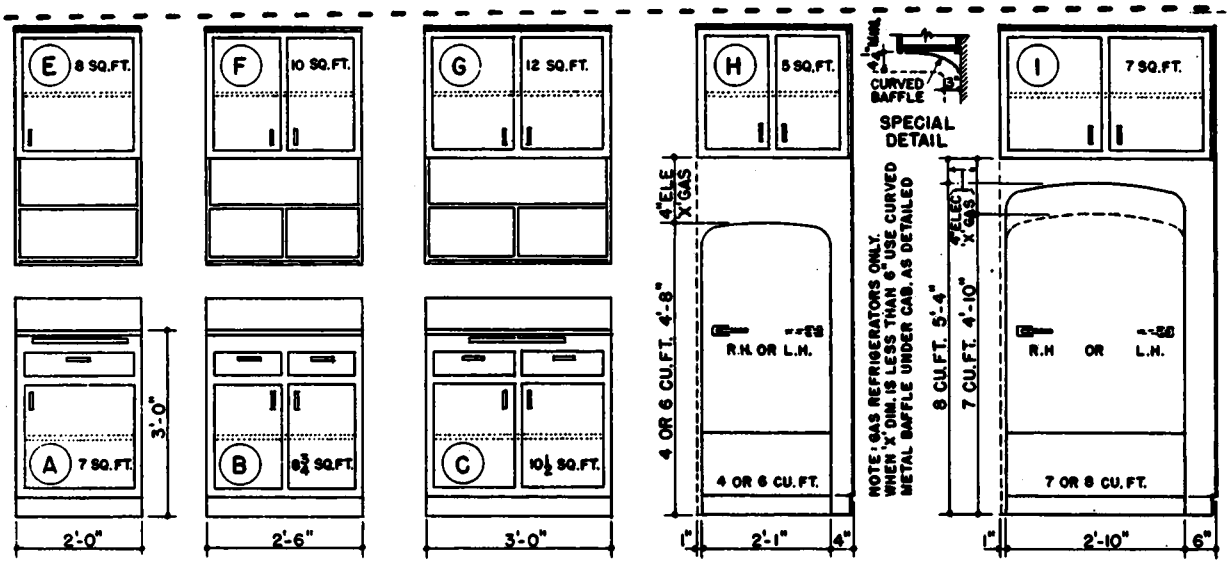
WORKING LIMITS AND SPACE REQUIREMENTS AT THE RANGE

SECTION AT SINK AND WALL CABINET SHOWING WORKING LIMITS

FIGURE 9 KITCHEN-DINING EQUIPMENT AND CABINET DETAILS

Shelves for the wall cabinet over the base cabinet (Sketch "A") and the sink (Sketch "B") should be spaced to accommodate stacking of dishes and, except for the top shelf, be within reach of the average woman. The bottom shelf should not be lower than dimension shown, to allow sufficient clear working space between bottom of wall cabinet and work top and sink. The bottom shelf of wall cabinet over sink (Sketch "B") should not be more than 5½" wide, to increase the work and vision area. A space of not less than 3'-6" should be provided between the range and any other fixed equipment or wall.

NOTE: These pages 9 and 10 supersede pages 9 and 10 of Bulletin No. LR-6, Part XII, dated 6-12-51. The drawing on page 10 only has been revised as to width of ranges.



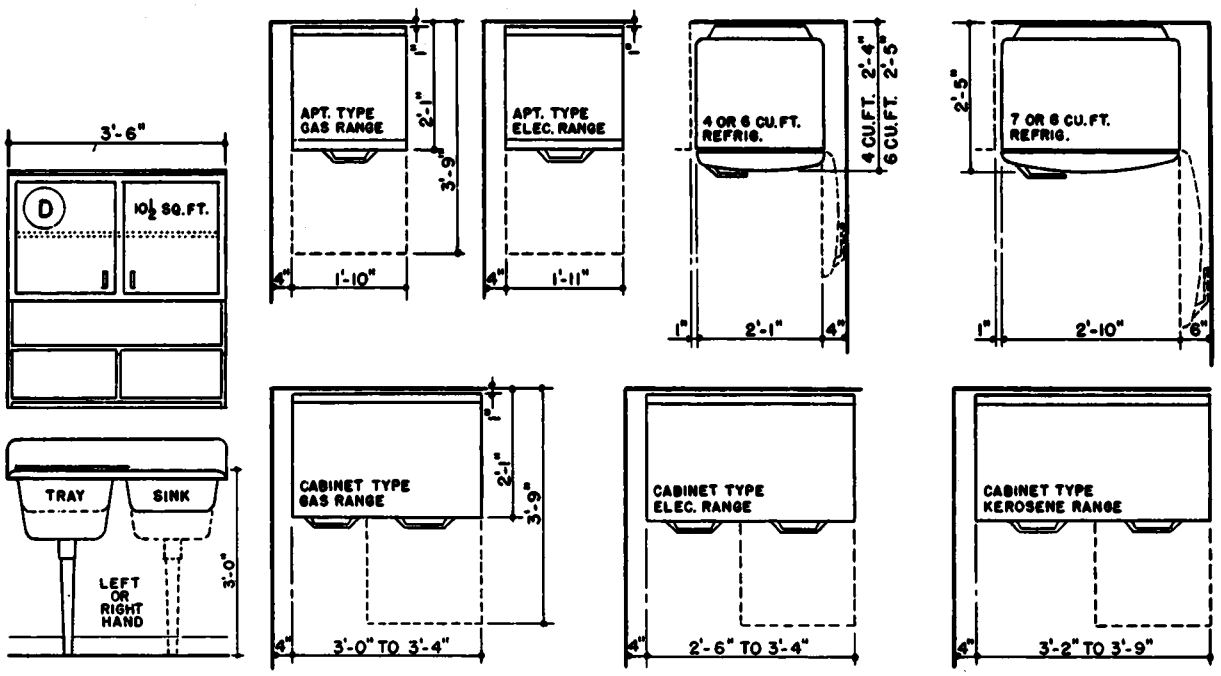


FIGURE 10 TYPES & SIZES KITCHEN CABINETS RANGES & REFRIGERATORS

NOTE: Base and wall cabinets are designed as basic units, and for strips, L or U planned kitchens, in small or large kitchens. A high degree of standardization is represented with very little change in the sizes currently produced. Production standardization will depend principally on the degree of acceptance of those standards by Local Authorities. The indicated clearances for refrigerators are in accordance with manufacturers' requirements. For ranges, they permit sufficient space between range and wall for cleaning and for pot handles to extend beyond the range.

In the second (rectifier) method, one project in the southwest reports: "The direct current delivered to the ground beds from the rectifiers will usually have a voltage of from 7 to 20, and generally average about 13 volts. Amperage will vary from 12 to 50, and average about 30 amperes." The ground area protection for one rectifier averages approximately 500,000 square feet. The anode rods for the ground beds are 4 inches in diameter and about 7 feet long. Generally about ten are required for each rectifier, installed vertically in holes from 12 inches to 16 inches in diameter and spaced from 10 to 20 feet apart. Space in the hole surrounding the anode is backfilled generally with material dependent upon type of anode. (See Figure 2.)

Whatever the method, galvanic anode or rectifier and anode bed, the entire system should be so designed and constructed that it offers no electrical resistance other than that normally encountered by the metal in the system itself. In other words, the cathodically protected system should be isolated from foreign metallic structures.

Cathodic protection need not be limited to gas systems. Its advantages can well be extended to water systems, and hot water generators or tanks. While cathodic protection will reduce electro-chemical reaction to a minimum, it will not prevent leaks in gas lines originating from mechanical damage.

This discussion on corrosion has been predicated on the use of steel pipe. Question may be raised as to why cast iron or copper can not be used, and so obviate the need for elaborate protective devices.

Cast iron, owing to its greater thickness, has a longer life than steel without cathodic protection, but has been comparatively little used for gas lines in public housing because in most projects the major part of the piping is small size, not obtainable in cast iron. Further, cast iron is more susceptible to fracture than steel, and should not be used in lines laid in unstable ground.

Copper is less subject to corrosive attack than ferrous metals, but is more expensive than steel pipe; its use, therefore, has been an economic problem in balancing cost of ferrous pipe and protection against added cost of the copper. Also copper is liable to corrosion when placed in soils which yield sulphur dioxide; when used, copper should be Type K, hard drawn, with solder fittings.

Some interest is being developed in the use of pipe extruded from an organic plastic. This pipe, light in weight and flexible enough to be bent to follow the path of the trench, is considered an insulator and will not become part of a galvanic couple. But public housing does not have sufficient experience with this pipe to recommend it or advise against its use.

Reduced to simplest terms, the following are believed safe rules to consider in protection of underground gas lines: (a) where resistivity of the soil is less than 3000 ohms per cubic centimeter, cathodic protection should be applied,

NOTE: This sheet supersedes the corresponding sheet dated 4-24-50. The 4th and 5th paragraphs on this page have been revised. Page 8 is re-issued without substantial charge.

(b) where resistivity of the soil varies from 3,000-10,000 ohms per cubic centimeter, cathodic protection may be necessary but further study of soil will be required, (c) where resistivity exceeds 10,000 ohms per cubic centimeter, no cathodic protection is needed, (d) regardless of soil characteristics, and whether or not cathodic protection is applied, the piping should be coated and/or wrapped.

4. PROTECTING BUILDINGS AGAINST OUTSIDE GAS LEAKS. In cases where leaks have occurred from corrosion or mechanical cracks or breaks in the distribution main or in the main serving a building, escaping gas travelled the path of the pipe trench to spaces under the building, then up to the dwelling unit. Such leaks may go unnoticed until it is too late. A momentary flash caused by a match, pilot, open flame or defective electric switch is sufficient to cause an explosion.

Gas should never be allowed to collect in confined areas such as crawl spaces, pipe spaces or utility rooms. Ignition may be in a dwelling unit, not necessarily in the area where the gas has accumulated. A flame tends to travel from lean to richer gas concentration areas, building up force as it propagates and compresses the gas ahead until the mixture is exploded. Explosion damage, many times, is greatest at locations away from the origin of the flame and generally occurs with maximum intensity when the gas concentration has reached the highest point within its range of inflammability.

Figures 3 and 4 illustrate a method of venting trenches, with three types of construction. Figure 3 shows venting with (a) crawl space on continuous footing construction and (b) crawl space with grade beam; figure 4 shows venting with slab-on-ground. It should be noted that, in each case, the gas line rises above grade before entry into building. The walls of the building serve as carriers, and are parged with waterproofing cement unless walls are solid dense concrete. In warmer climates where check metering is required, the meter may be installed before gas line enters the building. The piping exposed to the outer air should be insulated adequately where the outside temperatures fall below the dew-point temperature of the water vapor in the gas; the local utility will generally furnish information on dew-point temperatures.

Where gas pipe enters a basement, pipe rise above grade will not be necessary, but venting of trench, parging of walls and sealing of sleeve before gas pipe enters building should be provided.

There are other methods for venting, such as, carrying the gas pipe before entering the building, concentrically within a tile or cast iron pipe not less than 4 inches diameter, extending a few inches above finished grade. Coarse gravel should fill the vent pipe and, in addition, be arranged similar to that shown on the sketches.

The purpose of the vent is to relieve the trench of any escaping gas, and preclude the probability of gas entering the building. The character of the soil is irrelevant to the need for venting. Whatever the soil, the vent should be installed. The soil covering the gravel should be of a permeable consistency to permit freer flow of escaping gas to the outside air.

Range		Width	Height (to Cooking Top)	Depth (Excluding Handles)	Structural Requirements
Electric	(a)	22-1/2"	36"	26"	(Electric
	(b)	30" - 40"	36"	26"	(wiring
*Gas	(a)	22"	36"	25"	(piping, flues
	(b)	36" - 40"	36"	25"	(where required *
Kerosene		55"	37"	25"	(oil can or (storage tank
Coal or Wood		42"	31"	24-1/2"	(flue and (fuel storage

When a specific type of equipment has been selected, the above dimensions may be adjusted accordingly.

* Recommended physical and ventilation clearances are indicated in PHA Bulletin LR-6, Part XII. *

2. REFRIGERATORS

a. General. Refrigerators have several variables which must be considered in providing space in kitchens: the net capacity in cubic feet of refrigerator storage space necessary to preserve the normal purchase of perishable foods for the persons to be housed in the dwelling unit, and the type of energy or fuel to be supplied for operation. In general, mechanical refrigerators will be operated by electricity or gas; the use of kerosene operated refrigerators is seldom justified.

b. Equipment should be standard manufacture, similar to "builder's model type" (stripped) as used in private housing developments and existing low-rent housing projects, with the basic necessities and without jeopardizing efficiency of operation and normal maintenance costs.

* c. Refrigerator capacity of 6 cubic feet is recommended to meet the requirements of one and two bedroom units. For three or more bedroom units, larger refrigerators may be required, with a maximum of 8 cubic feet. Where the additional food storage space is not an essential factor, four cubic foot refrigerators may be desirable for one bedroom units only. *

d. The dimensions for equipment listed in Tables I, II and III are the maximum overall sizes of standard types of regularly manufactured equipment.

NOTE: These pages 3 and 4 supersede pages 3 and 4 of Bulletin LR-10, Part II, dated 6-15-50. Material * between asterisks * is new or revised.

Table I - Electric

Size Cu.Ft.	Maximum overall dimensions Width	Height	Depth
4	25"	55"	29"
6	25"	56"	29"
7	32"	58"	29"
8	34"	63"	30"

Table II - Gas

Size Cu.Ft.	Maximum overall dimensions Width	Height	Depth
4	24"	55"	28"
6	25"	56"	30"
8	35"	64"	30"

Table III - Ice

Size Cu.Ft.	Capacity of Ice	Maximum overall dimensions Width	Height	Depth
4, 5	75#	26"	53½"	24½"
5½,6	100#	30½"	60"	25"

When a specific type of equipment has been selected for installation, the above dimensions may be adjusted accordingly.

* Recommended physical and ventilation clearances are indicated in PHA Bulletin LR-6, Part XII. *

For each electric refrigerator, the electric outlet should be located adjacent thereto to allow proper use with other appliances.

For each gas refrigerator, the gas outlet should not serve any other equipment.

Where ice refrigerators are recommended and approved for use, a drip pan of sufficient size should be provided under each refrigerator. The use of any pipework through which an ice refrigerator may drain is generally frowned upon by public health and code writing authorities, because of the unsanitary conditions which these drains produce, and the fact that they attract vermin and rodents.

3. WATER HEATERS

a. General. Water heaters located within the dwelling unit should not differ from the type of equipment usually installed in small private residences.

* b. Recommended storage capacity of water heaters for the various sizes of dwelling units is discussed in PHA Bulletin LR-7, Part XVIII. *

b. Gas Consumption for Tenant Operated Domestic Hot Water Equipment. Based on water at 130° F., 55% overall efficiency, 100% checkmetering, 30 gallon insulated automatic storage tank type water heaters, and approximately 25,000 Btu per hour input.

GAS CONSUMPTIONS IN THERMS PER DWELLING PER MONTH

		NORTHERN LOCALITIES		CENTRAL LOCALITIES		SOUTHERN LOCALITIES	
	Cold Water Temperature:	40°	45°	50°	55°	60°	65°
Size of Unit	Hot Water Requirements						
1-BR	36 Gallons per Day	15.0	14.2	13.2	12.4	11.6	10.8
2-BR	45 " " "	18.7	17.7	16.5	15.5	14.5	13.5
3-BR	53 " " "	22.0	20.8	19.4	18.3	17.1	15.9
4-BR	62 " " "	25.7	24.4	22.7	21.3	20.0	18.6

c. Gas Consumption for Central Domestic Hot Water Plants. Consumption of gas for project-operated central or group hot water plants should be calculated in accordance with the formula and factors given in Paragraph 6 of this Part II.

d. Gas Consumption for Space Heating. Consumption of gas for space heating should be calculated in accordance with the formula and factors given in Paragraph 6 of this Part II.

e. Gas Consumption for Mechanical Clothes Dryers. Where mechanical dryers are provided in community laundries, gas requirements may be estimated at 3.5 therms per dwelling per month, assuming that this equipment will be used by the tenants practically the entire year.

f. Distribution Loss Adjustment. All of the foregoing consumption tables have excluded losses through leakage in distribution systems. Where gas is purchased at wholesale the consumption estimates should be increased by 5% to cover losses in the project's distribution system.

g. Demands of Gas Burning Equipment. It is occasionally necessary to estimate maximum hourly demand for gas in the application of certain gas rate schedules. The following data may be used where this is required:

NOTE: These pages 11-15 supersede pages 11-16 dated 3-30-50. Paragraph 6 has been extensively revised.

PEAK HOUR LOADS

Number of Dwellings	Peak Hour Loads in Therms	
	Cooking	Cooking and Domestic Hot Water
50	9.0	12.0
100	15.0	20.5
200	24.0	34.0
300	31.0	43.8
400	38.0	53.6
500	45.0	63.5
1000	71.0	97.0

Interpolate for exact number of dwellings.

For refrigeration, add .01 therms per dwelling. For space heating, add 90% of the specified input of all connected heating appliances. Specified input of each space heater is from .30 to .45 therms per hour, and of each forced warm air furnace is from .60 to .80 therms per hour.

5. OIL, KEROSENE, AND COAL.

The following monthly quantities per dwelling may be used to estimate requirements for cooking and domestic hot water where oil, kerosene, or coal are used by the tenant for these functions:

Function	Oil (Gallons)	Kerosene (Gallons)	Coal (Tons)
Cooking	7	7	.125
Water Heating	20	20	.125
Cooking and Water Heating (using water back on coal range)			.167

6. FUEL AND HEATING SUPPLIES.

a. Space Heating. The fuel requirements for space heating supplied by either project or tenant operated plants may be estimated from the following formulas, based on conditions which exist in public housing projects, such as the use of heat controls:

(1) When the Annual Degree Days Exceed 4200

$$\text{FUEL UNITS CONSUMED ANNUALLY} = \frac{\text{EDR} \times \text{Annual Degree Days} \times \text{Use Factor}}{\text{Btu. per Fuel Unit} \times \text{Design Range}}$$

(2) When the Annual Degree Days are 4200 or Less

$$\text{FUEL UNITS CONSUMED ANNUALLY} = \frac{\text{EDR} \times (1/3 \text{ Annual Degree Days} + 2800) \times \text{Use Factor}}{\text{Btu. per Fuel Unit} \times \text{Design Range}}$$

The factors appearing in the above formulas are as follows:

EDR is the Equivalent Direct Radiation which is the number of square feet of surface, each radiating 240 Btu. per hour, required to maintain the desired indoor temperature. The EDR may be determined by multiplying the number of rooms by the values obtained from the following table:

*SQUARE FEET OF EDR PER ROOM

Design Temperature Degrees F	Number of Stories in Building				
	One	Two	Three	Four	Six
20	30.2	23.8	21.6	20.4	19.3
15	31.5	25.0	23.0	21.6	20.7
10	33.0	26.9	24.2	23.0	22.0
5	35.4	28.4	25.9	24.2	23.4
0	38.2	30.9	27.9	26.4	25.0
-5	41.4	33.7	30.2	28.4	27.4
-10	45.3	35.4	33.0	30.9	29.6
-15	50.0	39.2	35.4	33.7	32.2
-20	55.8	43.9	39.2	37.2	34.5

*Based upon an average volume of 1450 cu. ft. per room

Annual Degree Days for a given locality may be determined from Weather Bureau records or from the "Degree Day Handbook" or the ASHVE "Guide". It is a summation of the number of degrees the daily average temperature falls below 65 degrees during the year.

Use Factor is a factor combining the effects of the heat losses in the connecting pipe lines, the efficiency of the heating plant, and the average daily heat input per degree day per square foot of EDR. These factors for the various types of plants and fuels are as follows:

USE FACTORS - SPACE HEATING

Project Plants	*Coal	Oil	Gas	Purchased Steam
Central Plant, High Pressure Steam	12,440	11,480	11,140	8,780
Central Plant, Low Pressure Steam or Forced Hot Water	10,710	9,890	9,600	-----
Group Plant, Low Pressure Steam or Forced Hot Water	10,520	9,710	9,420	-----
Building Plant, Low Pressure Steam or Forced Hot Water	10,050	9,270	9,000	-----

*Stoker Fired

Individual Dwelling Plants (All Systems)

Type of Fuel	Tenant Purchased Fuel	Project Purchased Fuel
Anthracite	8,870	10,440
Bituminous Coal, Low Volatile	9,760	11,480
" " , Medium Volatile	10,840	12,760
Fuel Oil, Vaporizing Pot Burner	8,870	10,440
" " , Conversion Burner	8,130	9,570
Gas Designed Unit-Space Heater	6,970	8,200
" " " -Other than Space Heater	6,500	7,650
Gas Conversion Burner	6,970	8,200

Btu. per Fuel Unit is the heating value of one unit of whatever fuel is to be used. This unit may be cubic feet, gallons, pounds, tons, etc. The resulting annual fuel consumption will be expressed in the same units.

The Design Range is the difference between the Design Temperature for the particular locality and 70 degrees Fahrenheit.

b. Project Operated Domestic Hot Water. Domestic hot water may be provided by the project from central, group or building plants with either (1) direct fired boilers or (2) steam-coil or water-coil generators. For all of these methods the average monthly fuel consumption may be determined by the following formula:

$$\text{FUEL UNITS CONSUMED PER DWELLING PER MONTH} = \frac{r}{h} \times \text{use factor}$$

r is the average temperature rise of the water, or the difference between the mean cold water temperature, averaged over the longest period of record available, and 140 degrees.

h is the heating value in Btu. of each unit of fuel.

Use Factor is a factor combining the effects of the heat losses in the connecting pipe lines, the heating plant efficiency and the estimated average consumption (60 gallons per day) of hot water required per dwelling unit per month. Use factors for the several types of plants and fuels are as follows:

USE FACTORS - PROJECT SUPPLIED DHW.

Type of Plant	Coal	Oil	Gas	Purchased Steam
Central, High Pressure Steam	32,370	29,880	28,990	20,440
Central, Low Pressure Steam or Forced Hot Water	27,890	25,740	24,970	------
Group	27,390	25,280	24,530	------
Building	26,150	24,130	23,410	------

c. The Annual Cost of Miscellaneous Supplies required for heating may be estimated as follows:

For coal burning plants	12.0¢ per ton of coal
For oil burning plants	2.8¢ per barrel of oil
For gas burning plants	45.0¢ per 1,000 therms

7. HEATING LABOR

The costs for all labor in connection with project operated heating plants should be carefully estimated, as these are among the most important expenses in project plant operation. To avoid duplication of cost estimates, operating labor only should be included, since provision is made for estimating the cost of maintenance and repairs to facilities and equipment in Part III. Include all supervision and labor for adjusting, oiling, inspecting, etc., when performed as part of normal operations. The cost of ash removal to the points of pick-up should be included, also the cost of hauling ashes from the site where this will be a management cost.

In estimating labor costs it is advisable to formulate tentative operating schedules, conforming these to local regulations, prevailing labor union contracts, and labor customs. It is important to investigate the feasibility of reducing operating forces during non-heating seasons.

8. ICE REQUIREMENTS

The consumption of ice for refrigeration varies considerably in different communities. The national average is approximately 17 pounds of ice per day or 520 pounds per month per dwelling unit. Consumptions based upon local experience should be used in comparing the cost of ice refrigeration with the cost of electric or gas refrigeration.

HHFA
PHA
8-1-51

Bulletin No. LR-12

CONSTRUCTION CONTRACT DOCUMENTS

INTRODUCTION

This Bulletin is designed to assist Local Authorities, and their architects and engineers, in the preparation of the essential contract documents for project construction. While the contents are generally advisory in character, there are a number of items of text and treatment in these documents which, because of existing laws or for other sufficient and justified reasons, are to be followed. Instructions and explanations relating to such items will be found in the appropriate sections of the PHA Low-Rent Housing Manual, which are published from time to time. Reference should also be made to the "Detailed Instructions covering the Preparation and Use of Construction Contract Documents," (see page 85) ~~of this Bulletin~~.

Since it is not feasible for these construction contract documents to anticipate all of the different conditions and problems which may arise in connection with specific projects, they have been prepared with no particular project or locality in mind. It is recognized that this material will frequently require modification to conform with State or local laws, codes, ordinances, and regulations. It is, of course, the responsibility of the Local Authority to see that the contract documents, as issued for bidding and construction purposes, do so conform.

When it is necessary to change these construction contract documents, to provide for separate prime contracts for mechanical trades or other specialty branches of the work, refer to "Changes in Construction Contract Documents". For the sake of uniformity and to expedite the review and approval of contract documents by the PHA, the form and sequence of the subject matter in these construction contract documents should be carefully maintained. The substance of this Bulletin and the documents reflects PHA experience in construction, together with that of competent and widely-recognized professional and commercial organizations.

The documents comprising the Contract as a whole are composed of the Specifications and Drawings. The Specifications include the Instructions and Forms, the General Specifications (consisting of General Conditions, Special Conditions, General Scope of Work and Schedule of Drawings), and the Technical Specifications, which comprise a variable number of divisions, (as outlined in Bulletin LR-13, Guide Specifications) all of which will be bound together within a Specifications cover. The Drawings themselves, enumerated in the Schedule of Drawings included in the Specifications, are, of course, physically separate from the Specifications though incorporated therein by reference.

Close study, reference and use of these construction contract documents should greatly facilitate the work of preparing the contract documents for a project, obtaining responsible and satisfactory bids, and the administration of construction contracts and work under the contracts.

NOTE: This Bulletin No. LR-12, Construction Contract Documents, dated 8-1-51, supersedes Bulletin No. LR-12, dated 6-14-50.

SPECIFICATIONS

CONTENTS

INSTRUCTIONS AND FORMS

GENERAL SPECIFICATIONS

CONTENTS (Cont'd)

A. General Conditions

CONTENTS (Cont'd)

HHFA
PHA
8-1-51

Bulletin No. LR-12

INSTRUCTIONS AND FORMS

FORM OF INVITATION FOR BIDS

(Must be modified if law requires other form)

INVITATION FOR BIDS

The (name of Local Authority) will receive bids for _____ (brief description of contract and project) until _____ M., (_____ S.T.) (_____ Daylight Saving Time) on the _____ day of _____, 19___, at (address of Local Authority) (City or town), _____ (State), at which time and place all bids will be publicly opened and read aloud.

Proposed forms of contract documents, including plans and specifications, are on file at the office of _____ (Local Authority) at _____ (address), and at the office of (architect or building exchange), at _____ (address).

Copies of the documents may be obtained by depositing $_____ with the (Local Authority) for each set of documents so obtained. Such deposit will be refunded to each person who returns the plans, specifications and other documents in good condition within 10 days after bid opening.

A certified check or bank draft, payable to the (Local Authority), U. S. Government bonds, or a satisfactory bid bond executed by the bidder and acceptable sureties in an amount equal to five percent of the bid shall be submitted with each bid.

The successful bidder will be required to furnish and pay for satisfactory performance and payment bond or bonds.

Attention is called to the fact that not less than the minimum salaries and wages as set forth in the Specifications must be paid on this project.

The (Local Authority) reserves the right to reject any or all bids or to waive any informalities in the bidding.

No bid shall be withdrawn for a period of thirty (30) days subsequent to the opening of bids without the consent of the (Local Authority).

(Name of Local Authority)

Date _____, 19___. By _____

Title _____

- -

INSTRUCTIONS TO BIDDERS

1. USE OF SEPARATE BID FORMS

Attention is directed to the fact that these Specifications include a complete set of bidding and contract forms. These are for the convenience of bidders, and are not to be detached from the Specifications, or filled out, or executed. Separate copies of Bid Forms are furnished for that purpose, in quadruplicate, three to be submitted with the bid and one to be retained by the bidder for his records. Only one of the three copies of the bid shall be signed. The other two shall be conformed copies only.

2. INTERPRETATIONS

No oral interpretation will be made to any bidder as to the meaning of the Specifications including the Drawings. Every request for such an interpretation shall be made in writing to the Local Authority at _____ _____. Any inquiry received ten or more days prior to the date fixed for opening of bids will be given consideration. Every interpretation made to a bidder will be in the form of an addendum to the Specifications which, if issued, will be on file in the office of the Local Authority and the office of the architect at least seven days before bids are opened. In addition, addenda will be mailed to each bidder, but it shall be the bidder's responsibility to make inquiry as to addenda issued. All such addenda shall become part of the Contract and all bidders shall be bound by such addenda, whether or not received by the bidders.

3. ALTERNATIVE BIDS

Alternative bids will not be considered.

4. PROPOSALS

a. All bids must be submitted on forms prepared by the Local Authority and shall be subject to all requirements of the Specifications, including the Drawings, and this Instructions to Bidders. Only the original shall be signed. Two additional conformed copies shall be submitted.

b. Bid Documents shall be enclosed in envelopes (outer and inner), both of which shall be sealed and clearly labeled with the words "Bid Documents", the project number, name of bidder, and date and time of opening so as to guard against premature opening of any bid.

c. A second inner sealed envelope marked "Data on Specialty Items" containing the information required by Section 9, below shall be enclosed in the outer envelope.

d. The Local Authority may consider as informal any bid on which there is an alteration of or departure from the Bid Form hereto attached.

e. The Contract will be based upon the completion of the work according to the Specifications (including the Drawings), together with all Addenda thereto, under the lowest proposal submitted by a responsible bidder, irrespective of the options permitted by the Contract which the bidder chooses to use. The Local Authority has determined, by its inclusion of the options, that any of the requested options are equally acceptable. The bidder is, therefore, required to submit only his lowest proposal for the work to be performed inasmuch as no other will be considered.

5. BID GUARANTY

a. The bid must be accompanied by a bid guaranty which shall not be less than five percent (5%) of the amount of the bid, and at the option of the bidder may be a certified check, bank draft, U. S. Government Bonds (at par value), or a bid bond secured by a guarantee company or a surety company in the form attached. No bid will be considered unless it is so guaranteed. Certified check or bank draft must be made payable to the order of (Local Authority). Cash deposits will not be accepted. The bid guaranty shall insure the execution of the contract and the furnishing of performance and payment bond or bonds by the successful bidder all as required by the Specifications.

b. Revised Bids, whether forwarded by mail or telegram, if representing an increase in excess of two percent (2%) of the original bid, must have the bid guaranty adjusted accordingly; otherwise the revision of the bid will not be considered and the original bid shall remain in force.

c. In case Bid Guaranty is in the form of a certified check, bank draft, or U. S. Government Bonds, the Local Authority may make such disposition of the same as will accomplish the purpose for which submitted. Certified checks or bank drafts, or the amount thereof, and U. S. Government bonds of unsuccessful bidders will be returned as soon as practicable after the opening of Bids.

6. COLLUSIVE AGREEMENTS

a. Each person submitting to the Local Authority a bid for any portion of the work contemplated by the bidding documents shall execute an affidavit in the form herein provided, to the effect that he has not colluded with any other person, firm or corporation in regard to any bid submitted. Such affidavit shall be attached to the bid.

b. Each person submitting a low bid for any subcontract work shall submit to the Contractor an affidavit in the form provided in Section 4 of the General Conditions.

INSTRUCTIONS TO BIDDERS

c. Failure on the part of any bidder for either the prime contract or subcontracts to observe these provisions shall be cause for rejection of his bid.

7. STATEMENT OF BIDDER'S QUALIFICATIONS

Each bid and each conformed copy thereof must be accompanied by a statement on the form furnished for that purpose, a copy of which is included in the Specifications, of the bidder's financial resources, his construction experience, and his organization and equipment available for the work contemplated. The Local Authority shall have the right to take such steps as it deems necessary to determine the ability of the bidder to perform the work and the bidder shall furnish the Local Authority all such information and data for this purpose as the Local Authority may request. The right is reserved to reject any bid where an investigation of the available evidence or information does not satisfy the Local Authority that the bidder is qualified to carry out properly the terms of the Specifications.

8. OPTIONS

The attention of all bidders, whether prime or subcontract, is directed to the "List of Options" contained in the Special Conditions.

9. *DATA ON SPECIALTY ITEMS

a. Each general bidder who includes in his bid the costs of the mechanical branches of the contract work shall submit, with his bid, in a separate sealed envelope identified on the outside by his name, project number, and marked "Data on Specialty Items", a breakdown of his overall bid showing the amounts included therein for the following subcontracts and work:

Amount of plumbing bid - - - - - - - - - - - - - - - $.....

Amount of heating bid- - - - - - - - - - - - - - - - $.....

Amount of electric wiring bid- - - - - - - - - - - - $.....

All remaining work - - - - - - - - - - - - - - - - - $ _____

Total overall bid price- - - - - - - - - - - - - - - $ _____

*If State or local law requires any additional breakdown of the overall bid, this paragraph shall be appropriately modified to require that in addition to the information called for herein, such additional information as is required by law shall be supplied.

b. This information is required for analytical purposes, shall have no bearing upon the determination of the lowest responsible bidder, and will not be divulged to the public at bid opening.

10. UNIT PRICES

a. Subsequent to bid opening and prior to and as a condition of award, the successful bidder shall negotiate with the Local Authority and agree upon mutually acceptable unit prices for the items listed in Section 8 of the Special Conditions, and conforming to the terms thereof.

b. No unit prices will be quoted in or submitted with any bid.

11. CORRECTIONS

Erasures or other changes in the bids must be explained or noted over the signature of the bidder.

12. TIME FOR RECEIVING BIDS

a. Bids received prior to the time of opening will be securely kept, unopened. The officer whose duty it is to open them will decide when the specified time has arrived, and no bid received thereafter will be considered; except that when a bid arrives by mail after the time fixed for opening, but before award is made, and it is shown to the satisfaction of the officer authorized to make the award that the non-arrival on time was due solely to delay in the mails for which the bidder was not responsible, such bid will be received and considered. No responsiblity will attach to an officer for the premature opening of a bid not properly addressed and identified. Unless specifically authorized, telegraphic bids will not be considered, but modification by telegraph of bids already submitted will be considered if received prior to the hour set for opening; Provided, that written confirmation of such modification over the signature of the bidder is placed in the mail and postmarked prior to the time set for bid opening.

b. Bidders are cautioned that, while telegraphic modifications of bids may be received as provided above, such modifications, if not explicit and if in any sense subject to misinterpretation, shall make the bid so modified or amended subject to rejection.

c. Bidders are cautioned to allow ample time for transmittal of bids by mail or otherwise. Bidders should secure correct information relative to the probable time of arrival and distribution of mail at the place where bids are to be opened; and, so far as practicable, make due allowance for possible

delays in order to avoid the necessity for investigations of claims that such delays in receipt of bids were due solely to delay in the mails as provided in this section.

13. OPENING OF BIDS

At the time and place fixed for the opening of bids, every bid received within the time fixed for receiving bids will be opened and publicly read aloud, irrespective of any irregularities therein. Bidders and other persons properly interested may be present, in person or by representative.

14. WITHDRAWAL OF BIDS

Bids may be withdrawn on written or telegraphic request dispatched by the Bidder in time for delivery in the normal course of business prior to the time fixed for opening; Provided, that written confirmation of any telegraphic withdrawal over the signature of the bidder is placed in the mail and post marked prior to the time set for bid opening. Negligence on the part of the bidder in preparing his bid confers no right of withdrawal or modification of his bid after such bid has been opened.

15. AWARD OF CONTRACT; REJECTION OF BIDS

a. The Contract will be awarded to the responsible bidder submitting the lowest proposal complying with the conditions of the Invitation for Bids, provided his bid is reasonable and it is to the interest of the Local Authority to accept it. The bidder to whom the award is made will be notified at the earliest practicable date. The Local Authority, however, reserves the right to reject any and all bids and to waive any informality in bids received whenever such rejection or waiver is in the interest of the Local Authority.

b. The Local Authority also reserves the right to reject the bid of any bidder who has previously failed to perform properly, or to complete on time, contracts of a similar nature; who is not in a position to perform the contract; or who has habitually and without just cause neglected the payment of bills or otherwise disregarded his obligations to subcontractors, materialmen, or employees. In determining the lowest responsible bidder the following elements, in addition to those above mentioned, will be considered; whether the bidder involved (1) maintains a permanent place of business; (2) has adequate plant equipment available to do the work properly and expeditiously; (3) has suitable financial resources to meet the obligations incident to the work; (4) has appropriate technical experience. The Local

Authority reserves the right to consider as unqualified to perform the work of general construction any bidder who does not habitually perform with his own forces the branches of structural concrete, masonry, and carpentry.

c. The ability of a bidder to obtain a performance bond shall not be regarded as the sole test of such bidder's competency or responsibility.

16. ESTIMATES OF COSTS

The successful bidder may be required to cooperate with the Local Authority and the Architect in a breakdown of his bid price in order to show the division of costs between dwelling facilities, non-dwelling facilities and site improvements.

17. PERFORMANCE AND PAYMENT BOND, EXECUTION OF CONTRACT

a. Subsequent to the award and within ten days after the prescribed forms are presented for signature, the successful bidder shall execute and deliver to the Local Authority a contract in the form included in the Specifications in such number of counterparts as the Local Authority may require. Separate contract forms, in lieu of those found in the Specifications, shall be used for the purpose.

b. Having satisfied all conditions of award as set forth elsewhere in these documents, the successful bidder shall, within the period specified in 17 a. above, furnish a performance and payment bond in a penal sum of at least _____% 1/ of the amount of the contract as awarded, as security for the faithful performance of the contract, and for the payment of all persons, firms or corporations to whom the Contractor may become legally indebted for labor, materials, tools, equipment, or services, of any nature, employed or used by him in performing the work. Such bond shall be in the form of bond included in the Specifications and shall bear the same date as, or a date subsequent to the date of the contract. 2/

1/ The Performance and Payment Bond should be at least in the full amount of the contract price. If a separate Performance Bond and a Payment Bond are required in lieu of the combined bond, each shall be at least 50% of the contract price.

2/ In some jurisdictions a separate Payment Bond is required; where thus required, appropriate revision should be made in this paragraph.

c. On each such bond the rate of premium shall be stated, together with the total amount of the premium charged. The current power of attorney for the person who signs for any surety company shall be attached to such bond.

d. The failure of the successful bidder to execute such contract and to supply the required bonds within ten days after the prescribed forms are presented for signature, or within such extended period as the Local Authority may grant based upon reasons determined adequate by the Local Authority shall constitute a default, and the Local Authority may either award the contract to the next responsible bidder or readvertise for bids, and may charge against the bidder the difference between the amount of the bid and the amount for which a contract for the work is subsequently executed, irrespective of whether the amount thus due exceeds the amount of the bid guaranty.

FORM OF BID

(Must be modified if law requires other form)

BID FOR _____

To the (Local Authority)
(address)

Gentlemen:

1. The undersigned, having familiarized (himself) (themselves) with the local conditions affecting the cost of the work, and with the Specifications (including Invitation for Bids, Instructions to Bidders, this bid, the form of Bid Bond, the form of Non-Collusive Affidavit, the form of Statement of Bidder's Qualifications, the form of Contract, and the form of Performance and Payment Bond or Bonds, the General Conditions, the Special Conditions, the General Scope of Work, the Technical Specifications and the Drawings) and Addenda, if any thereto, as prepared by _____ _____ and on file in the office of _____ _____, hereby proposes to furnish all labor, materials, equipment and services required to construct and complete _____ (description of work, identify project), all in accordance therewith, for the sum of _____ Dollars ($_____).

2. In submitting this bid it is understood that the right is reserved by the (Local Authority) to reject any and all bids. If written notice of the acceptance of this bid is mailed, telegraphed or delivered to the undersigned within thirty (30) days after the opening thereof, or at any time thereafter before this bid is withdrawn, the undersigned agrees to execute and deliver a contract in the prescribed form and furnish the required bond within ten (10) days after the contract is presented to him for signature.

3. Security in the sum of _____ Dollars ($_____), in the form of _____, is submitted herewith in accordance with the Specifications.

4. Attached hereto is an affidavit in proof that the undersigned has not entered into any collusion with any person in respect to this proposal or any

FORM OF BID

other proposal or the submitting of proposals for the contract for which this proposal is submitted. Also attached is a Statement of Bidder's Qualifications.

Date _____, 19____. _____(name of bidder)_____

Official address: By _____

_____ Title _____

_____

(SIGN ORIGINAL ONLY)

- -

FORM OF BID BOND

BID BOND

KNOW ALL MEN BY THESE PRESENTS, That we the undersigned,

_____(name of Principal)_____

as PRINCIPAL, and

_____(name of Surety)_____, as SURETY

are held and firmly bound unto ____(corporate name of Local Authority)____ hereinafter called the "Local Authority", in the penal sum of _____ _____ Dollars, lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal has submitted the accompanying bid, dated _____, 19___, for _____ _____

NOW, THEREFORE, if the Principal shall not withdraw said bid within the period specified therein after the opening of the same, or, if no period be specified, within sixty (60) days after the said opening, and shall within the period specified therefor, or, if no period be specified within ten (10) days after the prescribed forms are presented to him for signature, enter into a written contract with the Local Authority in accordance with the bid as accepted, and give bond with good and sufficient surety or sureties, as may be required, for the faithful performance and proper fulfillment of such contract; or in the event of the withdrawal of said bid within the period specified, or the failure to enter into such contract and give such bond within the time specified, if the Principal shall pay the Local Authority the difference between the amount specified in said bid and the amount for which the Local Authority may procure the required work or supplies or both, if the latter amount be in excess of the former, then the above obligation shall be void and of no effect, otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above-bounden parties have executed this instrument under their several seals this _____ day of _____, 19___, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

In presence of:

_____ ____(Individual Principal)____ (SEAL)

_____ ____(Business address)____

_____ ____(Individual Principal)____ (SEAL)

_____ ____(Business address)____

FORM OF BID BOND

Attest:

_____ (Corporate Principal)

(Business address)

By _____ Affix corporate seal

_____

Attest:

_____ (Corporate Surety)

By _____ Affix corporate seal

_____

(Power-of-attorney for person signing for surety company must be attached to bond).

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, _____, certify that I am the _____ Secretary of the corporation named as Principal in the within bond; that _____, who signed the said bond on behalf of the Principal was then _____ of said corporation; that I know his signature, and his signature thereto is genuine; and that said bond was duly signed, sealed, and attested to for and in behalf of said corporation by authority of its governing body.

_____ (Corporate Seal)

FORM OF NON-COLLUSIVE AFFIDAVIT

(To be modified if law requires other form)

A F F I D A V I T

(Prime Bidder)

State of _____)ss.
County of _____)

_____, being first duly sworn, deposes and says:

That he is _____(a partner or officer of the firm of, etc.)_____ the party making the foregoing proposal or bid, that such proposal or bid is genuine and not collusive or sham; that said bidder has not colluded, conspired, connived or agreed, directly or indirectly, with any bidder or person, to put in a sham bid or to refrain from bidding, and has not in any manner, directly or indirectly, sought by agreement or collusion, or communication or conference, with any person, to fix the bid price of affiant or of any other bidder, or to fix any overhead, profit or cost element of said bid price, or of that of any other bidder, or to secure any advantage against the ____(Local Authority)____ or any person interested in the proposed contract; and that all statements in said proposal or bid are true.

Signature of:
Bidder, if the bidder is an individual;

Partner, if the bidder is a partnership;

Officer, if the bidder is a corporation.

Subscribed and sworn to before me
this _____ day of _____, 19___.

_____

My commission expires _____, 19___.

FORM OF STATEMENT OF BIDDER'S QUALIFICATIONS

STATEMENT OF BIDDER'S QUALIFICATIONS
(General Contractor)

All questions must be answered and the data given must be clear and comprehensive. This statement must be notarized. If necessary add separate sheets for items marked *.

1. Name of bidder.
2. Permanent main office address.
3. When organized.
4. Where incorporated.
5. How many years have you been engaged in the contracting business under your present firm name?
6.* Contracts on hand: (Schedule these, showing gross amount of each contract and the approximate anticipated dates of completion.)
7.* General character of work performed by your company.
8. Have you ever failed to complete any work awarded to you? If so, where and why?
9.* Have you ever defaulted on a contract? If so, where and why?
10.* List the more important structures recently erected by your company, stating approximate cost for each, and the month and year completed.
11.* List your major equipment available for this contract.
12.* Experience in construction work similar in importance to this project.
13.* Background and experience of the principal members of your personnel, including the officers.
14.* Credit available; furnish written evidence.
15. Financial statement no more than 60 days old in the following form:

(_____NAME_____)
BALANCE SHEET
AS OF_____

ASSETS

Current Assets:			
Cash:			
On hand			$ -
In banks			- $ -
Notes Receivable:			
Due within 90 days	(Hypothecated $ -)	$ -	
Due after 90 days	(Hypothecated $ -)	-	
Past due	(Hypothecated $ -)	- $ -	
Less: Estimated uncollectibles		$ -	
Notes receivable discounted		- -	-

FORM OF STATEMENT OF BIDDER'S QUALIFICATIONS

Accounts Receivable:			
Completed contracts	$ -		
Deferred and unbilled contract costs	-		
Unfinished contract costs (contra)	-		
Other receivables	-	$ -	
Less: Estimated uncollectibles		-	-
Deposits on Bids			-
Raw Materials and Supplies (State basis)			-
Other Current Assets			-
Total Current Assets				$ -
Investments:			
Stocks and Bonds (Market value $ -)			$ -
Other			-
Total Investments				-
Fixed Assets:			
Land			$ -
Buildings (Depreciated value)			-
Machinery and Equipment (Depreciated value)			-
Furniture and Fixtures (Depreciated value)			-
Other			-
Total Fixed Assets				-
Other Assets:			
Intangible Assets, Goodwill, Patents			$ -
Deferred Charges and Prepaid Expenses			-
Restricted Cash			-
Total Other Assets				-
TOTAL ASSETS				$ -

LIABILITIES

Current Liabilities:			
Notes Payable:			
To banks	$ -		
For machinery and equipment	-		
For merchandise and raw materials	-		
Other	-	$ -	
Accounts Payable:			
Not past due	$ -		
Past due	-	-	
Unfinished Sub-Contract Costs (contra)		-	
Accrued Expenses (Interest, wages, etc.)		-	
Advances from Stockholders, Directors, and Others		-	
State and Federal Taxes		-	
Long-Term Debt (Due within one year)		-	

FORM OF STATEMENT OF BIDDER'S QUALIFICATIONS

Estimated Liability for Damages, etc. (Indeterminate in amount but due within one year)	$ -		
Other Current Liabilities	-		
Total Current Liabilities		$ -	
Deferred Credits:			
Deferred Income - Uncompleted Contracts	$ -		
Unamortized Bond Premium	-		
Total Deferred Credits		-	
Funded Debt:			
Mortgage Payable (Date, interest, rate, monthly payments if applicable, etc.)	$ -		
Other	-		
Total Funded Debt		-	
TOTAL LIABILITIES			$ -
Capital and Surplus:			
Capital:			
Preferred Stock (Shares issued, par value, etc.)		$ -	
Common Stock (Shares issued, par value, etc.)		-	
Total Capital			-
Surplus:			
Capital Surplus		$ -	
Earned Surplus		-	
Total Surplus			-
TOTAL LIABILITIES, CAPITAL AND SURPLUS			$ -

Footnotes (When applicable):

(1) Where assets have been pledged against any liabilities, that fact and the nature and amount of the assets pledged should be stated
(2) Contingent liabilities, liability as guarantor on contracts or accounts of others, etc.
(3) Amount of preferred stock dividends in arrears
(4) Amount of defaults in principal, interest or sinking fund provision of funded debt
(5) Where the value of fixed assets includes appreciation, that fact and the amount of appreciation for each item should be stated.

FORM OF STATEMENT OF BIDDER'S QUALIFICATIONS

16. Will you, upon request, fill out a detailed financial statement and furnish any other information that may be required by the (Local Authority)? _____.

17. The undersigned hereby authorizes and requests any person, firm, or corporation to furnish any information requested by the (Local Authority) in verification of the recitals comprising this Statement of Bidder's Qualifications.

Dated at _____ this _____ day of _____, 19___.

(name of bidder)

By_____

Title_____

State of _____)
County of _____) ss.

_____ being duly sworn deposes and says that he is _____ of (name of organization) and that the answers to the foregoing questions and all statements therein contained are true and correct.

Sworn to before me this_____ day of _____, 19____.

_____
Notary Public

My commission expires _____

(Bidder may submit additional information if desired)

- -

FORM OF CONTRACT

THIS AGREEMENT made this _____ day of _____, in the year Nineteen Hundred and _____ by and between _____ a corporation organized and existing under the laws of the State of _____ a partnership consisting of _____ or individual trading as _____

hereinafter called the 'Contractor', and

_____

_____

hereinafter called the "Local Authority",

WITNESSETH, That the Contractor and the Local Authority for the consideration stated herein mutually agree as follows:

ARTICLE 1. Statement of Work. The Contractor shall furnish all labor, material, equipment and services, and perform and complete all work required for (the construction of) (description of work and project identification) in strict accordance with the "Specifications for _____ (identify the Specification) and Addenda thereto numbered _____ and _____, dated _____ and _____, and the Drawings referred to therein, all as prepared by

_____,

which said Specifications, Addenda and Drawings are incorporated herein by reference and made a part hereof.

ARTICLE 2. The Contract Price. The Local Authority shall pay the Contractor for the performance of the Contract, in current funds, subject to additions and deductions as provided in the Specifications, the sum of _____ _____ Dollars ($_____) _____

FORM OF CONTRACT

ARTICLE 3. Contract Documents. The Contract shall consist of the following component parts:

a. This Instrument
b. General Conditions
c. Special Conditions
d. General Scope of Work
e. Technical Specifications
f. Drawings

This Instrument, together with the other documents enumerated in this Article 3, which said other documents are as fully a part of the Contract as if hereto attached or herein repeated, form the Contract. In the event that any provision in any component part of this Contract conflicts with any provision of any other component part, the provision of the component part first enumerated in this Article 3 shall govern, except as otherwise specifically stated. The various provisions in Addenda shall be construed in the order of preference of the component part of the Contract which each modifies.

IN WITNESS WHEREOF, the parties hereto have caused This Instrument to be executed in _____ original counterparts the day and year first above written.

Attest:

_____ (Contractor)

_____ By _____

_____ Title _____

_____ (Street)

_____ (City)

_____

_____ (Local Authority)

By _____

Title _____

(Print or type the names underneath all signatures)

FORM OF CONTRACT

Certifications

I, _____, certify that I am the _____ of the corporation named as Contractor herein; that _____, who signed this Contract on behalf of the Contractor, was then _____ of said corporation; that said Contract was duly signed for and in behalf of said corporation by authority of its governing body, and is within the scope of its corporate powers.

:Corporate:
: Seal :

_____

_____

I HEREBY CERTIFY that, to the best of my knowledge and belief, based upon observation and inquiry, _____, who signed this Contract for the _____, had authority to execute the same, and is the individual who signs similar contracts on behalf of this corporation with the public generally.

_____

(This last certification must be made by the person who signed the Contract for the Local Authority)

(Print or type the names underneath all signatures)

FORM OF PERFORMANCE AND PAYMENT BOND (OR BONDS)

NOTE TO THE ARCHITECT: Insert here appropriate form of bond (or bonds) securing performance of the work and payment of laborers and materialmen. Certain bond forms are unacceptable because they modify the substance of the contract, as distinguished from merely securing the performance of that contract. For instance, AIA Form B1, which is a bond form issued by the American Institute of Architects, includes an arbitration clause conflicting with the provisions of Sec. 15 of the General Conditions of Bulletin LR-12 and is therefore unacceptable. There are also a number of other bond forms which include arbitration provisions, all of which are unacceptable.

The PHA also regards as unacceptable any bond modifying the provisions of the contract or restricting the liability of a surety. A number of bonds - all regarded as unacceptable - limit the time within which laborers and materialmen must pursue their claims or require laborers and materialmen to bring suit only in a specified court. Laborers and materialmen should have full benefit of applicable law, and nothing should be included in a bond to circumvent those rights.

On each form the following shall appear beneath the signature space for Corporate Surety and ahead of the space for Certificate As to Corporate Principal:

"The rate of premium on this bond is $_____ per thousand. The total amount of premium charged is $_____.
(The above is to be filled in by surety company)
(Power-of-attorney of person signing for surety company must be attached)"

NOTE: This page 25 supersedes page 25 dated 8-1-51. The instructions regarding appropriate forms of performance and payment bonds have been expanded to exclude certain bond forms which are unacceptable.

- -

GENERAL SPECIFICATIONS

GENERAL CONDITIONS

1. DEFINITIONS

Wherever used in any of the contract documents, the following meanings shall be given to the terms herein defined:

a. The "Contract" means the contract executed by the Local Authority and the Contractor, of which these General Conditions form a part. The documents which comprise the contract are set forth in the contract form.

b. The terms "Local Authority" and "Contractor" mean the respective parties to the contract.

c. The term "PHA" means the Public Housing Administration, successor in interest to the United States Housing Authority under Reorganization Plan 3 of 1947 (12 F.R. 4981), an agency and instrumentality of the United States of America created by the United States Housing Act of 1937 (Public No. 412, 75th Congress), as amended, which (subject to the provisions of a certain contract for financial aid between the Local Authority and the PHA) has agreed to purchase certain obligations of the Local Authority to aid in financing the work to be performed under the Contract. However, nothing contained in the Contract shall be construed to create any contractual relation between the Contractor and the PHA.

d. The "Architect" is the person, firm or corporation under contract with the Local Authority for architectural and engineering services related to the work.

e. The term "Project Engineer" means the person designated by the PHA to perform certain functions in connection with the contract for financial aid between the PHA and the Local Authority.

f. The term "Project" means the housing project, the construction work for which is contemplated in whole or in part under this contract.

g. The term "Specifications" means the volume which includes, and the term shall include, the Instructions and Forms (consisting of the Form of Invitation for Bids, Instructions to Bidders, Form of Bid, Form of Bid Bond, Form of Non-Collusive Affidavit, Form of Statement of Bidder's Qualifications, Form of Contract and Form of Performance and Payment Bond or Bonds), the General Specifications (consisting of the General Conditions, the Special Conditions, the General Scope of Work and the Schedule of Drawings) and the Technical Specifications.

h. The term "Drawings" means the drawings enumerated in the Schedule of Drawings.

GENERAL CONDITIONS

1. The term "Contracting Officer" means the person within the Local Authority's organization duly authorized by the governing body thereof to administer construction contracts for and in the name of the Local Authority. It does not necessarily mean the person executing this Contract. The Local Authority shall advise the Contractor the person or official who is designated as Contracting Officer.

2. CONTRACTOR

Only one Contractor is recognized as a party to this Contract, and where the term "Contractor" is used the prime contractor who signed this Contract is referred to. For convenience, the Technical Specifications have been divided into separate headings or divisions to cover the various trades represented in the work, and where "Contractors", such as "Mason Contractor", "Carpenter Contractor", and other "Contractors" are referred to it has been for convenience only.

3. SUPERINTENDENCE BY CONTRACTOR

a. The Contractor shall give his personal superintendence to the work or have a competent superintendent, satisfactory to the Local Authority and the Architect, on the work at all times during progress with full authority to act for him. The Contractor shall also provide an adequate staff for the proper coordination and expediting of his work.

b. The Contractor shall lay out his own work and he shall be responsible for all lines, elevations, and measurements of the buildings, grading, paving, and other work executed by him under the Contract. He must verify the figures shown on the drawings before laying out the work and will be held responsible for any error resulting from his failure so to do.

4. SUBCONTRACTS

a. The Contractor shall not award any work to any subcontractor without prior written approval of the Local Authority, which approval will not be given until the Contractor submits to it a written statement containing such information as the Local Authority may require concerning the proposed subcontractor and the scope of the subcontract, together with the proposed subcontractor's non-collusive affidavit in the following form:

GENERAL CONDITIONS

A F F I D A V I T

(Subbidder)

State of_____) ss.
County of_____)

_____, being first duly sworn, deposes and says:

That he is (a partner or officer of the firm of, etc.) _____ the party making a certain proposal or bid dated _____ 19____, to (name of Contractor) _____ for subcontract work in connection with the construction of PHA-aided Housing Project No. _____, located in (City) _____, (State) _____, and the party proposed by said (name of Contractor) _____ as subcontractor for said work as a result of said bid, that such bid is genuine and not collusive or sham; that said bidder has not colluded, conspired, connived or agreed, directly or indirectly with any bidder or person, to put in a sham bid or to refrain from bidding, and has not in any manner, directly or indirectly, sought by agreement or collusion, or communication or conference, with any person, to fix the bid price of affiant or of any other bidder, or to fix any overhead, profit or cost element of said bid price, or of that of any other bidder, or to secure any advantage against the (Local Authority) or any person interested in the proposed contract; and that all statements in said proposal or bid are true.

Signature of:
Bidder if the bidder is an individual;

Partner if the bidder is a partnership;

Officer if the bidder is a corporation.

Subscribed and sworn to before me this _____ day of _____, 19___.

_____

My commission expires _____, 19___.

b. No proposed subcontractor shall be disapproved except for cause.

c. The Contractor shall be as fully responsible to the Local Authority for the acts and omissions of his subcontractors, and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him.

d. The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind subcontractors to the Contractor by the terms of the General Conditions, Special Conditions and other documents comprising the Contract in so far as they are applicable to the work of subcontractors and to give the Contractor the same power as regards terminating any subcontract that the Local Authority may exercise over the Contractor under any provisions of the Contract. The Contractor shall insert in each of his subcontracts the provisions (appropriately modified) of sections 37, 42, 43, 44, 45 and 50, of these General Conditions.

e. Nothing contained in the Contract shall create any contractual relation between any subcontractor and the Local Authority.

5. OTHER CONTRACTS

The Local Authority may award other contracts for additional work, and the Contractor shall fully cooperate with such other contractors and carefully fit his own work to that provided under other contracts as may be directed by the Local Authority. The Contractor shall not commit or permit any act which will interfere with the performance of work by any other contractor. Where more than one prime contractor is employed on the site it shall be the responsibility of the Local Authority to coordinate the work of all such prime contractors unless otherwise expressly provided herein.

6. FITTING AND COORDINATION OF THE WORK

The Contractor shall be responsible for the proper fitting of all work and for the coordination of the operations of all trades, subcontractors, or materialmen engaged upon the work. He shall be prepared to guarantee to each of his subcontractors the dimensions which they may require for the fitting of their work to all surrounding work and shall do, or cause his agents to do, all cutting, fitting, adjusting, and patching necessary to make the several parts of the work come together properly and to fit the work to receive, or be received by, that of other contractors.

7. MUTUAL RESPONSIBILITY OF CONTRACTORS

If, through acts or neglect on the part of the Contractor, any other contractor or any subcontractor shall suffer loss or damage on the work, the Contractor agrees to settle with such other contractor or subcontractor by agreement or arbitration, if such other contractor or subcontractor will so settle. If such other contractor or subcontractor shall assert any claim against the Local Authority on account of any damage alleged to have been so sustained,

the Local Authority shall notify the Contractor, who shall defend at his own expense any suit based upon such claim, and, if any judgment or claims against the Local Authority shall be allowed, the Contractor shall pay or satisfy such judgment or claim and pay all costs and expenses in connection therewith.

8. BREAKDOWN, PROGRESS SCHEDULE AND PERIODICAL ESTIMATES

a. For the purpose of preparing an acceptable progress schedule, and as a basis upon which partial payments to the Contractor may be authorized, immediately after execution of the Contract the Contractor shall furnish, on forms to be supplied by the Local Authority, a detailed estimate, (herein termed "Breakdown"), giving a complete breakdown of his Contract price, so arranged and itemized as to meet the approval of the Local Authority and of the PHA. If the Contract covers more than one project, a separate Breakdown shall be furnished for each project.

b. The values employed in making up this Breakdown are for the purpose of making partial payments and shall not be taken as a basis for additions to or deductions from the contract price.

c. Upon approval of the Breakdown the Contractor shall, without delay, submit for approval in like manner a carefully considered Progress Schedule, prepared in accordance with a specimen form and instructions supplied by the Local Authority, showing the proposed dates of starting and completing each of the various branches of the work, the anticipated monthly payments to become due the Contractor, and the accumulated percent of progress each month. This chart shall correspond to the major subdivisions of the approved Breakdown and incorporate information taken therefrom as required. If the Contract covers more than one project, a separate Progress Schedule shall be furnished for each project.

d. At the time of submitting his Progress Schedule the Contractor shall file also his general "Plan of Operations" showing concisely the manner in which he proposes to carry out the work on the site. This will indicate the point of entrance, the course he intends to pursue, the sequence of operations, the successive blocks of dwelling units to be ready for occupancy, and such other general information as will assist the Local Authority in planning its arrangements with others for services and materials not furnished by the Contractor, and in preparing for tenancy. Any later deviation from this Plan shall be discussed with and receive the concurrence of the Local Authority amply in advance of the date it is proposed to place it in effect.

e. In order to receive partial payments as the work progresses the Contractor shall submit, on forms supplied by the Local Authority, Periodical Estimates showing the value of the work performed each month, based upon the items appearing in the approved Breakdown. Such estimates must be submitted not later than ten days in advance of the date set for payment, and are subject to correction and revision as required. In final form, they must bear the certification of both the Architect and the Local Authority before any payment may be made.

GENERAL CONDITIONS

9. PAYMENTS TO CONTRACTOR

a. Subject to submission by the Contractor of the written certifications required of him and his subcontractors by Section 37 of the General Conditions, partial payments will be made as the work progresses on not later than the fifteenth day of each calendar month for work done during the preceding calendar month on estimates certified to by both the Architect and Local Authority. In preparing estimates the material delivered to and properly stored on the site and preparatory work done may be taken into consideration. Estimates for monthly payments must be submitted at least ten (10) days in advance of the date set for payment. If the Contract covers more than one project, a separate estimate shall be furnished for each project.

b. In making such partial payments for the work there shall be retained 10% of the estimated amount until final completion and acceptance of all work covered by the Contract: Provided, however, that after 50% of the work has been completed, if the Local Authority determines that the Contractor's performance and progress are satisfactory, the Local Authority may make the remaining partial payments in full for the work subsequently completed.

c. All material and work covered by partial payments made shall thereupon become the sole property of the Local Authority, but this provision shall not be construed as relieving the Contractor from the sole responsibility for the care and protection of materials and work upon which payments have been made or the restoration of any damaged work, whether such damage has been caused by the Contractor or by other contractors of the Local Authority or others, or as a waiver of the right of the Local Authority to require the fulfillment of all terms of the Contract. In the event the work of the Contractor has been damaged by other contractors or by others than the employees of the Local Authority in the course of their employment, the Contractor agrees to restore such damaged work without cost to the Local Authority and to seek redress for his damage only from those who directly caused it.

d. Upon completion and acceptance of all work required hereunder, the amount due the Contractor under this Contract shall be paid upon certification by the Architect and approval by the Local Authority and the PHA, after the Contractor shall have furnished the Local Authority with a release in satisfactory form of all claims against the Local Authority arising under and by virtue of this Contract, other than such claims, if any, as may be specifically excepted by the Contractor from the operation of the release; Provided, each such exception embraces no more than one claim, the basis and scope of which is clearly defined and the amount stated; and provided further, the amounts of such excepted claims are not included in the voucher for final payment.

e. The Local Authority, before making any payment, may require the Contractor to furnish releases or receipts from all persons performing work and supplying material to the Contractor, if the Local Authority deems the same necessary in order to protect its interest. The Local Authority, however, may make payment in part or in full to the Contractor without requiring the furnishing of such releases or receipts and any payments so made shall in nowise impair the obligations of any surety or sureties on any bond or bonds furnished under this Contract.

f. The Local Authority may withhold from any payment otherwise due the Contractor so much as may be necessary to protect the Local Authority against any claims that may be urged against the Local Authority and if it so elects may also withhold any amounts due from the Contractor to any subcontractors or materialmen, for labor or material furnished by them. The foregoing provisions shall be construed solely for the benefit of the Local Authority and shall not require the Local Authority to determine or adjust any claims or disputes between the Contractor and his subcontractors or materialmen, or to withhold any moneys for their protection unless the Local Authority elects so to do. The failure or refusal of the Local Authority to withhold any moneys from the Contractor shall in nowise impair the obligations of any surety or sureties under any bond or bonds furnished under this Contract.

10. CHANGES IN THE WORK

a. The Local Authority may make changes in the work of the Contractor by making alterations therein, or by making additions thereto, or by omitting work therefrom, without invalidating the Contract, and without relieving or releasing the Contractor from any guarantee given by him pursuant to the Contract provisions, and without affecting the validity of the guaranty bonds, and without relieving or releasing the surety or sureties of said bonds. All such work shall be executed under the conditions of the original Contract.

b. Except in an emergency endangering life or property, no change shall be made by the Contractor unless in pursuance of a written order from the Local Authority, countersigned by the Architect, authorizing the change and no claim for an adjustment of the Contract price or time shall be valid unless so ordered.

c. In determining the value of any change, either additive or subtractive, the contracting parties are restricted to the use of the three following methods, singly or in combination. Method (1) shall be used to establish the equitable value of the change in every case where it can be fixed prior to performance of the changed work. Method (2), and no other, shall be used to establish changed values for any and all items for which unit prices are set forth in the Contract. Method (3) shall be used only to establish values which are indeterminate otherwise, or in an emergency endangering life or property. The Local Authority at the time it issues the written Order to Proceed shall, in the case of both Methods 2 and 3, fix a maximum amount to be spent on the work which shall not be exceeded. If additional work remains to be done after that sum has been expended the additional work shall be the subject of a separate written order.

(1) The contracting parties shall negotiate and agree upon the equitable value of the change prior to issuance of the order, and the order shall stipulate the corresponding lump-sum adjustment of the Contract price.

(2) The applicable unit price shall be applied to the net change in quantity, estimated or actual as agreed, of the item involved.

(3) The order shall direct the Contractor to proceed on a time and material basis, whereupon the Contractor shall so proceed and keep accurately and present, in such form and at such times as the Local Authority may require, a correct account of the cost, together with all proper vouchers and supporting papers therefor. Upon completion of the change and agreement upon the total value thereof, the Local Authority shall issue a second written order, processed in accordance with the provisions of Section 10 b. above, effecting the equitable adjustment of the contract price.

d. Under Methods (1), (2), and (3), for extra work performed, the allowances for overhead and profit combined, included in the total cost to the Local Authority, shall be based upon the following schedule:

(1) To the Contractor, for work which he performs with his own forces, not to exceed 15% of his net additional cost.

(2) To a subcontractor, for work which he performs with his own forces, not to exceed 15% of his net additional cost.

(3) To the Contractor, for work performed by his subcontractor, not to exceed 7½% of the amount due the subcontractor.

These percentages shall be applied to the net additional cost as defined in subsection e. immediately following. If the net cost value of a change results in a credit from the Contractor or subcontractor, the credit given shall be the net cost without overhead or profit.

e. The "net cost" as used herein shall mean the difference between all proper cost additions and deductions. The "cost" as used herein may include all items of labor or materials, the use of power tools and equipment, and all such items of cost as public liability and workmens' compensation insurance, pro rata charges for foremen, social security, old age and unemployment insurance. Among the items to be considered as overhead are insurance other than as mentioned above, bond premiums, supervision, superintendents, timekeepers, clerks, watchmen, small tools, incidental job burdens and general office expense, and all other items not included in the cost as herein defined.

f. Every order issued by the Local Authority which effects an adjustment of the contract price shall be supported by an itemized, bona fide, written proposal from the Contractor to the Local Authority, submitted prior to preparation of the order, in multiple-copy form as required. In preparing such

order, the Local Authority shall break down the total price to show the several amounts properly chargeable to "Site Improvements", "Dwelling Construction and Equipment", and "Non-Dwelling Construction and Equipment". This breakdown is to be used for statistical purposes only.

g. Should the Contractor encounter or the Local Authority discover during the progress of the work sub-surface or latent conditions at the site materially differing from those shown on the Drawings or indicated in the Specifications, the attention of the Architect shall immediately be called to such conditions before they are disturbed. If the Architect finds that they so materially differ, he shall at once make such changes in the Drawings or Specifications as he may find necessary, and any adjustment in the Contract price or time as may be justifiable shall be made by means of a written order as provided herein.

h. Subject to the provisions of Sections 11 and 13 of the General Conditions justifiable extensions of Contract time because of changes ordered may be granted by the Local Authority.

11. CLAIMS FOR EXTRA COST

a. If the Contractor claims that any instructions by drawings or otherwise involve extra cost or extension of time, he shall, within ten days after the receipt of such instructions, and in any event before proceeding to execute the work, submit his protest thereto in writing to the Local Authority, stating clearly and in detail the basis of his objections. No such claim shall be valid unless so made.

b. Claims for additional compensation for extra work, due to alleged errors in spot elevations, contour lines, or bench marks, will not be recognized unless accompanied by certified survey data, made prior to the time the original ground was disturbed, clearly showing that errors exist which resulted, or would result, in handling more material, or performing more work, than would be reasonably estimated from the plans and topographical maps issued.

c. Any discrepancies which may be discovered between actual conditions and those represented by the topographical maps and plans shall at once be reported to the Local Authority, and work shall not proceed, except at the Contractor's risk, until written instructions have been received by him from the Local Authority.

d. If, on the basis of the available evidence, the Local Authority determines that an adjustment of the Contract price or time is justifiable, the procedure shall then be as provided herein for "Changes in the Work."

e. By execution of this Contract the Contractor warrants that he has visited the site of the proposed work and fully acquainted himself with the

conditions there existing relating to construction and labor, and that he fully understands the facilities, difficulties and restrictions attending the execution of the work under the Contract. The Contractor further warrants that he has thoroughly examined and is familiar with the Drawings, Specifications, and all other documents comprising the Contract. The Contractor further warrants that by execution of this Contract his failure when he was bidding on this Contract to receive or examine any form, instrument or document, or to visit the site and acquaint himself with conditions there existing, in no wise relieves him from any obligation under the Contract and the Contractor agrees that the Local Authority shall be justified in rejecting any claim based on facts regarding which he should have been on notice as a result thereof.

12. RIGHT OF LOCAL AUTHORITY TO TERMINATE CONTRACT

If the Contractor should be adjudged a bankrupt, or if he should make a general assignment for the benefit of his creditors, or if a receiver should be appointed on account of his insolvency, or if he should persistently or repeatedly refuse or fail to supply enough properly skilled workmen or proper materials, or if he should fail to make prompt payment to his employees or to his subcontractors, or persistently disregard instructions of the Local Authority or Architect or fail to observe or perform the provisions of the Contract, or otherwise be guilty of a substantial violation of any provision of the Contract, then the Local Authority may, by at least five days prior written notice to the Contractor, without prejudice to any other rights or remedies of the Local Authority, terminate the Contractor's right to proceed with the work. In such event, the Local Authority may take over and prosecute the work to completion, by contract or otherwise, and the Contractor and his sureties shall be liable to the Local Authority for any excess cost occasioned the Local Authority thereby; and in any such case the Local Authority may take possession of and utilize in completing the work such materials, appliances, and plant as may be on the site of the work and necessary therefor. The foregoing provisions are in addition to, and not in limitation of the rights of the Local Authority under any other provisions of the Contract.

13. DELAYS - DAMAGES

a. If the Contractor refuses or fails to prosecute the work, or any separable part thereof, with such diligence as will insure its completion within the time specified in the Special Conditions, or any extension thereof, or fails to complete said work within such time, the Local Authority, may, by written notice to the Contractor, terminate his right to proceed with the work or such part of the work as to which there has been delay. In such event the Local Authority may take over the work and prosecute the same to completion, by contract or otherwise and the Contractor and his sureties shall be liable to the Local Authority for any excess cost occasioned the Local Authority thereby. If the Contractor's right to proceed is so terminated, the Local Authority may take possession of and utilize in completing

- -

the work such materials, appliances, and plant as may be on the site of the work and necessary therefor. Until such time as the Local Authority terminates the right of the Contractor to proceed, the Contractor shall continue the work, and the Contractor shall pay to the Local Authority as fixed, agreed, and liquidated damages (it being impossible to determine the actual damages occasioned by the delay) for each calendar day of delay, until the work is completed, or accepted, or until such time as the Contractor's right to proceed shall be terminated, the amount as set forth in the Special Conditions, and the Contractor and his sureties shall be liable for the amount thereof. In the event the Local Authority shall at any time subsequent to the date of completion, as established in the Contract or any amendment thereto, terminate the Contractor's right to proceed, such termination shall not relieve the Contractor of the payment of the liquidated damages which have accrued from the completion date as established in the Contract, up to and including the date of the termination of the Contractor's right to proceed; Provided, That the right of the Contractor to proceed shall not be terminated or the Contractor charged with liquidated damages because of any delays in the completion of the work due to unforeseeable causes beyond the control and without the fault or negligence of the Contractor, including but not restricted to acts of God, or of the public enemy, acts of the Government, acts of the Local Authority, acts of another contractor in the performance of a contract with the Local Authority, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and unusually severe weather or delays of subcontractors due to such causes, if the Contractor shall within 10 days from the beginning of any such delay (unless the Local Authority, with the approval of the PHA, shall grant a further period of time prior to the date of final settlement of the Contract) notify the Contracting Officer in writing of the causes of delay, who shall ascertain the facts and the extent of delay, and the Local Authority shall, subject to prior approval of the PHA, extend the time for completing the work when in its judgment the findings of fact of the Contracting Officer justify such an extension, and his findings of fact thereon shall be final and conclusive upon the parties hereto.

b. No payment or compensation of any kind shall be made to the Contractor for damages because of hindrance or delay from any cause in the progress of the work, whether such hindrances or delays be avoidable or unavoidable.

14. ASSIGNMENT OF CONTRACT

The Contractor's obligations and duties under this Contract shall not be assigned in whole or in part by the Contractor without the written approval of the Local Authority, but this shall not prohibit the assignment of the proceeds due hereunder to a bank or financial institution nor shall this provision preclude the Contractor from subletting, as provided in this Contract, parts of the work in accordance with the general practice of the building industry. This Contract may be assigned by the Local Authority to any corporation, agency, or instrumentality authorized to accept such assignment.

GENERAL CONDITIONS

15. DISPUTES

a. All disputes, other than those required to be handled under Section 44 of the General Conditions, arising under this contract or its interpretation, whether involving law or fact, or both, or extra work, and all claims for alleged breach of contract shall within 10 days of commencement of dispute be presented to the Contracting Officer for decision. A copy of the notice of the dispute shall be forwarded to the Field Office of the Public Housing Administration. Such notice need not detail the amount of the claim but shall state the facts surrounding the claim in sufficient detail to identify the claim, together with its character and scope. In the meantime the Contractor shall proceed with the work as directed. The parties agree that any claim not presented within the time limit specified within this subsection is waived, except that if the claim is of a continuing character and notice of the claim is not given within ten days of its commencement, the claim will be considered only for a period commencing ten days prior to the receipt by the Local Authority of written notice thereof.

b. The Contractor shall submit in detail his claim and his proof thereof. The decision of the Contracting Officer shall be approved in writing by the Public Housing Administration prior to its issuance. Any decision not so approved shall be a nullity. Each decision by the Contracting Officer shall be in writing and shall be mailed to the Contractor by registered mail, return receipt requested. A copy shall be delivered to the Project Engineer.

c. If the Contractor does not agree with any decision of the Contracting Officer, he shall except from the final release the decision in question.

d. Provided the Contractor has:

(1) given notice of any dispute within the time limit stated in 15a. above;

(2) presented his dispute to the Contracting Officer;

(3) taken exception in his release from the Contracting Officer's decision; and

(4) brought suit within 120 days after receipt of final payment under this Contract or within six months of a written request by the Local Authority that he submit a final voucher and release, whichever time is the lesser;

the Contracting Officer's decision shall not be final and conclusive but the dispute shall be tried in court on its merits. In the event the above conditions precedent have not been met, the Contractor hereby agrees that his non-compliance with the conditions precedent constitutes a waiver of his right to assert said claim.

- -

GENERAL CONDITIONS

16. SPECIFICATIONS AND DRAWINGS

Anything mentioned in the Technical Specifications and not shown on the Drawings, or shown on the Drawings and not mentioned in the Technical Specifications, shall be of like effect as if shown on or mentioned in both. In case of difference between Drawings and Technical Specifications, the Technical Specifications shall govern. In case of any discrepancy in Drawings, or Technical Specifications, the matter shall be immediately submitted to the Local Authority, without whose decision said discrepancy shall not be adjusted by the Contractor, save only at his own risk and expense.

17. DRAWINGS

a. The general character of the detail work is shown on the Drawings but minor modifications may be made by the Architect in the full size drawings or models. The Contractor shall not attempt to execute any part of the work requiring such drawings until he has received the same.

b. Where the word "similar" occurs on the Drawings, it shall be used in its general sense and not as meaning identical, and all details shall be worked out in relation to their location and their connection to other parts of the work.

c. Where, on any Drawing, a portion of the work is drawn out and the remainder is indicated in outline, the parts drawn out shall apply also to all other like portions of the work. Where ornament or other detail is indicated by starting only, such detail shall be continued throughout the courses or parts in which it occurs and shall also apply to all other similar parts in the work, unless otherwise indicated.

d. In case of differences between small and large scale drawings, the larger scale drawing shall take precedence.

18. OWNERSHIP OF DRAWINGS AND SPECIFICATIONS

Except the Contractor's executed set, all Drawings and the Specifications are and remain the property of the Local Authority. Such Drawings and Specifications are not to be used on other work, and those sets in usable condition shall be returned to the Local Authority, upon request, at the completion or cessation of the work or termination of the contract.

19. SHOP DRAWINGS

a. Shop drawings of all fabricated work shall be submitted to the Architect for approval and no work shall be fabricated by the Contractor, save at his own risk, until approval has been given. The Contractor will be advised as to the exact procedure to be followed with respect to the number of prints required, where submitted, letters of transmittal, making corrections, etc. No less than five (5) prints of finally approved shop drawings will be required.

- -

b. The Contractor shall submit all shop drawings on dates sufficiently in advance of requirements to afford the Architect ample time for checking same, including time for correcting, resubmission, and recheck, if necessary, and no claim for extension of the contract time will be granted the Contractor by reason of his failure in this respect.

c. All shop drawings submitted must bear the stamp of approval of the Contractor as evidence that the drawings have been checked by the Contractor. Any drawings submitted without this stamp of approval will not be considered and will be returned to the Contractor for proper resubmission. If the shop drawings show variations from the requirements of the Contract because of standard shop practice or other reason, the Contractor shall make specific mention of such variation in his letter of transmittal in order that, if acceptable, suitable action may be taken for proper adjustment; otherwise the Contractor will not be relieved of the responsibility for executing the work in accordance with the Contract even though such shop drawings have been approved.

d. Where a shop drawing as submitted by the Contractor indicates a departure from the Contract which the Architect deems to be a minor adjustment in the interest of the Local Authority not involving a change in Contract price or extension of time, the Architect may approve the drawing but the approval will contain, in substance, the following:

> "The modification shown on the attached drawing is approved in the interest of the Local Authority to effect an improvement for the project and is ordered with the understanding that it does not involve any change in the Contract price or time; that it is subject generally to all Contract stipulations and covenants; and that it is without prejudice to any and all rights of the Local Authority under the Contract and bond or bonds."

e. The approval of shop drawings will be general and shall not relieve the Contractor from the responsibility for adherence to the Contract, not shall it relieve him of the responsibility for any error which may exist.

20. REQUESTS FOR SUPPLEMENTARY INFORMATION

a. It shall be the responsibility of the Contractor to make timely requests of the Architect, through the Local Authority, for such large scale and full size drawings, color schemes, and other additional information, not already in his possession, which he will require in the planning and production of the work. Such requests may be submitted from time to time as the need is approached, but each such request shall be filed in ample time to permit appropriate action to be taken by all parties involved so as to avoid delay. Each request shall be in writing, and shall

list the various items and the latest date by which each will be required by the Contractor. The first list shall be submitted within two weeks after Contract award and shall be as complete as possible at that time. The Contractor shall, if requested, furnish promptly any assistance and information which the Architect may require in responding to the requests of the Contractor. The Contractor shall be fully responsible for any delay in his work or to others arising from his failure to comply fully with the provisions of this Section.

b. The Local Authority shall coordinate these activities between its Architect and the Contractor and shall expedite the flow of information so as to minimize delay in the progress of the development.

21. MATERIALS AND WORKMANSHIP

a. Unless otherwise specifically provided for in the Technical Specifications, all workmanship, equipment, materials and articles incorporated in the work shall be new and the best grade of the respective kinds for the purpose. Where equipment, materials, articles or workmanship are referred to in the Technical Specifications as "equal to" any particular standard, the Contracting Officer shall decide the question of equality.

b. The Contractor shall furnish to the Local Authority for approval the name of the manufacturer of machinery, mechanical and other equipment which he contemplates installing together with full information as to type, performance characteristics, and all other pertinent information as required, and shall likewise submit for approval as required full information concerning the materials or articles which he proposes to incorporate in the work. (See "Samples, Certificates and Tests", Section 22 of the General Conditions).

c. Machinery, mechanical and other equipment, materials or articles installed or used without such prior approval shall be at the risk of subsequent rejection.

d. Materials specified by reference to the number or symbol of a specific standard, such as a Commercial Standard, a Federal Specification or other similar standard, shall comply with requirements in the latest revision thereof and any amendment or supplement thereto in effect on the date of the Invitation for Bids, except as limited to type, class or grade, or modified in such reference. The standards referred to, except as modified in the Technical Specifications shall have full force and effect as though printed therein.

e. Specific reference in the Technical Specifications to any article, device, product, material, fixture, form, or type of construction, etc., by name, make or catalog number shall be interpreted as establishing a standard of quality and shall not be construed as limiting competition, and the

Contractor, in such cases, may at his option use any article, device, product or material, fixture, form or type of construction which, in the judgment of the Contracting Officer, expressed in writing, is equal to that named.

f. The Local Authority may require the Contractor to dismiss from the work such employee or employees as the Local Authority or the Architect may deem incompetent, or careless, or insubordinate, or otherwise objectionable.

22. SAMPLES, CERTIFICATES AND TESTS

a. No samples shall be submitted with any bid nor before the award of the Contract and acceptance of the Contractor's Bond.

b. No material for which samples are required shall be delivered to the site for use until representative samples have been approved in writing by the Local Authority.

c. The Contractor shall furnish for approval all samples (and certificates related to them) as stipulated under the several divisions of the Technical Specifications as well as all other samples as requested by the Local Authority. Samples shall be delivered with all transportation charges prepaid to a location designated by the Local Authority and in ample time for proper consideration and action. In general, 20 days is the minimum time required for making tests.

d. Pack samples so as to reach their destination in good condition; ship in tight metal containers samples of paste or liquid materials.

e. Label, or otherwise properly mark on the container the material or product represented, its place of origin, the name of the producer, the name of the Contractor, and the name and symbol of the Project for which it is intended.

f. Submit to the Local Authority, in triplicate, a certificate describing each sample submitted for approval, certifying that the material, equipment or accessory submitted complies with Contract requirements. The certificates shall include the following information:

(1) Name and brand of the product, name of manufacturer, location of plant.

(2) Name and location of at least two structures on which substantial quantities of the material represented by the sample were used, and the approximate dates of use or installation.

(3) An outline showing chemical and physical properties of the material represented by the sample submitted and giving the

name of the laboratory or testing authority which obtained the data, and the dates of the tests. (NOTE: The information required by this subparagraph f (3) may be omitted in the case of materials required to conform to Federal Specifications or A.S.T.M. Standards; Provided, A certified statement by an acceptable laboratory or testing authority is furnished in lieu thereof.)

(4) If the statement originates with the producer, the Contractor shall endorse all claims and submit the statement in his own name; he shall also guarantee that all materials furnished for use on the Project will be in compliance with the samples and certified statements.

g. Approval of any material shall be general only and shall not constitute a waiver of the Local Authority's right to demand full compliance with Contract requirements. After actual deliveries, the Local Authority will make such check tests as it deems necessary in each instance and may reject materials and equipment and accessories for cause, even though such materials and articles have been given general approval. If materials, equipment or accessories which fail to meet check tests have been incorporated in the work, the Local Authority shall have the right to cause their removal and replacement by proper materials or to demand and secure such reparation by the Contractor as is equitable.

h. When a material has been approved, no change in brand or make will be permitted unless:

(1) The manufacturer cannot make satisfactory delivery; or

(2) The material delivered fails to comply with the Contract requirements.

i. Wherever materials are required to comply with A.S.T.M. Standards or Federal Specifications, and such specifications shall be accepted as establishing the technical qualities and testing methods, they shall not govern the number of tests required to be made. The number of tests required on material delivered for use shall in all cases be at the discretion of the Local Authority. They may require laboratory tests on samples submitted for approval or they may approve materials on the basis of data submitted in certificates with the samples.

j. Check tests will be made on materials delivered for use only as frequently as the Local Authority considers necessary to insure compliance of materials used with Contract requirements.

k. Except as otherwise specifically stated in the Contract, the costs of sampling and testing will be divided as follows:

GENERAL CONDITIONS

(1) The Contractor will furnish without extra cost, including packing and delivery charges, all samples required for testing purposes;

(2) The Contractor will assume all costs of re-testing materials which fail to meet contract requirements;

(3) The Contractor will assume all costs of testing materials offered in substitution for those found deficient; and

(4) The Local Authority will pay all other expenses.

1. Samples of materials not subject to destruction tests when approved will be sent to the Local Authority's Project office and kept there until completion of the work. They may be built into the work after a substantial quantity of the materials they represent have been built in and approved. Samples that are not approved will be returned to the Contractor only upon his request and at his expense; if the return of such samples is not requested within 30 days after rejection or disapproval, they will be treated as unclaimed material. The failure of samples to meet Contract requirements will be sufficient cause for refusal to consider any further samples from manufacturers whose materials have failed.

23. PERMITS AND CODES

a. The Contractor shall give all notices and comply with all applicable laws, ordinances, codes, rules and regulations. The intent of this Contract is that the Contractor shall base his bid upon the Drawings and the Specifications, but that all work installed shall comply with all applicable codes and regulations as amended by any waivers. Before installing the work, the Contractor shall examine the Drawings and the Specifications for compliance with applicable codes and regulations bearing on the work, and shall immediately report any discrepancy to the Local Authority. Where the requirements of the Drawings and the Specifications fail to comply with the applicable code or regulation, the Local Authority shall adjust by change order the Contract to conform to the code or regulation (unless waivers in writing covering the differences have been granted by the governing authority) and shall make appropriate adjustment in the Contract price. Should the Contractor fail to observe the foregoing provisions and install work at variance with any applicable code or regulation as may be amended by waivers (notwithstanding the fact that such installation is in compliance with the Technical Specifications), the Contractor shall remove such work without cost to the Local Authority, but a change order shall be issued to cover only the excess cost the Contractor would have been entitled to receive if the change had been made before the Contractor commenced work on the items involved.

b. Where the cost might otherwise fall upon the Contractor, the Local Authority will arrange for the issuance, WITHOUT COST TO THE CONTRACTOR by the appropriate local governmental agency, of permits for water, demolition, sidewalks, sheds, removal of abandoned water taps, sealing of house connection drains, street openings, the repaving of streets and sidewalks and all other building, electrical, plumbing, heating, gas and sewer permits necessary under any rule or regulation of the local regulatory body or any of its agencies and the Contractor shall not include in his bid price the cost of any such permits against him therefor. The Contractor, however, shall make all necessary applications for securing any such required permits and shall obtain all such permits before commencing work. Notwithstanding the above, the Contractor may be reimbursed for fees, by the issuance of a change order, if (1) the Contractor finds that failure to pay such fees will delay construction of the project, (2) the Local Authority, after written notice from the Contractor, concurs in writing that substantial delay will result unless said fees are paid, and (3) the Contractor pays the fees under written protest.

24. DOMESTIC AND FOREIGN MATERIALS

Except for materials listed in this section, only such unmanufactured articles, materials, and supplies as have been mined or produced in the United States of America, and only such manufactured articles, materials, and supplies as have been manufactured in the United States of America substantially all from articles, materials, or supplies, mined, produced or manufactured, as the case may be, in the United States of America, shall be employed under this Contract in the construction of the project.

The following have been exempted by the PHA from the foregoing provision:

Antimony	Jute	Copper, natural - nickel alloy
Asbestos	Kaurigum	Manganese Ore - 35% and over
Asphalt - native	Lac	Oil, China wood (tung oil)
Carnauba Wax	Mercury	Rubber - natural
Chromium	Mica	Sisal
Cork	Nickel	Tin
Flax	Platinum	Titanium
Hemp	Silk	Tungsten

25. CONVICT-MADE MATERIALS

No materials manufactured or produced in a penal or correctional institution shall be incorporated in the project under this Contract.

26. CARE OF THE WORK

a. The Contractor shall adopt reasonable methods during the life of the Contract to furnish continuous protection to the site and to the work, materials, and equipment thereon to the end that loss or damage may be

NOTE: These pages 45 and 46 supersede pages 45 and 46 dated 8-1-51. Sections 26a and 26b have been revised.

GENERAL CONDITIONS

prevented. He shall refuse entry to persons not having business on the site. He shall be responsible for all damages to persons or property that occur as a result of his fault or negligence in connection with the prosecution of the work and shall be responsible for the proper care and protection of all materials delivered and work performed until completion and final acceptance, whether or not the same has been covered by partial payments made by the Local Authority, and whether or not the damage to his work was caused by the Contractor or by other contractors or by others than the employees of the Local Authority in the course of their employment.

b. In the event of delay in completion of the contract work due to loss or damage caused by failure of the contractor to adopt reasonable and continuous protective methods, the contractor shall not be relieved from payment of liquidated damages because of such delay.

c. In an emergency affecting the safety of life or property, including adjoining property, the Contractor, without special instructions or authorization from the Local Authority, is authorized to act at his discretion to prevent such threatened loss or injury, and he shall so act. Likewise, he shall so act if instructed to do so by the Local Authority. Any compensation claimed by the Contractor on account of such emergency work shall be determined by the Local Authority, subject to PHA approval, and as provided in the Contract.

d. The Contractor shall avoid damage as a result of his operations to existing sidewalks, streets, curbs, pavements, utilities, adjoining property, the work of other contractors and the property of the Local Authority and others, and he shall at his own expense completely repair any damage thereto caused by his operations.

e. Wherever required by law, the Contractor shall shore up, brace, underpin, secure, and protect as may be necessary all foundations and other parts of existing structures adjacent to, adjoining, and in the vicinity of the site, which may be in any way affected by the excavations or other operations connected with the construction of the Project. The Contractor shall be responsible for the giving of any and all required notices to any adjoining or adjacent property owner or other party before the commencement of any work. The Contractor shall indemnify and save harmless the Local Authority from any damages on account of settlements or the loss of lateral support of adjoining property and from all loss or expense and all damages for which the Local Authority may become liable in consequence of such injury or damage to adjoining and adjacent structures and their premises.

27. TEMPORARY HEATING

a. The Contractor shall provide and pay for temporary heating, covering and enclosures as directed by the Local Authority, and as necessary to protect properly all work and materials against damage by dampness and cold, to dry out the work, and to facilitate the completion of the work. The fuel, equipment, materials and methods used shall at all times be adequate for the purpose, and satisfactory to the Local Authority. The Contractor shall maintain the critical installation temperatures called for in the Technical Specifications for various branches of the work in those spaces where such work is being performed. The maintenance of proper heat, ventilation, and adequate drying out of the work are the responsibilities of the Contractor and any work damaged by dampness, insufficient or abnormal heat shall be replaced to the satisfaction of the Local Authority by and at the expense of the Contractor.

b. The Contractor may utilize the permanent heating equipment which he furnishes and installs under this Contract but shall supply any additional equipment required. Any permanent equipment so used shall be turned over to the Local Authority in the condition and at the time required by the Specifications.

28. ACCIDENT PREVENTION

The Contractor shall exercise proper precaution at all times for the protection of persons and property. The safety provisions of applicable law, building and construction codes shall be observed, and the Contractor shall take or cause to be taken such additional safety and health measures as the Local Authority may determine to be reasonably necessary. Machinery, equipment and all hazards shall be guarded in accordance with the safety provisions of the Manual of Accident Prevention in Construction published by the Associated General Contractors of America, to the extent that such provisions are not in contravention of applicable law.

29. SANITARY FACILITIES

The Contractor shall furnish, install and maintain ample sanitary facilities for the workmen. As the needs arise, enclosed temporary toilets, in sufficient number, shall be placed as directed by the Local Authority. Permanent toilets installed under this contract shall not be used during construction of the Project. Drinking water shall be provided from a proved safe source, so piped or transported as to be kept clean and fresh and served from single service containers or satisfactory types of sanitary drinking stands or fountains. All such facilities and services shall be furnished in strict accordance with existing governing health regulations.

30. USE OF PREMISES

a. The Contractor shall confine his apparatus, storage of materials, and construction operations to the limits prescribed by ordinances or permits, or as may be directed by the Local Authority, and shall not unreasonably encumber the premises with his materials.

b. The Contractor shall not load any structure or permit any part thereof to be loaded to such an extent as to endanger its safety.

c. The Contractor shall comply with and enforce any instructions of the Local Authority, or local laws regarding signs, advertising, fires danger signals, barricades, and smoking.

31. REMOVAL OF DEBRIS, CLEANING, ETC.

The Contractor shall, periodically or as directed during the progress of the work, remove and properly dispose of the resultant dirt and debris, and keep

the premises reasonably clear. Upon completion of the work, he shall remove all temporary construction, facilities and unused materials provided for the work, and put the buildings and premises in a neat and clean condition, and do all cleaning and washing required by the Specifications. Trash and combustible materials shall not be allowed to accumulate in the buildings or elsewhere on the premises. Trash burning on the site will be subject to prior approval of the Local Authority and existing local and State regulations.

32. INSPECTION

a. All material and workmanship shall be subject to inspection, examination, or test by the Local Authority and the Architect at any and all times during manufacture or construction and at any and all places where such manufacture or construction is carried on. The Local Authority shall have the right to reject defective material and workmanship or require its correction. Rejected workmanship shall be satisfactorily corrected. Rejected material shall be promptly segregated and removed from the premises and satisfactorily replaced with proper material without charge therefor. If the Contractor fails to proceed at once with the correction of rejected defective material or workmanship, the Local Authority may by contract or otherwise have the defects remedied or rejected materials removed from the site and charge the cost of the same against any moneys which may be due the Contractor, without prejudice to any other rights or remedies of the Local Authority.

b. The Contractor shall furnish promptly all materials reasonably necessary for any tests that may be required. (See Samples, Certificates and Tests, Section 22 of the General Conditions). All tests by the Local Authority shall be performed in such manner as not to unnecessarily delay the work. Special, full size, and performance tests shall be as described in the Technical Specifications.

c. If any work be covered up without approval or consent of the Local Authority, it must, if requested by the Local Authority be uncovered at the expense of the Contractor. Should it be considered necessary or advisable by the Local Authority at any time before final acceptance of the entire work to make an examination of work already completed, by removing or tearing out same, the Contractor shall on request promptly furnish all necessary facilities, labor, and material. If such work is found to be defective in any material respect, due to fault of the Contractor or his subcontractors, he shall defray all the expenses of such examination and of satisfactory reconstruction. If, however, such work is found to meet the requirements of the Contract, the actual cost of labor and material necessarily involved in the examination and replacement, plus 15 per cent, shall be allowed the Contractor and he shall, in addition, if completion of the work of the entire Contract has been delayed thereby, be granted a suitable extension of time on account of the additional work involved.

d. Inspection of material and finished articles to be incorporated in the work at the site may be made at the place of production, manufacture, or shipment, whenever the quantity justifies it, unless otherwise stated in the Technical Specifications; and such inspection and acceptance, unless otherwise stated in the Technical Specifications, shall be final, except as regards (1) latent defects, (2) departures from specific requirements of the Contract, (3) damage or loss in transit, or (4) fraud or such gross mistakes as amount to fraud. Subject to the requirements contained in the preceding sentence, the inspection of material and workmanship for final acceptance as a whole or in part shall be made at the site.

e. Neither inspection, testing, approval nor acceptance of the work, in whole or in part, by the Local Authority or its agent shall relieve the Contractor or his Sureties of full responsibility for materials furnished or work performed not in strict accordance with the Contract.

33. REVIEW BY LOCAL AUTHORITY AND PHA

The Local Authority, the PHA, and their authorized representatives and agents shall, at all times, have access to and be permitted to observe and review all work, materials, equipment, pay rolls, personnel records, employment conditions, material invoices, contracts, books of account, and other relevant data and records; Provided, however, that all instructions and approvals with respect to the work shall be given to the Contractor only by the Local Authority, or its authorized representatives or agents.

34. FINAL INSPECTION

a. When the work is substantially completed the Contractor shall notify the Local Authority in writing that the work will be ready for final inspection on a definite date which shall be stated in such notice. Such notice shall be given at least ten (10) days prior to the date stated for final inspection, and the notice shall bear the signed concurrence of the representative of the Local Authority having charge of inspection.

b. If the Local Authority determines that the state of preparedness is as represented it will make the arrangements necessary to have final inspection commenced on the date stated in such notice, or as nearly thereafter as is practicable.

35. DEDUCTION FOR UNCORRECTED WORK

If the Local Authority deems it inexpedient to require the Contractor to correct work injured or not done in accordance with the Contract, an equitable deduction from the Contract Price shall be made by agreement between the Contractor and the Local Authority, subject to prior approval of the PHA, and subject to settlement, in case of dispute, as herein provided.

GENERAL CONDITIONS

36. INSURANCE

a. Before commencing work each Contractor shall submit to the Local Authority for review and approval his Workmen's Compensation and Manufacturers' and Contractors' Public Liability Insurance policies and shall similarly submit his subcontractors' policies before each commences work. Further, before commencing work on the superstructure each Contractor shall submit his Builder's Risk policy. The policies to be thus submitted shall be scheduled on an approval form to be supplied by the Local Authority. Such insurance shall be carried with financially responsible insurance companies approved by the Local Authority and shall be kept in force until the Contractor's work is accepted and taken over by the Local Authority. Contracts of insurance (covering operations under this Contract) which expire before the Contractor's work is accepted and taken over by the Local Authority shall be renewed and submitted to the Local Authority for its approval.

b. The Contractor shall carry Workmen's Compensation Insurance for all his employees engaged in work at the site, in accordance with State or Territorial Workmen's Compensation Laws. Each Contractor shall require his subcontractors to carry such insurance for all their employees working at the site.

c. The Contractor shall carry Manufacturers' and Contractors' Public Liability Insurance with Limits of $50,000/$100,000 to protect the Contractor against claims for injury to or death of one or more than one person as a result of accidents which may occur at the site from operations under the Contract. Each Contractor shall require his subcontractors to carry such insurance. Such insurance shall cover the use of all equipment, hoists, and vehicles on the site.

d. The Contractor shall carry Builder's Risk (fire and extended coverage) Insurance upon all work in place and/or materials stored at the building site including foundation and building equipment. The Contractor in installing equipment supplied by the Local Authority, such as ranges and refrigerators, shall carry insurance on such equipment from the time he takes possession thereof until his contract work is accepted by the Local Authority. Builder's Risk Insurance need not be carried on excavations, piers, footings or upon foundations until such time as work on the superstructure is started. It need not be carried on landscape work. Policy shall furnish coverage at all times for the full cash value of all completed construction as well as materials in place and/or stored at the site, whether or not the partial payment has been made by the Local Authority. The Contractor may terminate this insurance on buildings taken over for occupancy by the Local Authority pursuant to Section 11 of the Special Conditions as of the date said buildings are taken over.

GENERAL CONDITIONS

37. PREVAILING SALARIES OR WAGES

a. The Contractor shall pay to all architects, technical engineers, draftsmen, and technicians employed in connection with this contract not less than the salaries or wages prevailing in the locality of the Project, as determined or adopted (subsequent to a determination under applicable State or local law) by the PHA.

b. The Contractor shall pay to all laborers and mechanics employed in the development of the Project not less than the wages prevailing in the locality of the Project, as predetermined by the Secretary of Labor of the United States pursuant to the Davis-Bacon Act (Title 40, U.S.C., Secs. 276a - 276a-5).

c. All laborers and mechanics employed in the development of the Project shall be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by the Anti-Kickback Regulations (29 CFR Part 3), the full amounts due at time of payment computed at wage rates not less than those contained in the wage determination decision of the Secretary of Labor of the United States, the substance of which is included in the Special Conditions, regardless of any contractual relationship which may be alleged to exist between the Contractor or subcontractor and such laborers and mechanics; and the wage determination decision shall be posted by the contractor at the site of the work in a prominent place where it can be easily seen by the workers.

d. If the Contractor or any of his subcontractors finds it necessary or desirable to exceed the prevailing salary or wage rates specified in his contract, any expense incurred by the Contractor or subcontractors because of the payment of salaries or wages in excess of such amounts shall not be cause for any increase in the amount payable under his Contract. The Local Authority shall not consider or allow any claim for additional compensation made by the Contractor or subcontractors because of such payments.

e. The Local Authority will not make any payment under this Contract unless and until the Local Authority has received an affidavit from the Contractor that such Contractor and each of his subcontractors has made payment to each class of employees in compliance with the applicable provisions of a, b, and c of this Section.

f. Apprentices shall be employed in the development of the Project only under a bona fide apprenticeship program registered with a State Apprenticeship Council which is recognized by the Federal Committee on Apprenticeship, United States Department of Labor, or if no such recognized Council exists in a State, under a program registered with the Bureau of Apprenticeship, United States Department of Labor.

GENERAL CONDITIONS

g. No laborer or mechanic employed in the development of the Project shall be discharged or in any other manner discriminated against because such laborer or mechanic has filed any complaint or instituted or caused to be instituted any proceedings or has testified or is about to testify in any proceedings under or relating to the labor standards incorporated in this Construction Contract.

38. HOURS OF WORK

Architects, technical engineers, draftsmen, technicians, laborers, and mechanics shall not be permitted to work more than eight hours per day nor more than 40 hours per week, unless such employees are paid at least time and a half for hours of work in excess of the limits prescribed above. The said limits shall not apply to executive, supervisory, or administrative employees, as such. If there is a State or local law applicable to any or all of the foregoing classes of employees prescribing hours of work not in excess of the hours above prescribed the Local Authority will require compliance with the State or local laws applicable to such class or classes, instead of compliance with the above requirements.

39. QUALIFICATIONS FOR EMPLOYMENT

a. No persons under the age of sixteen (16) years and no person undergoing sentence of imprisonment at hard labor shall be employed in the development of the Project. No person whose age or physical condition is such as to make his employment dangerous to his health or safety or to the health and safety of others shall be employed in the development of the Project; provided, that this shall not operate against the employment of physically handicapped persons, otherwise employable, where such persons may be safely assigned to work which they can ably perform.

b. There shall be no discrimination against any employee or applicant for employment because of race, creed, color, or national origin. This provision shall be included in all subcontracts.

40. PERSONS ENTITLED TO BENEFITS OF LABOR AND MATERIALS PROVISIONS

a. The Contractor and each subcontractor shall extend to every person who performs for him the work of an architect, technical engineer, draftsman, technician, laborer, or mechanic on the Project, or on any part thereof, or in any connection therewith, the benefits of the labor and wage provisions of this Contract regardless of any contractual relationship between the Contractor and such person, or between any subcontractor and such person.

b. The Contractor shall promptly pay all amounts due from him for services rendered, work performed and materials supplied.

GENERAL CONDITIONS

41. WEEKLY PAYMENTS

Every employee of the Contractor or a subcontractor shall be paid in lawful money of the United States, or by check if the Contractor provides or secures convenient and satisfactory facilities approved by the Local Authority for the cashing of the same without cost or expense to the employee, in the full amount accrued to each individual at the time of closing of the payroll, which shall be at the latest date practicable prior to the date of payment, and there shall be no deductions or rebates on account of goods purchased, rent, or other obligations, but such obligations shall be subject to collection only by legal process.

42. NON-REBATE OF WAGES

The Contractor agrees to comply with the regulations, rulings, and interpretations of the Secretary of Labor of the United States pursuant to the Anti-Kickback Act (Title 18, U.S.C., Sec. 874 and Title 40, U.S.C., Sec. 276c) which makes it unlawful to induce any person employed in the construction or repair of public buildings or public works to give up any part of the compensation to which he is entitled under his contract of employment; and the contractor agrees to insert a like provision in all subcontracts hereunder.

43. SUBMITTAL OF PAYROLLS AND RELATED REPORTS

a. The Contractor and each subcontractor shall furnish to the United States Department of Labor the names and addresses of all their subcontractors on the work at the earliest date practicable, and shall report monthly to the Secretary of Labor of the United States (within five days after the close of each calendar month, on forms to be furnished by the United States Department of Labor), as to the number of persons on their respective payrolls on the particular Project, the aggregate amount of such payrolls, the total man hours worked, and itemized expenditures for materials.

b. The Contractor shall, not later than the 7th day following the payment of wages, submit to the Local Authority two legible copies of his payroll and of the payrolls of each of his subcontractors, each with the Payroll Summary completed and the Affidavit notarized on the back of the final sheet; and, in addition, a third notarized copy of each final sheet, completed legibly on both sides. All of these copies shall be prepared on forms which will be furnished to the Contractor by the Local Authority.

c. Payroll records shall be maintained during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics employed in the development of the Project. Such records shall

NOTE: These pages 53 and 54 supersede pages 53 and 54 dated 8-1-51. Section 43b has been revised.

contain the name and address of each such employee, his correct classification, rate of pay, daily and weekly number of hours worked, deductions made, and actual wages paid. The Contractor shall submit weekly to the Local Authority such copies and summaries (on forms prescribed by the PHA and furnished by the Local Authority) of all his payrolls and those of each of his subcontractors, as the Local Authority or the PHA may require. Each payroll and summary shall be accompanied by an affidavit to the effect that (1)such payroll is correct and complete, (2) the wage rates contained therein are not less than those determined by the Secretary of Labor of the United States, and (3) the classifications set forth for each laborer or mechanic conform with the work performed. The Contractor shall make his employment records available for inspection by authorized representatives of the Local Authority, the PHA, and the United States Department of Labor, and shall permit such representatives to interview employees during working hours on the job.

d. The Contractor shall also furnish to the Local Authority any other information or certifications relating to employees in such form as the Local Authority may request.

44. DISPUTES CONCERNING WAGE RATES AND CLASSIFICATION OF LABOR

a. All disputes concerning prevailing wage rates or classifications arising under this Contract involving (1) significant sums of money, (2) large groups of employees, or (3) novel or unusual situations shall be promptly reported by the Local Authority to the PHA for decision or, at the option of the PHA, referral to the Secretary of Labor of the United States. The decision of the PHA or the Secretary of Labor, as the case may be, shall be final.

b. All questions arising under this Contract relating to the application or interpretation of the Anti-Kickback Act or Sec. 16(2) of the Act shall be referred to the Secretary of Labor of the United States for ruling or interpretation, and such ruling or interpretation shall be final.

45. WAGE CLAIMS AND ADJUSTMENTS

In cases of underpayment of salaries or wages to any architects, technical engineers, draftsmen, technicians, laborers, or mechanics by the Contractor or any of his subcontractors, the Local Authority may withhold from such Contractor out of payments due, an amount sufficient to pay persons employed on the work covered by the Contract the difference between the salaries or wages required to be paid under the Contract and the salaries or wages actually paid such employees for the total number of hours worked, and the amounts withheld may be disbursed by the Local Authority for and on account of the Contractor or the subcontractor to the respective employees to whom they are due. The Local Authority shall in cases of such underpayment withhold such monies: Provided, That the Local Authority shall not be considered in default under this sentence if it has in good faith made payments to the Contractor in reliance upon an affidavit of the Contractor that the salaries and wages required under his Contract have actually been paid.

GENERAL CONDITIONS

46. PATENTS

The Contractor shall hold and save the Local Authority, its officers, and employees, harmless from liability of any nature or kind, including costs and expenses, for, or on account of, any patented or unpatented invention, process, article, or appliance manufactured or used in the performance of the Contract, including its use by the Local Authority, unless otherwise specifically stipulated in the Contract.

47. WARRANTY OF TITLE

No material, supplies, or equipment for the work shall be purchased subject to any chattel mortgage or under a conditional sale or other agreement by which an interest therein or in any part thereof is retained by the seller or supplier. The Contractor warrants good title to all materials, supplies, and equipment installed or incorporated in the work and agrees, upon completion of all work, to deliver the premises together with all improvements and appurtenances constructed or placed thereon by him to the Local Authority free from any claims, liens, or charges and further agrees that neither he nor any person, firm or corporation furnishing any material or labor for any work covered by this contract shall have any right to a lien upon the premises or any improvement or appurtenance thereon, provided that this shall not preclude the Contractor from installing metering devices and other equipment of utility companies or of municipalities, the title to which is commonly retained by the utility company or the city. In the event of the installation of any such metering device or equipment, the Contractor shall advise the Local Authority as to the owner thereof. Nothing contained in this paragraph, however, shall defeat or impair the right of such persons furnishing materials or labor under any bond given by the Contractor for their protection or any rights under any law permitting such persons to look to funds due the Contractor in the hands of the Local Authority. The provisions of this paragraph shall be inserted in all subcontracts and material contracts and notice of its provisions shall be given to all persons furnishing materials for the work when no formal contract is entered into for such materials.

48. GENERAL GUARANTY

Neither the final certificate of payment nor any provision in the Contract nor partial or entire use or occupancy of the premises by the Local Authority shall constitute an acceptance of work not done in accordance with the Contract or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship. The Contractor shall promptly remedy any defects in the work and pay for any damage to other work resulting therefrom which shall appear within a period of one year from the date of final acceptance of the work unless a longer period is specified. The Local Authority will give notice of observed defects with reasonable promptness.

- -

49. INTEREST OF MEMBER OF CONGRESS

No member of or delegate to the Congress of the United States of America or Resident Commissioner shall be admitted to any share or part of this Contract or to any benefit to arise therefrom; Provided that this provision shall not be construed to extend to this Contract if made with a corporation for its general benefit.

50. TERMINATION BECAUSE OF VIOLATION OF WAGE PROVISIONS

This Contract may be terminated by the Local Authority upon default by the Contractor of any of the provisions of Sections 37, 42, 43, 44 and 45.

SPECIAL CONDITIONS

1. TIME FOR COMPLETION*

a. The work shall be commenced at the time stipulated in the Notice to Proceed to the Contractor and shall be fully completed within _____ consecutive calendar days thereafter, exclusive of Landscaping. An additional _____ consecutive calendar days will be allowed in which to complete the Landscaping, exclusive of maintenance and replacement.

b. Groups of dwelling units shall be progressively completed, suitable and ready for occupancy, including utilities, sidewalks and driveways servicing such units, exclusive of Landscaping, within the number of consecutive calendar days from the established starting date as follows:

(1) Not less than_____dwelling units within_____days;
(2) An accumulated total of_____dwelling units within_____days;
(3) An accumulated total of_____dwelling units within_____days;
(continue as desired)

and all the balance of the entire work shall be fully completed within the number of consecutive calendar days first set forth above.

/* Notes to the Architect:

Omit all references to Landscaping if not included in contract.

Omit subparagraph b. if partial occupancy is not contemplated.

If multiple-story buildings are contemplated, and partial occupancy is intended, substitute the word "buildings" for "units" through 1b./

SPECIAL CONDITIONS

2. LIQUIDATED DAMAGES*

a. As actual damages for any delay in completion are impossible of determination the Contractor and his Sureties shall be liable for and shall pay to the Local Authority the sums hereinafter stipulated as fixed, agreed and liquidated damages for each calendar day of delay until the work is completed or accepted:

(1) $_____ per dwelling unit per calendar day applicable to dwelling units and related work as set forth in Section 1b. above;
(2) $_____ per calendar day applicable to all the balance of the contract work except Landscaping; and
(3) $_____ per calendar day applicable to Landscaping.

b. The Local Authority may accept any part of the work if there has been such a degree of completion as will, in its opinion, make such part reasonably safe, fit and convenient for the use and accommodation for which it was intended.

/* Notes to the Architect:

This Section must be carefully correlated with Section 1, "Time of Completion."

Delete all references to Landscaping if not in contract.

If partial occupancy is not contemplated, but Landscaping is included, change the subsections to:

(1) $_____per calendar day applicable to all work except Landscaping; and
(2) $_____per calendar day applicable to Landscaping.

If both partial occupancy and Landscaping are omitted, this provision may be shortened to:

"2. Liquidated Damages. As actual damages for any delay in completion are impossible of determination the Contractor and his Sureties shall be liable for and shall pay to the Local Authority the sum of $_____as fixed, agreed and liquidated damages for each calendar day of delay until the Contract work is completed or accepted."

If multiple-story buildings are contemplated, and partial occupancy intended, substitute the word "building" for "unit" throughout 2a.(1)./

SPECIAL CONDITIONS

3. COMMUNICATIONS

a. All notices, demands, requests, instructions, approvals, proposals and claims must be in writing.

b. Any notice to or demand upon the Contractor shall be sufficiently given if delivered at the office of the Contractor stated on the signature page of the Contract (or at such other office as he may from time to time designate in writing to the Local Authority), or deposited in the United States mail in a sealed, postage-prepaid envelope, or if delivered with charges prepaid to any telegraph company for transmission, in each case addressed to such office.

c. All papers required to be delivered to the Local Authority shall, unless otherwise specified in writing to the Contractor, be delivered to the_____ at _____, and any notice to or demand upon the Local Authority shall be sufficiently given if so delivered, or deposited in the United States mail in a sealed, postage-prepaid envelope, or delivered with charges prepaid to any telegraph company for transmission to said_____ at such address, or to such other representatives of the Local Authority or to such other address as the Local Authority may subsequently specify in writing to the Contractor for such purpose.

d. Any such notice shall be deemed to have been given as of the time of actual delivery or (in the case of mailing) when the same should have been received in due course of post, or in the case of telegrams, at the time of actual receipt, as the case may be.

4. SIGNS *

a. The Contractor shall construct and maintain on the site of the Project at locations to be designated by the Local Authority (with the concurrence of the Project Engineer) _____ signs, as follows:

(1) These signs shall be built of concrete and wood. The signboard shall be of 3/4" Marine plywood, 6'-0" long, 4'-0" high, securely fastened to 4" x 4" wood posts 10 feet long, set in concrete bases 10" square. Bottom of sign shall be 3'-6" above grade. Bottom of posts shall extend into concrete bases to a point 2'-6" below grade. Concrete bases shall extend 3'-0" below grade and 0'-4" above grade, with tops beveled down 1" away from

---

/* Note to the Architect. Refer to Notes to the Architect - Project Signs, herein for a drawing and additional information relative to project signs./

SPECIAL CONDITIONS

posts on all sides. Posts shall be of No. 1 Y.P. or equal -S4S. Protect all edges of plywood with a band and moulding.

(2) The entire woodwork shall be given a lead-in-oil priming coat on all surfaces before assembly and two such coats after assembly. The field of the sign shall be white and all lettering shall be black. The sign shall be lettered in accordance with the following, and the sizes and the character of lettering shall be as per detail furnished by the Architect.

****

(P R O J E C T N A M E)
(Project Number)

a project of
(CORPORATE NAME OF LOCAL AUTHORITY)
and the
City (or County) of _____

These homes are built with aid
under the Low-Rent Program of the
Public Housing Administration
Housing and Home Finance Agency

****

b. The Contractor shall maintain these Project signs in good condition satisfactory to the Local Authority during the construction period, and upon completion of the Contract work or when directed, shall turn them over to the Local Authority cleaned, (freshly painted and lettered, if required), and in acceptable condition.

c. Subject to prior approval of the Local Authority as to size, design, type and location, and to local regulations, the Contractor and his sub-contractors may erect temporary signs for purposes of identification and controlling traffic. The Contractor shall furnish, erect and maintain such signs as may be required by Safety Regulations or as necessary to safeguard life and property.

5. JOB OFFICES

a. The Contractor shall furnish and maintain, during construction of the Project, adequate facilities at the site for the use of the Local Authority, Architect, and PHA, as follows:

(Here should be specified in some detail the facilities and services required, such as adequate office space, light,

SPECIAL CONDITIONS

heat, hot and cold water, toilet facilities, janitor service, local telephone, closets, sample room, plan tables, plan racks, etc.)

b. The Contractor and his subcontractors may maintain such office and storage facilities on the site as may be necessary in the proper conduct of the work. These shall be located so as to cause no interference to any work to be performed on the site. The Local Authority shall be consulted with regard to locations.

c. Upon completion of the Project, or as directed by the Local Authority, the Contractor shall remove all such temporary structures and facilities from the site, same to become his property, and leave the premises in the condition required by the Contract.

6. PROGRESS PHOTOGRAPHS

a. The Contractor shall furnish and deliver to the Local Authority a series of progress photographs consisting of *_____ views, each taken *_____ a month, from permanently located vantage points to be determined by agreement with the Local Authority and the Project Engineer. The Local Authority may, at its discretion, change the location of any predetermined point whenever additional exposures from that point will serve no useful purpose. A total of *_____ exposures will be required under this Section. Additional exposures, if required, will be made the subject of a change order.

b. The photographs shall be 8" x 10", black and white, medium weight, glossy finish, unmounted, contact or enlarged prints. They shall be clear views, with good detail and contrast, taken by a competent commercial photographer. The time interval between successive views shall be uniform, with due allowance for inclement weather. The negatives from which the prints are made shall be at least 4 x 5 inches.

c. For each exposure, the Contractor shall indicate (in triplicate, on small scale site plan diagrams to be furnished by the Local Authority) the location and approximate camera angle.

d. Each photographic print shall be permanently numbered and identified on the negative (using a transparent, lettered attachment, securely cemented to the negative), with a title panel which will appear on the print not larger than 3" x 1-1/4" in the lower right-hand corner, showing:

(1) Date of exposure
(2) Serial number of the negative for the viewpoint

/* Note to the Architect. The Local Authority will determine and inform the Architect concerning the number of photographs to be taken./

SPECIAL CONDITIONS

(3) Project number
(4) Project name
(5) Location of project
(6) Brief description of the view, such as, block number, building numbers, streets, direction of view, special features, etc.

For example:

3" maximum	
Feb. 10, 1950 No. 6	
VA-17-B Stratford Hms. Anytown, Va.	1-1/4" maximum
Point No. 3 looking N.W. Bldgs.43, 45, 47 & 49, on State St.	

e. The Contractor shall deliver the negatives and three prints of each negative to the Local Authority within five days after exposures are made. The photographer shall stamp or write on the back of each print his name and address.

7. MINIMUM RATES OF PAY

The following minimum rates have been determined and adopted in accordance with the provisions contained in the General Conditions and not less than the rates listed herein shall be paid to the following trades and occupations: *

Classification	Rate per hour
Air Compressor Operators	
Air Hammer Operators	
Asbestos Workers	
Asbestos Workers' Helpers	
Asbestos Workers' Improvers	
Asphalt Rakers	
Asphalt Tampers and Smoothers	
Blacksmiths	
Blacksmiths' Helper	
Boilermakers	
Boilermakers' Helper	
Bricklayers	
Bricklayers' Apprentices 1)	
2) year	
3)	
Brick Tenders	
Carpenters	
Carpenters' Apprentices 1)	
2) year	
3)	

* This list must be amended to suit each particular contract.

SPECIAL CONDITIONS

Classification	Rate per hour
Cement Finishers	
Electricians	
Electricians' Helpers (Apprentices)	
Elevator Constructors	
Elevator Constructors' Helpers	
Engineers	
Engineers' Apprentices	
Firemen	
Glaziers	
Granite Cutters	
Hod Carriers	
Ironworkers - Ornamental and Bronze	
Ironworkers - Structural	
Ironworkers - Reinforcing	
Ironworkers' Apprentices - Structural	
Laborers - Common	
Laborers - Building	
Lathers	
Linoleum Layers	
Marble Masons	
Marble Masons' Helpers	
Mosaic and Terrazzo Workers	
Mosaic and Terrazzo Workers' Helpers	
Oilers and Greasers	
Operators - Cement & Concrete Mixer (Under 21E)	
Operators - Cement & Concrete Mixer (21E & Over)	
Operators - Crane, Clamshell, Drag Line	
Operators - Derrick	
Operators - Trenching Machine	
Operators - Backfilling Machine	
Operators - Bulldozer	
Operators - Hoist - One Drum	
Operators - Hoist - Two Drum	
Operators - Machine Road Grader	
Operators - Power Shovel (Enginemen)	
Operators - Pile Drivers	
Operators - Road Roller	
Operators - Pumps	
Operators - Tractor 50 H.P. and under	
Operators - Tractor over 50 H.P.	
Painters	
Painters - Steel Painting	
Plasterers	
Plasterers' Apprentice 1)	
2) year	
3)	

SPECIAL CONDITIONS

Classification	Rate per hour
Plasterers' Laborers and Tenders	
Plumbers	
Plumbers' Apprentices	
Roofers - Composition	
Roofers - Composition - Kettlemen	
Roofers - Composition - Apprentices	
Roofers - Slate and Tile	
Sheet Metal Workers	
Sheet Metal Workers' Apprentices 1)	
2) years	
3)	
Sheet Metal Workers' Helpers	
Sprinkler Fitters	
Sprinkler Fitters' Helpers	
Steam Fitters	
Steam Fitters' Apprentices 1)	
2) years	
3)	
Steam Fitters' Helpers	
Stone Masons	
Stone Masons' Helpers	
Truck Drivers	
Tile Layers' Helpers	

Architectural and Engineering	Rate
Electrical Engineer	
Mechanical Engineer	
Asst. Engr. (Chief Draftsman)	
Junior Engineer	
Draftsman	

Land Surveying	
Field Engineer	
Chief of Party	
Transitman	
Rodman	

8. UNIT PRICES

a. The unit prices set forth in this Section are subject to the approval of the PHA and, when so approved, become a part of the Contract and shall be used, where applicable, to determine the equitable adjustment of the Contract price in connection with changes or extra work ordered under the Contract, and the "Rules of Measurement" herein contained shall govern.

SPECIAL CONDITIONS

b. It is mutually understood and agreed that such approved unit prices represent, in each case, the cost to the Contractor without profit, and without overhead as the same is defined in Section 10e of the General Conditions.

c. Rules of Measurement:

(1) General excavation shall be assumed to extend 2 feet outside of wall lines.

(2) Hand excavation shall be computed from the level at which hand excavation actually starts.

(3) Footing excavation shall be computed from the actual size of the cut.

(4) Trenches for walls shall be assumed to be 2 feet wider than wall thickness but in no case less than 3 feet in width.

(5) Trenches for pipes shall be assumed to be 2 feet wider than the outside diameter of the pipe barrel.

(6) Backfill shall be the volume of excavation computed under the foregoing rules less the volume of displacement by walls and footings.

(7) Where rock excavation replaces earth excavation required under the Contract such earth excavation shall be credited.

(8) The quantities of sheet piling for banks and of all form work shall be based upon contact area.

(9) Concrete quantities shall be computed from plan size, or if there are no drawings, from actual measurements of the work ordered and placed.

d. Unit Prices:

(1) General excavation (machine) left on site as directed — per cu. yd. $_____

(2) General excavation (machine) removed from site — per cu. yd. $_____

(3) Hand excavation to 5 ft. depth left on site as directed — per cu. yd. $_____

SPECIAL CONDITIONS

(4) Hand excavation to 5 ft. depth removed from site — per cu. yd. $_____

(5) Hand excavation per 1 ft. depth extra (added to Items #3 and #4 for each additional foot below 5 ft. depth) — per cu. yd. $_____

(6) Removal from site of stacked excavated material other than rock — per cu. yd. $_____

(7) Backfill due to extra excavation — per cu. yd. $_____

(8) Rock excavation other than in trenches using explosives, left on site — per cu. yd. $_____

(9) Rock excavation other than in trenches where explosives are prohibited, left on site — per cu. yd. $_____

(10) Rock excavation in trenches using explosives, left on site — per cu. yd. $_____

(11) Rock excavation in trenches where explosives are prohibited, left on site — per cu. yd. $_____

(12) Removal from site of excavated rock — per cu. yd. $_____

(13) Piles, of contract length, type as specified, driven in place and cut off — per pile $_____

(14) Furnishing and driving piles of longer or shorter lengths, type as specified — per lin. ft. $_____

(15) Furnishing, driving and cutting off piles of type other than as specified--(describe)--multiples of 5 ft., measured below cutoff:

a._____ft. long — per pile $_____
b._____ft. long — per pile $_____
c._____ft. long — per pile $_____

SPECIAL CONDITIONS

(16) Column forms, including stripping — per sq. ft. $_____

(17) Beam forms, including stripping — per sq. ft. $_____

(18) Wall forms, including stripping — per sq. ft. $_____

(19) Footing forms, when actually used, including stripping — per sq. ft. $_____

(20) Reinforcing steel in place including accessories — per lb. $_____

(21) Concrete in place, not including forms or reinforcing steel:

(a) 2000 lbs. $_____per cu. yd.
(b) 2500 lbs. $_____per cu. yd.
(c) 3000 lbs. $_____per cu. yd.
(d) 3500 lbs. $_____per cu. yd.

(22) Concrete units for foundation walls:

(a) 8" $_____per sq. ft.
(b) 10" $_____per sq. ft.
(c) 12" $_____per sq. ft.
(d) 14" $_____per sq. ft.
(e) 16" $_____per sq. ft.

(23) Membrane waterproofing on foundation walls — per sq. ft. $_____

(24) Sheet piling of banks, left in place — per sq. ft. $_____

(25) Sheet piling of banks, including removal — per sq. ft. $_____

(26) Cement plaster on foundation walls — per sq. ft. $_____

(27) Filling concrete in place — per cu. yd. $_____

9. LIST OF OPTIONS

a. Permissible options with respect to the items shown are set forth in the list following and shall be at the option of the bidder wherever applicable to the work included in his bid, whether such bid be for prime or for sub-contract work.

b. The permissible options listed in this Section, once they are selected and the Local Authority notified, shall become fixed parts of the

SPECIAL CONDITIONS

respective contracts or subcontracts, and must be used throughout the entire Contract work subject to change only by written order of the Local Authority in the manner provided in the General Conditions for "Changes in the Work", and if such change be made at the Contractor's request, with no change in Contract time and no increase in the Contract price.

c. Where, on the Drawings or in the Specifications, acceptability of optional materials or methods is indicated for items not included in the list following, it shall be the privilege of a contractor or subcontractor to utilize those which best suit his purpose in the performance of his work. As to these options there must be uniformity within each building.

d. In exercising the options chosen from the list following, the Contractor or subcontractor shall assume all the responsibilities for his selections which he otherwise assumes under his Contract or subcontract for materials and methods prescribed thereunder without options, particularly with respect to securing timely deliveries, the passing of required tests, the adequacy of methods for the purposes for which intended, and the proper adaption to adjoining work so as to fit and coordinate therewith in an acceptable manner without extra cost.

e. List of Options:

Name of Item	Specified Under Division	Option
1	.....	.....
2	.....	.....
3	.....	.....

10. EQUIPMENT FURNISHED BY OTHERS

a. The following equipment will be furnished by others but installed by the Contractor:

Cooking Ranges
Refrigerators
Space Heaters
Movable Equipment for Job Offices of the Local Authority, Architect, and PHA

(Note to Architect: This list is an example only)

b. This equipment will be delivered to the Contractor at the transportation terminal serving the Project, or other local point, from which place or places the Contractor shall, at his expense and risk, unload the

equipment and install it, including any necessary hauling to the places for installation. The Contractor shall provide and pay for any storage that may become necessary after delivery to him and shall assume all costs and risks incident thereto, and shall be responsible for any demurrage charges arising from his failure to unload promptly.

c. Where the type of equipment requires roughing-in dimensions, the Local Authority will furnish these to the Contractor as soon as obtainable.

d. When equipment arrives at the delivery point, the Contractor shall cause its prompt unloading and transfer to the Project site, unless otherwise permitted or directed. The unloading at delivery point shall not be performed except in the presence of a representative of the Local Authority with whom the Contractor shall jointly determine what, if any, damage has occurred in transit, and the responsibility therefor. Turnover of the equipment to the Contractor shall then be formalized by means of a Transfer Receipt, executed in triplicate, signed by the representative both of the Contractor and the Local Authority, the latter retaining two copies. This document shall show all particulars of the shipment it covers, the number and condition of the items turned over to the Contractor, and the disposition of those found unusable.

e. Immediately after the inspection at delivery point for damage in transit has been completed the Contractor shall assume full responsibility for such equipment until such time or times as it is installed and accepted.

f. The Contractor shall inspect all equipment items for latent defects or concealed damage and for shortages, immediately upon its arrival at the Project site, or at place of storage, as the case may be. All such discrepancies shall be reported to the Local Authority not later than three days (exclusive of Saturdays, Sundays and legal holidays) after the initial inspection described in 10 d. above.

g. The Local Authority will handle all claims against transportation companies for damage in transit and will furnish to the Contractor, as soon as practicable, replacements for any whole items so damaged and rejected as unfit for use.

h. The provision to "install", as used in Section 10b. above, shall mean to cover all operations in connection with this equipment necessary to: (1) receive at the Project Site; (2) unload there; (3) distribute; (4) uncrate; (5) assemble as may be necessary; (6) place in permanent positions; (7) connect up; (8) clean up and dispose of rubbish.

i. The Contractor shall deliver all such equipment in whole and satisfactory operating condition, except that the final testing, adjusting, and checking for proper performance of gas-fired equipment, if used, will be done by others after the Contractor has performed all other required operations in connection therewith.

SPECIAL CONDITIONS

11. PARTIAL OCCUPANCY

The Local Authority, at its election, may from time to time occupy any of the dwelling units, buildings, or other portions of the Project as the work in connection therewith is completed to such a degree as will, in the opinion of the Local Authority, permit the use of the dwelling units, buildings, or other portions of the Project for the purpose for which intended. The Local Authority will, prior to any such partial occupancy, give notice to the Contractor thereof, and such occupancy shall be upon the following terms:

a. The one year guarantee period called for in Section 48 of the General Conditions shall not begin to run until the final acceptance of all work under the Contract.

b. The occupancy or use of any space in the Project shall not constitute an acceptance of work not performed in accordance with the Contract or relieve the Contractor of liability to perform any work required by the Contract but not completed at the time of said occupancy.

c. The Contractor shall be relieved of all maintenance costs on the buildings occupied under this agreement.

d. The Contractor shall not be responsible for wear and tear or damage resulting from said occupancy.

e. The Local Authority shall assume risk of loss with respect to any building occupied by it under the terms of this agreement; Provided, the Contractor shall assume full responsibility for loss or damage traceable to his fault or negligence in the performance of his Contract.

f. The Contractor shall not be required to furnish heat, light, power and water used in the buildings occupied without proper remuneration therefor.

12. PARTIAL OCCUPANCY FENCING

The Contractor shall fence off from construction operations those portions of the Project taken over by the Local Authority for occupancy. This fencing shall be not less than five feet high, substantial, firmly installed, continuous and without gates, placed where directed by the Local Authority, and moved from time to time as additional portions of the Project are taken over. It shall be maintained in effective condition by the Contractor at all times. It shall be steel, with driven posts and 2" mesh, of the "Cyclone" type or similar; new or used; or it may be other types of fencing if, in the opinion of the Local Authority, it proves suitable for the purpose of preventing trespass upon the area under construction. Upon completion of the Project it shall become the property of the Contractor and be entirely removed by him from the premises. Upon any change in location, and upon final removal, any damaged, disturbed, or uncompleted work shall be brought

SPECIAL CONDITIONS

by the Contractor to the condition required by the Contract. This temporary fencing shall be in addition to any required permanent fencing. None will be placed along Project boundaries fronting upon a public street or public way except as may be otherwise expressly provided elsewhere in the Contract.

13. DISCRIMINATION

For the purpose of determining whether there has been discrimination in regard to Negro labor in violation of the provision contained in the General Conditions, titled "Qualifications for Employment", it is hereby provided that if the Contractor pays to the Negro skilled labor at least_____% of the total amount paid in any period of four weeks for all skilled labor under the Contract (irrespective of individual trades), and pays Negro unskilled labor at least_____% of the total amount paid in any period of four weeks for all unskilled labor under the Contract, it shall be considered as prima facie evidence that the Contractor has not discriminated against Negro labor.

14. DRAWINGS AND SPECIFICATIONS

The Local Authority will furnish the Contractor without charge_____ copies of the Drawings and Specifications. Additional copies requested by the Contractor will be furnished at cost.

- -

GENERAL SCOPE OF WORK

1. APPLICATION

This "General Scope of Work" Division of the Specifications is applicable to all work contemplated.

2. PROJECT SITES

a The Project site of Housing Project No. PA 22-1 consists of that area within the property limits bounded in general (by / on the) _____

_____

within the (city), (county), (state), all as shown on the (title of drawing or drawings) designated as Drawing(s) No. (s) _____.

3. RESPONSIBILITIES OF CONTRACTOR

Except as otherwise specifically stated in the Contract, the Contractor shall provide and pay for all materials, labor, tools, equipment, water, light, heat, power, transportation, superintendence, temporary construction of every nature, taxes legally collectible because of the work, and all other services and facilities of every nature whatsoever necessary to execute the work to be done under the Contract and deliver it complete in every respect within the specified time.

4. WORK BY OTHERS

The following work will be done by others:

a. At no expense to the Contractor:

(1) On site:
(a) .....
(b) .....
etc.

(2) Off Site:
(a) .....
(b) .....
etc.

b. At the expense of the Contractor:

(1) On site:
(a) .....
(b) .....
etc.

(2) Off site:
(a) .....
(b) .....
etc.

5. WORK NOT INCLUDED IN CONTRACT

a. Work noted on the Drawings or mentioned in the Specifications, or both, as not being a part of the Contract.

b. Equipment furnished by others but installed by the Contractor as provided in the Special Conditions.

SCHEDULE OF DRAWINGS

Drg. No.	Date	Title
		SITE
		ARCHITECTURAL
		STRUCTURAL
		PLUMBING
		HEATING
		ELECTRICAL
		etc.

NOTES TO THE ARCHITECT

PROJECT SIGNS

1. Number. The number of signs required for each project will be determined by the Local Authority, based on the project size and location. (Generally, one sign for a project comprising 100 or less dwelling units, and two or three signs for large projects, should be adequate.)

2. Location. Where one sign is provided, it should be placed near the principal entrance to the project, adjacent to the general contractor's job office, or in the vicinity of the administration building or space, as determined by the Local Authority. Other signs, if needed, should be located at the corners of or at principal approaches to the site.

3. Construction and Lettering. The size, construction and lettering of these signs is set forth in Section 4 of the Special Conditions, Bulletin No. LR-12, and shown in the illustration below. The sizes and styles of lettering will be determined by the Local Authority or its Architect, and a detailed drawing of the sign(s) and lettering shall be incorporated in the Drawings.

4. Use After Completion of Construction. These signs are to be left in place and in good condition at completion of project construction, for use in connection with management and operation of the project.

Sec. 15a:

This section must be modified to change certain words from singular to plural. For example, the first few lines should read:

"a. The Contracts will be awarded to the responsible bidders submitting the lowest proposals complying with the Invitation for Bids providing each such bid is reasonable and it is to the interest of the Local Authority to accept it. The bidders to whom the awards are made . . ."

Sec. 15c:

The first five words should be:

"c. The ability of any bidder . . ."

Sec. 17:

In both subsections a and b, the words "the successful bidder" must be changed to "each successful bidder."

Sec. 17d:

Change the fourth word in the first line from "the" to "any".

4. BID FORMS

Prepare and include in the Specifications a separate "Form of Bid" for each of the separate Contracts to be let. Fill out each heading appropriately, "Bid for General Construction", "Bid for Plumbing", "Bid for Heating", or "Bid for Electrical Work".

5. GENERAL CONDITIONS

Sec. 1:

Add a new subsection j to read:

"j. The term "General Contractor" means the person, firm or corporation who has contracted under a prime contract with the Local Authority to perform the work of general construction for the Project."

Sec. 3b:

Change the first sentence to:

"b. Each prime Contractor shall lay out his own work and he shall be responsible for all applicable lines, elevations and measurements of the work performed by him under his Contract."
(Do not change or omit the second sentence in b.)

CHANGES IN CONSTRUCTION CONTRACT DOCUMENTS When SEPARATE PRIME CONTRACTS for Mechanical Trades or Other Specialty Branches of the Work are to be Let

1. INTRODUCTION

The purpose of this section is to assist the Architect in revising the suggested form of Construction Contract in those instances where separate Contracts will be let for general construction, plumbing, heating, and electrical work (and for additional trades, in some cases).

The suggested forms of Construction Contract Documents will require revision mainly as follows, but further revision may prove necessary, especially in the Technical Specifications, to prevent duplication and overlap, all of which is the problem of the Local Authority and the Architect.

2. INVITATION FOR BIDS

Add to Par. 2:

"In addition to the general construction contract, separate prime contracts will be let for plumbing, heating, and electrical work."

3. INSTRUCTIONS TO BIDDERS

Sec. 4b:

Add to this sentence:

"Each envelope shall also be marked to identify the branch of work bid upon, i.e., "General Construction," "Plumbing," "Heating," or "Electrical Work," as the case may be.

Sec. 9:

This section may be eliminated unless similar breakdown information is required by law, or for other sufficient reason, for branches other than the mechanical trades. In such event, this section must be modified accordingly.

NOTE: This sheet supersedes pages 79 and 80 dated 6-14-50. Editorial changes have been made in paragraph 1; several section references in paragraph 3 have been changed; and paragraph 4 now follows the last section reference in paragraph 3.

NOTES TO THE ARCHITECT

Sec. 6:

Change the opening words from "The Contractor" to "Each prime Contractor."

In the first sentence, after the word "materialmen", insert the words "employed by him".

Sec. 8b:

At the end of this subsection, add a sentence to read: "The Progress Schedules of all prime Contractors shall be coordinated, consolidated, and adopted by agreement between all such Contractors, under the supervision of the Local Authority."

Sec. 8c:

Change the first sentence to read:

"At the time of submitting his Progress Schedule, the General Contractor shall also file his general "Plan of Operations" showing precisely the manner in which he proposes to carry out his work on the site. This Plan of Operations shall take into consideration the work of the plumbing Contractor, the heating Contractor, and the electrical Contractor, who shall each submit therewith either their concurrence in or objection to said Plan of Operations."

(The remainder of this subsection, beginning with "This will indicate . . . " should not be changed.)

Sec. 11c:

Delete from page 36 the first two lines and the first eight words on the third line, and substitute in lieu thereof:

"conditions there existing relating to construction and labor, that he understands that other contracts will be let for other work, which other work will be performed in the same general area or contiguous thereto during part or all of the time that he performs his Contract, and that he fully understands the facilities, difficulties and restrictions attending the execution of the work under the Contract, and that he will make no claim for extra compensation because of said conditions, restrictions, or difficulties, or because his work has been delayed or interfered with by reason of the fact that others are working in the same general area or contiguous thereto."

Sec. 27a:

In the four places where the words occur in this paragraph, change "The Contractor" to "The General Contractor".

Sec. 27b:

Change the first sentence to read:

- -

"b. The prime Contractors for plumbing, for heating, and for electrical work hereby severally agree with the General Contractor to furnish to him, if and when requested, such labor, materials, equipment and services within their control as he may deem advantageous for them, or any of them, to furnish in connection with the providing of temporary heating, and the General Contractor agrees to be responsible for the adjustment and payment of all costs arising therefrom."

(The second sentence must not be changed or omitted.)

Sec. 29:

Change the opening words "The Contractor" to "The General Contractor."

Sec. 31:

Change the opening words "The Contractor" to "The General Contractor."

6. SPECIAL CONDITIONS

Sec. 1:

Add a new subsection c. to read:

"c. The plumbing Contractor, the heating Contractor, and the electrical Contractor shall each coordinate his work with that of the General Contractor and perform it at such times, in such a manner, and at such speed that the General Contractor will not be delayed in meeting the above stated times for completion."

Sec. 2:

Add a new subsection c. to read:

"c. It is the obligation of the plumbing, the heating, and the electrical Contractors each to coordinate their work with that of the General Contractor and with that of each other. If there is unexcused delay in completing the work of the general construction the Local Authority shall determine to what extent such delay, or any portion thereof, is chargeable to each such Contractor. Liquidated damages in the full amount stated herein shall be assessed against each Contractor to the extent he is responsible for such delay as determined by the Local Authority."

Sec. 4a:

Change the opening words "The Contractor" to "The General Contractor".

Sec. 4b:

Change the opening words "The Contractor" to "The General Contractor".

Sec. 4c:

Do not change.

Sec. 5a:

Change the opening words "The Contractor" to "The General Contractor".

Sec. 5b:

Do not change.

NOTES TO THE ARCHITECT

Sec. 5c:

Change to read:

"c. Upon completion of the work, or as directed by the Local Authority, each prime Contractor shall remove from the site all such temporary structures and facilities placed thereon by him, same to become his property, and leave the premises in the condition required by the Contract."

Sec. 6:

Throughout this Section, insert the word "General" before the word "Contractor", wherever it occurs.

Sec. 8d:

This subsection should be modified to indicate which prime Contractor will negotiate for what unit prices.

Sec. 10:

This Section must be modified to indicate which prime Contractor will be responsible for what equipment.

Sec. 12:

Wherever it appears, change "Contractor" to"General Contractor".

Sec. 14:

This Section should be modified to indicate how many free copies will be allocated to the General Contractor, and how many to each Contractor for the other branches of the work.

7. GENERAL SCOPE OF WORK

Sec. 4:

This Section must be carefully revised to define precisely what work is to be done, and what work is not to be done, by each of the specialty Contractors, as well as the general Contractor.

8. SCHEDULE OF DRAWINGS

This Schedule should list all the drawings issued as applicable to the work of the entire project. The Schedule should be in identical form in the bidding documents issued to all classes of bidders so that, upon executing his Contract, each prime bidder is bound by all the drawings and not merely those related to his specialty. Otherwise, the Local Authority may be inviting subsequent disputes and claims for extra cost which the claimants might be able to substantiate.

NOTES TO THE ARCHITECT

Conditions peculiar to the project do not belong in the "General Conditions", but should be incorporated in the "Special Conditions" (as the name implies).

SECTION 1. DEFINITIONS (Subsection d.)

Some Local Authorities may employ architects and engineers as a part of the Local Authority organization; others may employ an Architect to provide architectural and engineering services up to the time of construction contract award only. In either event, this clause should be appropriately modified to reflect the circumstances. If such modification is necessary, a precise definition of the "Architect" will serve to avoid changes in the following clauses, where the Architect is mentioned:

General Conditions - Subsections 1d, 92, 9d, 10b, 10g, 17a, 19a, 19b, 19d, 20a, 20b, 21d, 32a.

Special Conditions - 5a.

SECTION 1. DEFINITIONS (Subsection i.)

Since delays in making decisions and ordering changes when they become necessary often interfere with construction progress and may result in claims for damages by the contractor against the Local Authority, it is essential that the Local Authority designate as its representative an individual who will be readily available to contractors at all times. This should be done by formal action of its governing body; the representative to be known as the "Contracting Officer", and his powers and duties should be clearly defined. The contractor and the PHA should be advised of this appointment. If subsequently replaced by another individual, due notification should be given to the contractor and the PHA Field Office, including the date and hour of official replacement.

SECTION 8. BREAKDOWN, PROGRESS SCHEDULE AND PERIODICAL ESTIMATES (Subsection e.)

The "Plan of Operations" may be in letter form. This provisions may be modified, or deleted if deemed unnecessary, if the Local Authority determines upon its own plan and sets it forth in the bidding documents, which might be the case when partial occupancy by stated groups in a certain order is desired. Any plan of partial occupancy must give due consideration to making all the necessary utilities available to the earlier tenants.

The PHA Architect's Contract form does not require the architect to certify payments or approve change orders unless the architect performs both supervision and inspection. Therefore, when the architect does not handle inspection, he is not required to approve periodic payments or approve change orders. In the event the architect does not handle inspection (i.e., Section 16, Alternate 2 of Form PHA-1915 or 1915A is included in the contract), the architect may make appropriate revisions in Sections 8.c., 9.a. and 10.b. of the General Conditions.

NOTES TO THE ARCHITECT

SECTION 9. PAYMENTS TO CONTRACTOR (Subsection b.)

The fact that 50% or more of the contract price may be due is not the standard by which additional partial payments may be made in full. In addition, both progress and performance must be satisfactory. Further, the Local Authority may, upon any subsequent payment, rescind the privilege for that particular month if either progress or performance falls below standard.

SECTION 10. CHANGES IN THE WORK (Subsection c.)

It is obvious that Method (1) is preferable. However, an occasion may arise when a combination of two, or event of all three methods will be needed to establish the equitable value of a change. If Method (3) is involved with one or both of the others, the time and material order should itself state clearly the value of that portion of the change which has been predetermined by use of Methods (1) or (2), or both, and which is to be carried into the final adjustment established by the "second written order" of Method (3).

SECTION 11. CLAIMS FOR EXTRA WORK (Subsection e.)

If separate contracts for demolition or landscaping are let, then delete from page 36 the first two lines and the first eight words on the third line, and substitute in lieu thereof:

"conditions there existing relating to construction and labor, that he understands that other contracts will be let for other work, which other work will be performed in the same general area or contiguous thereto during part or all of the time that he performs his Contract, and that he fully understands the facilities, difficulties and restrictions attending the execution of the work under the Contract, and that he will make no claim for extra compensation because of said conditions, restrictions, or difficulties, or because his work has been delayed or interferred with by reason of the fact that others are working in the same general area or contiguous thereto."

SECTION 13. DELAYS - DAMAGES (Subsection a.)

In this clause there is a sentence beginning "in the event the Local Authority ...". This provision prevents a defaulting contractor from claiming that he does not have to pay accrued liquidated damages if his right to proceed is terminated.

SECTION 15. DISPUTES (Subsection d.(4)

It is essential that the Local Authority investigate local statutes and if it finds that it is not legal to limit the time within which the Contractor may bring suit, subsection d.(4) must be changed to read:

NOTES TO THE ARCHITECT

"(4) submitted his final voucher and release within six months after a written request therefor by the Local Authority."

SECTION 20. REQUESTS FOR SUPPLEMENTARY INFORMATION

Delays by parties other than the contractor in the processing of shop drawings and like matters may give rise to expensive claims on the part of the contractor. Care should be exercised, by the Local Authority, the architect and others, to avoid any delays which may result in such claims.

SECTION 23. PERMITS AND CODES (Subsection b.)

The agreement between the Local Authority and the City (or other local governing body) usually provides that permits will be issued without cost to the Local Authority and that there will be no inspection fees. Accordingly, this provision has been drafted to advise the contractor to exclude from his bid price the costs of such permits and inspection. Provision is made, however, to reimburse the contractor should he be forced to pay. It is the duty of the Local Authority to assure itself that its architect has so preparedthe contract documents as to comply with all applicable laws, ordinances, codes, rules and regulations, or that approved amendments, modifications or waivers have been obtained.

SECTION 27. TEMPORARY HEATING

A project, perhaps because of size and the anticipated dates of starting and completion, may not appear to require temporary heating. Nevertheless, unanticipated delays in construction may carry the work into cold weather and, thus, temporary heating may be required. For this reason, and because this provision covers more than protection against freezing, it should not be changed or deleted.

SECTION 34. FINAL INSPECTION (Subsection a.)

The signed concurrence of the Local Authority's representative having charge of inspection will guard against a premature request from a contractor who has not reduced his punch list corrections within reasonable bounds.

SECTION 36. INSURANCE (Subsection d.)

Some printed forms of buiders' risk insurance do not become effective until windows and doors are <u>permanently</u> in place. Such coverage is worthless during construction. The policies offered should be carefully examined for coverage in all stages of construction.

In certain localities which are particularly susceptible to earthquake disturbances, it is essential that Builder's Risk Insurance against loss by earthquake be carried. This additional coverage may be included by adding the following statement to the end of the first sentence in subsection d. of Section 36: "The extended coverage insurance shall include coverage against loss by earthquake."

NOTES TO THE ARCHITECT

SECTION 37. WAGE RATES, SALARIES, CERTIFICATION (Subsection a.)

The Housing Act of 1949 requires the PHA to obtain from a Local Authority a certification as to compliance with the provisions of payment to the various professions and crafts set forth in section 37, before PHA may make funds available for construction from time to time. In turn, the Local Authority, in order to issue such certification to the PHA, must have in hand the underlying affidavits from the contractor and all subcontractors, each month, or withhold payment.

SECTION 47. WARRANTY OF TITLE

It is essential that the Local Authority investigate applicable local law to determine whether the project is subject to mechanics' lien claims. Since the Annual Contributions Contract requires a bond for the protection of those furnishing materials and labor, the Local Authority should, if possible under local law, prohibit the right of anyone to assert a mechanics' lien claim against the project. Some State laws require either actual or recorded notice of contractual provisions prohibiting liens being filed against property. In such States the law must be followed and, if necessary, the contract must be recorded in the proper office.

SECTION 48. GENERAL GUARANTY

Sometimes, specification writers require guarantees of results, as differentiated from guarantees as to workmanship and materials, and specify results irrespective of the work as shown on the drawings and specifications. This demands that a bidder, and ultimately the contractor, accept the drawings and specifications as adequate for accomplishment of the result. Such a demand is extremely drastic, and many contractors have voiced strenuous objection to it. It is not recommended. However, if desired for any part of the work is should be inserted in the Technical Specifications and made applicable to that portion of the work only. This Section 48 should not be changed.

6. SPECIAL CONDITIONS

The "Special Conditions" provide a flexible division of the contract documents in which to place provisions which contain elements that vary from one project to another, and which cover situations peculiar to the project involved. Some of the suggested topics may not be applicable, and should be deleted; others may require specific modification to fit the local situation; and it may be necessary to include additional provisions to round out the contract requirements.

In assembling the Special Conditions it is important that the serial numbering of Sections 1, 2, 8 and 9 be not changed, because of certain cross-references elsewhere in the contract documents.

NOTES TO THE ARCHITECT

SECTION 1. TIME FOR COMPLETION

The Local Authority should exercise good judgment in fixing a time (or times) of completion. It should bear a reasonable relationship to the amount of work to be performed, the difficulties attendant upon its performance, and the probable effect of seasonal weather upon certain stages of the work according to the time of the year in which the proposed schedule anticipates they will be performed.

An unreasonably curtailed construction period results in higher bid prices and tempts the contractor to rush the work and skimp in performance, while an unnecessarily extended period will delay completion and occupancy and the related income from rents.

In subsection b. both numbers and days in the series should be counted from zero, and the series continued until the final accumulated total of numbers and days corresponds with the grand total of units in the project and the number of days in which completion of all units is desired. This final number of days may be less than or the same as the number specified in subsection a. above, depending upon the Local Authority's desires in the matter.

SECTION 2. LIQUIDATED DAMAGES

The amount(s) of liquidated damages should be established in such sum(s) as will be in reasonable proportion to the actual loss that might be sustained by the Local Authority, through failure of the contractor to complete on time. Consideration should be given to the loss the Local Authority will sustain by virtue of a delay in receiving annual contributions. However, liquidated damages should not be fixed so high as to discourage bidding by responsible contractors nor to result in high prices. Furthermore, unrealistic sums will be held to be penalties and unenforceable in court.

For partial occupancy, the range of from $1 to $2 per dwelling unit per day can usually be successfully defended. The method shown in subsection a.(1) provides flexibility for any number of units.

SECTION 3. COMMUNICATIONS (Subsection c.)

Insert here the name of the Local Authority and its permanent mailing address.

SECTION 4. SIGNS (Subsection a.)

If a project sign (or signs) is (are) erected under a demolition contract, this provision may require revision or elimination, to suit the circumstances. However, subsections 4b. and 4c. should not be changed.

NOTES TO THE ARCHITECT

SECTION 5. JOB OFFICES (Subsection a.)

This section should be given considerable study so as to express clearly what is desired. In some instances, one or more substantial existing buildings may be converted, if out of the path of major construction, and used until construction is well along, when the job offices may be moved into completed space, the existing buildings demolished and the area they occupied brought to the condition required by the contract. An explicit description of what the contractor is to do results in a realistic estimate, with the reduction or elimination of contingencies in his bid. The Low-Rent Housing Manual should be consulted for general requirements for the PHA Project Engineer, subject to specific advice from the PHA Field Office.

Sections 5b. and 5c. should not be changed.

SECTION 6. PROGRESS PHOTOGRAPHS (Subsection a.)

It is believed that views taken once a month are sufficient to present the information desired but, in unusual cases, certain views at more frequent intervals may be advisable. In any event, the total number required of the contractor without extra charge must be inserted. In selecting the vantage points it is well to remember that the function of these photographs is to record a pictorial history of progress with respect to as many work items as can be shown by the camera. A view in which some building blots out much of the scene does not always give information of great value concerning streets, walks, the status of adjoining structures, stock piles of materials, and general construction activities in the immediate vicinity. The total number required of the contractor under the contract should not be reduced by views taken of unusual events such as cave-ins, latent soil conditions, storm damage, etc. These are to be considered as emergency items, and should be covered by a change order.

The Local Authority should retain all negatives in its files, but the PHA should be furnished two prints of each as soon as practicable after each picture is taken.

SECTION 7. MINIMUM RATE OF PAY
(This provision is to be incorporated verbatim, without qualification.)

The master list of trades and occupations shown may be reduced to exclude those which are not anticipated to be employed on the project, and amended if necessary to include others not shown. Wage rates prevailing locally should be investigated by the Local Authority as soon as possible after execution of the Annual Contributions Contract so that recommendation may be submitted by the Local Authority to the PHA Field Office without delay. If State or local law makes provision for the determination of prevailing rates, the Local Authority should, with their submittal, furnish evidence of the findings of the State or local body making such determination, and a reference to the law under which such determination was made.

NOTES TO THE ARCHITECT

SECTION 8. UNIT PRICES

The work to be controlled by unit prices should be confined to that arising from unforeseen latent soil conditions. The master list of items shown represents PHA experience in these matters. This list is subject to revision to fit the project and it is believed that, generally, no more than about one-half of these items will be needed. Note that these are cost-to-contractor prices, negotiated prior to and as a condition of award of the contract as provided in Section 10 of Instructions to Bidders, and should be included by the Local Authority in its submittal to the PHA Field Office of the contract documents when it recommends the award.

SECTION 9. LIST OF OPTIONS

Only relatively minor cases, such as a choice between linoleum and asphalt tile floors, metal and wood door frames, and the like, should be mentioned here. (The numerous species of lumber acceptable in the locality are not considered an option in the sense used here; they are an example of those covered by subsection c.)

The choices of the contractor should be expressed in writing.

SECTION 10. EQUIPMENT FURNISHED BY OTHERS

The basis of this provision is that direct purchase by the Local Authority rather than by the contractor, avoids the payment of current excise taxes, provided the necessary excise tax exemption certificates are issued, with respect to certain manufactured articles, such as electric ranges and refrigerators, and gas-fired equipment. Any future downward revision in such taxes may bring a situation where the saving in cost will not be worth the trouble, nor the loss of placing all responsibility on the contractor. In any event, the difference in water heaters currently is comparatively small, and it is considered advisable to include this item in the construction contract and thus secure the advantage of installation guarantees, including that applying to relief valves.

The specimen list in Sec. 10a. dealing with equipment to be supplied by others is probably broader than the PHA believes is generally feasible. For example, in most cases the Contractor will probably be required to suppy the space heaters (although it is suggested that space heaters is an item of equipment which might be purchased by the Local Authority).

No specimen form is furnished for the Transfer Receipt mentioned in subsection 10d. but the pertinent subject matter is indicated in Exhibit 1 hereto. This document establishes in the written record, assumption by the contractor of responsibility for the equipment after delivery to him. It may be in letter form, if desired. One signed copy is for the Project Engineer.

- -

NOTES TO THE ARCHITECT

If no movable building equipment is to be purchased direct, and only that for the job offices is to be handled by the contractor, this Section 10 may be simplified by reducing it to a single, brief clause.

Note that this Section 10 is related to subsection 5b. of the "General Scope of Work."

SECTION 11. PARTIAL OCCUPANCY

A specimen form of Partial Occupancy Agreement will be found in the Low-Rent Housing Manual. One should be executed upon each partial occupancy turn over by the contractor.

If partial occupancy is not contemplated, delete Sections 11 and 12.

SECTION 12. PARTIAL OCCUPANCY FENCING

It is advisable not to attempt to indicate on the Drawings or describe in the Specification the length of fencing, nor its probable positions or number of moves. By doing so, the Local Authority may share in the responsibility for preventing trespass whereas it is intended that this be assumed in full by the contractor, who should then be left to devise his own methods.

SECTION 13. DISCRIMINATION

When the Local Authority sends in its recommendations for prevailing wages, it should also request of the PHA Field Office the percentage to be inserted in this Section.

7. GENERAL SCOPE OF WORK

SECTION 3. RESPONSIBILITIES OF CONTRACTOR

Note the wording relative to taxes. It is incumbent upon the Local Authority to ascertain whether local sales or business privilege taxes are legally applicable to the work to be performed by the contractor. If the applicability of the law is not clear, every effort must be made by the Local Authority to obtain a ruling from the appropriate officer of the State or locality (i.e., the Attorney General of the State; the State Tax Commissioner; the Tax Collector; etc.). If it appears to the Local Authority that such sales or business privilege taxes are not applicable to the work, an appropriate clause should be inserted in the "Special Conditions" informing bidders of this fact and instructing them not to include the costs of such taxes in their bid prices. In any event, the wording of this Section 3 is <u>not</u> to be changed.

8. SCHEDULE OF DRAWINGS

Each applicable drawing should be listed in this schedule, by number, date, and title.

If any revised drawing, or portion thereof, is issued with an addendum, the addendum, in addition to its description of the change, must contain a separate paragraph making an appropriate revision in this schedule.

- -

NOTES TO THE ARCHITECT

EXHIBIT 1

SYNOPSIS OF SUBJECT MATTER APPROPRIATE FOR INCLUSION IN TRANSFER RECEIPT COVERING TRANSFER TO CONTRACTOR OF EQUIPMENT FURNISHED BY OTHERS

Note to Local Authority: Since comparatively few of these transactions will occur no especial form is necessary, but may be devised if desired. Each transaction should be covered by a formal document, captioned "TRANSFER RECEIPT NO. _____", numbered serially as issued. Such of the following information as is applicable should appear in each case, and each receipt should conclude with the certification of the person acting for the Local Authority, and the Contractor's clear receipt.

* * * * * * * *

Kind of goods shipped; name and address of shipper; point of origin; method of transportation; how routed; name of delivering carrier; car number if carload shipment.

Transportation charges (i.e., Prepaid? C.O.D.? Freight allowed?)
If not prepaid: Freight bill No. ____? Amount charged $_____.

Date car spotted, or shipment made available to consignee; place where unloaded and initially inspected; date unloaded; weather conditions at unloading.

How packed: (i.e., Open crates? Closed crates? Boxed? Paper cartons? Etc.) If carload shipment report any failure of bracing in car to prevent shifting in transit, giving reason if discernible.

Have agent of delivering carrier inspect any damage found upon arrival, and note down the fact either that he did so, or waived the right to do so.

Record the number, condition, and disposition of all items in the shipment. Note overage or shortage. The record should be particularly concerned with the number in good condition and usable turned over to the contractor; and the number damaged beyond repair, turned back to the carrier and receipt taken. Some items may be but slightly damaged and made usable if repaired locally. An agreement can generally be reached with carrier's agent on these, with the carrier standing the cost.

- - - - - - - - -

Certification by Representative of Local Authority

I, _____, representing the (Local Authority), certify that the facts relating to the receipt, count, condition and disposition of this shipment are as stated herein.

Date _____ _____

- -

NOTES TO THE ARCHITECT

Contractor's Receipt

The undersigned, having unloaded the aforementioned shipment of _____, and inspected the same jointly with Mr. _____ representing the (Local Authority), hereby accepts as of (hour) on the _____ day of _____, 19___, the following articles for safe-keeping and use in the construction of Project No. _____, in strict accordance with the terms and conditions of my (our) contract and more particularly Section _____ of the Special Conditions thereof:

(number) (kind), in good condition and usable.

*_____ _____, _____

(name of contractor)

By _____

Title _____

(* If so arranged, there may be included those items only slightly damaged but which can be placed in usable condition after minor repairs made locally.)

NOTES TO THE ARCHITECT

CHANGES IN CONSTRUCTION CONTRACT DOCUMENTS when LAWNS AND PLANTING WORK IS INCLUDED IN THE MAIN CONSTRUCTION CONTRACT or when IT IS TO BE AWARDED UNDER A SEPARATE CONTRACT

1. INTRODUCTION

The purpose of this section is to assist the architect in revising the suggested form of Construction Contract Documents in the instance where laws and planting work is involved, either (A) when included in the main construction contract, or (B) when awarded separately.

(A) WHEN INCLUDED IN THE MAIN CONSTRUCTION CONTRACT

2. GENERAL DISCUSSION

Inclusion of lawns and planting work in the general contract complicates the making of final payment because it is unfair that the general contractor wait until this work has been completed before receiving final payment for his construction work, since in many instances such work must be done during a planting season several months away. For this reason, provision must be made in the General Conditions and Special Conditions for withholding a substantial sum, sufficient to cover the estimated cost of all of the lawns and planting work plus a quarter to a third more to assure that the general contractor will retain his interest in seeing that this work is properly done.

During the performance of lawns and planting work, the Local Authority should ascertain that the prime contractor is actually passing on to the lawns and planting subcontractor the partial payments made periodically on account of this work, and not retaining them for his own benefit.

Upon acceptance of the lawns and planting work, there may be a few, or there may be many plantings which are marginal, and they may live or they may die; or there is the possibility that everything seems in excellent condition. At this time the Local Authority should make a realistic estimate of what is an adequate amount to be withheld for its protection in case the Contractor does not comply with the provisions of his guaranty. This sum shall be withheld until the end of the first planting season following, to be paid in full after all required replacements are made. Or, if the Contractor elects to let questionable plants remain for another year, the sum withheld should be sufficient to cover these questionable plants should the Contractor decline then to make the replacements if required to do so.

In evaluating the cost of replacements attention is directed to the fact that although the lawns and planting subcontractor based his bid on purchases in large quantities, the Local Authority, in order to protect itself as to replacements, will have to use small-lot purchase prices or retail purchase prices in determining a proper amount of retention.

NOTES TO THE ARCHITECT

This procedure will necessitate submittal by the Contractor of two separate releases. The function of one must be distinct from that of the other. The original release will cover all contract work except lawns and planting work; the subsequent release will pertain to lawns and planting work only. The lawns and planting release shall not be used as a device to reopen or add to matters within the scope of the original release.

To give effect to these principles, make the following changes in the General Conditions and Special Conditions:

3. GENERAL CONDITIONS

Section 9d:

Delete this subsection and substitute the following:

" d. Upon completion and acceptance of all work required hereunder (exclusive of lawns and planting), the amount due the Contractor under this Contract, exclusive of the retention for lawns and planting work specified in the Special Conditions, shall be paid upon certification by the Architect and approval by the Local Authority and the PHA of all work exclusive of lawns and planting, after the Contractor shall have furnished the Local Authority with a release, in satisfactory form, of all claims against the Local Authority arising under and by virtue of this Contract, other than claims arising out of the lawns and planting operations and such other claims, if any, as may be specifically excepted by the Contractor from the operation of the release; provided, each such exception embraces no more than one claim, the basis and scope of which is clearly defined and the amount stated; and provided further, the amounts of such excepted claims are not included in the voucher for payment of the said amount due. Upon completion and acceptance of lawns and planting work and the furnishing of a supplemental release relating only to such work, under the same procedure and subject to the same conditions as are specified in this paragraph for the construction work, final payment exclusive of the retention to assure compliance with the guaranty for such work shall be made to the Contractor."

Section 48:

Change the latter portion of the provision so that, from the 8th line on, it will read:

" of one year from the date of final acceptance of the work (exclusive of lawns and planting) unless a longer period is specified. The Local Authority will give notice of observed defects with reasonable promptness. The Contractor shall also comply with the guaranty for lawns and planting work stipulated in the Technical Specifications for that branch of the work."

NOTES TO THE ARCHITECT

4. SPECIAL CONDITIONS

Add a section as follows:

"_____. RETENTION FOR LAWNS AND PLANTING

II. NOTES TO ARCHITECT

1. When lawn and planting work is included in the Main Construction Contract Specifications, the following paragraph should be added under Section 4 of "Notes to the Architect" which appears on Page 107:

"The amount to be inserted in the above blank space is to be determined subsequent to bid opening and prior to and as a condition of award by negotiation between the successful bidder and the Local Authority subject to the approval of the PHA."

75) as a basis, and observing the "Detailed Instructions" (pages 85 through 101), the preparation of separate contract documents for lawns and planting work will not be difficult.

The elimination of certain provisions which are not applicable to lawns and planting work, and the revisions and other changes necessary, are indicated below. It is advisable before the final draft is sent to the printer to check against the Technical Specifications. Sections and subsections not mentioned or treated below should be included verbatim.

5. INVITATION FOR BIDS

If an award of lawns and planting work is deferred, add to Paragraph 2: "General construction is now in progress at the site."

6. INSTRUCTIONS TO BIDDERS

Delete subsection 4c. Reletter subsections 4d and 4e appropriately.

Delete Section 8. If any options are permitted, state them in the Technical Specifications.

Delete Sections 9, 10, and 16 as being inapplicable. Renumber the remaining sections appropriately.

NOTES TO THE ARCHITECT

7. BID FORM

Paragraph 1:

In lieu of "construct and complete" it is suggested to substitute "perform and complete the work of."

8. FORM OF STATEMENT OF BIDDER'S QUALIFICATIONS

Question 5:

Insert the word "landscape" before "contracting."

Question 10:

Change "structures recently erected" to "contracts recently performed."

Question 12:

Change "construction" to "landscape."

Question 15:

Change to read:

"Financial statement no more than 60 days old (attach separate sheet)."

(Delete the comprehensive form shown, from the bottom of page 17 through page 19).

(Continue with questions 16, 17 and the form of oath, as shown on page 20).

9. GENERAL CONDITIONS

Section 1f:

Change "construction" to "lawns and planting."

Section 2:

Use only the first sentence, deleting the second sentence entirely.

Section 3:

Retain subsection "a" without change. In lieu of subsection "b" substitute:

NOTES TO THE ARCHITECT

" b. The Contractor shall lay out his own work and be responsible for all lines, locations, elevations, and the finished grades of the work performed by him. He must verify the figures shown on the drawings and any preparatory work done by others, and will be held responsible for any errors resulting from his failure so to do."

Section 6:

Change this entire section (including title) to read:

"6. COORDINATION OF THE WORK

The Contractor shall coordinate his work with that of other contractors and shall schedule and perform it at such times and in such a manner as to cause no delay to the progress of his own work or that of other contractors being performed concurrently on the site."

Section 8:

Change this entire section (including title) to read:

"8. BREAKDOWN AND PERIODICAL ESTIMATES

a. Immediately after execution of the Contract the Contractor shall furnish, on forms supplies by the Local Authority, a detailed estimate, (herein termed "Breakdown"), giving a complete breakdown of his Contract price, so arranged and itemized as to meet the approval of the Local Authority and of the PHA. The values employed will be for the purpose of making partial payments and shall not be taken as a basis for additions to or deductions from the Contract price.

b. In order to receive partial payments as the work progresses the Contractor shall submit, on forms supplied by the Local Authority, Periodical Estimates showing the value of the work performed each month, based upon the items appearing in the approved Breakdown. Such estimates must be submitted not later than 10 days in advance of the date set for payment, and are subject to correction and revision as required. In final form, they must bear the certification of both the Architect and Local Authority before payment may be made.

Section 9a:

The number "37" in the second line will be changed, due to deletions. Insert the correct number.

Section 9b:

Last line, change the period after "completed" to a comma, and add:

NOTES TO THE ARCHITECT

"and provided further, that in no case shall the amount retained be less than a sum sufficient to cover the estimated cost of probable replacements, as stipulated in the Technical Specifications."

Section 9d:

Delete this subsection and substitute the following:

"d. Upon completion and acceptance of all work required hereunder, the amount due the Contractor under this Contract shall be paid (less, however, an amount determined by the Local Authority as adequate to secure performance of the guaranty stated in the Specifications) upon certification by the Architect and approval by the Local Authority and the PHA, after the Contractor shall have furnished the Local Authority with a release in satisfactory form of all claims against the Local Authority arising under and by virtue of this Contract, other than such claims, if any, as may be specifically excepted by the Contractor from the operation of the release; Provided, each such exception embraces no more than one claim, the basis and scope of which is clearly defined and the amount stated; and provided further, the amounts of such excepted claims are not included in the voucher for payment of the said amount due. Upon satisfactory performance of the Contractor's obligations under the guaranty the Contractor shall, upon presentation of a properly certified voucher, be paid the amount of the retention."

Section 11b:

Delete this subsection, and appropriately reletter those which follow.

Section 11c:

Second line, change "topographical maps and plans" to "Drawings and Specifications."

Section 16:

Prefix the designation "a" to the present section. Add new subsections "b" and "c" as follows:

" b. Where, on any drawing, a portion of the work is drawn out and the remainder merely indicated, the parts drawn out shall apply also to all other like portions of the work."

" c. In case of differences between small and large scale drawings, the larger scale drawings shall take precedence."

Section 17:

Delete this section.

NOTES TO THE ARCHITECT

Section 19:

Delete this section.

Section 20:

Delete this section.

Section 21:

Change subsection 21a to read:

" Unless otherwise specifically provided in the Technical Specifications, all materials and articles incorporated in the work shall be new, or fresh, and the best grade of the respective kinds for the purpose. Where referred to "as equal" to any particular standard, the Contracting Officer will decide the question of equality."

Delete subsections 21b, 21c, 21d, 21e, and 21f.

Add a new subsection 21b to read:

" b. Workmanship shall be of good quality. The Contractor shall employ only such workmen as are skilled in the tasks to which they are assigned. The Local Authority may require the Contractor to dismiss from the work such employee or employees as the Local Authority may deem incompetent, or careless, or insubordinate, or otherwise objectionable."

Section 22:

Include subsections "a" and "b" without change.

Include subsection "c" but insert after "approval" in the first line the words "at no extra cost." Also delete the last sentence ("In general . . . . . making tests.")

Change subsection "d" to read:

"d. Pack samples so as to reach their destination in good condition. Ship in tight, sealed metal containers samples of paste or liquid materials, or manure. Ship fertilizer samples in glass jars, completely filled.

Delete subsection "f."

Include subsection "g" as the new subsection "f" but delete from the 5th line the words "and equipment"; and delete "equipment" from the last sentence so that it commences: "If materials or accessories which . . ."

Delete subsection "i" and "j".

NOTES TO THE ARCHITECT

Include subsection "k" as the new subsection "i".

Delete subsection "l".

Section 23:

Change the title to read: "PERMITS - CODES - WATER"

Change subsection "a" to read:

" a. The Contractor shall give all notices pertaining to his operations, obtain any additional permits required but not previously issued, and comply with all laws, ordinances, codes, rules and regulations."

Change subsection "b" to read:

" b. The Local Authority will arrange for the Contractor to draw water from the city or project hydrants without cost to him, but he shall furnish his own attachments and accessories. The Local Authority does not warrant an unfailing supply from this source under all conditions. No responsibility shall attach to the Local Authority if the supply should prove inadequate from causes beyond its control, and in such event the Contractor shall acquir his needs from other sources at his own expense."

Section 26:

Change subsection "a" to read:

" a. The Contractor shall be responsible for all damages to persons or property that occur as a result of his fault or negligence in connection with the prosecution of the work and shall be responsible for the proper care and protection of all materials delivered and work performed until completion and final acceptance, whether or not the same has been covered by partial payments made by the Local Authority, except as otherwise specific ally stipulated in the maintenance provisions of the Technical Specifications

Delete subsections "b," "c" and "e." Include subsection "d" but change its designation to "b".

Section 27:

Delete this section.

Section 29:

Change to read:

"___ SANITARY FACILITIES

The Contractor shall arrange for, or provide, ample toilet facilities, for the workmen, and shall provide drinking water from a proved, safe source, all in strict accordance with existing governing health regulations."

NOTES TO THE ARCHITECT

Section 31:

Second line (bottom page 47), delete "the resultant dirt and."

Third line (top page 48), delete "buildings and."

Fourth line (top page 48), delete "and washing."

Section 32:

Retain subsection "a"; delete subsections "b," "c," and "d"; retain subsection "e" changing the letter to "b."

Section 34:

Delete both subsections; change the entire provision to read:

"34. FINAL INSPECTION

The procedure for final inspection will be as stipulated in the Technical Specifications."

Section 36:

Delete subsection "d."

Delete from subsection "a" the second sentence which relates to Builder's Risk.

In subsections "a," "b," and "c" change the words "each Contractor" wherever they occur to "the Contractor".

Section 47:

Change to read:

"____. WARRANTY OF TITLE

No materials for the work shall be purchased subject to any chattel mortgage or under a conditional sale or other agreement by which an interest therein or in any part thereof is retained by the seller or supplier. The Contractor warrants good title to all materials incorporated in the work and agrees, upon completion of all work, to deliver the premises together with all improvements placed thereon by him to the Local Authority free from any claims, liens or charges, and further agrees that neither he nor any person, firm, or corporation furnishing any material or labor for any work covered by this Contract shall have any right to a lien upon the premises or any improvement thereon. Nothing contained in this paragraph,

NOTES TO THE ARCHITECT

however, shall defeat or impair the right of such persons furnishing materials or labor under any bond given by the Contractor for their protection or any rights under any law permitting such persons to look to funds due the Contractor in the hands of the Local Authority. The provisions of this paragraph shall be inserted in all subcontracts and material contracts, and notice of its provisions shall be given to all persons furnishing materials for the work when no formal contract is entered into for such materials."

Section 48:

Include the first sentence only, ending the clause with ". . . faulty materials or workmanship."

10. Special Note: Upon completing the above revisions and deletions in the General Conditions, renumber the sections in serial order from Section 16 on.

11. SPECIAL CONDITIONS

Section 1:

Delete subsections "a" and "b," and substitute the following:

"1. TIME FOR COMPLETION

The work shall be commenced at the time stipulated in the Notice to Proceed to the Contractor and shall be fully completed within _____ consecutive calendar days thereafter, exclusive of maintenance and replacement."

Section 2:

Delete both "a" and "b." Substitute the following:

"2. LIQUIDATED DAMAGES

As actual damages for any delay in completion are impossible of determination the Contractor and his sureties shall be liable for and shall pay to the Local Authority the sum of $_____ as fixed, agree and liquidated damages for each calendar day of delay until the contract work is completed or accepted."

Section 4:

Delete this section.

NOTES TO THE ARCHITECT

Section 5:

Delete subsection "a". Include subsections "b" and "c", changing their designations to "a" and "b" respectively.

Section 6:

Delete this section.

Sections 8, 9, 10, 11, and 12:

Delete these five sections.

12. Special Note: Upon completion of the above revisions and deletions in the Special Conditions, renumber the sections from Section 3 on in serial order.

12. GENERAL SCOPE OF WORK

Sections 1, 2, and 3 are applicable to lawns and planting contractors, without change.

Sections 4 and 5 should be prepared carefully to show clearly the divisions of work between the lawns and planting contractor and the other contractors working on the site.

13. SCHEDULE OF DRAWINGS

Drawings which relate to the general contract and which are required for reference by the landscape bidders, should also be listed here and included in the "package" issued to bidders.

HHFA-PHA, Wash., D.C.

GPO 83-16851

GUIDE SPECIFICATIONS

DIVISION 9

WINDOWS AND SCREENS, ALUMINUM

NOTES TO THE ARCHITECT:

THIS SPECIFICATION PROVIDES FOR DOUBLE HUNG WINDOWS, CASEMENT WINDOWS, OR PROJECTED WINDOWS.

CASEMENT WINDOWS MAY HAVE FRICTION HINGES OR ROTO-OPERATOR.

ROTO-OPERATORS MAY BE SPECIFIED WHEN SILL VENTILATORS ARE NOT TO BE USED.

STRIKE OUT PARAGRAPHS AND WORDS NOT APPLICABLE TO THE TYPE OF WINDOW SELECTED.

*THIS SPECIFICATION PROVIDES FOR THE USE OF WOOD SUB-FRAMES WITH ALUMINUM CASEMENT OR PROJECTED WINDOWS AND ALUMINUM OR STEEL INTERIOR TRIM. * DETAILS OF A WOOD SUB-FRAME ARE SHOWN IN BULLETIN LR-6, PART VII. THE USE OF WOOD SUB-FRAMES IS ADVANTAGEOUS WHEN INTERIOR METAL TRIM IS USED IN COLD AREAS WHERE CONDENSATION AND PAINT FAILURE ON CASINGS HAVE CREATED A MAINTENANCE PROBLEM. IN WARM AREAS AND IN DRY AREAS, THE USE OF WOOD SUB-FRAMES IS CONSIDERED UNNECESSARY BECAUSE CONDENSATION ON THE METAL CASINGS SHOULD NOT BE SERIOUS.

SPECIAL WOOD SUB-FRAMES FOR ATTACHMENT OF METAL INTERIOR CASINGS ARE NOT RECOMMENDED FOR DOUBLE HUNG WINDOWS. IT IS CONSIDERED SIMPLER TO USE

NOTE: This DIVISION 9 supersedes DIVISION 9 dated 1-4-51. Material * between asterisks * is new or revised.

WOOD INSIDE TRIM WITH DOUBLE HUNG WINDOWS WHEN DESIRABLE TO AVOID CONDENSATION ON METAL CASINGS.

*WHEN SELECTING SIZES FOR CASEMENT OR PROJECTED WINDOWS FOR SMALL PROJECTS, WHEN QUICK DELIVERY IS DESIRED, ARCHITECT SHOULD CONSULT MANUFACTURERS FOR AVAILABLE WAREHOUSE SIZES. *

FOR CASEMENT WINDOWS FOR LARGE PROJECTS, THE SIZES OF CASEMENTS SHOWN IN BULLETIN LR-6, PART VII, PAGE 12, ARE RECOMMENDED.

PARAGRAPHS MARKED ( ) COVER VARYING TYPES OF CONSTRUCTION AND MAY NOT BE REQUIRED IN THE PROJECT. SELECT THE TYPE OR TYPES SUITED TO THE PROJECT AND OMIT THOSE NOT SUITABLE.

ADD NUMBER OR LETTER TO PARAGRAPHS MARKED THUS _____. AND REVISE PARAGRAPH IDENTIFICATION AS NECESSARY.

WHEN WORDS OR PHRASES ARE INCLOSED IN PARENTHESIS THEY MAY NOT BE APPLICABLE TO THE PROJECT. THEY SHOULD BE DELETED UNLESS THEY ARE APPLICABLE.

CHANGE THE TEXT OF ANY PARAGRAPH TO SUIT THE PROJECT REQUIREMENTS. STRIKE OUT ITEMS NOT APPLICABLE AND INSERT ADDED TEXT AS NECESSARY.

- -

GUIDE SPECIFICATIONS

DIVISION 9

WINDOWS AND SCREENS, ALUMINUM

1. SCOPE

This Division includes (double hung)(casement)(projected) aluminum windows, screens, and related items required to complete the work indicated on the drawings and specified. Calking and glazing (and wood sub-frames) are specified under other divisions of this specification.

2. GENERAL

Stock commercial windows and screens will be accepted, including hardware and manufacturers standard sections, provided they conform to requirements specified herein.

*( ) The sizes of (casement)(projected) windows shall be as indicated on the drawings. *

( ) The sizes of double hung windows indicated on the drawings are the minimum sizes acceptable. The contractor may furnish double hung windows of similar type and venting of equal or greater individual areas provided the area is not more than 20 per cent greater than the windows indicated and provided the openable area is equal to or greater than the openable area indicated on the drawings and provided necessary adjustments in other work are made to the satisfaction of and without added cost to the Local Authority.

( ) Structural wood sub-frames shall be provided for (casement) (projected) windows under the division CARPENTRY AND MILLWORK. Windows shall be installed without any contact with interior metal trim. Windows shall be erected after completion of masonry walls and shall be removable without disturbing metal casings or masonry.

(1) Details of wood sub-frame indicated on the drawings define sub-frame requirements for the window sections shown. When windows of sections differing from those indicated on the drawings are furnished, the contractor shall make necessary adjustments in the wood sub-frame and other affected items to perform the same functions as the sub-frames indicated without added cost to the Local Authority.

*( ) Furnish affidavit from the manufacturer of the windows that the windows delivered to the project meet all requirements of this specification. *

3. MATERIALS

a. Aluminum in extruded members shall conform to ASTM Specification B 221-49T, alloy GS 10A, commercially known as alloy 63S. Reinforcing members and other members not specified shall be a commercial aluminum alloy containing not more than .40 per cent copper or be non-magnetic stainless steel.

b. Screws, nuts, washers, bolts, rivets, and other miscellaneous fastening devices incorporated in the windows shall be of aluminum, non-magnetic stainless steel or other non-corrosive materials compatible with aluminum and of sufficient strength to perform the functions for which they are used. Plated or coated materials will not be permitted.

c. Screen wire shall be aluminum, 16 x 16 or 18 x 14 mesh, conforming to Commercial Standard 138-49.

d. Hardware shall have exposed parts of aluminum, non-magnetic stainless steel, or other non-corrosive materials compatible with aluminum. Hardware shall have strength sufficient to perform the functions for which it is used. Plated or coated materials harmful to aluminum shall not be used unless properly insulated from the aluminum.

e. Anchors shall be aluminum, non-magnetic stainless steel, or other non-corrosive materials compatible with aluminum. Steel anchors may be used provided they are properly insulated from the aluminum.

f. Asphalt paint shall be an asbestos fibered asphalt roof coating conforming to Federal Specification SS-R-451, thinned to brushing consistency with a volatile solvent.

*( ) Interior steel casings shall be 18 gage, .0473 inch, and stools shall be 16 gage, .0598 inch, steel sheets. Steel trim shall have a hot-dip phosphate or a cold phosphate-chromate treatment standard with the manufacturer. Immediately after drying apply to both sides a shop coat of a rust inhibitive paint which will produce a hard tough film of good appearance, flexibility, adhesion, and rust resistance. Shop coat shall be oven dried. *

( ) Interior extruded aluminum casings, including stools, shall be 0.050 inches thick. Stools shall have integral stiffening ribs.

( ) Interior sheet aluminum casings shall be 16 B & S gage, .051 inch, and stools shall be 14 B & S gage, .064 inch.

4. SHOP DRAWINGS

Shop drawings showing design and details of aluminum windows, aluminum screens, (sub-frames) and items covered by this division shall be submitted to the Local Authority for approval.

5. CONSTRUCTION

a. Assembly of the windows shall be done in a secure and workmanlike manner to perform as hereinafter specified and to insure neat, weather-tight construction. Corners of casement frames and ventilators shall be mitered and segments parallel to the plane of the window shall be welded. Muntins shall be continuous, mechanically interlocked, or welded with flush interior surfaces, secured to sash, frames or ventilators by mortise and tenoned joints securely peened. When welding flux is used, it shall be completely removed immediately after completion of the welding operation. A permanent water-tight joint shall be made at the junction of the sill and side-frame members. Windows shall be arranged for outside glazing and holes shall be provided for glazing clips. The glass shall be held in place by clips or other mechanical means and sealed as specified in the division GLAZING.

*b. Parts in contact sliding over each other shall not both be aluminum. *

c. Mullions shall be manufacturers standard pattern and shall tightly close the openings between the window units at interior and exterior surfaces.

*d. Replacements. Sash and balances of double hung windows and hinges, ventilators, operators, hardware, and any moving part of any window shall be removable and replaceable without damage to the new part or to the remainder of the window. *

*e. The minimum thickness of any principal member of double hung windows shall be .050 inches except that sills shall be .062 inches thick. The minimum thickness of principal members of casement and projected windows shall be .062 inches. Screen frames shall be not less than .027 inches thick. When machine screws are threaded directly into aluminum the thread length engaged shall be not less than 0.9 of the diameter of the screw. *

f. Surfaces to be permanently exposed shall be smooth and closely uniform in color and free from serious surface defects.

g. Fabrication of windows, except picture windows, shall be completed at the factory. When wood sub-frames are not specified, casings may be attached at the factory, or at the site or warehouse.

h. Protective coating of clear water-white methacrylate-type lacquer, resistant to alkaline mortar and plaster and capable of withstanding the action of lime mortar for a period of at least one month in an atmosphere of 100% relative humidity at room temperature, shall be applied to all aluminum, including backs of frames and anchors, after surfaces have been

cleaned of all fabrication compounds, dirt accumulations, and steel wool fibers deposited by abrasion cleaning.

( ) Double Hung Windows

(1) Cutouts for sash balances shall be closely and neatly fitted.

(2) Meeting rails shall tightly contact each other when windows are closed or be provided with weatherstrips.

(3) Stops shall be provided to prevent damage to heads and sills by contacts with hardware. Sash shall open substantially its full height.

(4) Weatherstrips of spring metal compatible with aluminum or non-metallic material proofed against vermin and decay shall be provided.

(5) Hardware for double hung windows shall consist of locks, lifts, and balances. Balances shall conform to Federal Specification FF-H-111a, Type F1240 or Type F1245. The balances and window construction shall permit operation of either sash in either direction with a force not exceeding 10 pounds after the sash is in motion.

( ) Casement Windows

(1) Metal drip molds with not less than 5/8 inch projection shall be provided at top of side hinged ventilators.

( ) Side hinged ventilators shall open out and operate on cleaning type friction hinges riveted or welded to the frame and vent members. Friction hinges shall be adjustable for friction and for wear and shall hold the ventilator open at any angle within the limits of its swing.

( ) Side hinged ventilators shall open out and operate by means of roto-type operators on extension hinges riveted or welded to the frame and vent members.

( ) Sill ventilators shall be projected ventilators opening in with side arms pivoted to the ventilator and to the frame and have two friction shoes sliding on the jamb sections. Opening of sill ventilators shall be limited to six inches.

___. Weathering contact shall be double and continuous around ventilators. When ventilators are adjusted and locked the metal to metal contact shall satisfactorily pass the feeler gage test hereinafter specified.

___. Hardware. Satisfactory hardware shall be provided to control and securely lock the operating units. Extension hinges, locking handles and roto-type operators or friction hinges, as specified herein,

shall be furnished on side-hinged ventilators. Sill ventilators shall have locking handles so arranged that the ventilators may be locked when closed and when open not more than 1/2 inch.

*( ) Projected Windows

*(1) Sill ventilators shall open in and other ventilators shall open out. Ventilators shall have side arms pivoted to the ventilators and the frames and have two non-abrasive friction shoes sliding on the jamb sections. Opening of sill ventilators shall be limited to six inches. *

*(2) Weathering contact shall be double and continuous around ventilators. When ventilators are closed and locked the metal to metal contact shall satisfactorily pass the feeler gage test hereinafter specified. *

*(3) Hardware shall consist of locking handle for manual operation of each ventilator as a standard and spring catch and pole where bottom of ventilator is over 5 feet 6 inches from the floor. Sill ventilators shall have locking handles so arranged that the ventilators may be locked when closed and when open not more than 1/2 inch. *

6. SAMPLES

A sample consisting of one of the largest windows scheduled for the project shall be forwarded for test to a testing laboratory selected by the Local Authority. Samples passing the tests shall become the standard to which windows furnished for the project shall conform.

7. TESTS

Check tests may be made as specified in the GENERAL CONDITIONS.

( ) Double Hung Windows

(1) Horizontal Load Test. Before the sash are glazed, a concentrated load of 20 pounds, acting horizontally and applied at the center of the span of any horizontal sash rail assembled in the sash, shall not cause a horizontal deflection of more than 1/175 of its span, and in no case more than .219 inches.

(2) Vertical Load Test. Before the sash are glazed, a concentrated load of 20 pounds, acting vertically and applied at the center of the span of any horizontal rail assembled in the sash shall not cause a vertical deflection of more than 1/375 of its span, and in no case more than .094 inches.

(3) Uniform Load Test. Under a uniform load of 10 pounds per square foot no member in a completely assembled window without muntins, glazed, closed and locked, continuously supported around its outside perimeter and securely anchored, shall deflect more than 1/175 of its span.

( ) Casement Windows

*(1) Vertical deflection test of completely assembled window, ventilator without muntins, unglazed, with hardware as specified herein. * A concentrated load of 45 pounds, acting at the lower unrestrained corner of a ventilator opened 90°, shall not cause a vertical deflection at the lower unrestrained corner greater than 1/2 inches, and at the conclusion of the test the ventilator shall properly close and operate.

(2) Horizontal deflection test on ventilators installed in window frames, without muntins, unglazed, locking hardware in approximate center of ventilator side rail in locked position. A concentrated load of 20 pounds acting at either of the unrestrained corners of a ventilator shall not cause a deflection at the unrestrained corners greater than 3/8 inches, and at the conclusion of the test the ventilator shall properly close and operate.

*(3) Hardware load test on ventilators with hinges and roto-operating hardware. The sample window shall be securely fastened on its side in a vertical plane so that when ventilators are opened to their fullest extent they will be horizontal. The hardware shall be strong enough to support a uniform load of 10 pounds per square foot and at the conclusion of the test the operators shall function in such a manner as to satisfactorily close and weather the ventilators. There shall be no failure of screws, track, or deformation of arm allowed. *

(4) Uniform load test on single and multiple window openings, glazed, closed and locked, supported continuously around outside perimeter and securely anchored. When subjected to an exterior uniform load of 10 pounds per square foot:

(a) No member in a single window unit, including those consisting of a combination of vents, fixed side lights or transoms, shall deflect more than 1/175 of its span. Window tested shall be one of the largest units on the project.

(b) No member, including horizontal and vertical mullions connecting single window units into multiple openings, shall deflect more than 1/175 of its span. All members in single units so combined must meet test described in paragraph immediately above.

*( ) Projected Windows *

*(1) Hardware load test on an unglazed window securely clamped and continuously supported around the perimeter and with a projected out ventilator open to 45°, one free corner of the ventilator held in position by blocking between the corner of the ventilator and the window frame. A concentrated load of 17 pounds acting inward perpendicular to the plane of the window frame and applied to the edge of the ventilator at the point of locking handle, shall not cause a deflection of more than 3½ inches at the unblocked corner measured perpendicular to the plane of the window frame. *

*(2) Uniform load test on complete unit. A glazed window with ventilators closed and locked shall be continuously supported around the perimeter and anchored. When the window is subjected to a uniform load of 10 pounds per square foot applied perpendicular to and on the outside surface, no member of a window unit nor any mullions shall deflect more than 1/175 of its span. *

8. SCREENS

All openable areas in windows shall be screened unless otherwise indicated. Screens shall be of manufacturers' standard design, shall effectively bar passage of insects to the building through the windows, shall fit closely and neatly around the openable area, be easily removable from the inside and be interchangeable with screens of the same size and type. All necessary hardware and attachments, clips, bolts and screws for a secure and insect proof screen shall be provided.

a. Frame members of screens shall be of extruded or formed sheet aluminum, or of non-magnetic stainless steel, with corners welded, spot welded, brazed, or mechanically connected in a secure and workmanlike manner. The spline shall be of aluminum or other suitable material compatible with aluminum. Screens shall be easily rewirable with hand tools.

( ) Double hung windows shall be equipped with (half length) (full length) screens.

*( ) Screens for ventilators with friction hinges and screens for projected out ventilators shall be inside screens. Screens for ventilators with friction hinges shall have sliding wickets with ample arm room for operating the ventilators. Wickets shall clear locking handles when ventilators are closed. *

( ) Casement window screens for ventilators with roto-hardware shall be inside screens.

9. METAL TRIM

Metal trim consisting of head, jamb and sill sections shall be provided as indicated on the drawings. They shall provide a flat surface for the full depth of the reveal and a flat interior trim, turned in at the outer edge. Anchor with 1 inch by 16 gage anchors not less than 24 inches on centers.

a. Corners shall be neatly fitted. Joints shall be mortised and tenoned.

( ) Attach casings to wood sub-frames with No. 6 screws, 16 inches on center without contact with aluminum window at any point.

( ) Attach casings to aluminum windows by one sheet metal screw to each light of glass but not over 20 inches apart.

10. ERECTION

a. General. Windows shall be stored at the site in an upright position on wood sills in a manner which will prevent injury to windows or to protective coatings.

( ) Install double hung windows and trim accurately to line, plumb and true without distortion. *Provide temporary bracing or blocking to prevent crowding of the frames during wall construction. * Use care in subsequent operations to prevent damage to the windows and replace damaged parts. Adjust windows to operate as specified after glazing.

*( ) Install (casement) (projected) windows and trim accurately to line, plumb and true without distortion. Install hardware and adjust windows prior to glazing to operate freely and close evenly. * When ventilators are closed and locked, the metal to metal contact shall be so close that a 1/32 inch feeler gage cannot be inserted without forcing.

*( ) Casement or projected windows shall be installed after erection of wood sub-frames and completion of the walls. * Metal trim shall be erected after completion of the walls or with the wood sub-frame at the option of the contractor. Bed lower corners of metal trim in a calking compound conforming to Federal Specification TT-C-598. Set windows to preserve width of rebates around windows for calking as indicated on the drawings. Attach windows to sub-frames with No. 8 wood screws 1½ inches long, one to each light of glass but not more than 20 inches on center. Attach metal trim to sub-frames with No. 6 wood screws 16 inches on center.

*( ) Clean exposed parts of the window after painting is complete. *

GUIDE SPECIFICATIONS

DIVISION 10

METAL BUCKS, DOORS, AND TRIM

NOTES TO THE ARCHITECT:

WHERE IT IS FOUND DESIRABLE TO USE METAL DOORS AND FRAMES IT IS CONSIDERED THAT A COMBINATION BUCK AND FRAME IS THE MOST ADAPTABLE FOR USE IN LOW RENT CONSTRUCTION.

METAL FRAMES OR DOORS SHOULD NOT BE USED IN EXTERIOR OPENINGS IN INDIVIDUAL DWELLINGS BECAUSE OF LIABILITY OF CONDENSATION AND RUST.

WOOD OR KALAMEIN OR METAL INTERIOR DOORS MAY BE USED WITH METAL FRAMES.

SCHEDULES SHOWING SIZES, PATTERNS AND THICKNESS OF DOORS, AND SIZE AND TYPE OF COMBINATION BUCKS AND FRAMES SHOULD BE INCLUDED ON THE DRAWINGS.

LOCATION AND TYPE OF UNDERWRITERS' LABELED DOORS SHOULD BE SHOWN ON PLANS OR SCHEDULES.

PARAGRAPHS MARKED THUS ( ) COVER VARYING TYPES OF CONSTRUCTION AND MAY NOT BE REQUIRED IN THE PROJECT. SELECT THE TYPE OR TYPES SUITED TO THE PROJECT AND OMIT THOSE NOT SUITABLE.

ADD NUMBER OR LETTER TO PARAGRAPHS MARKED THUS ___. AND REVISE PARAGRAPH IDENTIFICATION AS NECESSARY.

NOTE: This Division 10 supersedes Division 10 of Bulletin No. LR-13 dated 3-5-53. Text * between asterisks * is new or revised.

* WHEN WORDS OR PHRASES OCCUR IN PARENTHESIS THUS (FRAMES) (BASE) THE WORDS NOT APPLICABLE SHOULD BE DELETED. *

CHANGE TEXT OF ANY PARAGRAPH TO SUIT THE PROJECT REQUIREMENTS. STRIKE OUT ITEMS NOT APPLICABLE. INSERT ADDED TEXT AS NECESSARY AND FILL IN BLANK SPACES.

GUIDE SPECIFICATIONS

DIVISION 10

METAL BUCKS, DOORS, AND TRIM

1. SCOPE

This Division includes combination metal bucks and frames, metal doors, kalamein doors, metal clad doors, metal base, and related items required to complete the work indicated on the drawings and specified. The words "buck" or "frame," wherever used in these specifications, mean combination metal bucks and frames.

a. Hardware, glass, and field painting are specified in other divisions of these specifications.

b. Locations and details shall be as indicated on drawings and schedules.

c. Underwriters' labeled doors shall be provided of the classes and at the locations indicated on the drawings or on the door schedule.

2. COMBINATION METAL BUCKS AND FRAMES AND METAL DOORS

a. Materials. Steel shall be first quality cold rolled or hot rolled pickled. Except as otherwise specified, steel shall be of the following minimum thicknesses, U. S. Standard Gage:

Combination bucks and frames for metal doors 2'6" wide and under, and wood doors	18 gage
Combination bucks and frames for metal doors over 2'6" wide	16 gage
Rails and stiles for panel doors	19 gage
Panel and moldings for panel doors	20 gage
Flush doors	20 gage
Lock, strike, and flush bolt reinforcement	16 gage
Hinge and check reinforcement	11 gage

b. Samples of materials for use in the work as listed below shall be submitted to the Local Authority for approval:

6-inch corner section of combination buck and frame.
Cut out corner section of door including stile and panel.

c. Shop drawings showing thickness of metal, details of construction, profile of moldings, connections to other work, fastenings and anchors shall be submitted to the Local Authority for approval.

d. General Requirements. All shapes shall be formed, rolled and formed, or cold drawn with contours and arrises as true and sharp as can be produced in the thickness of metal required.

* (1) Weld construction joints of frames full depth and width or weld equivalent splice plates on unexposed faces of frames, or weld miters of frames. Exposed surfaces of welded joints shall be smooth. Butted or mitred joints on the face of trim shall fit within 1/64 inch. Other joints shall fit within 1/32 inch. Welding shall be used where practicable in preference to the use of rivets, screws, or bolts. *

* (a) Frames shipped knocked down will be accepted provided an adequate interlocking joint producing a solid corner securely locked in place during assembly is used. *

(2) The finished work shall be strong and rigid, neat in appearance, and free from objectionable defects. Plain surfaces shall be smooth and free from warp or buckle. Molded members shall be clean cut, straight, and true. Miters shall be well formed and in true alignment. Fastenings shall be concealed where practicable.

(3) Cut outs shall be accurately located and made to fit the hardware. Cut outs shall have dust covers of steel sheet welded in place to prevent mortar and plaster from contact with the reinforcing plates and lock strikes.

(4) The manufacturer of doors or frames shall fit, drill, and tap for locks, strikes, hinges, and concealed hardware. Drilling and tapping for other hardware shall be done at the job where its exact location can be established during installation.

* (a) Reinforcing plates shall be provided in doors and frames for locks, strikes, door closers, and flush bolts and for hinges except for hinges which are welded to the frames. Reinforcement shall be offset so that surfaces of hardware will finish flush with surfaces of doors and frames. Hinges shall be fastened to reinforcement with flat head machine screws or to the back surface of metal backs by spot or projection welding. Reinforcing shall be concealed, extend past hardware enough to develop the strength of the frame, be welded in place and be tapped for hardware fastenings as specified above. *

* (b) Any hinge welded to frames shall ring soundly when tapped by a carpenter's hammer. Hinges indicated to have imperfect welds by this test shall be tested by the contractor, in the presence of the representative of the Local Authority, as follows: The frame shall be fastened in an upright position and the hinge subjected to a load of 150 pounds suspended from the hinge. Any indication of failure of the welds shall be cause for rejection of the frame. *

(c) Lock strikes for wood doors shall be supplied by the manufacturer of the hardware or shall be universal strikes provided they comply with the specifications for hardware in the Division, HARDWARE BUILDERS. Strikes for metal doors shall be furnished by the manufacturer of the hardware.

(d) Where locations of hardware are not indicated on the drawings, the following requirements shall apply: Door knobs shall center from 36 to 38 inches above the floor. Door pulls and push plates shall center not more than 45 inches above the floor. Single horizontal push bars shall center 48 inches above the floor. These knob heights shall not apply when 6'8" flush steel doors are used, in which case, locks shall be located on the horizontal center line of the door to permit their use as right or left hand doors.

(5) Doors shall have not more than 1/8" clearance at jambs and heads and not more than 3/4" clearance from floor or 3/16" from thresholds and shall have the proper bevel on lock stiles or rails to operate without binding. They shall be out of wind and reinforced at corners sufficiently to prevent sagging or twisting.

* e. Frames unless otherwise indicated or specified shall be combination buck and frames, channel section rabbeted for doors. Edges of flanges shall be turned to form plaster stops where plaster occurs and to form retainers for adjustable anchors. *

(1) Adjustable anchors for frames in masonry shall be of steel T-shaped and of the same thickness as metal of the frames. The head shall give equivalent strength and shall positively engage the retainers on both flanges of each jamb member when in place. The stem shall be corrugated or perforated for mortar bond and extend at least 4" into the masonry. The stem shall be not less than 1-1/2" wide. Anchors shall be placed near the top and bottom of each jamb and at one intermediate point and shall lie flat in the masonry joints.

(2) Anchors for frames in stud partitions shall consist of three concealed angle or channel sections each side, not less than .047 inch thick by one inch high, placed near the hinges and near mid-height of the frame, welded to the jambs of the frames and engaging both edges of each stud. Fasten to wood studs with twelve 8d common nails and to steel studs with equivalent bolts or wires.

(3) Anchors for frames in 2" solid partitions shall be angle sections welded to each side of the buck and wired or bolted to the vertical channels, or U-sections welded to the bucks to receive the gypsum lath. Any other satisfactory anchorage may be submitted to the Local Authority for approval.

* (4) Base angle for fastening to floor shall be welded to each jamb section or fastened thereto with bolts or rivets with flattened heads. *

* (5) Each door frame, except in wood stud partitions, and including frames in masonry partitions, shall be provided with two erection struts, manufacturer's standard type. Struts shall be arranged to fasten to ceiling by means of expansion bolts or equivalent. *

* (6) Frames shall be shipped separately with removable spreaders or nested in pairs and bound tightly together, or knocked down for unassembled frames. *

f. Hollow metal doors unless otherwise indicated on drawings or specified shall be 1-3/4" thick for exterior entrances to apartment buildings and not less than 1-3/8" thick for interior doors.

( ) Panel type doors. Rail and stiles, exclusive of applied moldings, shall be formed from single sheets, except bottom rails of doors may be formed of two sheets welded to reinforcing channels not less than .0478 inch thick and shall have interior cross bracing. Stiles shall be fitted to the rails, reinforced, and welded at joints.

(a) Panel moldings shall be fitted to the panels, mitered and welded at corners and form a continuous frame around the metal or glass panels. Panel moldings on the outside shall be stationary; integral with rails and stiles, or shall interlock with and be spot welded thereto. Moldings on the inside of metal panels shall be stationary or shall be keyed to the rails and stiles without the use of exposed fastenings. Moldings on the inside of glass panels shall be fastened with not smaller than No. 6 x 32 oval head countersunk machine screws having small heads.

(b) Metal panels shall consist of two metal sheets separated by incombustible, heat retarding insulation, such as asbestos felt or mill-board not less than 1/4" thick, and cemented thereto.

* ( ) Flush type doors shall, at the option of the contractor, be constructed to meet the requirements of any of the following paragraphs: *

* (a) Flush type door stiles shall be roll formed and door panels shall be roll formed and mechanically stiffened with 24 gage stiffeners securely welded to the rear side of the panel. Ends of the doors shall be closed and reinforced with channels securely spot welded to both panels and welded to panels and stiles at their corners. *

* (b) Flush type doors shall be triple box type construction, consisting of hinge stile, lock stile and center panel with continuous vertical flush joints welded internally the entire length of the door. *

* (c) Flush type doors shall consist of two face plates formed as required and with edges welded not less than 4" on center. The face plates shall be stiffened by interlocking channels or Z members or U-shaped stiffeners, not less than .031 inch thick, spaced not more than 6" apart, extending the full height of the plates and welded thereto at close intervals or a continuous 28 gage truss reinforcement extending the full width and height of the door and spot welded to the face sheets not over 3" apart horizontally and vertically. Tops and bottoms of doors shall have continuous channels formed from metal not less than .031 inch thick, welded to face plates. *

* g. Shop Coat. All surfaces of frames and exposed surfaces of doors shall be cleaned and coated with an oven dried shop coat of a rust inhibitive paint which will produce a hard tough film of good appearance, flexibility, and rust resistance. *

* h. Doors shall be effectively treated to reduce vibration and noise with a material resistant to shock, fire, sound, moisture, vermin, and decay. *

3. KALAMEIN DOORS

Stiles and rails shall be made from non-resinous kiln dried white pine, ponderosa pine, or poplar, solid or built-up, 1-3/4" thick, accurately machined, mortised and tenoned, and glued. Panels shall be made from plywood of above species or composition board or, when Underwriters' labeled doors are required, from cement asbestos board.

a. Metal covering shall be 24 gage galvanized steel on stiles and rails and 26 gage on panels. Metal shall be drawn over stiles and rails through steel dies and glued to panels. Metal covering shall fit closely and be free from waves and imperfections with edges straight and true and covering of stiles and rails locked together with joints recessed into wood and seams soldered and leveled.

b. Moldings shall be metal formed of 20 gage steel.

c. Frames for kalamein doors shall be metal frames as specified herein for metal doors.

d. Underwriters' labels shall be affixed to kalamein doors when and as indicated on the drawings.

e. Cut edges of metal shall be turned in or concealed under lock trim and butts when hardware is applied.

f. Kalamein doors shall be cleaned and primed with a shop coat of air dried manufacturer's standard rust inhibitive primer.

4. METAL CLAD FIRE DOORS

a. Metal clad fire doors shall be Underwriters' Class A or B as indicated on the drawings, of nominal 1" dressed T & G white pine, ponderosa pine, or spruce boards of low resin content free from defects that will impair their strength or durability. Laminations shall be assembled with grain at right angles and clinch nailed in accordance with Underwriters' standards.

b. Cover all edges and faces with standard I. C. 20 pound terneplate conforming to Federal Specification QQ-T-201a in sheets 14" x 20", applied with double locked seams. All joints between sheets to be locked with 1/2" seams and nailed under seams and concealed in the finish work. Provide a continuous border around the perimeter of the face of each door with corners folded into a miter from a single sheet. All seams shall be malletted flat against the core to avoid air spaces.

c. Hardware for metal clad fire doors and frames when frames are required, shall be furnished by the manufacturer of the door and shall comply with requirements of the Underwriters' Laboratories, Inc., and be so labeled.

5. METAL BASE

Metal base shall be 1 or 2 piece base, of profile and dimensions indicated on the drawings, formed of not less than 18 gage tight coated galvanized sheets and painted with a shop coat of zinc dust-zinc oxide paint. Topo flange of base shall be perforated to permit grouting. Stock patterns of metal base meeting requirements of this specification and conforming substantially to details indicated on the drawings will be accepted.

a. Samples of materials proposed for use in the work as listed below shall be submitted to the Local Authority for approval:

12 inch section of base.
One each of corners and fittings.

b. Fastenings for metal base shall be concealed clips or wood screws in wood grounds or equivalent, spaced not over 24 inches apart.

c. Corners shall be shop fabricated of steel or cast iron except for straight base which may be notched and bent.

d. Splices shall be as standard with the manufacturer of the base and approved by the Local Authority.

6. STORAGE AND ERECTION

(Doors) (frames) (base) shall be stored at the site in an upright position on wood sills or on floors in a manner which will prevent rust and injury.

* a. Install (frames) (base) in position plumb, rigid, in true alignment and fasten to retain position and clearances during construction of partitions. Erection struts for frames in masonry partitions shall be removed after masonry is placed to the level of the top of the frame. Fill behind base with portland or gypsum cement grout mixed one part of cement to three parts of sand. Fill against metal door frames solidly with masonry mortar or gypsum plaster. *

b. Install doors in position as scheduled on the drawings. Erection of fire doors and metal clad doors shall conform with Underwriters' standards.

c. Install hardware specified in the division HARDWARE, BUILDERS on metal and kalamein doors. Adjust hardware to operate freely and latch or lock doors securely.

PUBLIC HOUSING ADMINISTRATION
HOUSING AND HOME FINANCE AGENCY WASHINGTON 25, D. C.

1-30-51 Low-Rent Housing Bulletin Transmittal No. 37

Insert in Low-Rent Housing Bulletin LR-13, GUIDE SPECIFICATIONS:

1. Division 13, Miscellaneous and Ornamental Metal, dated 1-30-51.

GUIDE SPECIFICATIONS

DIVISION 13

MISCELLANEOUS AND ORNAMENTAL METAL

NOTES TO THE ARCHITECT:

STRUCTURAL ITEMS COVERED IN THIS DIVISION SHOULD BE TRANSPOSED TO THE DIVISION STRUCTURAL STEEL IN PROJECTS WHERE A STRUCTURAL STEEL SPECIFICATION IS INCLUDED.

NECESSARY ITEMS NOT COVERED IN THIS DIVISION SHOULD BE ADDED USING STANDARD PATTERNS EASILY AVAILABLE.

PARAGRAPHS MARKED THUS ( ) COVER VARYING TYPES OF CONSTRUCTION AND MAY NOT BE REQUIRED IN THE PROJECT. SELECT THE TYPE OR TYPES SUITED TO THE PROJECT AND OMIT THOSE NOT SUITABLE.

ADD NUMBER OR LETTER TO PARAGRAPHS MARKED THIS __, AND REVISE PARAGRAPH IDENTIFICATION AS NECESSARY.

CHANGE TEXT OF ANY PARAGRAPH TO SUIT THE PROJECT REQUIREMENTS. STRIKE OUT ITEMS NOT APPLICABLE. INSERT ADDED TEXT AS NECESSARY AND FILL IN BLANK SPACES.

GUIDE SPECIFICATIONS

DIVISION 13

MISCELLANEOUS AND ORNAMENTAL METAL

1. SCOPE

This division includes miscellaneous and ornamental metal work and related items including required anchors, bolts, hardware and other accessories required to complete the work indicated on the drawings and specified.

2. MATERIALS

Materials shall comply with standard specifications as follows:

( ) Steel - QQ-S-741, type I or type II as best suited, grade B, Class 1.

( ) Cast iron shall be soft, tough, gray iron, true to pattern, clean and free from injurious flaws and defects. Malleable castings shall be heat treated to produce tough castings.

( ) Wire shall be cold drawn steel unless otherwise specified.

( ) Gratings - RR-G-661a, type I or type II as specified.

( ) Aluminum extruded; ASTM specification 221-49T, alloy GS 10A, commercially known as 63S.

( ) Bronze shall be the best commercial grade of copper-zinc alloy architectural bronze.

3. SHOP DRAWINGS

Shop drawings giving sizes, details of construction, methods of assembly and location of hardware shall be submitted to the Local Authority for approval.

4. GENERAL

Stock commercial material, products, patterns and fabrication methods meeting requirements of this specification and conforming substantially to details and design indicated on the drawings will be accepted. See the drawings for location, size and details not covered in this specification.

a. Built-in-items shall be supplied in ample time for incorporation in the work.

b. Gages for sheet metal are U.S. standard gages and gages for wire are U.S. Steel wire gage.

c. Prime coat ferrous metal, except cast iron, and except materials to be embedded in concrete or masonry with a rust inhibitive primer standard with the manufacturer, after cleaning free from oil, rust, and dirt.

d. Anchors to masonry not otherwise indicated shall be strap steel 1-1/2 x 3/16 inches bonding 8 inches into masonry and with ends turned up 2 inches and welded or riveted to frames. Anchors shall be spaced not to exceed 2 feet 6 inches on centers and not less than 2 anchors shall be furnished for each side of a frame.

5. DESIGN AND FABRICATION

a. Proportion items to meet the applicable building code and to support any live loads which may normally be imposed unless specific live loads are indicated on the drawings.

b. Structural design of items covered by this specification shall conform to the Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings of the American Institute of Steel Construction.

c. Fabricate work to shape and size with sharp lines and angles and smooth surfaces. Connections shall be securely welded, bolted or riveted. Welds shall be dressed smooth on exposed surfaces. Rabbets, lugs and brackets shall be provided so that the work can be assembed in a neat substantial manner. Thickness of metal and detail of assembly and support shall give ample strength and stiffness. Built up parts shall be out of wind. Exposed ends and edges of metal shall be smooth. Joints exposed to the weather shall be formed to exclude water or to drain.

6. ITEMS OF METAL WORK

( ) Clean-out doors for masonry flues shall be cast iron with flange type frames and with anchors to be built into masonry. Size shall be as indicated on the drawings or when not so indicated the width and height shall equal the width of the flue. Door shall have 2 hinges, latch and knob.

( ) Clothes Line Hook. Install 3 clothes line hooks on the building in line with clothes pole as shown on plot plan. Hooks shall be galvanized steel or cast iron welded or bolted to plates. Plates shall be secured to wood construction with not less than 3-1/4 inch galvanized coach screws penetrating 2 wood studs 2 inches, and to masonry with not less than 3-1/4 inch expansion bolts in expansion shields. Details and spacing of hooks shall be as indicated on the drawings.

( ) Coal chute and frame _____inches by _____inches shall be steel or malleable iron, wall type. Frame shall have steel lining for sides and head and sloping sill full depth of wall, flanged on the outside and equipped with four anchors, to be built into the wall construction. Door to be hinged at top and equipped with a hold open feature and a locking device controlled from the inside.

- -

( ) Coal ring and cover shall be cast iron not less than 3/4 inches thick, 24 inches clear diameter and reinforced to safely carry a wheel load of 5 tons. Top shall be non-slip checker finished. Lid shall be equipped with 2 flush handles, recess for pinch bar and interior locking device. Coal ring shall be set 1 inch higher than pavement grade to drain.

( ) Corner guards shall be steel, of details indicated with anchors for bonding to masonry not less than 3 feet on center. Erect corner guards plumb and square with masonry work.

( ) Doorway Frames. Structural steel frames, except for fire doors, shall be formed to details indicated with mitred and welded corners. Door stops exposed to weather shall be continuously welded to frame. Make necessary cutouts and sinkages for hardware and provide 3 anchors to masonry on each side. Frames for fuel slides shall have angles welded to frames to retain stop planks and to permit separate removal of each plank.

( ) Foundation Vents. Unless otherwise indicated on the drawings, vents for underfloor spaces shall consist of steel channel frames as detailed, anchored to walls with replaceable screens of 1/2 inch mesh hardware cloth attached to steel angle frames. Arrange vent frames for the installation of doors to close vents in winter. Entire vent frame and screen shall be hot dip galvanized and bolts cadmium or zinc coated.

( ) Gratings. Area way gratings shall consist of flat steel bars not less than 7/64 inch thick set on edge and connected with 1/2 inch rods and pipe spacers or by welded rods. Bars shall be spaced not closer than 1 inch between bars and rod connectors not more than 2 feet on center. Frames for areaway gratings, when called for, shall be made up of structural steel members attached to masonry with expansion bolts or recessed in the masonry as detailed. At the option of the contractor areaway gratings may be steel floor gratings conforming to Federal Specification RR-G-661a. Area gratings and supporting frames, bolts and members shall carry a test load of 250 pounds per square foot without damage to any part of the assembly. Check tests for conformance may be made at any time and on any grating.

( ) Ladders shall be 18 inches wide fabricated of 3/8 inch by 2 inch mild steel rails and 5/8 inch round steel rungs. The rungs shall extend full size through the rails with connections welded. Rungs shall be spaced 14 inches on centers. Anchorage shall be at top and bottom and not over 5 feet on center intermediately.

( ) Lintels. Steel lintels shall be provided for all square head openings in masonry where other lintels are not indicated on the drawings. Built up lintels shall be bolted or riveted together, with separators where noted. The lengths of the bearing at each end of the lintels shall not be less than 1 inch per foot of span and in no case less than 6 inches.

( ) Pipe sleeves through masonry or concrete walls and footings for subdrains, wall hydrants, interior downspouts discharging at grade and similar work

shall be standard weight, wrought iron, mild steel or cast iron sleeves with not less than 1/4 inch space all around between the sleeve and pipe.

( ) Pipe rails unless otherwise indicated in the drawings shall be 1-1/2 inch internal diameter standard weight black steel pipe. Pipe rail posts shall be set in pipe sleeves to a minimum depth of 6 inches and set in lead or cement or attached to concrete less than 7 inches thick or to metal by flanged fittings and fastenings approved by the Local Authority.

Single pipe rails used for stair wall rails shall have neat end fittings and be supported not over 6 feet apart or 10 inches from the ends of wall rail by brackets secured to masonry walls by not less than three 1/4 inch expansion bolts, to wood studs by not less than three 1/4 inch lag screws, 3 inches long and to tile or 2" plaster partitions by not less than one 3/8 inch bolt and a plate washer. Plate washer and bolt shall be concealed in plaster.

( ) Flush pipe rails shall have flush welded fittings except floor flanges and concealed splices. Welds shall be smoothed for painting.

( ) Screw pipe rails shall be fitted with malleable iron plain screw fittings cast to the correct angle to fit the work. Pipe threads shall not show in the finished rails.

( ) Stair railings for concrete stairs shall be formed of steel sections as indicated on the drawings with shop connections welded. Exposed welds shall be smoothed for paint. Posts shall be set in lead or cement in preset pipe sleeves. Form of rails with required turns and easements shall follow slope of stairway. Field connections shall be bolts or cap screws arranged to prevent tampering.

( ) Rolling Doors. Doors shall be of the rolling steel, spring counter-balanced lift, coiling type, operated from both sides; the curtain to travel in steel guides suitably mounted with 1 inch lap at sides of opening.

(1) Curtain shall consist of interlocking slats rolled from not lighter than 22 gage (.030 inches) steel, zinc-coated (hot dip) at the rate of not less than 1.2 ounces of zinc per square foot of flat metal and then shall be prepared for painting by a hot-dip phosphate or a cold phosphate chromate treatment standard with the manufacturer.

(2) Provide malleable iron endlocks with wind baffle ribs on both ends of each slat and finish the bottom of curtain with suitable steel stiffening member fitted with zinc-coated lift handles and (at one end) a locking device consisting of a slide bolt and padlock.

(3) Curtain counterbalance shall consist of steel springs wound in helical form from oil tempered and heat treated wire and heat-treated after forming; springs shall be fully enclosed in barrel with means for adjustment. Main bearings of spring barrel assembly shall be steel ball or roller bearings, grease packed and sealed to require no further lubrication.

(4) Supporting bracket shall be of cast iron or welded steel plate assembly. Hood enclosing curtain coil shall be zinc-coated steel not lighter than 24 gage, with edges flanged, beaded or reinforced.

(5) All metal parts including zinc-coated surfaces, but not including bearings and enclosed parts protected by grease or oil, shall be cleaned and dried and given a shop coat of rust inhibitive paint, standard with the manufacturer.

( ) Rolling steel doors over 80 square feet in area shall be equipped with chain hoist operator to be operated from one side only and shall be locked by means of a padlock through hoist chain and a keeper on the jamb.

( ) Rolling steel doors shall carry on Underwriters Class A or B label when so indicated on the drawings.

( ) Safety treads for public stairs and steps shall be metal, not less than 1/4 inch thick and 3-1/2 inches wide including nosing and not more than 1 foot shorter than the treads to which they are applied. Metal treads shall have lead filled or abrasive filled grooves or be faced with abrasive. Safety treads shall be set flush with the top surface of the treads and fastened by not less than 5 brass countersunk bolts or screws and anchors.

( ) Thresholds. Metal thresholds for non-dwelling buildings shall have non-slip abrasive, checkered or channeled surfaced pattern on the upper surface. No portion of any threshold shall be less than 3/16 inch thick and thicker thresholds shall be used where so shown or noted. Thresholds at double doors shall be cut out or countersunk for door bolts. Where floor hinges occur, the thresholds shall extend around the hinge boxes.

Thresholds shall be fastened by two rows of countersunk screws not less than 3/16 inch in diameter in expansion shields when necessary, providing two screws at each end and intermediate ones spaced not over 18 inches apart in each row. Intermediate screws shall be staggered, unless otherwise required.

All exterior thresholds shall be set level in full beds of calking compound.

( ) Trench Covers. Where metal trench covers are indicated make covers of steel plate with non-slip safety surface of a minimum thickness of 3/16 inches. Frames shall be steel countersunk to bring all metal flush with concrete. Provide required anchors, make covers in convenient length for handling and provide hand holes for lifting. Reinforce covers as necessary to carry floor loads of 100 pounds per square foot or a concentrated load of 200 pounds at any place.

( ) Vault Door. Install single vault door and frame where noted on the drawings. Frame shall be flanged on both sides of wall. Clear opening shall be not less than 32 by 76 inches. Door shall be equipped with 3 tumbler

combination lock and all necessary hardware. Door shall have relocking device which deadlocks doors when door is attacked and an emergency release from inside the vault. The vault entrance shall have a fire rating classification of 1/2 hour and shall bear Underwriters and Safe Manufacturers National Association label for this class. The contractor shall furnish the Local Authority with blue prints or cuts showing the class and type and lock combination with catalog number before doors are shipped. Doors shall have a standard finish of the manufacturer.

( ) Walkway and platforms, where indicated on the drawings shall be constructed of shapes as detailed and securely fastened in place. Open sides of walkways and platforms shall be provided with two member railings at least 3 feet high. Railings may be constructed of 1-1/2 inch I.D. pipe or 1-1/2 inch x 1-1/2 inch angles. Walkways and gratings and supporting frames and structural members shall carry a test load of 250 pounds per square foot without damage to any part of the assembly. Tests may be made at any time on any grating.

( ) Wheel guards shall be of detail shown and located where indicated on the drawings. Wheel guards shall be of cast iron at least 1/2 inch in thickness. Guards shall be securely fastened to anchors built into the masonry or by expansion bolts.

( ) Window guards. Where outside window guards are indicated they shall be constructed of No. 10 gage steel wire woven to 2 inch diamond mesh. The wire shall be let into 1 inch x 1/2 inch x 1/8 inch channel frames with the ends turned, headed or welded. Frames shall be mitered at the corners, full welded and dressed flush and smooth on exposed surfaces and guards shall be hot zinc-coated after fabrication.

(1) Supporting frames shall consist of angles of ample size and height at top and two sides and fastened to masonry by 1/4 inch diameter, oval head zinc-coated machine screws 2 inches long with metal expansion shields, one at each end and at intermediate not more than 30 inches on centers. Separate angle frames from masonry at each expansion screw with lead washer.

(2) Guards shall be hung on two 4 inch wrought steel, fast brass pin butts. Guards over 5 feet high shall have three butts. Butts shall be cut to fit the guard and supporting frame, one leaf full welded to the guard and the other secured by four countersunk steel machine screws. Guard and frame shall be fitted with hasp and staple and locked by padlock on the inside. Padlock shall be 1-3/4 inches in size with chain secured to supporting frame; all padlocks shall be keyed alike and 3 keys furnished for each group.

(3) Inside window guards shall be similar to outside window guards except that hot zinc coating may be omitted.

( ) Window sills shall be of cast or extruded aluminum not less than 3/16 inches thick, adequately reinforced and provided with interlocking flanges to receive connecting members. Lugs shall be formed on underside for anchorage. Sills shall be weathertight with uniform pitch to provide proper drainage with weather stop under the sash and a positive drip.

(1) Sills shall be designed to provide room for expansion at joints and at masonry jambs. They shall be bedded solidly in mortar and calked as provided under the respective divisions.

( ) Window sills shall be of cast iron not less than 3/8 inch thick provided with interlocking flanges to connecting members and lugs shall be formed on the underside for anchorage. Sills shall be weathertight with uniform pitch to provide proper drainage with weather stop and weather bar under the sash and a positive drip to eliminate capillary attraction in contact with masonry.

(1) Sills shall be bedded solidly in mortar and calked as provided under the respective divisions.

( ) Wire mesh partitions shall consist of a framework of steel posts and rails filled and stiffened by fixed wire panels. For height and spacing of posts, location of doors, etc., see drawings. Post shall be used at end intersections and changes in direction of partitions as required.

(1) All posts shall have flanged fittings at floors and ceilings. Posts at wall and partitions shall be fastened through spool or saddle separators spaced 36 inches on centers.

(2) Fixed panels and supporting frames of hinged doors shall be fastened to posts and rails with oval head screws or through bolt; at least two on each side near the corners and at points between not more than 18 inches on centers. Where practicable, through fastenings shall be used instead of screws.

(3) Wire fabric shall be round steel wire not less than 11 gage and woven to not over 2 inch double crimped mesh.

(4) Frames of wire panels and doors shall be hot rolled steel channels not less than 1 x 1/2 x 1/8 inches. Channel frames shall be braced with horizontal bar at center. Back bands, cover strips, strikes, astragals riveted or welded.

(a) Steel frames of wire grills and panels shall be tenoned and riveted or mitered and welded at the corners, except that the corner joints of hinged doors shall be mitered, webs lapped and joints full welded. One channel of intermediate cross rail shall be welded on the back to the abutting frame member and through riveted to the opposite channel at ends and points between not more than 9 inches apart. The wire filling shall be let into the frame and the end of wire shall be turned, headed or welded.

(b) Channel frames for doors shall have cover plates secured to the frame every 9 inches by countersunk rivets or welding. The cover plates shall be continuous around all corners and in as long lengths as practicable. Cover plates shall be cut to receive the butts and one leaf of each butt shall be full welded to the hinged unit.

(5) Vertical members or posts of framework for partitions may be steel tubing of 1-1/4 inch nominal inside diameter or 2 inch "tee" (2 x 2 x 3/16) or 2-1/2 inch angles (2-1/2 x 2-1/2 x 1/4). Flanged fitting of pipe posts shall be of malleable iron with set screw to post or for shapes, angle clips shall be welded or riveted to top and bottom for anchorage; wood screws, expansion screws, toggle bolts or tap screws as most suitable shall be used for anchorage of uprights.

(6) Wire mesh work shall be erected in a rigid substantial manner straight and plumb with horizontal lines level. Hardware shall be adjusted and doors left in perfect working order.

(7) Door Hardware. Butts shall be wrought steel not less than .130 inches thick, five kunckles, fast brass pin butt, similar to Type 2029P and cut to fit the door and supporting frame; one leaf full welded to the door and the other leaf secured by 3 countersunk machine screws. Furnish 3 butts, 4 inches high for each door.

(8) Lock shall be mortise type cylinder lock suitable for wire mesh door, operated from the outside by key only and from the inside by knob and similar to Federal Specification FF-H-106a, Type 183 with knob and rose. Master key with project master key system.

( ) Shop Painting. All iron and steel work shall be thoroughly cleaned and given a shop coat of paint.

(1) Interior iron and steel work that will be exposed to view shall be prime coated with iron oxide paint or synthetic paint primer. All other iron and steel work shall be prime coated with red lead paint. Paint on exposed surfaces shall be thoroughly brushed out and not allowed to run or sag or fill the corners.

___. Memorial Tablet. Provide a cast bronze or cast aluminum tablet in accordance with design indicated on the drawings anchored to building with concealed non-ferrous metal fasteners. Unless otherwise indicated borders and letters shall be polished and background stippled.

GUIDE SPECIFICATIONS

DIVISION 14

LATHING AND PLASTERING

NOTES TO THE ARCHITECT:

WHEN CODES IMPOSE FIRE RESISTANCE RESTRICTIONS ON PARTITIONS THE FOLLOWING TABLES MAY BE USEFUL BUT AUTHORITIES HAVING JURISDICTION SHOULD BE CONSULTED.

WOOD FRAMED PARTITIONS				
Description	Ultimate Fire Resistance Period Thickness of board or plaster			Authority
	1/2 inch	3/4 inch	7/8 inch	
1:2, 1:2 Gypsum: sand plaster on gypsum lath with one 3/4 in. hole each 16 in. 2	1 hour			N.B.S.
1:2, 1:2 Gypsum: sand plaster on metal lath		1 hour		N.B.S.
1:2, 1:3 Gypsum: sand plaster on metal lath			1 hour	N.B.S.
1:2-1/2 Gypsum: perlite or vermiculite plaster on gypsum lath with one 3/4 in. hole each 16 in. 2	1-1/4 hours			N.B.S.
1:2, 1:3 Gypsum: perlite or vermiculite plaster on metal lath		1 hour		U.L.

NOTE: PROPORTIONS OF PLASTER AND SAND ARE BY WEIGHT, 1 BAG OF NEAT PLASTER = 100 LBS. = 1.54 CU. FT. PROPORTIONS OF PLASTER AND PERLITE OR VERMICULITE ARE 100 LBS. (1 BAG) OF NEAT PLASTER TO X CUBIC FEET OF AGGREGATE.

NOTE: This revised Division 14 supersedes Division 14 dated 9-15-51 as amended. Text * between asterisks * is new or revised.

SOLID PARTITIONS		
Description	Ultimate Fire Resistance Period	Authority
2 inch thick studless partition with 1:2, 1:3 gypsum; perlite or vermiculite plaster on gypsum lath	1-1/2 hours	N.B.S.
2 inch thick metal lath and stud partition with 1:1, 1:1 gypsum sand plaster	1 hour	N.B.S.
2-1/2 inch thick partition with 1:2, 1:3 gypsum; perlite or vermiculite plaster on metal lath and stud	2 hours	N.B.S.

SEE BUILDING MATERIALS AND STRUCTURES REPORT, BMS 92 1/ FOR FIRE RESISTANCE OF OTHER TYPES OF PARTITIONS AND FOR WOOD STUD PARTITIONS FACED WITH OTHER MIXES. ALSO, SEE CURRENT "LIST OF INSPECTED FIRE PROTECTION EQUIPMENT AND MATERIALS" PUBLISHED BY UNDERWRITERS LABORATORIES, INCORPORATED, NEW YORK 13, CHICAGO 11 AND SAN FRANCISCO 11.

WHERE CLIMATIC CONDITIONS ARE COOL, EXTERIOR MASONRY WALLS SHOULD BE FURRED.

THIS SPECIFICATION IS INTENDED TO COVER ONLY THE SIMPLER FORMS OF CONSTRUCTION. SUSPENDED CEILINGS, ACOUSTICAL PLASTER AND LIKE ITEMS WHICH WILL SELDOM BE REQUIRED, ARE NOT INCLUDED.

KEENES CEMENT PLASTER SHOULD BE LIMITED TO BATHROOMS AND MAY BE OMITTED ENTIRELY.

THE TYPE OF WALL AND CEILING FINISHES SHOULD BE INDICATED IN A FINISH SCHEDULE ON THE DRAWINGS.

1/ BMS 92 can be procured from the Superintendent of Documents, Washington 25, D. C., for 25 cents.
N.B.S. - National Bureau of Standards
U.L. - Underwriters Laboratories

DO NOT USE ANY CRESOTED WOOD IN CONTACT WITH PLASTER.

WHEN SOLID PLASTER PARTITIONS ARE USED, MAKE PROVISIONS FOR ATTACHING BASE AND REINFORCE AS NECESSARY FOR ATTACHING PLUMBING FIXTURES, KITCHEN CABINETS AND SHELVING.

WHEN IT IS DESIRED TO SPECIFY MILL MIXED PLASTER OF PROPORTIONS OTHER THAN INDICATED IN SECTION 5A THE SPECIFICATION SHOULD BE MODIFIED ACCORDINGLY.

PARAGRAPHS MARKED THUS ( ) COVER VARYING TYPES OF CONSTRUCTION AND MAY NOT BE APPROPRIATE IN THE PROJECT. SELECT THE TYPE OR TYPES SUITED TO THE PROJECT AND OMIT THOSE NOT SUITABLE.

ADD NUMBER OR LETTER TO PARAGRAPHS MARKED THUS __. AND REVISE PARAGRAPH IDENTIFICATION AS NECESSARY.

CHANGE TEXT OF ANY PARAGRAPH TO SUIT THE PROJECT REQUIREMENTS. STRIKE OUT ITEMS NOT APPLICABLE. INSERT ADDED TEXT AS NECESSARY AND FILL IN BLANK.

GUIDE SPECIFICATIONS

DIVISION 14

LATHING AND PLASTERING

1. SCOPE

This Division includes interior lathing, furring, plastering, and related items required to complete the work as indicated on the drawings, and as specified, except wood furring and wood grounds which are specified in the Division, CARPENTRY AND MILLWORK.

a. Plastered ceilings shall include beams and soffits of stairs and other overhead plaster work.

b. Plastered walls shall include walls, piers, columns, and plaster reveals.

2. MATERIALS

a. Channels shall be hot-rolled or cold-rolled steel, free from rust and coated with rust inhibitive paint and shall have the following minimum weights per thousand lineal feet:

Size	Hot-Rolled	Cold-Rolled
3/4 inch	300 pounds	300 pounds
1-1/2 inch	1120 pounds	475 pounds

b. Metal lath shall be expanded metal lath or paper backed fabric. Expanded metal lath shall conform to Federal Specification QQ-B-101c, Type F, FR, or F 3/8 R. Paper-backed wire fabric shall consist of galvanized wire not less than 16 gage, spaced two inches on center in two directions with stiffening ribs spaced not over five inches on center, and an absorptive paper backing securely attached to the fabric so as to provide full embedment of at least 1/8 inch in plaster for at least 1/2 of the total length of the strands, and 1/2 of the total weight of the metal. The design shall provide a mechanical bond and continuous reinforcement in both directions. Wire shall extend one inch beyond the paper backing on two adjoining edges.

The following table gives maximum spans in inches for the various weights and types of lath:

Type of Lath	Weight of Lath in Pounds per Sq. Yd.	MAXIMUM SPANS				
		Wired to Metal			Nailed to Wood	
		Solid Partition	Walls	Ceilings	Walls	Ceilings
Flat Expanded	2.5	16	-----	-----	-----	-----
Flat Expanded	3.4	16	16	13½	16	16
Flat 1/8" Rib	2.75	24	-----	-----	-----	-----
Flat 1/8" Rib	3.4	24	19	19	19	19
3/8" Rib	3.4	2/	24	24	24	24
3/8" Rib	4.0	2/	24	24	24	24
Paper-backed wire fabric	---	---	16	16	16	16

2/ The extra stiffness of 3/8" Rib Lath is not needed for solid partitions.

c. Accessories

(1) Tie wire shall be soft annealed, 16 or 18 gage galvanized steel, monel metal, or other corrosion resistant metal of sufficient strength for the purpose as approved by the Local Authority.

(2) Corner beads shall be zinc coated sheet metal not lighter than 26 gage with perforated or expanded continuous flanges not less than 2-1/2 inches wide.

(3) Metal grounds and screeds shall be zinc coated sheet metal not lighter than 26 gage with perforated or expanded flanges not less than two inches wide.

(4) Cornerites shall be 2.5 pound flat expanded metal lath bent at right angles to form not less than three inch legs on each side.

( ) Metal runners for solid plaster partitions shall consist of 18 gage painted or galvanized clips, and metal base as specified in the Division, METAL BUCKS, DOORS AND TRIM for floor runners; and not less than 26 gage painted or galvanized metal for ceiling runners, manufacturer's standard type.

( ) Wood furring for solid plaster partitions shall be as detailed on the drawings.

_. Gypsum lath shall conform to Federal Specification SS-P-431a. Gypsum lath shall be 3/8 inch thick for 16 inch spans and 1/2 inch thick for 24 inch spans, plain or perforated. Gypsum lath for studless partitions and for furring masonry walls on metal furring shall be 2 feet wide, 8 feet high nominal, and 1/2 inch thick.

( ) Aluminum insulating lath shall be 1/2 inch or 3/8 inch plain gypsum lath to which has been cemented a layer of bright aluminum foil not less than .00035 inches thick over one entire surface.

( ) Fiber insulating lath shall be 1/2 inch thick and conform to Federal Specification LLL-F-321b, Class B. Lath shall be proofed against vermin and rot producing fungi and treated or coated to provide a vapor barrier as specified in the Division, THERMAL INSULATION.

_. Gypsum plaster shall conform to Federal Specification SS-P-402, Type N (neat), fibered with sisal for application over metal lath.

_. Gaging plaster (calcined gypsum) shall conform to Federal Specification SS-P-402, Type G.

_. Keenes cement shall conform to Federal Specification SS-C-161, Type 1 or Type 2, pure white and capable of taking a high polish.

_. Lime shall be hydrated lime or finely pulverized quick lime.

(1) Hydrated lime shall conform to ASTM Specification C206-49, Type S.

(2) Pulverized quick lime shall conform to Federal Specification SS-Q-351, Type C. All material shall pass a No. 20 sieve and not less than 90 per cent shall pass a No. 50 sieve.

(3) Aged lime putty made from lump lime may be used provided it meets the requirements for hydrated lime. The putty shall be made by a firm regularly engaged in supplying the trade with lime putty in bulk, and in a plant fully equipped with proper machinery and storage capacity. The plant and methods used shall be subject to inspection and approval by the Local Authority.

_. Bond plaster shall be a factory-mixed product specially prepared for use directly on concrete surfaces and shall contain not less than 60 per cent by weight of calcined gypsum calculated from SO_3 content. The

remainder shall consist of materials to control working quality, setting time, bonding property and expansion on setting. Bond plaster shall require only the addition of water to make it ready for use and shall set in not less than 1-1/2 hours nor more than 8 hours. It shall have a tensile strength of not less than 150 pounds per square inch after seven days in moist air at a temperature of 70 degrees to 100 degrees F. The method of testing shall conform to ASTM C26-42.

_. Portland cement shall conform to Federal Specification SS-C-192, Type 1 or Type 1-A.

_. Sand shall conform to ASTM Specification C35-39.

_. Light weight aggregate may be used in lieu of sand for scratch and brown coats only. In making a sieve analysis of light weight aggregate under ASTM Specification C136-46, a 50 grain sample shall be used. When such a determination is made for bagged materials, samples shall be obtained by mixing and then quartering. Where a "Rotat" or other mechanical sieve device is used, the sieving time shall be five minutes.

(1) Vermiculite shall be a mica mineral, properly expanded by a heating process, conforming in particle size to the requirements of the standard specifications for sand for plaster. The weight shall be not less than 7-1/2 nor more than 10 pounds per cubic foot, as determined by measurement in a cubic foot box, using the shoveling procedure outlined in the Standard Method for Unit Weight of Aggregate, ASTM Specification C29-42.

(2) Perlite shall be a volcanic rock properly expanded by a heating process conforming in particle size to the requirements of the standard specification for sand for plaster, except that the minimum percentage retained on a No. 100 (149 micron) sieve shall be decreased from 95 to 90 per cent. The weight shall be not less than 7-1/2 nor more than 15 pounds per cubic foot as determined by measurements in a cubic foot box, using the shoveling procedure outlined in the Standard Method of Tests of Aggregate, ASTM Specification C29-42.

_. Water shall be clean, fresh and free from alkali or such amounts of mineral and organic substances as would affect the set of the plaster.

_. All manufactured materials shall be delivered in the original packages, containers, or bundles bearing the name of the manufacturer and the brand.

_. Protect plaster and all cementitious materials against dampness. Store off the ground, under cover and away from sweating walls and other damp surfaces.

_. Protect metal goods against rusting.

_. Affidavits. Furnish affidavits from manufacturers certifying that materials delivered to the job conform to the requirements of these specifications.

3. SAMPLES

Samples, as listed below, of materials proposed by the contractor for use in the work shall be submitted to the Local Authority for approval:

Metal Lath	12 sq. ft.
Tie Wire	1 lb.
Corner Bead	6 lin.ft.
Metal Grounds and Screeds	6 lin.ft.
Cornerites	6 lin.ft.
Insulating Lath	12 sq. ft.
Sand	2 cu. ft.
Light Weight Aggregate	4 cu. ft.
Metal Runners for Solid Plaster Partitions	6 lin.ft.

4. INSTALLATION OF LATH AND ACCESSORIES

a. Metal furring shall be 3/4 inch channels, unless otherwise indicated on the drawings, spaced as required for the type of lath to be used.

(1) Fur over chases, recesses, pockets, and other gaps. Provide necessary clips, wire and channels to bring plaster to lines indicated on the drawings. Furring shall be fastened securely in place.

( ) Furring and Gypsum Lath on Masonry Walls. Construct furring for masonry walls and apply gypsum lath to meet requirements of one of the following methods:

(1) Wood furring strips shall be attached to masonry walls as specified in the Division CARPENTRY AND MILLWORK and gypsum lath nailed to the wall furring as specified elsewhere in this Division.

(2) Metal furring and gypsum lath shall be erected as follows:

(a) Provide corrugated masonry wall ties 7/8 inch wide, 7 inches long, and not less than 24 gage galvanized steel, folded to form inserts for furring nails and placed open end out in interior horizontal joints of exterior masonry walls at heights close to the third points of 8 foot stories and the quarter points of stories over 8 feet. Space these inserts not over 3 feet apart horizontally and within 6 inches of both sides of masonry partitions. Into these inserts drive galvanized common 12d nails with heads flush with line of surface of gypsum lath but not less than one inch from the wall. Any other insert or fastening of equivalent strength and durability as approved by the Local Authority may be used in lieu of the wall tie and galvanized nail.

(b) Place a single metal base and clips for single metal base on floor and a ceiling runner on ceiling true to line so that plaster surface will be vertical. Floor clips shall be spaced not over 24 inches apart. Floor clips and ceiling runners shall be fastened at intervals of not over 24 inches with 6 gage concrete nails, drive anchors or equivalent fastenings.

(c) Fasten 3/4 inch horizontal channels to the galvanized nails at least 1/4 inch clear of the wall with double loops of 16 gage tie wire. The wide dimension of the channel shall be horizontal.

(d) Fill behind metal base with scratch coat plaster mix and form a groove in top surface to receive the gypsum lath. At completion of the furring the ceiling runner, the horizontal channel and the groove in the floor runner shall be in a plane so that the lath can be attached in a vertical plane.

(e) Attach gypsum lath to the ceiling runner with metal clips of not less than 13 gage galvanized wire or equivalent 12 inches on center. Fasten gypsum lath to horizontal furring channels with double loops of 16 gage tie wire and galvanized 8d common nails.

. Metal lath shall be applied with sides of sheets lapped 1/2 inch for expanded metal lath and one inch for paper-backed wire fabric and ends of sheets lapped one inch. Laps shall be made with metal to metal contact. Ribbed lath shall have the ribs nested at joints. End joints of sheets shall be made only at bearings and shall be staggered. Lath shall be continuous around corners of intersecting plaster surfaces with laps at least 4 inches from the corner or cornerites shall be used to reinforce the juncture. Each edge of the cornerite shall be tied to the metal lath at 6 inch centers. Metal lath shall be fastened to supports at intervals of not over 6 inches and at edges. Edges shall be tied together once between supports.

(1) Fasten metal lath to wood joists with 1-1/2 inch barbed roofers' nails, to wood studs or furring with 4d common or 1-inch roofing nails and to metal channels with single loops of 16 gage or 2 loops of 18 gage tie wire or approved galvanized metal clips not less than 12 gage. Fasten paper-backed wire fabric to wood joists with 1-1/4 inch galvanized wire fence staples or 1-3/4 inch large head roofing nails and to wood studs or furring with 13 gage hook nails furnished by the manufacturer of the lath and penetrating the wood 1 inch. Nails or staples shall engage a main mesh member between ribs. Paper-backed wire fabric shall contact supports only at the stiffening ribs.

(2) Fasten metal lath to light gage joists by twisted loops of 14 gage or heavier galvanized steel wire or 10 gage or heavier galvanized wire hangers with hooked ends.

(3) Fasten metal lath to open web steel joists by two loops of 18 gage or one loop of 16 gage galvanized steel wire. Fasten paperbacked wire fabric to open web steel joists by means of one inch V shaped strips not thinner than 19 gage for 24 inch spans or 16 gage for 36 inch spans, attached to joists 16 inches on center by 12 gage galvanized clips or two turns of 12 gage galvanized wire to which are welded galvanized 12-1/2 gage wire prongs 6 inches on center. Attach V strips 16 inches on center at right angles to joists. Attach fabric, with stiffener ridges at right angles to the V strips, to the strips by pushing fabric over the prongs tightly to the V strip and bending prongs around main members of the fabric.

(4) Fasten metal lath to light gage steel studs with 1-3/4 inch galvanized roofing nails.

(5) Fasten metal lath to channels with tie wire.

(6) Bridge joints, between differing materials which are to be plastered, with expanded metal lath.

(7) Lap metal lath four inches beyond sides of chases and and recesses.

_. Gypsum lath shall be applied with the long dimension at right angles to the framing members. Cross joints shall be broken in each course and so staggered that joints on the walls shall not meet corresponding ceiling joints. Gypsum lath shall be nailed to wood with four nails to each stud or furring strip, 5 inches apart and 3/8 inches from the edge. Nails shall be 13 gage, blued 19/64 inch flat head, smooth diamond point nails, 1-1/8 inches long for 3/8 inch lath or 1-1/4 inches long for 1/2 inch lath, driven so that the underside of the nail head will be flush with lath.

( ) Aluminum insulating gypsum lath shall be applied on exterior walls only in the same manner as standard gypsum lath and with the foil toward the framing. Horizontal joints shall be tight and closure joints shall not be larger than 1/8 inch. Fit tightly against outlet boxes and other obstacles on exterior walls.

( ) Fiber insulating lath shall be applied on exterior walls and top floor ceilings only with the long edge at right angles to the framing. Start lath application along top of wall with back edge of shiplapped edge down. Vertical joints shall be staggered. Bring joints to moderate contact. Secure in place with 1-1/4 inch blued fiberboard nails or 4d box nails spaced 4 inches apart. Fit tightly against outlet boxes and other obstacles on exterior walls.

. Corner beads shall be furnished full length for all vertical and arched external angles. Set corner beads true to line, solid and anchored every 16 inches and at ends.

. Metal grounds and base screeds shall be set to true straight lines parallel with floor or rake of stairs where cement base is indicated and fastened in place at each end and at intervals not to exceed 16 inches on centers.

*_. Cornerites shall be installed on all interior angles where gypsum or fiber insulating lath is used for one or both surfaces or where different plaster bases occur on each surface unless metal lath from one surface is continued around the angle for not less than 4 inches. Fasten along each edge at 16 inch intervals. *

*( ) Solid Plaster Partitions

Floor and ceiling runners shall be provided for solid plaster partitions, set true to line so that partition will be vertical. Runners and floor clips shall be secured in place by 6 gage concrete nails, drive anchors, or equivalent fasteners not over 24 inches apart.*

*Solid Plaster Partitions shall be constructed to meet the requirements of studless or stud partitions, as stated below: *

(1) Metal lath and stud and plaster type partitions shall be framed of 3/4 inch channels 16 or 24 inches apart and metal lath. Fasten channels to runners by tie wire or wire clips or set in holes punched in runners. Provide a channel stud at openings, corners and at adjacent walls. Fasten studs to door frames or bucks, and anchor to adjacent walls at midheight. Apply metal lath as specified elsewhere in this division. This partition will require temporary bracing.. Apply plaster to partition as specified hereinafter.

(2) Studless metal lath and plaster type partitions shall be framed of 3.4 pounds per square yard 3/8 inch rib metal lath. Metal lath shall be erected with long dimension of sheet vertical. Sheets shall be secured first to ceiling runners with wire ties not less than 6 inches on center and attached to floor runners or metal base clips or suitably anchored in a grouted metal base assembly. A wire tie shall be placed where sheets lap at runners. Provide a channel stud at openings, corners and at adjacent walls. Fasten studs to door frames or bucks, to lath 12 inch centers and anchor to adjacent walls at midheight. This partition will require temporary bracing. Apply plaster to partition as specified hereinafter.

(3) Gypsum lath and plaster type partitions shall be framed of gypsum lath. Fill between metal base members with scratch coat plaster mix and form a groove in top surface to receive the gypsum lath. Set lath in grooves of bottom runners and door frames and wire or clip to ceiling runners 12 inches on center. Allow not less than 1/4 inch or more than 1-1/4 inches clearance between lath and ceiling with metal runners or less than 1/4 inch or more than 5/8 inch with wood runners. Partitions shall be securely anchored to adjacent walls at midheight. Provide diagonal reinforcing of flat 3.4 pound lath 24 inches long by 4 inches wide both sides at corners of openings. This partition will require temporary bracing. Apply plaster to partition as specified hereinafter.

(4) Metal door bucks or frames are specified to be anchored to ceilings in the Division, METAL BUCKS, DOORS AND TRIM.

5. PROPORTIONING AND MIXING

a. Plaster mixes shall be proportioned according to the following tables.

NEAT GYPSUM PLASTER AND SAND

	Neat Gypsum Plaster	Sand	
		Volume	Weight
Scratch coat	100 lbs.(1.54 cu.ft.)	2.0 cu.ft.	200 lbs.
On lath	1 cu. ft.	1.3 cu.ft.	130 lbs.
Brown coat on lath	100 lbs.	3.0 cu.ft.	300 lbs.
and all coats on masonry	1 cu. ft.	1.95 cu.ft.	195 lbs.
Doubled up on lath	100 lbs.	2.50 cu.ft.	250 lbs.
Both coats	1 cu. ft.	1.63 cu.ft.	163 lbs.
Smooth white coat 3/	1 part gaging plaster by volume	3 parts of lime putty by volume	
Keenes Cement-Lime Putty Finish	100 lbs. Keenes Cement	100 lbs. lime putty (1.17 cu. ft.)	

3/ Factory prepared finishes which require the addition of water only may be used at the option of the contractor when approved by the Local Authority.

NEAT GYPSUM PLASTER AND LIGHT WEIGHT AGGREGATE

	Neat Gypsum Plaster	Light Weight Aggregate
Scratch coat on lath	100 lbs.	2 cu. ft.
Brown coat on lath and all coats on masonry	100 lbs.	3 cu. ft.
Doubled up on lath Both coats	100 lbs.	2-1/2 cu. ft.

PORTLAND CEMENT PLASTER

All coats	1 sack 94 lbs. (Cement) 1/10 to 1/4 cu. ft. Lime putty as required for a plastic mortar.	3 cu. ft. sand

Hair or fiber may be added to scratch coat on metal lath as required.

Bond Plaster	Neat as supplied by manufacturer.

Factory prepared plaster mixes proportioned as specified herein and requiring the addition of water only may be used when approved by the Local Authority.

b. Mixing. Measurement by volume, except for finish coats, shall be by barrow or buggy or other containers of known capacity, or by manufacturers' packages or any similar method of equal accuracy for maintaining consistent proportions. No lumps or caked or frozen material shall be used. No mortar that has commenced to set shall be retempered or used. Mixing equipment, boxes, machines, and tools shall be clean.

The materials shall be proportioned as specified with such variations only as will, under prevailing conditions, improve the quality of the mortar and are approved by the Local Authority. Mixing shall be continuous until complete and the ingredients are evenly distributed.

(1) Hand Mixing. Plaster and aggregate shall be mixed dry to a uniform color at one end of the box, hoed into the water at the other end, and thoroughly mixed.

(2) Machine mixing shall be in a machine made for this purpose. The following cycle of operation shall be followed: while the mixer is in continuous operation put in approximate amount of water; add approximately half the amount of aggregate; add all the plaster; add the remainder of the aggregate; mix, adding water if necessary.

(3) Factory proportioned plaster shall be mixed as follows: Put in approximate amount of water, add combined materials and mix, adding water as necessary.

(4) Overmixing of light weight aggregate shall be avoided. Mix light weight aggregate in accordance with manufacturers' directions.

c. Hydrated lime shall be converted to lime putty in accordance with the printed instructions of the manufacturer.

6. THICKNESS

The minimum thickness of plaster on various materials shall be:

*On metal lath	3/4 inch
On gypsum and fiber lath except ceiling height gypsum lath on metal furring	1/2 inch
On ceiling height gypsum lath on metal furring	3/4 inch
On masonry	5/8 inch
Solid plaster partitions, including base	2 inches *

7. PREPARATION FOR PLASTER

a. Temperature. Plaster shall not be applied to materials that contain frost. A minimum temperature of 40°F. shall be maintained in the building for an adequate period prior to the application of the plaster, while plastering is being done, and until it is dry.

b. Masonry surfaces to be plastered shall be clean and free from loose particles, grease, oil, acid or foreign matter. When necessary, excessive suction of masonry shall be reduced by wetting.

c. Gypsum and fiber lath shall not be wetted before applying plaster.

d. Plaster on concrete surfaces shall not be applied until surfaces have been properly roughened as specified in the division CONCRETE. Before application of plaster, the surface shall be evenly dampened as necessary to regulate suction.

e. All surfaces shall be carefully examined and the Local Authority notified of any and all unsatisfactory conditions before the plaster is applied. Applications of plaster shall not proceed until such unsatisfactory conditions have been satisfactorily remedied.

f. Metal grounds and other accessories such as corner beads, screeds, etc., shall be carefully examined to see that they are straight, curved, plumb, level, square or true to the required angles as the case may require and all defective work or material replaced or corrected before plaster is applied.

8. APPLICATION OF PLASTER

Plaster shall be applied to surfaces indicated to be plastered, to true straight lines, level and plumb with corners square. Compact brown coats by floating the surface. Trowel finish coats to a hard finished surface. Plaster on walls and partitions, except finish coat, shall extend to the floor and all spaces between grounds shall be filled.

a. Plaster screeds for brown coat including bond plaster on concrete shall be brought into good line and level to establish the exact surface of the brown coat and allowed to set up and used as a guide for rodding the brown coat.

b. Number of Coats. Plaster on metal lath, concrete, fiber insulating lath, and plaster over 1/2 inch thick on gypsum lath shall be 3-coat work. Plaster on masonry and plaster 1/2 inch thick on gypsum lath shall be 2-coat or 3-coat work.

(1) Two-Coat Work. Base (first) coat shall be applied with sufficient material and pressure to form good bond on gypsum lath or masonry as the case may be, and to cover well. Material of the same proportions shall then be doubled back to bring the plaster out to grounds, struck to a true surface and left ready to receive the finish coat.

(2) Three-Coat Work. The scratch (first) coat shall be applied with sufficient material and pressure to form good bond and to cover well, and then be scratched to rough surfaces. The brown (second) coat shall be applied after the scratch (first) coat has set firm and hard, brought out to grounds and straightened to a true surface and left ready to receive the finish (third) coat. When fiber insulating lath is used the set of the scratch coat shall be accelerated.

c. Plaster on Concrete Surfaces. After preparation of the surface, as specified elsewhere, surfaces of concrete walls and columns shall have a scratch coat of bond plaster followed by a brown coat of gypsum plaster troweled into the scratch coat before it has set. The brown coat shall be brought out to grounds, using a double-bach application if required, straightened to a true surface, and left ready to receive the finish coat.

( ) Solid plaster partitions shall be not less than two inches thick with details and accessories as indicated on the drawings. Check thickness by driving nails through and withdrawing them before finish coat is applied.

(1) Solid plaster partitions with steel studs and metal lath shall have scratch, back up, brown and finish coats. Temporary bracing of studs shall be furnished on the channel side of the partition and maintained until the scratch coat has set.

(a) Scratch coat shall be applied on the lath side with sufficient material and pressure to form good keys and to cover well and be scratched to a rough surface. Fill solidly between metal bases.

(b) Back-up coat shall be applied on the channel side, after the scratch coat on the lath side has set firm and hard, in not less than two operations, the first to adequately cover the keys of the scratch coat and the other coat or coats to bring the plaster out to grounds. It shall be straightened to true surfaces and left ready to receive the finish coat.

(c) Brown coat on the lath side shall be applied over the scratch coat, after the back-up on the channel side has set, straightened to true surfaces, and left ready for the finish coat.

*(2) Solid plaster studless partitions shall have scratch coat, brown and finish coats on both sides. Temporary bracing shall be provided. *

(a) Scratch coat shall be applied to the side opposite the bracing with sufficient pressure to form a good bond. Following this coat, scratch coat on the braced side and brown coats on both sides shall be applied in any practicable sequence and the bracing removed. Scratch coats shall be scratched to provide a mechanical bond and allowed to set firm and hard and to dry partially before application of the brown coat.

(b) Brown coats shall be applied to bring the partition out to required thickness, straightened to true surfaces, floated and left ready for the finish coat.

( ) Portland cement plaster shall have a scratch coat, a brown and a finish coat. Scratch coat shall be applied 3/8 inch thick with sufficient pressure to form good bond and then uniformly scratched. Brown coat shall be applied 3/8 inch thick not sooner than 48 hours after the application of the scratch coat. It shall be straightened to a true surface by floating or rodding and left ready for finish coat.

(1) Finish coat shall be applied not less than 1/8 inch thick not sooner than seven days after application of brown coat and shall be troweled smooth and free from tool marks or blemishes. Before application of each coat, the base or previously applied coat shall be evenly dampened to control suction. Cement plaster shall be kept moist for at least three days and protected against rapid drying until cured.

*_. Finish coats shall be applied to a partially dry brown coat or to a thoroughly dry brown coat which has been evenly wetted by brushing or spraying. The use of excessive water shall be avoided. Cut a joint around exposed edges of metal door and window frames and similar locations and clean plaster from adjoining surfaces. *

(1) Gypsum lime putty trowel finish shall be applied over the base course, laid on well, doubled back and filled out to true even surfaces. The general thickness shall be 1/16 inch to 1/8 inch. The finish shall be allowed to draw a few minutes and then well troweled with water to a smooth finish, free from blemishes or irregularities.

(2) Prepared gypsum trowel finish shall be applied in accordance with manufacturer's directions. The general thickness shall be from 1/16 inch to 1/8 inch. It shall be well troweled with water to a smooth finish free from blemishes or irregularities.

( ) Keenes cement lime putty finish shall be applied over the base course, laid on well, doubled back and filled out to a true even surface. The general thickness shall be from 1/16 inch to 1/8 inch. The finish coat shall be allowed to draw a few minutes and then well troweled with water to a smooth finish. Troweling shall be continued until the plaster has set.

9. CURING AND VENTILATION

During the application of each coat of plaster the exterior openings shall be adjusted for proper continuous ventilation to control the drying out and curing of the plaster until it is dry. Plaster shall be protected against rapid drying and frost.

10. PATCHING

Point up around trim and other set work. Patch and point all cracks and defects. Patching plaster shall match and finish smooth and level with adjoining plastering.

GUIDE SPECIFICATIONS

DIVISION 14

LATHING AND PLASTERING

1. SCOPE

This Division includes interior lathing, furring, plastering, and related items required to complete the work as indicated on the drawings, and as specified, except wood furring and wood grounds which are specified in the division CARPENTRY AND MILLWORK.

a. Plastered ceilings shall include beams and soffits of stairs and other overhead plaster work.

b. Plastered walls shall include walls, piers, columns, and plaster reveals.

2. MATERIALS

a. Channels shall be hot-rolled or cold-rolled steel, free from rust and coated with rust inhibitive paint and shall have the following minimum weights per thousand lineal feet:

SIZE	HOT-ROLLED	COLD-ROLLED
3/4 inch	300 pounds	300 pounds
1-1/2 inch	1120 pounds	475 pounds

b. Metal lath shall be expanded metal lath or paper-backed fabric. Expanded metal lath shall conform to Federal Specification QQ-B-101c Type F, FR, or F 3/8 R. Paper-backed wire fabric shall consist of galvanized wire not less than 16-gage, spaced 2 inches on center in two directions with stiffening ribs spaced not over 5 inches on center, and an absorptive paper backing securely attached to the fabric so as to provide full embedment of at least 1/8 inch in plaster for at least 1/2 of the total length of the strands, and 1/2 of the total weight of the metal. The design shall provide a mechanical bond and continuous reinforcement in both directions. Wire shall extend one inch beyond the paper backing on two adjoining edges.

NOTE: These pages 14-5 and 14-6 supersede pages 14-5 and 14-6 dated 9-5-51. Page 14-5 has been rerun unchanged. Page 14-6 is revised. Material * between asterisks * is new or revised.

The following table gives maximum spans in inches for the various weights and types of lath:

TYPE OF LATH	WEIGHT OF LATH IN POUNDS PER SQ. YD.	MAXIMUM SPANS				
		Wired to Metal			Nailed to Wood	
		Solid Partition	Walls	Ceilings	Walls	Ceilings
Flat Expanded	2.5	16	---	---	---	---
Flat Expanded	3.4	16	16	13½	16	16
Flat 1/8" Rib	2.75	24	---	---	---	---
Flat 1/8" Rib	3.4	24	19	19	19	19
3/8" Rib	3.4	2/	24	24	24	24
3/8" Rib	4.0	2/	24	24	24	24
Paper-backed wire fabric	---	---	16	16	16	16

2/ The extra stiffness of 3/8" Rib Lath is not needed for solid partitions.

c. Accessories

(1) Tie wire shall be soft annealed, 16 or 18 gage galvanized steel, monel metal, or other corrosion resistant metal of sufficient strength for the purpose as approved by the Local Authority.

(2) Corner beads shall be zinc coated sheet metal not lighter than 26 gage with perforated or expanded continuous flanges not less than 2-1/2 inches wide.

(3) Metal grounds and screeds shall be zinc coated sheet metal not lighter than 26 gage with perforated or expanded flanges not less than two inches wide.

(4) Cornerites shall be 2.5 pound flat expanded metal lath bent at right angles to form not less than 3 inch legs on each side.

* ( ) Metal runners for solid plaster partitions shall consist of 18 gage painted or galvanized clips, and metal base as specified in the division METAL BUCKS, DOOR AND TRIM for floor runners; and not less than 26 gage painted or galvanized metal for ceiling runners, manufacturers' standard type. *

( ) Wood runners for solid plaster partitions shall be as detailed on the drawings.

_. Cornerites shall be installed on all interior angles where gypsum or fiber insulating lath is used for one or both surfaces or where different plaster bases occur on each surface unless metal lath from one surface is continued around the angle for not less than 3 inches. Secure along each edge at 16-inch intervals.

( ). Solid Plaster Partitions

(1) Floor and ceiling runners shall be provided for solid plaster partitions, set true to line with ceiling runners vertically over floor runners. Runners shall be secured in place by 6-gage concrete nails, drive anchors, or equivalent fasteners not over 24 inches apart.

(2) Metal lath and plaster type shall be framed of 3/4-inch channels 16 or 24 inches apart and metal lath. Secure channels to runners by tie wire or wire clips or set in holes punched in runners. Double channels at openings and at corners and secure to door frames or bucksand securely anchor to adjacent walls. Apply metal lath as specified elsewhere in this division. The studs will require temporary bracing. See APPLICATION OF PLASTER.

* (3) Gypsum lath and plaster type shall be framed of gypsum lath 1/2 inch thick by 2 feet wide and ceiling height. Fill between metal base members with scratch coat plaster mix and form a groove in top surface to receive the gypsum lath. Set lath in grooves of bottom runner and door frames and wire or clip to ceiling runner 12 inches on center. Allow not less than 1/4 inch or more than 1½ inches clearance between lath and ceiling with metal runners or less than 1/4-inch or more than 5/8 inch with wood runners. Partitions shall be securely anchored to adjacent walls at mid-height. Provide diagonal reinforcing of flat 3.4 pound lath 24 inches long by 4 inches wide at corners of openings. This partition will require temporary bracing. See APPLICATION OF PLASTER. *

(4) Do not anchor door bucks to ceilings.

NOTE: These pages 14-11, 14-12, and 14-12a supersede pages 14-11 and 14-12 dated 9-5-51. Material * between asterisks * is new or revised.

5. PROPORTIONING AND MIXING

a. Plaster mixes shall be proportioned according to the following tables.

NEAT GYPSUM PLASTER AND SAND

	Neat Gypsum Plaster	Sand	
		Volume	Weight
Scratch coat	100 lbs. (1.54 cu. ft.)	2.0 cu. ft.	200 lbs.
On lath	1 cu. ft.	1.3 cu. ft.	130 lbs.
Brown coat on lath	100 lbs.	3.0 cu. ft.	300 lbs.
and all coats on masonry	1 cu. ft.	1.95 cu. ft.	195 lbs.
Doubled up on lath	100 lbs.	2.50 cu. ft.	250 lbs.
Both coats	1 cu. ft.	1.63 cu. ft.	163 lbs.
Smooth white coat 3/	1 part gaging plaster by volume	3 parts of lime putty by volume	
Keenes Cement-Lime Putty Finish	100 bls. Keenes Cement	100 lbs. lime putty (1.17 cu. ft.)	

3/ Factory prepared finishes which require the addition of water only may be used at the option of the Contractor, when approved by the Local Authority.

NEAT GYPSUM PLASTER AND LIGHT WEIGHT AGGREGATE

	Neat Gypsum Plaster	Light Weight Aggregate
Scratch coat on lath	100 lbs.	2 cu. ft.
Brown coat on lath and all coats on masonry.	100 lbs.	3 cu. ft.
Doubled up on lath both coats	100 lbs.	2½ cu. ft.

PORTLAND CEMENT PLASTER

All coats	1 sack 94 lbs. (Cement) 1/10 to 1/4 cu. ft. lime putty as required for a plastic mortar.	3 cu. ft. sand

Hair or fiber may be added to scratch coat on metal lath as required.

Bond Plaster	Neat as supplied by manufacturer.

b. Mixing. Measurement by volume, except for finish coats, shall be by barrow or buggy or other containers of known capacity, or by manufacturers' packages or any similar method of equal accuracy for maintaining consistent proportions. No lumps or caked or frozen material shall be used. No mortar that has commenced to set shall be retempered or used. Mixing equipment, boxes, machines, and tools shall be clean.

The materials shall be proportioned as specified with such variations only as will, under prevailing conditions, improve the quality of the mortar and are approved by the Local Authority. Mixing shall be continuous until complete and the ingredients are evenly distributed.

(1) Hand Mixing. Plaster and aggregate shall be mixed dry to a uniform color at one end of the box, hoed into the water at the other end, and thoroughly mixed.

(2) Machine mixing shall be in a machine made for this purpose. Aggregate shall be added at the job. The following cycle of operation shall be followed: while the mixer is in continuous operation put in approximate amount of water; add approximately half the amount of aggregate; add all the plaster; add the remainder of the aggregate; mix, adding water if necessary.

(3) Factory proportioned plaster shall be mixed as follows: Put in approximate amount of water, add aggregate and mix, adding water as necessary.

(4) Overmixing of light weight aggregate shall be avoided. Mix light weight aggregate in accordance with manufacturers' directions.

NOTE: This new page is a continuation of the material formerly on Page 14-12, dated 9-5-51.

- -

( ) ALUMINUM SCREENS FOR WOOD DOUBLE HUNG WINDOWS

a. General. Screens shall be formed with frames and screen cloth covers applied to the room side of the frames. Screen cloth shall be long and wide enough so that the splines will hold cloth securely in place and shall be drawn taut and held by the splines forced into the grooves in the frames. Screens shall effectively bar passage of insects through the screened opening, shall fit closely and neatly, be easily installed and removed from the inside and be interchangeable with screens of the same nominal size and type. Screens shall be finished in every detail including fittings for convenient operation. They shall be set in place after finish painting is dry and left in satisfactory working order. Shop drawings showing parts and assembly of the screens shall be submitted to the Local Authority for approval.

b. Materials. Aluminum shall contain not more than .4 per cent copper.

(1) Frames shall be rolled aluminum formed into box sections not less than 5/16" x 1" or 3/8" x 15/16" or shall be extruded aluminum of the same size and shape with a wall thickness of not less than .032 inches. Frames shall be grooved to receive splines.

(2) Screen wire shall be aluminum, 16 mesh or 14 x 18 mesh conforming to Federal Specification RR-C-451a, Type G.

(3) Corner pieces shall be formed from aluminum, cast in one piece, not less than .051 thick, fitted tightly to the inside of and holding the frame sections securely. They shall extend into frame members at least 2½ inches from the outside of frame corners.

(4) Splines shall be aluminum, cylindrical or "U" type of a minimum thickness of .025 inches. They shall be removable and replaceable without becoming distorted or causing damage to the frames.

(5) Corners of frames shall be rigid and resist tendency to wrack. Corner joints shall be mitred, closely fitted, and made water-tight by filling with asphalt mastic, calking compound or by welding. Welded joints shall have flux removed immediately after welding and be smoothed to an even surface.

( ) Full length screens shall cover the entire window opening, shall fit closely to the outside surface of the blind stops and shall have center cross braces on the line of the meeting rails for screens over two feet high.

(1) Hardware. Where both storm sash and full length screens are to be furnished, hardware for each shall be identical so that the two will be interchangeable. Hardware shall consist of two screen hangers, zinc plated, conforming to Federal Specification FF-H-111a, Type F-1825 and two 1-1/2" aluminum or stainless steel hooks and eyes. Wood screws shall be aluminum or stainless steel.

( ) Half length screens shall cover the lower half of the window openings and shall be mounted on the edges of the blind stops.

(1) Hardware. Hardware shall consist of two 1-1/2" aluminum or stainless steel hooks and eyes.

(2) Slides for half length screens shall be of the same thickness as screen frame material, formed into a channel approximately 5/8" deep and of width to snugly accommodate screens. Length of slides shall be not less than 1/2" less than height of screens. Mount slides flush with the room side of the blind stops so that spaces between screens and top sash will not permit passage of insects.

(3) Operation. Half length screens shall operate in slides fastened to the outside sash stops by 1-1/2" galvanized flat head nails. The inside legs of each slide shall be cut off a sufficient distance from the top in order that the screens may be removed from the inside only.

GUIDE SPECIFICATIONS

DIVISION 16

THERMAL INSULATION

NOTES TO THE ARCHITECT:

THIS SPECIFICATION REQUIRES AN AMOUNT OF THERMAL RESISTANCE (TO BE DETERMINED BY THE ARCHITECT) INSTEAD OF A THICKNESS OF INSULATION. THIS PERMITS THE MORE EFFICIENT MATERIALS TO COMPETE ON A PRICE BASIS.

NO ONE PROJECT WILL REQUIRE ALL OF THE MATERIALS LISTED. THUS, CEILING INSULATION MAY BE LOOSE FILL, OR BATTS OR BLANKETS.

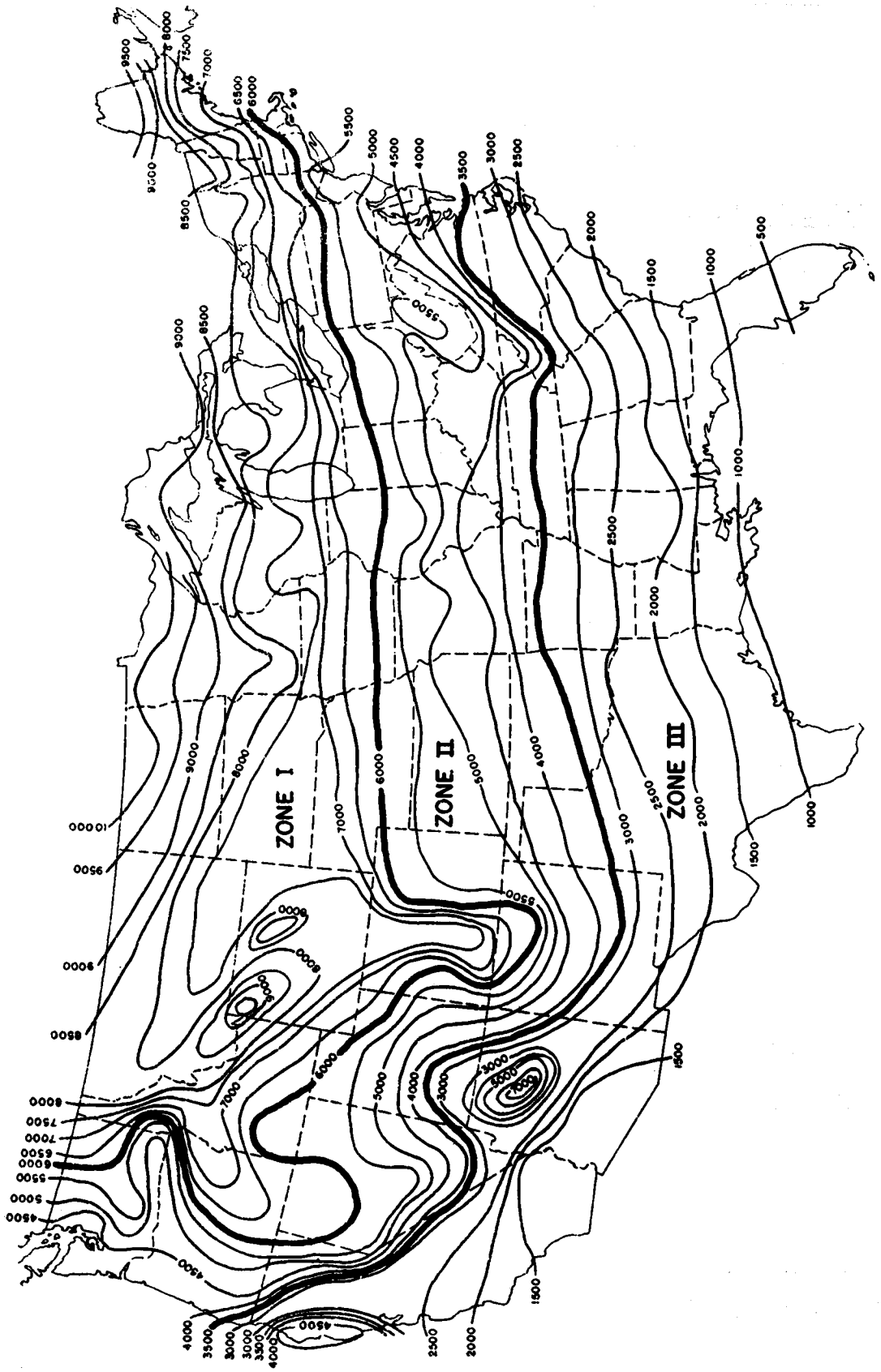
Reflective ~~EFFECTIVE~~ INSULATION IS NOT ECONOMICAL IN CEILING FOR WINTER INSULATION, BUT IS EFFECTIVE IN ATTICS TO REDUCE SUMMER HEAT AND UNDER FLOORS AS A MEANS OF KEEPING FLOORS WARM AND AS WALL INSULATION.

ALUMINUM FOIL INSULATION MAY BE APPLIED UNDER FLOOR JOISTS TO SEAL FLOORS AGAINST DAMPNESS FROM CRAWL SPACES.

LOOSE FILL INSULATION IS PRACTICAL ONLY FOR CEILINGS WHERE THERE IS ROOM FOR WORKMEN AND INSPECTION. THERE MUST BE AMPLE SPACE FOR VENTILATION ABOVE ALL CEILING INSULATION.

ATTIC INSULATION AGAINST SUMMER HEAT IS NOT NECESSARY WHEN WINTER INSULATION IN CEILINGS IS PROVIDED.

NOTE: These pages 16-1, 16-2, 16-2a, and 16-2b supersede pages 16-1 and 16-2, dated 9-28-50.



DEGREE DAY MAP OF THE UNITED STATES AND CONDENSATION ZONES I, II & III

RECOMMENDATIONS FOR ATTIC VENTILATION AND FOR VAPOR BARRIERS UNDER INSULATED ATTICS. SEE ZONE MAP, PAGE 2.

TYPE OF ROOF	CONDESATION ZONE I	II	III
Flat, Slope less than 3 in 12	Net area of ventilation should be 1/600 of attic area at each eave plus a vapor barrier and free circulation of air from eave to eave.	All requirements same as Zone I	All requirements same as Zone I
Pitched, Slope 3 in 12 or more	Net area of ventilation should be 1/600 of attic area at each eave and 1/300 near ridge plus a vapor barrier.	Same ventilation at eave as Zone 1. Vapor barrier included unless ventilation near ridge is included as in Zone I.	Same ventilation at eave as Zone I. Vapor barrier not needed.

THE ABOVE RECOMMENDATIONS ARE ADAPTED FROM HHFA PUBLICATION ENTITLED "CONDENSATION CONTROL IN DWELLING CONSTRUCTION, AUGUST 1949". THIS MAY BE PURCHASED FROM THE SUPERINTENDENT OF DOCUMENTS, U. S. GOVERNMENT PRINTING OFFICE, WASHINGTON, D. C. FOR 20 CENTS.

THE SAME PUBLICATION RECOMMENDS THAT WALLS WITH A "U" FACTOR LESS THAN 0.25 IN ANY ZONE, OR WALLS WITH EXTERIOR COVERING OR SHEATHING WITH A WATER VAPOR PERMEABILITY LESS THAN 5 PERMS IN ZONES I OR II, SHOULD HAVE VAPOR BARRIERS. THIS COVERS PLYWOOD SIDING OR SHEATHING. THESE RECOMMENDATIONS WILL AVOID TROUBLE IN MOST CASES, ALTHOUGH WALLS WITH FRESHLY PAINTED LAP SIDING AND EVEN UNINSULATED WALLS OCCASIONALLY EXHIBIT CONDENSATION AND PAINT FAILURE DUE TO CONDENSATION. IT IS, HOWEVER, CHEAPER IN THE AGGREGATE TO TREAT SUCH UNUSUAL CASES WITH INTERIOR VAPOR RESISTANT PAINT OR OTHER MEANS THAN TO INSTALL VAPOR BARRIERS IN ALL WALLS.

THE PROPER METHOD OF INSTALLING VAPOR BARRIERS SHOULD BE ILLUSTRATED ON THE DRAWINGS FOR THE BENEFIT OF MECHANICS AND INSPECTORS. SEE BULLETIN IR-5 PART II, AND "CONDENSATION CONTROL IN DWELLING CONSTRUCTION" PREVIOUSLY REFERRED TO.

PARAGRAPHS MARKED THUS ( ) COVER VARYING TYPES OF CONSTRUCTION AND MAY NOT BE APPROPRIATE FOR THE PROJECT. SELECT THE TYPE OR TYPES SUITED TO THE PROJECT AND OMIT THOSE NOT SUITABLE.

ADD NUMBER OR LETTER TO PARAGRAPHS MARKED THUS ___. AND REVISE PARAGRAPH IDENTIFICATION AS NECESSARY.

CHANGE TEXT OF ANY PARAGRAPH TO SUIT THE PROJECT REQUIREMENTS. STRIKE OUT ITEMS NOT APPLICABLE. INSERT ADDED TEXT AS NECESSARY, AND FILL IN BLANK SPACES.

GUIDE SPECIFICATIONS

DIVISION 20

PAINTING

NOTES TO THE ARCHITECT:

SCHEDULES SHOWING ROOMS TO BE PAINTED AND THE EXTENT OF PAINTING SHOULD BE INCLUDED ON THE DRAWINGS.

THE USE OF THE TWO COAT SYSTEM OF PAINTING EXTERIOR WOODWORK WILL PROMOTE ECONOMY AND ADEQUATE WEARING QUALITIES ARE READILY PROCURABLE BY THIS METHOD.

ANY COMBINATION OF PAINT AND STAIN FOR EXTERIOR WOODWORK CONSIDERED DESIRABLE MAY BE SUBSTITUTED FOR THE PARAGRAPHS IN THIS GUIDE SPECIFICATION.

CHROME OXIDE GREEN WILL HOLD ITS COLOR LONGER THAN CHROME GREEN BUT SHOULD BE USED SPARINGLY (AS FOR STEEL WINDOWS) BECAUSE OF COST.

THE ADVANTAGE OF ADEQUATE DRYING OF PLASTERED WALLS BEFORE PAINTING CANNOT BE OVEREMPHASIZED ESPECIALLY WHEN VAPOR BARRIERS ARE INCLUDED UNDER THE PLASTER.

TWO COATS OF OIL PAINT, PRIMER-SEALER AND INTERIOR FLAT PAINT, OR TWO COATS OF LATEX BASE INTERIOR PAINT ARE RECOMMENDED FOR ALL PLASTERED ROOMS EXCEPT KITCHENS AND BATHROOMS.

ONE COAT OF RESIN EMULSION PAINT COVERS ACCEPTABLE ON WALLBOARD WHEN THE COLOR CONTRAST IS NOT EXTREME.

WHEN WORDS OR PHRASES OCCUR IN PARENTHESES THUS (WALLBOARD) THE WORDS NOT APPLICABLE SHOULD BE DELETED.

NOTE: This Division 20 supersedes Division 20 of Bulletin No. LR-13 dated 11-3-50. Text * between asterisks * is new or revised.

PARAGRAPHS MARKED THUS ( ) COVER VARYING TYPES OF CONSTRUCTION AND MAY NOT BE APPROPRIATE IN THE PROJECT. SELECT THE TYPE OR TYPES SUITED TO THE PROJECT AND OMIT THOSE NOT SUITABLE.

ADD NUMBER OR LETTER TO PARAGRAPHS MARKED THUS _____. AND REVISE PARAGRAPH IDENTIFICATION AS NECESSARY.

CHANGE TEXT OF ANY PARAGRAPH TO SUIT THE PROJECT REQUIREMENTS. STRIKE OUT ITEMS NOT APPLICABLE. INSERT ADDED TEXT AS NECESSARY AND FILL IN BLANK SPACES.

GUIDE SPECIFICATIONS

DIVISION 20

PAINTING

1. SCOPE

This Division includes painting and related items required to complete the work indicated on the drawings and specified except the following which are specified in other Divisions of this Specification:

Shop painting of structural metal;
Shop painting of miscellaneous and ornamental metal;
Shop painting of steel windows;
Prime coat on unfinished metal bucks, doors and trim;
Baked enamel finish on hollow metal toilet doors and partitions;
Finish complete on metal cabinets;
Stain finish on wood shingles.

2. GENERAL

The term "paint" as used herein includes emulsions, enamels, oil paints, sealers, stains, varnishes, and similar coatings.

a. Colors and Specimens for Approval. Colors shall be as selected by the Local Authority. The contractor shall prepare specimens in duplicate, approximately 8 inches by 10 inches, for approval. Wood used to display stains shall be the same kind as that on which the stain is to be used. After approval, one specimen of each kind and color of approved sample will be returned to the contractor. The number of colors required shall be as noted on the schedule of finishes shown on the drawings.

b. Samples of paint for laboratory testing consisting of one quart samples labeled to indicate proposed use shall be furnished from the containers on the work when requested by the Local Authority.

3. MATERIALS

Paint shall be well ground, shall not settle badly, cake or thicken in the container, shall be readily broken up with a paddle to a smooth consistency and have easy brushing properties. Paint shall be ready mixed except that tinting and thinning may be done at the job. The paint shall be suitable for spraying when thinned with not more than 12 per cent by volume of thinner. All paint materials shall be delivered in original unopened containers with labels and tags intact.

- -

Materials not otherwise specified shall conform to the Federal or General Services Administration Specifications which are referred to herein by symbol only as listed below opposite the items:

MATERIAL	SPECIFICATION SYMBOL
Wax; floor, water emulsion	P-W-151a
Drier; paint, liquid	TT-D-651a
Enamel; interior, gloss, tints and white	TT-E-506b
Enamel; interior, semi-gloss, tints and white	TT-E-508
Enamel; undercoat	TT-E-543
Filler; wood, paste	TT-F-336a
Oil; linseed, boiled	TT-O-364
Oil; linseed, raw	TT-O-369
Paint; exterior primer, ready mixed, white	TT-P-25a
*Paint; latex base, interior, flat white and tints	GSA TT-P-29*
Paint; oil interior, flat, wall, tints and white	TT-P-51b
Paint; primer sealer, interior	TT-P-56a
Paint; ready mixed, black	TT-P-61a
Paint; red lead base, Type I	TT-P-86a
Paint; resin-base emulsion, interior, paste, white and tints	TT-P-88a
*Paint; oil, exterior, ready mixed, tints and white	TT-P-102*
Paint; varnish-base for concrete and wood floors	TT-P-146
Pigments in oil; paint colors	TT-P-381a
Primer; paint for zinc coated surfaces	TT-P-641
Sealer; floor, varnish type	TT-S-176a
Stain; wood, exterior	TT-S-706
Stain; wood, interior	TT-S-711
Thinner; paint, volatile mineral	TT-T-291a
Varnish; interior	TT-V-71b
Paint; aluminum - 2 to 2-1/2 pounds of aluminum paste TT-A-468 Type II, mixed with one gallon of varnish	TT-V-81b
Varnish; shellac, Type II, Grade B, Body 3	TT-V-91b
Varnish; spar, water resisting	TT-V-121c
White lead; basic carbonate, paste in oil	TT-W-251b
Zinc-oxide, paste in oil	TT-Z-301

The use of specification symbols in other paragraphs of this Specification shall be understood to require a material conforming to Federal or General Services Administration Specifications indicated.

4. GENERAL REQUIREMENTS

a. Maintain temperature of rooms where varnish or enamel is being applied at 70° F. or more and at 50° F. or more during other interior painting. Exterior painting shall be performed when the air temperature is 50° F. or higher and in drying weather.

b. Field painting will not be required on items specified to be completely finished at factory or on aluminum, copper, brass, and bronze or on glazing compound in aluminum or galvanized windows.

c. Vary tints of succeeding coats slightly to permit identification of coats.

d. Ceilings will be painted a different color than walls except that walls and ceilings of bathrooms and _____ will be painted the same color.

e. Access doors or panels, registers, pipes, ducts, radiators, and radiator recess linings to be painted shall be painted the same color as adjacent walls or ceilings.

f. Doors and windows to be painted and trim in a room shall be painted one color not the same color as the walls unless specifically required. Metal door bucks shall be painted the same color as the surrounding walls.

g. Prime coated butts and door closers shall be painted to match the door to which they are attached.

h. Back prime exterior wood trim on masonry buildings with one coat of exterior oil paint.

i. Allow paint to dry hard between coats. (2 to 7 days).

j. Wood sash shall have a prime coat of exterior oil paint applied both sides before glazing.

k. No painting will be required on exposed wood joists, underside of wood floors, bridging or framing, unless specifically indicated.

l. Protect all work from damage. Remove paint stains completely from finished work.

m. Paint unfinished exposed surfaces of plumbing fixtures two coats of paint as specified for interior woodwork.

n. Thinning and application of paint shall be in accordance with the printed instructions of the manufacturer.

o. Covering shall be complete. When color, stain, dirt or undercoats show through the final coat of paint, the work shall be covered by additional coats until the paint is of uniform color and appearance and coverage is complete.

p. Hardware and accessories, fixtures, and similar items placed prior to painting shall be removed, or protected during painting, and replaced on completion of painting.

---

q. Radiators in place adjacent to walls shall be removed before painting walls and replaced on completion of painting.

r. Shelving shall be treated on the bottom and exposed edges as specified for interior wood trim.

s. Sand interior enamel surfaces lightly between coats.

t. Furnish affidavits from manufacturers certifying that materials delivered to the project conform to the requirements of these Specifications.

5. PREPARATION OF SURFACES

a. Surfaces to be painted shall be clean, dry, and free from dirt and frost.

b. Cover knots and pitch streaks with orange shellac, aluminum paint or a resin sealer approved by the Local Authority.

c. Fill nail holes and minor imperfections with putty between first and second coat. Color putty to match stained work.

d. Steel and iron shall have grease, rust, scale, and dirt removed. Touch up any chipped or abraded places on material that has been shop coated.

e. Galvanized metal, zinc, lead, and copper to be painted shall be cleaned with commercial pre-treating solution or a solution consisting of four ounces of copper sulphate in one gallon of water. Permit copper sulphate solution to dry on surface not less than twelve hours and dust off with a stiff brush. Follow manufacturer's direction for pre-treating solutions.

f. Plaster surfaces shall have holes and cracks filled with patching plaster before painting. Neutralize free lime in areas less than one month old with a solution of 2-1/2 pounds of zinc sulphate in one gallon of water and allow to dry thoroughly before applying oil paint.

6. EXTERIOR PAINTING

( ) Exterior woodwork except steps, porch floors, and shingle siding and including (exterior of wood sash) (both sides of storm doors, wood screens and wood storm sash) shall be painted as follows:

Three coat work,

( ) First coat, exterior primer	TT-P-25a
*Second and third coats, oil paint Class A or C as required by color	TT-P-102*

Two coat work,

( ) First coat, exterior primer	TT-P-25a
*Second coat, oil paint Class A or C as required by color	TT-P-102*

(a) Both first and second coats shall be manufactured especially for two coat work. Spread at a rate of not to exceed 450 square feet per gallon for the first coat and 550 square feet per gallon for the second coat.

( ) Exterior woodwork except sash, steps, porch floors, and shingle siding, including (both sides of storm doors, wood screens, and wood storm sash) shall be painted as follows:

( ) First coat, exterior oil stain	TT-S-706
Second and third coats, exterior spar varnish	TT-V-121b

( ) Exterior of wood sash shall be painted with a coat of TT-P-25 and a coat of TT-P-102 formulated as for two coat work.

( ) Wood porch floors and exterior wood steps shall be painted as follows:

( ) First coat, varnish base paint	TT-P-146
Second coat, varnish base paint	TT-P-146

( ) Exterior ferrous metal except cast iron shall be painted as follows:

First coat, red lead base paint	TT-P-86a
Second coat, aluminum paint (see materials) or	
Second coat ready mixed black paint	TT-P-61a or
*Second coat oil paint, colored	TT-P-102, Class B or *
Second coat job mixed chrome oxide green	See Note

Note: Chrome oxide green paint is a white lead zinc oxide paint tinted with chromium oxide and may be job mixed according to the following formula:

25 lbs. white lead paste in oil	TT-W-251b
2.5 lbs. zinc oxide paste in oil	TT-Z-301
1.5 lbs. CP chromium oxide paste in oil (full strength)	TT-P-381, Color 4B
0.75 gal. raw linseed oil	TT-O-369
0.25 gal. spar varnish	TT-V-121b
0.5 pt. turpentine	TT-T-801
0.5 pt. drier	TT-D-651a

or TT-P-104 white lead paint may be tinted with chromium oxide paste.

- -

( ) Exterior galvanized sheet metal and _____ shall be painted as follows:

First coat, zinc dust-zinc oxide paint	TT-P-641, Type I
Second coat, same as for ferrous metal	

7. INTERIOR PAINTING

( ) Wood doors, wood windows, wood trim, and other finish woodwork except stairs, rails, and floors shall be painted as follows:

*First coat, except wood sash, primer sealer paint	TT-P-56a
Wood sash only	TT-P-25a
Second coat, enamel undercoat	TT-E-543
Third coat, semi-gloss enamel	TT-E-508*

*( ) Wood windows, wood trim, and other finish woodwork except stairs, doors, rails, and floors shall be painted as follows:

First coat, except wood sash, primer sealer paint	TT-P-56a
Wood sash only	TT-P-25a
Second coat, enamel undercoat	TT-E-543
Third coat, semi-gloss enamel	TT-E-508*

(1) Wood doors shall be painted as follows:

First and second coats, wood sealer, colored as approved, TT-S-176a, Class I, for soft wood and Class 2 for hard wood, wiped off before drying hard. Sand lightly with fine waterproof sand paper and water.

Third coat, water emulsion wax or paste wax rubbed to a gloss finish.

Commercial stain wax finishes, approved by the Local Authority after submittal of samples, may be used for wood doors in place of the wood sealer and wax treatment.

_____. Wood shelving, upper side, and inside of drawers of kitchen cabinet work, shall receive one coat of wood sealer, TT-S-176a.

( ) Wood floors not prefinished and wood stair treads and risers shall be painted as follows:

Oak flooring shall have a coat of wood filler TT-F-336a, tinted with stain as approved by the Local Authority, applied freely and wiped off across the grain.

Second and third coats on oak, first and second coats on other woods, wood sealer, TT-S-176a, Class 1, for soft wood and Class 2 for hard wood. Wipe off to a clean dry surface before sealer has set. Recoat any dull spots and wipe.

Floors shall have a uniform mat finish. Sealer on woods other than oak shall be tinted as approved by the Local Authority.

Final coat, solvent type, liquid wax, P-W-158, buffed.

Protect finished wood floors from traffic with nonstaining building paper.

( ) Wood stair rails shall be painted with two coats of wood sealer, TT-S-176a colored as approved by the Local Authority, wiped off before drying, sanded with fine waterproof sandpaper and waxed.

( ) Radiators, ferrous piping, and other ferrous metal shall be painted as follows:

*First coat, primer sealer	TT-P-56a or
interior oil paint	TT-P-51b or
enamel undercoat	TT-P-543
Second coat, interior oil paint	TT-P-51b or
semi-gloss enamel	TT-P-508*

( ) Zinc coated metal

*First coat, zinc dust-zinc oxide paint	TT-P-641, Type I, Class B

Second and third coats to match the adjoining wall or ceiling.*

( ) Kitchen and bathroom walls and ceilings shall be painted as follows:

First coat, primer sealer paint	TT-P-56a
Second coat, enamel undercoat	TT-E-543
Third coat, semi-gloss enamel	TT-E-508

( ) Plastered walls and ceilings to be painted, not otherwise specified, shall be painted as follows:

First coat, primer sealer paint	TT-P-56a
Second coat, interior oil paint	TT-P-51b

The first coat may be mixed with up to 30% of the second coat to provide a tinted first coat which will cover well.

( ) Wallboard walls and ceilings to be painted, not otherwise specified, shall be painted with one coat of resin base emulsion interior paint, TT-P-88a.

( ) (Wallboard) or (plastered) walls and ceilings, not otherwise specified, shall receive two coats of latex base interior paint TT-P-29.

8. APPLICATION

Any required thinning of paint shall be done in compliance with the printed instructions of the manufacturer of the paint. A shop coat will be accepted in lieu of any priming coat required by these specifications.

Work shall be done by skilled mechanics and shall be uniform in appearance, of approved color, smooth and free from runs, sags, skips, and defective brushing. Make edges of paint adjoining other materials or colors sharp and clean without overlapping except that paint shall overlap glass slightly. Should workmanship of finish be found defective, proper preparatory work shall be done and additional coats applied as necessary to give a finish in accordance with specifications and color samples.

At completion, touch up and restore finish where damaged or defaced and leave in first class condition. Painted or finished surfaces damaged in fitting or erection shall be restored.

9. PAINTED SIGNS AND NUMBERS

Paint or stencil signs and numbers of sizes and details as indicated on the drawings. Lettering and numerals shall be neat and clear with sharp edges.

Use black enamel paint of hiding power sufficient to cover in one coat.

( ) Wood subframes for metal casements. Paint wood subframes for metal casements one coat of aluminum paint on all surfaces before installation.

10. STRUCTURAL METAL

Structural steel and metal joists to be encased in concrete or covered with ceilings shall not be field painted. Structural steel to be encased in masonry shall have one field coat of iron oxide paint TT-P-31a in addition to the shop coat. Structural steel and miscellaneous or ornamental metal exposed to view shall be painted as specified herein for interior or exterior metal surfaces.

11. PREFINISHED WALLBOARD

When prefinished wallboard, as specified in the division, DRY INTERIOR FINISH, is used for wall or ceiling surfaces, the painting of such surfaces shall be omitted.

GUIDE SPECIFICATIONS

DIVISION 21

HARDWARE, BUILDERS

NOTES TO THE ARCHITECT:

ALL NECESSARY ITEMS OF BUILDERS HARDWARE MAY NOT BE INCLUDED HEREIN.

A CAREFUL CHECK OF THE DRAWINGS SHOULD BE MADE AND ALL NECESSARY ADDITIONAL ITEMS LISTED.

SPECIFY DOORS THAT ARE TO HAVE CLOSERS AND GIVE SIZE OF CLOSER.

IF LOCAL CODE REQUIRES PANIC BOLT HARDWARE ON ASSEMBLY ROOM DOORS OR FIRE STAIRS SPECIFY HARDWARE TO COMPLY WITH SUCH REQUIREMENTS.

LETTER SLOTS IN DOORS - OR - LETTER BOXES (BUT NOT BOTH) ARE TO BE USED FOR DWELLINGS. CHECK WITH THE LOCAL POST OFFICE BEFORE SPECIFYING LETTER SLOTS.

PROVIDE ON SITE PLANS A SCHEDULE OF HOUSE AND APARTMENT NUMBERS.

APARTMENT DWELLING DOOR NUMBERS CAN BE PAINTED OR STENCILED AND INCLUDED IN THE DIVISION "PAINTING".

PARAGRAPHS MARKED ( ) COVER VARYING TYPES OF MATERIALS AND MAY NOT BE REQUIRED IN THE PROJECT. SELECT THE TYPE OR TYPES SUITED TO THE PROJECT AND OMIT THOSE NOT SUITABLE.

NOTE: This revised Division 21 supersedes Division 21 dated 12-7-50. The major change is the omission of tubular locks and the selection of cylindrical locks based on Federal Specification FF-H-106a, Amendment No. 1 dated December 10, 1952. Text * between asterisks * is new or revised.

- -

ADD NUMBER OR LETTER TO PARAGRAPHS MARKED THUS _. AND REVISED PARAGRAPH IDENTIFICATION AS NECESSARY.

CHANGE TEXT OF ANY PARAGRAPH TO SUIT THE PROJECT REQUIREMENTS, STRIKE OUT ITEMS NOT APPLICABLE. INSERT ADDED TEXT AS NECESSARY AND FILL IN BLANK SPACES.

GUIDE SPECIFICATIONS

DIVISION 21

HARDWARE, BUILDERS

1. SCOPE

This Division includes builders' finish hardware and related items required to complete the work specified and indicated on the drawings except for the following items of work wherein the hardware has been included under their respective divisions.

Windows and screens, aluminum and steel;
Wood window frames, screens and storm sash;
Metal toilet partitions;
Miscellaneous and ornamental metal;
Hardware for factory assembled wood or metal kitchen cabinets;
Hardware and fittings for mechanical equipment.

a. Installation is provided in Divisions CARPENTRY AND MILLWORK and METAL BUCKS, DOORS, AND TRIM.

b. Items of hardware not definitely specified herein and necessary for completion of the work shall be provided. Such items shall be of type and quality suitable to the service required and comparable to adjacent hardware. Where size or shape of members is such as to prevent the use of types specified, hardware shall be furnished of suitable types having as nearly as practicable the same operation and quality as the type specified. Sizes shall be adequate for the service required.

2. MATERIALS

a. Hardware shall conform to the following Federal Specifications and the type numbers specified:

Locks and door trim	FF-H-106a	See Amendment No. 1
Shelf and miscellaneous	FF-H-111a	
Hinges	FF-H-116b	
Door closers	FF-H-121a	
Padlocks	FF-P-101b	

b. Finish for hardware, except as otherwise specified, shall be:

US 3 for hardware generally (US 27 or 28 for aluminum).
US 26 for toilet and bathroom hardware.
USP for hinges primed for painting.
Finish for door closers shall be sprayed bronze or manufacturer's standard finish.

c. Template hardware for metal bucks and hollow metal doors shall be factory applied or templates shall be furnished to the factory from which the work may be fitted to receive the hardware. Screws for use with metal shall be machine screws.

3. SAMPLES AND SCHEDULE

a. Samples of builders hardware proposed for use in the work shall be submitted to the Local Authority for approval before delivery of the hardware. Provide one sample each of every type specified or required. Hardware samples shall be properly identified as to type, number, and where it is proposed to be used. Hardware so identified may be installed in the buildings before completion provided the identification remains attached until acceptance of the buildings.

b. Schedule of hardware indicating type, number, location, and finish of each item required shall be submitted by contractor for approval with the samples. The hardware schedule shall assign serial numbers to items which will be used to identify the packages of hardware items. Approval of hardware schedule shall be for type, operation, and finish. The contractor shall be responsible for furnishing all necessary hardware items. After approval, supply six copies of the hardware schedule to the Local Authority for use and record.

4. KEYS AND KEYING

a. Locks shall be keyed differently unless otherwise specified. Cylinder locks of different changes shall be furnished with three keys each. Locks specified to be keyed alike in any system or set shall be furnished with one key for each lock, with a total of at least three keys for each set.

b. Die stamp each key with the number of lock change.

c. Padlocks shall be provided with two keys each.

d. Bit key locks shall be provided with two keys each.

e. Six master keys shall be furnished for cylinder locks on the project. No grand master key system will be required. Master keys shall be delivered to the Local Authority by the contractor upon completion and occupancy or acceptance of any of the dwellings in the project.

( ) Cylinder locks within dwelling units shall be keyed the same as entrance door to that unit or apartment, with three keys per unit or apartment.

5. KEY CONTROL SYSTEM

Provide a visible key control system and cabinet as a complete unit for the indexing, storage, and control of all keys for locks throughout the project.

Wall type cabinets shall be furnished for 500 keys or less. Table type cabinets shall be furnished for 500 to 1200 keys. Drawer file type shall be furnished for more than 1200 keys.

a. Cabinets shall be made of not less than 20 gage cold rolled furniture steel with connections solidly welded and exposed welds ground smooth. Cabinets shall be so formed as to be rigid and self-supporting without observable deflection when fully loaded. Provide means of attachment for wall cabinets. Doors shall have continuous hinges with chrome plated handles and a locking device and three flat keys. Cabinet finish shall be gray or green baked enamel as selected by the Local Authority.

(1) Panels as required for the storage of keys shall be hinged in pin and socket bearings or hung on fast pin butts.

b. Control accessories for keys in number to correspond to the number of locks shall be provided as follows:

(1) One hook and one label pocket with key labels approximately 7/8 inch square marked consecutively with 5/16 inch high figures from 1 to the total number of locks.

(2) One red fiber non-detachable, permanent type key marker that can be easily attached to reserve pattern key. Non-detachable markers shall be die-stamped "FILE KEY MUST NOT BE LOANED", and marked with die stamp and enameled consecutive white 3/16 inch figures as for item (1).

(3) One white fiber detachable marker, to contain three duplicate keys, die-stamped with red consecutive numbering to correspond to item (2).

(4) One brass or plastic receipt holder with sufficient printed receipt forms to record and control all issued active keys.

(5) Cross index forms for listing keys alphabetically, numerically, and by lock serial number.

(6) Key and information collection envelopes approximately 5 x 3 inches, printed with blank space for location of lock, make, key change numbers and openings locked.

6. PACKING AND MARKING

Each lock set and item of hardware shall be packaged separately and shall be complete with necessary screws, key instructions, and required templates. Each individual container shall be marked with corresponding item number from the hardware schedule identifying the contents and defining its location in the finished work.

7. BUTTS (HINGES)

a. Butts for doors 1-3/4 inches thick shall be 4-1/2 x 4-1/2 inches; for doors 1-3/8 inches thick they shall be 3-1/2 x 3-1/2 inches and for doors 1-1/8 inches thick they shall be 3 x 3 inches. Exterior doors shall have 1-1/2 pair of butts and interior doors shall have one pair of butts unless otherwise specified.

(1) Unless otherwise specified, door butts shall be Type 2014-1/2P for painted doors and Type 2015-1/2 for stained or varnished doors.

(2) Butts for exterior doors that open out shall be Type 2014, except they shall be so arranged that pins cannot be removed when doors are closed.

(3) Butts for metal doors shall be template butts. Butts for metal covered doors shall be half surface butts 2080-1/2P except that full surface butts similar to Stanley 166 shall be used where such doors have frames of structural shapes. The surface leaf on metal covered doors shall be fastened with through bolts with sleeve nuts.

8. LOCKS

Cylinder locks supplied under this division shall be the product of one manufacturer and the same restriction shall apply to bit key locks and padlocks.

a. Hubs of cylinder knob locks for exterior doors shall be brass or bronze.

b. Cylinder rings of wrought bronze of proper size to fit door thickness shall be supplied.

c. Bit key mortise locks and mortise latches shall have lock cases, fronts and strikes of the same external measurements to suit a standardized mortise for all interior dwelling unit doors.

d. Letters in the following Lock Schedule refer to lock type scheduled herein according to function. *Mortise or cylindrical locks and latches may be used.* Lock sets shall be complete with escutcheons, knobs, roses and similar items as required and herein specified. Where two numbers are given under any one type of lock, both pieces shall be provided. In lieu of locks specified, locks of manufacturers' stock design, similar in quality and function, may be used, subject to the approval of the Local Authority.

Type	Mortise	Cylindrical
A	194-185	* 160A
B	3B	160L
* C	3D (CS on closets only)*	160N
* D	86A *	160A
E	3AA	160R
F	194-185	160A
G	3D	161N
* H	3D	160N *

Bathroom locks shall have an emergency access device and the locking mechanism shall release when the knob is turned or when the door is closed.

e. Lock Schedule

( ) Apartment Buildings:

	Type
Front entrance doors, from street;	G
Public stairhalls or corridors to apartments;	A
Bathroom doors;	B
Closet doors, locked;	E
Closet doors, except as above;	C
* Inter-communicating and bedroom doors;	E *
Exterior doors, not otherwise specified;	D
Interior doors, not otherwise specified;	D
Exterior basement doors;	D
Service rooms, storage rooms, machine rooms, pump rooms, equipment rooms, tool rooms, workshops, incinerator rooms;	D
Administration rooms, offices, auditoriums, assembly, play, craft and recreational rooms;	D
* Penthouse doors.	H *

		Type
( )	Houses:	
	Front entrance doors;	A
	Rear entrance doors;	F
	Bathroom doors;	B
	Closet doors, locked;	E
	Closet doors, except as above;	C
*	Inter-communicating and bedroom doors;	E *
	Service rooms, storage rooms, machine rooms, pump rooms, equipment rooms, tool rooms, workshops, incinerator rooms;	D
	Administration rooms, offices, auditoriums, assembly, play, craft and recreation rooms.	D
( )	Flat Buildings:	
	Front entrance doors, from street;	G
	Entrance doors from stairhall to dwelling unit;	A
	Rear entrance doors;	F
	Bathroom doors;	B
	Closet doors, locked;	E
	Closet doors, except as above;	C
*	Inter-communicating and bedroom doors;	E *
	Service rooms, storage rooms, machine rooms, pump rooms, equipment rooms, tool rooms, workshops, incinerator rooms;	D
	Administration rooms, offices, auditoriums, assembly, play, craft and recreational rooms.	D
( )	Access Doors to Crawl Space:	D

f. Knobs and spindles shall be as herein specified. Variations from these requirements not involving increased cost may be required at the time samples are approved. *Knobs for cylindrical locks shall be manufacturers' standard complying generally with requirements for other knobs.*

(1) Knobs for mortise locks for exterior doors and doors from corridors to stairhalls in apartment and flat buildings shall be Type 202. Outside knobs shall be pinned to spindles. Other knobs shall be Type 203 except closet doors shall have closet spindle with thumb turn and plate on inside.

g. Roses for locks and latches shall be Type 335 or 336 except as otherwise necessary for the operation of the lock furnished.

(1) Cylindrical case lock and latch sets shall have roses that are standard for the manufacturer of the lock.

(2) Double doors, except for locks, shall have both leaves trimmed alike.

9. PADLOCKS

a. Padlocks shall be Type EPA, 2 inch size, and shall be provided for the following locations:

(1) Provide hasps, Type F-1405, 4-1/2 inches in size, or similar type safety hasp required to suit conditions for all padlocks, except where hasps are called for in other divisions of the specifications.

10. SHELF AND MISCELLANEOUS

Hardware attached to flush hollow core doors where blocking is not provided shall be attached to the door by through bolts with sleeve nuts.

( ) Door closers shall be Type 3002 or Type 3005, sizes as specified, one each for the following openings:

( ) Kick plates Type 1224, 1225, 1226 or 1227 shall be 8 inches high and 3 inches less than the width of the door to which it is applied. Kick plates shall be secured in place with oval headed aluminum or stainless steel screws for aluminum plates or brass screws for other plates, spaced not less than 8 inches on centers.

(1) Kick plates shall be installed in the following locations and where indicated on the drawings:

( ) Apartment buildings front entrance doors.

( ) Public toilet doors.

( ) Doors to play rooms and public assembly rooms.

- -

_. Door stops shall be provided for all exterior and interior doors where the swing of the door will permit the door closer or door knob to strike the wall surface. Door stops shall be Type F1323 or Type F1331. Suitable expansion shields shall be provided for securing to materials other than wood.

( ) Door bolts shall be provided for inactive leaf of double doors; Type F1023A, 6 inches in length for top and Type F1023BC, 6 inches in length for bottom of doors.

( ) Chain door fastener of plate size not less than 6 x 1-1/2 inches wrought steel plated, shall be provided for entrance doors to dwelling units.

_. Six coat hooks, Type F1173 commercial finish, shall be provided for closets except linen closets.

( ) Curtain bar, Type F1171 shall be provided for each closet having open front.

( ) Hand rail brackets (for wood hand rails) similar to Type F1064 for stud walls and Type F1065A for other walls. Fastenings shall be as follows:

3 - 3 inch wood screws for stud walls;
1 - 3/8 inch through bolt with cut washers for tile walls and solid partitions;
1 - 1/2 inch bolt and expansion shields for brick and concrete.

Space brackets not over 6 feet apart and not more than 16 inches from ends.

( ) Kitchen cabinets shall be provided with one pair of 2 inch wrought steel chromium plated semi-concealed cabinet hinges for each lipped door and one pair of 2 inch full surface butts, chromium plated, for each panel door. Friction catches for holding doors shut shall be Type F1073, one for each door. Pulls for doors and drawers shall be Type F1307, one for each door and one for each drawer 20 inches or less wide; two for each drawer over 20 inches wide.

( ) Cabinets and counters of wood other than in kitchen. Doors shall have one pair of 2-1/2 inch butts 2018A. Locks for doors shall be brass or bronze wardrobe locks with two flat keys. Drawer locks shall be brass or bronze cabinet locks with two flat keys. Elbow catches Type F1075, drawer pulls 1310, one for drawers less than 20 inches wide, two for other drawers. Doors shall have pulls Type 1280, 1-1/8 inch diameter knob.

( ) Double-hung wood windows shall have sash fasteners, one to each pair of sash, crescent Type F1140.

( ) Door transoms shall have one pair of butts 2029P, 3 x 3 inches (if over 4 feet wide, 3 butts), transom catch F1097, transom chain F1123 (if over 36 inches, 2 chains), operating pole Type 1265B.

( ) Screen and storm doors shall have one pair of 3 x 3 butts, one chain door stop F1317, one No. 4 coil spring Type F1845, except galvanized, and one 3 inch rust proofed steel hook and eye and one door pull.

( ) Letter drop shall be provided for each front door to each house (not apartment). Letter drops shall have an opening of not less than 1-1/2 x 7 inches with front and back plates of heavy gage wrought brass or bronze with over-all dimension of approximately 3 x 10 inches and square beveled design. Opening on outside plate shall be closed by a gravity hinged leaf providing weather protection. Door slots shall be installed not less than 30 inches from finished floor.

( ) Mail boxes and frames shall be provided in first floor stair halls of apartment buildings, one box for each apartment unit.

(1) Mail boxes shall be of a gang type conforming to regulations of the United States Post Office Department and fitted for Post Office arrow lock. They shall be stamped on the face to indicate that such approval has been obtained. Sample of boxes shall be submitted to the Local Authority for approval before installation.

(2) The concealed parts of the boxes shall be formed of sheet steel and the exposed parts of sheet brass or bronze. Steel shall be not less than 30 gage metal, zinc coated, lead coated, or baked on enamel finish. Exposed brass or bronze shall have a brushed finish.

(3) Doors for the insertion of mail shall be equipped with provisions for a lock to be supplied by the Post Office Department.

(4) Doors to compartments for mail shall be equipped with flat key locks and the face of the doors shall be provided with holders for tenant's name and apartment number card. Two keys shall be furnished for each lock.

(5) Apartment numbers shall be painted on the inside of each mail compartment at points visible when the door for insertion of mail is open.

(6) Mail boxes for apartments shall be provided with not less than the number of units corresponding to the number of dwelling units.

_. LETTERING AND NUMBERING

( ) Provide numbers consisting of two inch ceramic tile numbers (black numerals on white tile) in non-ferrous metal holder or three inch high non-ferrous numbers of finish to match the hardware on wall near each front entrance house door.

(1) The numbers shall be in accordance with the schedule indicated on the site plans.

( ) Provide letters and numbers of ceramic tile or non-ferrous metal of size, detail, and number as indicated on the drawings on each apartment house entrance.

( ) Provide a non-ferrous card holder to hold cards 3-1/2 x 2 inches on each entrance door in flats and apartments.

GUIDE SPECIFICATIONS

DIVISION 27

HEATING, PROJECT OPERATED

NOTES TO THE ARCHITECT:

THESE SPECIFICATIONS ARE BASED ON REQUIREMENTS APPLICABLE TO LOW PRESSURE STEAM AND FORCED HOT WATER SYSTEMS AND, ACCORDINGLY, INCLUDE SECTIONS ON COAL-FIRED STOKERS, FUEL OIL BURNERS FOR NOS. 6 AND 2 OIL, AND GAS BURNERS SECTIONS ALSO HAVE BEEN INCLUDED ON AUXILIARY BOILER EQUIPMENT SUCH AS SOOT BLOWERS, ASH HOISTS, AND SMOKE INDICATORS. THE SECTION ON UNDERGROUND DISTRIBUTION INCLUDES REQUIREMENTS FOR BUILT-UP CONDUITS, PRESEALED CONDUITS, AND A CONCRETE TRENCH. THESE, AND ITEMS IN OTHER SECTIONS OF THE SPECIFICATIONS, MAY BE SUPPLEMENTED OR DELETED TO SUIT PARTICULAR REQUIREMENTS FOR THE PROJECT. SHOULD THE PROJECT USE STEAM PURCHASED FROM A LOCAL UTILITY COMPANY, SECTIONS ON STEAM MEASURING EQUIPMENT AND PRESSURE REDUCING VALVES SHOULD BE ADDED, AND THE ITEMS ON BOILERS, FIRING EQUIPMENT AND OTHER AUXILIARIES DELETED. REQUIREMENTS FOR BOILER SETTINGS ARE BASED ON FIREBRICK; THE SPECIFICATION MAY BE DELETED AND A PLASTIC TYPE REFRACTORY SUBSTITUTED THEREFOR.

COORDINATE THE ELECTRICAL WORK WITH THE HEATING SO THAT THERE IS NO DUPLICATION IN MAKING WIRING CONNECTIONS TO ELECTRICAL DEVICES. THE HEATING CONTRACTOR SHOULD MAKE ELECTRICAL CONNECTIONS COMPLETE TO FIRING EQUIPMENT AND ITS CONTROLS, AND TO THE HEAT CONTROL SYSTEM. THE ELECTRICAL CONTRACTOR SHOULD MAKE CONNECTIONS TO EQUIPMENT SUCH AS PUMPS AND FANS. THE ELECTRICAL CONTRACTOR SHOULD PROVIDE THE SOURCE TO WHICH THE HEATING CONTRACTOR SHALL CONNECT WHEN THE LATTER IS REQUIRED TO DO THE FINAL CONNECTIONS. MOTOR SIZES SHOULD BE SPECIFIED WHEREVER PRACTICABLE.

COORDINATE PLUMBING WITH HEATING WORK. THE PLUMBING CONTRACTOR SHOULD PROVIDE WATER SUPPLY FOR HEATING CONTRACTOR'S CONNECTION TO EQUIPMENT SUCH AS BOILERS AND CONDENSATE TANKS, GAS LINES FOR CONNECTION TO OIL BURNERS WHEN THERE IS GAS-ELECTRIC IGNITION, AND SEWER CONNECTION WHERE HEATING DRAINS ARE TO TERMINATE. UNDERGROUND DISTRIBUTION HOT WATER SUPPLY AND RECIRCULATING LINES SHOULD GENERALLY BE PROVIDED FOR UNDER THE "PLUMBING" DIVISION, BUT THE HEATING CONTRACTOR SHOULD PROVIDE CONDUIT SIZES LARGE ENOUGH TO HOUSE BOTH SPACE HEATING AND DOMESTIC WATER HEATING LINES WHEREVER PRACTICABLE.

COORDINATE PAINTING WITH HEATING WORK. THE PAINTING CONTRACTOR SHOULD PAINT RADIATORS, PIPES, VENTILATING DUCTS, REGISTERS AND GRILLES IN ALL FINISHED ROOMS.

COORDINATE CONCRETE WORK WITH HEATING WORK SO THAT PITS AND TRENCHES WITHIN BUILDINGS, WHEN NECESSARY, ARE PROVIDED FOR UNDER "CONCRETE" DIVISION.

CEILINGS OVER HEAT PRODUCING EQUIPMENT IN BASEMENTS SHOULD BE INSULATED WHEN SPACES ABOVE ARE OCCUPIED. INDICATE ON DRAWINGS THE EXTENT AND DETAILS OF SUSPENDED CEILING AND PROVISIONS FOR A PLENUM FREE FROM HEAT SOURCES. SPACE SHOULD BE VENTILATED AT THE RATE OF NOT LESS THAN 10 AIR CHANGES PER HOUR.

BLANK SPACES, WHICH ARE SHOWN IN SEVERAL PARAGRAPHS OF THE SPECIFICATION, SHOULD BE FILLED IN WITH NECESSARY INFORMATION TO SUIT SPECIFIC CONDITIONS.

WHERE FUEL OIL TANKS ARE SPECIFIED AND GROUND CONDITIONS WARRANT, TANKS SHOULD BE ANCHORED TO FOUNDATIONS BY TURNBUCKLES STRAPPED AROUND TANK WITH ENDS EMBEDED IN REINFORCED SLAB.

WHERE PUMPS ARE REQUIRED, THE SIZES SHOULD BE SCHEDULED ON THE DRAWINGS. THE FOLLOWING FORMS OF SCHEDULES ARE SUGGESTED:

VACUUM PUMPS

Location Bldg.No.	No. of Duplex (D) or Single (S) Units	Sq.ft. Radiation Each Pump	Water (gpm) Only at 160° F. Ea.Pump	Capacity Each Pump (gpm) Water at 160° F.	Capacity Each Pump (cfm) Air at 5-1/2" Vac.	Discharge Pressure Pounds Per Sq.In.	Receiver Capacity Gallons	Motor (hp) Each Pump

CONDENSATE PUMPS

Location Bldg.No.	No. of Duplex (D) or Single (S) Units	Sq.ft. Radiation Each Pump	Water (gpm) at 200° F. Ea.Pump	Discharge Pressure, Pounds Per Sq.In.	Receiver Capacity Gallons	Motor (hp) Each Pump

BOILER FEED PUMPS

Location Bldg.No.	No. of Duplex (D) or Single (S) Units	Water (gpm) at 200° F. Ea.Pump	Pressure Head - Ft. of Water	Motor (hp) Each Pump

HOT WATER CIRCULATING PUMPS

Location Bldg.No.	No. of Units	Water (gpm) at 200° F. Each Pump	Pressure Head - Ft. of Water	Motor (hp) Each Pump

FOR THE UNDERGROUND DISTRIBUTION, ONE TYPE, SUCH AS A CONCRETE TRENCH, MAY BE SPECIFIED AS THE ONLY MEANS OF HOUSING THE LINES; OR, MORE THAN ONE OR ALL CONDUIT TYPES MAY BE INCLUDED FOR SELECTION BY THE CONTRACTOR AT HIS OPTION. ILLUSTRATE THE METHODS ON THE DRAWINGS. WHERE GROUND CONDITIONS WARRANT, SHOW REINFORCEMENT IN CONCRETE BASE SLAB FOR BUILT-UP CONDUITS AND INSULATING CONCRETE PRESEALED CONDUIT; SHOW EXTRA DRAINAGE. FOR SUGGESTED METHODS, REFER TO BULLETIN LR-7, PART XIV, "UNDERGROUND DISTRIBUTION". SHOW CONDUIT ELEVATIONS ON PLANS WHEREVER PRACTICABLE. INDICATE AMOUNT OF "COLD SPRING" FOR BENDS: SHOW EXPANSION, MANHOLE AND ANCHOR CHAMBERS WHEREVER THEY ARE REQUIRED.

EARTH COVER OVER CONCRETE PIPE TRENCHES BETWEEN BUILDINGS SHOULD BE SUFFICIENT TO PREVENT EXTREME COLD TEMPERATURES ON THE CONCRETE TRENCH CEILING WITH CONSEQUENT DRIP OF WATER.

THESE GUIDE SPECIFICATIONS DESCRIBE SOME MATERIALS WHOSE USE MAY BE RESTRICTED. ENGINEERS USING THIS SPECIFICATION AS A GUIDE WILL BE GOVERNED BY WHATEVER RESTRICTIONS ARE CURRENT AT THAT TIME.

PARAGRAPHS MARKED THUS ( ) COVER VARYING REQUIREMENTS ON MATERIALS AND EQUIPMENT. NO ONE PROJECT WILL REQUIRE ALL ITEMS SPECIFIED. ADD NUMBER AND LETTER TO THE PARAGRAPHS MARKED __ AND REVISE PARAGRAPH IDENTIFICATION AS NECESSARY.

CHANGE TEXT OF ANY PARAGRAPH TO SUIT THE PROJECT REQUIREMENTS. DELETE ITEMS NOT APPLICABLE. INSERT ADDED TEXT AS NECESSARY.

GUIDE SPECIFICATIONS

DIVISION 27

HEATING, PROJECT OPERATED

1. SCOPE

This division includes the heating system, equipment and accessories required to complete the work indicated on the drawings and specified.

2. DESCRIPTION OF SYSTEM

a. Heat shall be supplied by (Coal stoker-fired boilers) (Oil-fired boilers) (Gas-fired boilers).

b. Heat distribution system shall be a (Two-pipe low pressure steam system with gravity return) (Two-pipe low pressure steam system with vacuum return) (Two-pipe forced hot water system) (One-pipe forced hot water system).

3. MATERIALS

Materials shall be new and shall conform to the Federal Specification or other standard specification listed with each item, as follows:

a. Pipe and fittings shall conform to the following:

( ) Steel pipe - Federal Specification WW-P-406.

( ) Wrought-iron pipe - Federal Specification WW-P-441a.

( ) Cast-iron screwed fittings - Federal Specification WW-P-501b.

( ) Brass pipe - Federal Specification WW-P-351, Grade A.

( ) Copper tubing - Federal Specification WW-T-797 or WW-T-799a.

( ) Soldered joint fittings - American Standard A40.3.

( ) Brass flared-type fittings - American Standard A40.2.

( ) Cast-iron flanges - Federal Specification WW-F-406a.

( ) Bronze screwed fittings - Federal Specification WW-P-460.

( ) Steel welding fittings - American Standard B16.9.

( ) Steel welding flanges - American Standard B16e.

b. Supply piping shall be:

( ) Standard weight black steel pipe with 125-lb. black cast-iron fittings or standard weight steel welding fittings for respective sizes herein specified.

( ) Copper tubing, type L, with wrought-copper solder joint fittings.

( ) Copper tubing, type B, with 125-lb. cast-bronze threadless silver-brazing fittings.

c. Return piping, drip piping, pump discharge and make-up water piping shall be:

( ) Standard weight black steel pipe with 125-lb. black cast-iron fittings or standard weight steel welding fittings for respective sizes herein specified.

( ) Standard weight black wrought-iron pipe with 125-lb. black cast-iron fittings or standard weight steel welding fittings for respective sizes herein specified.

( ) Copper tubing, type L, with wrought-copper solder-joint fittings.

( ) Copper tubing, type B, with 125-lb. cast-bronze threadless silver-brazing fittings.

d. Boiler water column and drain piping shall be standard weight brass pipe and 125-lb. cast-bronze screwed fittings.

e. Instrument lines shall be:

( ) Standard weight black steel pipe with 125-lb. black cast-iron fittings.

( ) Standard weight wrought-iron with 125-lb. black cast-iron fittings.

( ) Standard weight brass pipe with 125-lb. cast-bronze screwed fittings.

( ) Copper tubing, type L, with brass flared-type fittings.

f. Threads for screwed fittings shall be American National taper pipe thread conforming to Federal Specification GGG-P-351a.

g. Valves 3/4 inch and smaller shall be globe valves; larger sizes shall be solid wedge type gate valves. Valves 2 inches and smaller shall be brass or bronze; larger sizes shall be iron body, brass mounted. Valves 6 inches

and larger on boiler supply leads and on main supply branches at boiler header shall be outside screw and yoke, iron body, brass-mounted. Valves used in connection with copper tubing shall have soldered (sweat) type ends or appropriate adapters. Check valves shall be the horizontal swing type with hinged check and ground seat. All valves, except as otherwise noted, shall be the 125-lb. type that can be repacked under pressure when wide open. Bronze angle, check and globe valves shall conform to Federal Specification WW-V-51a; bronze gate valves shall conform to Federal Specification WW-V-54; and iron body gate valves to Federal Specification WW-V-58.

h. Unions

( ) For ferrous piping. All unions 2 inches and smaller shall be 150-lb. malleable iron with brass to iron seats. Larger unions shall be 125-lb. cast-iron gasket type with flanged ends.

( ) For copper or brass piping. All unions 2 inches and smaller shall be 125-lb. brass ground-joint type. Larger unions shall be 150-lb. brass flange type.

i. Gaskets shall be 1/16 inch thick 125-lb. asbestos ring type, of material conforming to Federal Specification HH-P-46a. The diameters of the gaskets shall conform to Federal Specification WW-F-406a.

j. Bolts, studs and nuts shall conform to Federal Specification FF-B-571a, Class A or B, open-hearth steel, the bolts being the square or hexagonal head type. Nuts shall be the hexagonal type.

k. Jointing compound for threaded and flanged joints shall be made up of pipe cement and oil or graphite and oil.

l. Nipples shall be the same material, composition, and weight classification as the pipe or tubing with which they are installed.

(1) Threaded nipples shall conform to Federal Specification WW-N-351.

(2) Welding nipples shall be accurately coped to fit the pipe to which they are connected, and shall have beveled ends.

m. Sleeves set vertically and sleeves in wood partitions shall be 26 gauge galvanized sheet steel. Sleeves set horizontally shall be standard weight steel pipe.

n. Escutcheons shall be chromium-plated steel.

o. Pipe covering shall be:

( ) 85% magnesia, standard thickness, molded covering with cotton sheeting jacket, conforming to Federal Specification HH-M-61a.

- -

( ) Mineral wool, single layer, molded covering conforming to Federal Specification HH-P-387.

( ) Asbestos paper, 4-ply corrugated or indented covering with cotton sheeting jacket, conforming to Federal Specification HH-I-561b.

( ) Insulating cement shall be 85% magnesia cement conforming to Federal Specification HH-M-61a.

( ) Insulating cement shall be mineral wool conforming to Federal Specification HH-C-168.

( ) Insulating blocks shall be 85% magnesia conforming to Federal Specification HH-M-61a.

( ) Insulating blocks shall be mineral wool conforming to Federal Specification HH-I-564.

( ) Soft solder shall be composition Sn 50 or Sn 35 conforming to Federal Specification QQ-S-571b. Flux shall be the non-corrosive type conforming to Specification O-F-506.

( ) Silver solder (silver-brazing alloy) shall conform to Federal Specification QQ-S-561d, Class 3. Flux shall be the non-corrosive type suitable for use with this alloy.

( ) Waterproof pipe wrapping shall be asphalt-saturated felt, 15-lb. type, conforming to Federal Specification HH-F-191a. Sealing compound shall be asphalt having a softening point of about 190°F and conforming to Federal Specification SS-A-666, Type II, Grade 2.

( ) Coal-tar saturated felt shall be the 15-lb. type, conforming to Federal Specification HH-F-201. The coal-tar pitch used with this felt shall conform to Federal Specification R-P-381, Type II.

( ) Fibrous glass wrapping shall be not less than 15 lb. type, bitumen-saturated with parallel reinforcing glass yarn and dusted with mica chips.

4. EQUIPMENT

( ) Ventilating ducts shall be constructed of galvanized steel sheets, or 2S (half hard) or 3S (quarter- or half-hard) aluminum sheets. The thickness of the material used for the ducts shall be not less than:

(1) No. 26 U.S. Std. gauge for steel, or No. 24 B and S gauge for aluminum, when the ducts are not greater than 12 inches in width or depth.

(2) No. 24 U.S. Std. gauge for steel, or No. 22 B and S gauge for aluminum, when the ducts are between 12 inches and 25 inches in width or depth unbraced, and between 12 inches and 31 inches in width or depth when braced.

(3) No. 22 U.S. Std. gauge for steel, or No. 20 B and S gauge for aluminum, when the ducts are between 31 inches and 40 inches in width or depth and are braced.

( ) Duct hangers and balancing dampers shall be of the same material, and at least as thick as ducts.

(1) Dampers shall be fitted with locking type quadrant and handle, set on face of duct, arranged and marked to show position of damper.

( ) Fire dampers shall conform with the requirements for construction and installation in "Standards of the National Board of Fire Underwriters for the Installation of Air Conditioning, Warm Air Heating, Air Cooling and Ventilating Systems" (NBFU Pamphlet No. 90). Door for inspection and resetting damper shall be easily accessible.

( ) Supply grilles (side wall) shall be formed from stamped or rolled steel sections, and have means for two-way (horizontal and vertical) adjustable deflection with front vanes or bars set vertically; vanes or bars shall be individually adjustable. Equip grille with sealing gasket of felt or sponge rubber. Prime coat grilles at factory.

( ) Ceiling diffusers shall be formed from steel or aluminum, of circular type designed for surface mounting to deliver air radially and at slight downward angle without causing air motion in excess of 35 feet per minute and temperature variation in excess of 2°F. measured 5 feet from floor. Diffusers shall be fitted with deflecting grid and volume damper. Prime coat steel diffusers at factory.

(1) Baffles shall be set in the diffuser whenever area served is not substantially square, or where beam or other such construction is within the radius of operation. Arrange baffles to direct air flow in directions away from the nearer walls (when the area is not square) and from the building obstruction. Take baffle effect into consideration when selecting diffuser.

( ) Return or exhaust grilles shall be formed from stamped or rolled steel sections, with vertical vanes fixed at right angles to the grille face so that free (daylight) area is not less than about 75 percent of net grille area. Prime coat grilles at factory.

( ) Cast-iron radiators shall be the small tube type; catalogue rating and section dimensions shall conform to the "Simplified Practice Recommendation 1/ RI74-43 (Cast-iron Radiators). Wall or ceiling supported radiators shall be legless. Paint radiators with a prime coat at the factory, and ship with threaded openings tightly sealed.

1/ "Simplified Practice" and "Commercial Standard" pamphlets are issued by the Commodity Standards Division of the U. S. Dept. of Commerce, and may be secured from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D.C.

( ) Convector radiators shall be cast-iron or copper with extended fins. Convector radiators shall be factory tested and proven tight under a hydrostatic pressure of 100 pounds per square inch. Output ratings shall conform to Commercial Standard 1/ CS240-47, "Testing and Rating Convectors", except that heating effect shall not be considered in determining the ratings. Metal convector enclosures shall be the _____ type, and shall be painted with a prime coat at the factory.

( ) Baseboard convector radiators shall be copper with extended fins. Each unit shall be factory tested and proven tight under a hydrostatic pressure of 100 pounds per square inch; furnish affidavit to the Local Authority, certifying that the units supplied will deliver the heat output indicated on the drawings, with heating effect not considered in determining the output ratings. Metal baseboard enclosures shall be the _____ type as indicated on the drawings, and shall include readily-operated dampers, inlet openings, discharge grilles, and gaskets for sealing the joint between the enclosure and the wall. The ends of the enclosures shall be closed to conceal the radiator element and the connections. Paint enclosures with a prime coat at the factory.

( ) Baseboard panel radiators shall be constructed of cast-iron panel sections furnished complete with supporting brackets, connecting pieces (and extension plates, where shown). Each section shall be factory tested and proven tight under a hydrostatic pressure of 100 pounds per square inch. Furnish affidavit to the Local Authority certifying that the units supplied will deliver the heat output indicated on the drawings, with heating effect not considered in determining the output ratings. Paint sections with a prime coat at the factory.

( ) Air vent valves for steam radiators shall be the adjustable type conforming to Federal Specification WW-V-151. When a special tool is necessary for adjustment of the valve, furnish not less than _____ such tools.

( ) Air vent valves for hot water radiators shall be of the slotted or key-operated type. When a key is necessary for adjustment of the valve, furnish not less than _____ keys.

( ) Radiator valves shall be bronze, packless, quick opening type suitable for the service required, with mushroom type wheel handle of hard wood or composition secured to the spindle with a countersunk metal nut. The valve body shall be red brass composition, rough body and have finished trimmings and a ball or ground-joint union.

( ) Balancing elbows for hot water radiators shall be bronze with slotted key or spindle which can be adjusted to regulate the flow through the elbow. The elbow body shall have finished trimmings and a ball or ground-joint union.

1/ "Simplified Practice" and "Commercial Standard" pamphlets are issued by the Commodity Standards Division of the U.S. Dept. of Commerce, and may be secured from the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C.

Provision for balancing the flow to each radiator may be incorporated in the radiator valve, in which case balancing feature need not be included in the elbow.

( ) Steam traps shall have a rated capacity of not less than twice the load carried by the piping or equipment.

(1) Radiator traps shall be the thermostatic type conforming to Federal Specification WW-T-696, except that they may be furnished with ball-joint unions.

(2) Combination float and thermostatic traps shall have a body of cast-iron with all internal valve parts made of corrosion-resisting metal, capable of resisting the scoring action of steam. Float shall be the ball type, copper or copper-alloy. The thermostatic element shall be positive in action and free from noise under all operating conditions; element shall be integral with the float chamber.

(3) Float traps shall have a cast-iron body with all internal valve parts made of corrosion-resisting metal, capable of resisting the scoring action of steam. Float mechanism shall be the ball or bucket type.

( ) Automatic air relief valves shall be _____ inch size and be suitable for the pressures in the system. The valve body shall be polished cast-iron or steel enclosing a seamless copper float and corrosion-resisting float mechanism which shall permit exit of air but which shall prevent discharge of steam or water from the valve outlet.

( ) Strainers shall have a cast-iron body and unless otherwise noted, shall be of the "Y" pattern. The strainers shall be furnished with readily-removable sediment baskets of corrosion-resisting material. The total area of the basket performations shall be equal to seven to nine times the cross-sectional area of the pipe to which the strainer is connected. Strainers up to one inch in size shall have screw plugs for cleanouts; 1-1/4 to 2 inches in size shall have 1/2 inch valved blowdown; 2-1/2 to 4 inches in size shall have a 3/4 inch valved blowdown; larger than 4 inches shall have 1 inch valved blowdown.

( ) Boiler return trap shall have cast-iron body, and be fitted with non-corrosive valve and air vent mechanism, and with copper or copper-alloy float. Condensate collecting in the body of the trap shall cause the float to rise until such time at which the steam valve admitting boiler pressure, shall open, and air vent valve close, permitting condensate to enter boiler. The above process shall be reversed as condensate is lowered in the trap.

(1) Air eliminator (or vent trap) shall be a separate device from, and be arranged for connection to, return trap. Eliminator (or trap) shall have cast-iron body, corrosion-resistant float and float mechanism to permit exit of air and prevent discharge of steam or water, and prevent re-entrance of air.

( ) Special diverter fittings for forced hot water systems shall be 125 lb. cast-iron (when installed on ferrous piping) and of wrought copper (when installed on copper piping). The fittings shall divert a portion of the water to the branch runouts and the balance through the main to which fittings are connected.

( ) Weighted check or limiting device for forced hot water systems shall close to prevent circulation of water when pump is not operating. It shall be constructed for installation at the boiler and arranged for cleaning without disconnecting piping. Valve shall have means for manual, independent of automatic, operation.

( ) Balancing cocks in hot water distribution piping shall be 125 lb. standard, iron type, with flat or square heads and brass plugs and washers.

( ) Thermometers (except where otherwise noted) shall be industrial type having a 9-inch scale graduated from 20-240 F. constructed for installation with brass or bronze separable sockets. Thermometer and socket shall conform to Federal Specification GG-T-321. Socket shall project above pipe insulation.

( ) Pressure reducing valves for hot water service shall be brass or bronze, constructed and sized to operate on an initial pressure of _____ pounds per square inch, and to effect a predetermined uniform outlet pressure.

( ) Pressure gauges shall conform to Federal Specification GG-G-76.

( ) Pumps shall be the direct-connected electric motor-driven type. Each pump shall have a bronze impeller, be bronze fitted, and have a corrosion resisting steel shaft. Except as otherwise noted, each pump and motor shall be mounted on a cast-iron or steel base which shall be bolted down securely to a concrete foundation. Sizes shall conform with the schedules in drawings.

( ) Vacuum pump receivers shall be cast-iron or copper bearing steel and shall include an air separator, strainer, compound pressure and vacuum gauge, and water level gauge, assembled complete. Single receiver may be provided when pumps are in duplex arrangement.

(a) Vacuum pump controls shall consist of a start-stop switch, an adjustable vacuum regulator, and a seamless bronze float with an adjustable float switch which shall automatically stop and start the pump motors. A manual switch shall be included to permit operation of each pump independent of automatic operation.

(b) Test report for a pump of each specified size shall be prepared and certified by the pump manufacturer and contractor, and approved by the Local Authority before shipment of the pumps. Tests shall

be performed in accordance with the "Standard Code for Testing and Rating Return Line Low Vacuum Heating Pumps", issued by the American Society of Heating and Ventilating Engineers.

( ) Condensate pump receiver shall be cast-iron or copper-bearing steel with a strainer and water level gauge, assembled complete. One receiver may be provided when pumps are in duplex arrangement.

(a) Condensate pump controls shall consist of a start-stop float switch which shall automatically start and stop the pumps. A manual switch shall be included to permit operation of each pump independent of automatic operation.

( ) Boiler feed pump shall be double suction, single-stage type with horizontally-split casing; or the end suction type with vertically-split casing; each type to have means for priming and draining. Pump and motor shall be separately mounted on a common cast-iron or steel bed plate having raised edges and tapped drain opening, be connected by a flexible coupling, and have sleeve or sealed ball bearings, and mechanical seals. Pump shall be quiet in operation.

(a) Boiler feed pump controls shall consist of a start-stop switch, and an adjustable float switch for each boiler; float switch shall be actuated by water level in the boilers, which shall automatically start and stop the pump when the water level drops below and rises above predetermined points. Float shall be copper or brass enclosed in a cast-iron chamber, and be fitted to non-corrosive packless valve and trim. A manual switch shall be included to permit manual operation of each pump, independent of automatic operation.

(b) Condensate receiving tank shall be constructed of black steel of the horizontal cylindrical type, with bumped heads and fitted with ____ inch size manhole complete with plate, bolts, yoke and gasket. Shell shall be of welded and/or riveted construction, not less than _____ inches thick; head thickness shall be not less than _____ inches. Tank shall be _____ inches in diameter and _____ inches long, with a capacity of _____ gallons, constructed for a working pressure of _____ pounds per square inch. Tank shall have necessary supply and discharge tappings including vent, drain and overflow. Gauge glass or group of gauge glasses over-lapping each other shall be attached to tank complete with guards and drain cocks. Thermometer on outlet end shall be the angle type.

(c) Float valve mechanism, sized and arranged to control the supply of make-up water to tank, shall consist of seamless copper or brass float with corrosion resisting valve parts. The float and valve mechanism shall be contained in a heavy cast-iron chamber or shall be inserted in tank and secured thereto with gasket and flange. Mechanism shall be set so that center line of float is _____ inches above bottom of tank.

( ) Hot water circulating pumps shall _____ suction, _____ stage type with split casing; each type to have means for priming and draining. Pump and motor shall be separately mounted on a common cast-iron or steel bed plate having raised edges and tapped drain opening, be connected by a flexible coupling, and have sleeve or sealed ball bearings, and mechanical seals. Pump shall be quiet in operation.

( ) Hot water circulators driven by fractional horsepower motors shall be supported by the piping, or be bolted to concrete foundations, in the locations indicated on the drawings. Each circulator shall operate at _____ rpm on _____ volt supply and have a capacity to pump _____ gal. per minute when operating against a head of _____ feet of water. Each pump shall have a mechanical seal designed for use with water at 220° F.

( ) Compression tank shall be of size shown, be constructed of black steel, welded construction and built to withstand a hydrostatic pressure of _____ pounds per square inch.

( ) Heat exchangers shall consist of removable copper coils not lighter than No. 20 gauge enclosed in steel or cast-iron shells constructed for working pressure of _____ pounds per square inch; connection to coil shall be fitted with vacuum breaker. Exchangers shall meet the requirements shown in the schedule on drawings when supplied with steam at _____ pounds per square inch.

( ) Temperature regulating valve for each exchanger shall be of proper size to pass the necessary amount of steam to meet the requirements in the herein schedule. Valves smaller than 2 inch shall be brass, and have screwed ends; larger valves shall be iron body, brass trimmings, flanged ends. Valves shall be self contained, actuated by an immersion type copper sensing element through armored tubing and copper bellows, adjustable over a scale range of about ___° - _____°F. operating on a differential of about _____°F. Valve shall open and close to steam flow when the water temperature falls below and rises above predetermined water temperatures.

( ) Unit heaters shall consist of direct-connected electric motor-driven accurately balanced propeller fan, and non-ferrous finned-tubed heating elements arranged to expand or contract freely with changes in temperature. Motor shall be condenser type, fractional horsepower (unless otherwise shown), constant speed, not over 1150 rpm, operating on _____ volts. Heater capacity indicated shall be based on _____ Btu per square foot EDR, with entering air temperature of 60°F. and the heating medium delivered at ____. Heater shall be fitted with hanger bars to permit support by rods, or other means, to building construction.

( ) Horizontal discharge heaters shall have louvres on the discharge side, each louvre to be adjustable for air deflection, and a wire screen guard on the inlet side constructed of not less than No. 16 gauge, 3/4 inch mesh, fitted into a steel frame arranged for convenient access to fan and motor.

( ) Downflow discharge heaters shall have resiliently mounted motor arranged for vertical installation, and have means for diffusing the air radially.

( ) Controls shall be electrically-actuated and consist of: Manual control switch; room type thermostat, fitted with thermometer in cover, with a scale range of about 55-85°F. controlling the on-off operation of the fan over an adjustable differential not exceeding 2°F.; surface type aquastat, with a scale range of about 80° - 240°F. operating on a differential of 10-15°F. which shall prevent fan starting until heater return has reached a predetermined temperature.

( ) Fans shall be electric motor driven and deliver the required air quantities at pressures shown when tested in accordance with the "Standard Test Code for Centrifugal and Axial Fans" prepared by the National Association of Fan Manufacturers and the American Society of Heating and Ventilating Engineers. Fans shall be quiet in operation and free from objectionable noise. Means for lubrication of bearings shall be easily accessible.

( ) Centrifugal fans shall be full-housed in cast-iron or steel casings, adequately braced, with multi-blade wheels assembled from die-formed parts, single inlet, single width unless otherwise shown, statically and dynamically balanced. Fan capacities in excess of 3500 cfm shall have backward curved blade designed to give a continuously rising pressure characteristic, (from free delivery to point of no delivery) and non-overloading power characteristics. Motors shall have the horsepower ratings indicated, operating at _____ rpm, _____ volt, and be ______ connected to fan. Operation on-and-off shall be manual through a start-stop switch.

( ) Propeller fans shall be direct-connected and be mounted on a cast-iron or pressed steel frame set in a steel panel secured to building construction. Fan shall have steel or aluminum blades with heavy hubs, be dynamically balanced and quiet in operation, and have the capacities to deliver the air quantities indicated. Motors shall be condenser type, resiliently mounted, fractional horsepower, constant speed not over ____rpm operating on _____ volt supply. Operation on-and-off shall be manual through a start-stop switch.

( ) Auxiliary equipment (completely assembled) shall consist of: (a) full-sized shutters set in angle iron frame, fitted with aluminum or zinc-coated blades mounted on easily movable rods, and opening and closing with the operation of the fan; (b) low resistance air flow grille; (c) grating constructed of not less than 1/2 inch round bars spaced 3 inches on centers and secured to iron frame; (d) guard screen constructed of not lighter than No. 16 gauge wire, 3/4 inch mesh, fitted into a steel frame and arranged for convenient access to fan and motors. Shutters shall close tightly with overlap of blades when fan is off.

5. BOILERS, BOILER ACCESSORIES AND FIRING EQUIPMENT

( ) Boilers shall be constructed, and be piped and fitted, to conform with the latest requirements of the ASME Boiler Construction Code stipulated in the "Rules for Construction of Low Pressure Heating Boilers". In addition to stamping required by Code, catalogue number shall be cast on boiler or stamped on metal plate permanently attached to boiler. Net rating shall include the load items defined, and conform with the listing, in the "Net Load Recommendations for Heating Boilers", published by the Heating, Piping and Air Conditioning Contractors National Association; rating shall be based on the type of fuel to be used and the method of firing the boiler. Steel Boiler Institute ratings for steel boilers will be acceptable; the symbol "SBI" permanently affixed to the boiler in a manner prescribed by the Institute will constitute evidence of compliance. See drawings for sizes.

( ) Steel boilers shall be of the horizontal, fire tube or water tube, portable firebox type, ____ pass, direct draft. Smoke outlet shall be at ____ end of boiler; smoke box shall have tight fitting doors for access to tubes, lined or protected to prevent warping. Doors required for access to other parts of boiler shall be accurately ground, hinged or otherwise secured paper tight to boiler, and protected where necessary against excessive heat.

( ) Cast-iron boilers shall be rectangular, sectional type with smoke outlet at rear of boiler. Doors for access to service and clean boiler shall be accurately ground, hinged or otherwise fastened paper-tight to boiler, and protected against excessive heat.

( ) Openings in boiler shell or sections shall be provided and fitted for connection to heat exchange apparatus. Boilers shall be equipped with lugs or plates for mounting on brick foundations.

( ) Cast-iron water column shall be complete with gauge glass, gauge glass guard and valves, pet cock, compression try cocks, and shall be fitted with cross at the bottom of column; one opening of cross shall have cleanout plug and the bottom opening shall connect to a valved blow-off pipe terminating 12 inches from firing floor. Cast-iron boilers may have separate gauge glass, with valves and pet cock, and compression try cocks tapped directly into boiler.

( ) Gauges (pressure or altitude) and thermometer (whichever is suited to the type of boiler installation) shall comply, except as noted, with the requirements for the respective instruments specified herein. Gauges shall have not less than a ____ inch diameter dial; instruments shall have scale ranges suited to these over which heating system will operate; steam gauge shall be stem mounted with syphon and pet cock.

( ) Safety valve or valves for each boiler shall have lever handle and side outlet with female pipe threads for iron pipe size connection.

- -

( ) Damper for each boiler shall be substantially constructed, neatly fitted into the smoke box, and equipped with stops or shall have opening in center to permit about 10 percent of the gases to pass when damper is in a closed position. Means shall be included for hand adjustment from firing floor.

( ) Standard tools for firing, cleaning and servicing boiler shall be furnished with each boiler room installation.

( ) Boiler setting dimensions and design are shown on drawings; modifications therefrom, but not in the type of materials, will be permitted, if in accordance with firing equipment manufacturer's recommendations. Anchor bolts for securing boiler front shall be inserted at time of construction.

(1) Side walls shall be not less than _____ inches thick, consisting of _____ inches thick selected hard burned common brick and ____ inches thick firebrick; carry firebrick not less than ____ inches above bottom of boiler water leg or mud drum; apply at least _____ inches thick expanded vermiculite base insulating cement in walls between common and firebrick.

(2) Rear foundation wall shall be not less than ____ inches thick, consisting of selected hard burned common brick. Provide additional walls or saddles as necessary for adequate boiler support.

(3) Bridge wall shall consist of not less than____ inches firebrick, spaced _____ from the boiler front. Shelf over bridge wall shall consist of 4-1/2 inches thick firebrick, extending from bridge wall to rear foundation wall. Fill space between bridge wall and rear wall with brick bats.

(4) Front wall shall have a minimum of _____ inches thick firebrick with openings and special shapes and insulation material as needed for efficient combustion and adequate protection.

(5) Floor shall be constructed as follows:

( ) For coal, fuel oil (except No. 6) and gas - paving brick set on edge in cement or 4-1/2 inches firebrick underlaid with 2-1/2 inch insulating block (such as sil-o-cell) set on 5 inches sand fill.

( ) For No. 6 fuel oil - checkered or slotted construction over secondary air intake, and solid construction. Checkered or slotted construction shall extend not less than _____ over the total floor area, and be substantially supported on _____" thickness steel T-irons or on firebrick piers. Checker or slotted work and floor underneath shall be not less than 2-1/2 inches thick. Solid portion of floor shall not be less than 4-1/2 inches thick firebrick. Entire floor section shall be underlaid with 2-1/2 inches thick insulating brick (as sil-o-cell) suitable for the high temperature encountered on not less than 5-inch sand fill. Underfloor of checker or slotted construction shall be level with boiler room floor.

(6) Lay common brick with a header course every third course; mortar shall be composed of one part portland cement, two parts clean screened sand and a small portion of lime. Lay firebrick with a rubbed dipped joint, using high temperature cement conforming with Federal Specification HH-C-451b, suited to the firebrick. Firebrick shall conform to Federal Specification HH-B-671c, Class 1d (high heat duty).

(7) Provide necessary expansion joints at each end of side walls, on bridge wall shelf between bridge wall and rear foundation wall, and at such other sections as may be needed to prevent sagging or twisting of walls. Fill joints with asbestos rope or equivalent.

(8) Maintain a slow wood fire in construction chamber for _____ consecutive hours, before boilers are fired with regular fuel.

( ) Breeching shall be constructed of black steel sheets not lighter than No. _____ U.S. Standard gauge. Joints shall be riveted, bolted or screwed smoke-tight; cleanout doors shall be of steel, and be hinged. Hangers or support framework shall be steel; wire supports will not be acceptable.

( ) Automatic boiler water feeder shall consist of a cast-iron chamber with ball float and float valve mechanism. Float shall be constructed of copper, and float valve mechanism shall be of corrosion-resisting metal. Float shall operate valve mechanism on a fall and rise in boiler and float chamber water level. Feeder shall be connected to boiler with valved equalizer piping. Feeder valve shall open and admit water to boiler when boiler water line drops below a predetermined level, and close when water line rises above a predetermined level; feeder may be combined as one device with low-water cut-off specified herein.

( ) Electric ash hoist shall be the telescopic type arranged to dump ash cans into a truck with sides at 6 feet above street level, and have the capacity to lift 500 pounds at a speed of 60 feet per minute.

(1) Motor shall be mounted at top of hoisting mast, built so that hoist head and motor will be telescoped below grade level doors, when not in use; motor shall be _____hp, _____ volt supply. Hoist shall have single control at grade level to raise, stop, lower and brake load; if operator releases control, load shall stop and remain stationary. There shall be an automatic upper limit and a device for lowering hook by gravity. Motor and mechanism shall have metal protective covering.

(2) Motor may be mounted on foundation at boiler room level in lieu of top of hoisting mast. Motor shall be clear of hoist and be fitted with means for control, as specified above, at boiler room and grade levels and have automatic upper and lower limits.

(3) Ash doors shall be extra heavy, checkered steel plate set with heavy steel frame and installed directly above grade level so as to shed

(a) Fixed position nozzles, each centered to a boiler tube and set in vertical rows of pipes, terminating in a horizontal header across the top row of tubes. The header shall be divided into sections, each controlling a group of tubes so that not more than 25 percent of the total number of nozzles are supplied and controlled through one section. Operation of cleaner shall be by hand.

(b) Nozzles fitted into arms rotated or moved so that nozzles can be positioned in front of tubes. Rotation of arms shall be through a swivel coupling or equivalent device, and movement of arm shall be through a travelling frame horizontally across boiler crown sheet. Positioning of nozzles in front of tubes and length of blow shall be done automatically over a complete cycle when position of nozzle is governed by rotation of arm; no air shall be delivered until nozzles are in front of tubes. Operation of cleaner moving horizontally across boiler shall be by hand.

(3) Connecting mechanism to nozzles shall be constructed and arranged to permit opening boiler smoke box doors without disconnecting soot blower parts or piping. Equipment and materials set within the boiler shall be constructed of heat resisting metal designed for long life. Make connections through stuffing boxes where pipes pass through boiler doors. Seal smoke box and inspection doors gas-tight.

(4) Air compressor shall be the two-stage, V-type, air cooled, having a piston displacement of _____cfm against _____lbs. per sq.in. gauge; drive shall be by electric motor, V-belt, not less than _____hp, _____volt supply. Control wiring, push-button starter, relays, selector switch for on-off operation shall be mounted on a panel, integral with the unit. Equip compressor with a silencer, air inlet filter, starting release unloader, and pressure switch which shall start and stop compressor when air pressure falls below and rises above predetermined settings. Protect belts and other moving parts with guards.

(a) Air receiver shall be black steel, _____ inches diameter x _____ inches long, designed for vertical mounting and built for 200 lbs. per sq. in. gauge, working pressure; inspection plugs, relief valves, necessary openings for pipe connections, trimmings, construction and pipe fittings shall conform to the "Rules for Construction of Unfired Pressure Vessels" of the ASME Boiler Construction Code.

(5) Pipe shall be extra heavy steel or wrought-iron; fittings and valves shall be extra strong, 250 lbs.

( ) Underfeed stoker for each boiler shall be of the single retort, ram or combination ram and screw (with screw outside retort) type fitted with side dump plates, except that when boiler combustion chamber is 48 inches or less in width, stoker may be screw-feed type fitted with stationary plates. Equipment shall be assembled complete and ready for operation, and have capacity to develop _____ boiler horsepower at the boiler nozzle continuously for _____ hours without undue strain or deterioration of parts.

surface water. Doors shall safely support a sustained load of at least 300 pounds per sq.ft., have non-ferrous hinges and locking devices and be fitted with condensation gutter tapped for drain pipe. Doors shall open or close by operation of hoist.

(4) Ash cans shall be formed from 16 gauge steel, hot dipped galvanized after fabrication. Furnish _____ cans, 18 inches x 24 inches with side handles 8 inches from top. Furnish two yokes or removable ash can bales.

( ) Manual ash hoist shall be complete with chain hoist, block and chain. Capacity shall be not less than 500 pounds at a speed of 30 feet per minute. Hoist shall be arranged to dump ash cans into a truck with sides at 6 feet above street level. Provide a hand brake for lowering ash cans without movement of crank.

(1) Ash doors shall be _____ feet square with two piece checkered safety steel plate lids and 3x3x1-1/4 inch steel angle frame, installed slightly above grade level so as to shed surface water. Rail guard enclosure shall open automatically when lid is raised. Door shall safely support a load of 300 pounds per square foot; hinges shall be non-ferrous.

(2) Ash cans shall be formed from 16 gauge steel, hot dipped galvanized after fabrication. Furnish _____ cans, each not less than _____ inches high, _____ inches diameter, with 2 handles and a swing bail.

( ) Smoke indicator shall be of the photo-cell type, sensitive to the density of gases intercepting a beam of light projected through the breeching at a selected position. It shall be installed and connected complete to nearest available source of electric current. Photo-cell shall be encased and protected from high ambient temperatures and other conditions affecting its reliability.

(1) Meter shall be enclosed in a heavy metal case and shall have a minimum scale of 4 inches, reading in Ringlemann numbers from 0 to 5 (in intervals of 1) and in percent smoke density from 0 to 100 (in intervals of 20). The instrument shall have relays to operate a visible signal light and sound an alarm; relays shall be adjustable to permit setting the degree of smoke density at which the light will show and the alarm sound. Indicator shall be mounted on one of the firing equipment control panel boards, where shown or directed by the Local Authority.

( ) Soot Blowers

(1) Cleaning of boiler tubes shall be by compressed air. Installation and amount of air blown for each tube shall conform with the instructions and recommendations of the soot blower manufacturer. Firing equipment shall operate without causing puffs or flare backs during cleaning process.

(2) Elements through which air is blown shall be one of the following types:

(1) Smoke density shall not exceed that specified in the local ordinances or, if no ordinances exist, No. 1 on the Ringlemann chart for at least 57 mimutes of each hour except when fires are being cleaned.

(2) Feed, grate and plate surfaces shall extend the full width of the boiler combustion chamber and from inside front wall to face of bridge wall, and be adapted to burn _____ coal, _____ size, _____ Btu per pound as received. Where dump plates are furnished, ash pit under each plate shall be separated from wind-box by heavy iron side beam; gate or damper shall be fitted in each beam to control supply of air from wind-box to each pit. Operation of dump plates and air supply to pit shall be from boiler front.

(3) Construction of coal feeder shall be rugged, and parts exposed to combustion chamber temperatures shall be of heat resisting metal designed for long life. Chains, gears and worms shall be enclosed in heavy dust-proof cases with means for accessible lubrication. Feeding device shall be constructed to prevent damage by foreign material in the coal and to permit clearing of any feed stoppage. Shearpin, shearkey or safety linkage shall be readily accessible, and located where no damage will be done to the mechanism should they become dislodged after failure.

( ) Hopper shall be not less than 5/16 inch cast-iron or 3/16 inch steel plate, and fitted with gate at bottom for removal of obstructions. Coal capacity shall be a minimum of _____ pounds.

( ) Conveyor as an integral part of the stoker mechanism shall feed the coal from bin directly to retort or to hopper, whichever is shown. Conveyor shall be separately housed, and shall extend into bin a distance of _____ feet.

(4) Front shall be of heavy cast-iron or minimum 3/8 inch steel plate, rigidly anchored to boiler setting, and equipped with substantially built and accurately fitted doors necessary for stoker and boiler operation. Doors shall have liners for heat protection, and safety latches.

(5) Draft fan shall deliver the necessary air volume to support combustion under all required operating conditions, when tested in accordance with the National Association of Fan Manufacturers and the ASHVE "Standard Test Code for Centrifugal and Axial Fans". Impeller wheel shall be of the multi-blade centrifugal type, full-housed.

(6) Drive shall be by electric motor, fully enclosed or splash proof type, separate for each coal feeder (not less than _____ horsepower, _____ volt) and draft fan (not less than _____ horsepower _____ volt), or one drive for the stoker as an integral unit (not less than ____ horsepower _____ volt). Drive from motor to coal feeder shall be through a variable speed or adjustable feed device. In lieu of coal feed by direct electric drive, method of drive may be by oil-actuated cylinder operated through an electric motor (not less than _____ horsepower _____ volt); means shall be included for fuel feed adjustment.

(7) Combustion regulating equipment shall permit putting into or taking out of service any stoker without affecting the regulation of any equipment retained in service. Means shall be included to change from automatic to manual operation, and to change fuel-air ratio manually. Control actuation, except as herein noted, shall be electric, pneumatic, or hydraulic. Control operation shall be as follows:

( ) A pressurestat for each boiler, responsive to boiler steam pressure, shall start and stop stoker when steam pressure falls below and rises above predetermined settings. Operating differential shall be adjustable over a scale range of 0-15 pounds.

( ) An aquastat for each boiler, responsive to boiler water temperature, shall be the immersion type, and shall start and stop stoker when water temperature falls below and rises above predetermined settings. Operating differential shall be 10-15° F. over a scale range of about 80-240° F.

( ) Master regulator for all boilers (within one plant) which, in conjunction with other required appurtenances, shall meet the load demand by varying in a properly graduated manner, the rate of coal feed and the volume of air continuously supplied for each stoker within an operating range of ____ boiler horsepower to ____ boiler horsepower. Linkage and interconnections shall have a minimum of lost motion. Regulator shall be responsive to:

( ) Steam pressure, and shall maintain a predetermined operating pressure range on the boilers. In addition thereto, separate high limit device for each boiler shall stop the stoker when boiler pressure rises above a predetermined setting, and start stoker only when pressure falls within operating range; operating differential on device shall be adjustable over a scale range of 0-15 pounds.

( ) Water temperature, and shall maintain a predetermined operating temperature range on the boilers. In addition thereto, separate high limit device for each boiler shall stop stoker when boiler water temperature rises above a predetermined setting and start stoker only when temperature falls within operating range; operating differential shall be adjustable over a scale range of about 80-240° F.

( ) Overfire draft shall be controlled through boiler uptake damper to maintain, automatically, a negative pressure within 0.02 inch water column of predetermined setting, by means of a separate device for each boiler, or shall be controlled by the master regulator specified herein.

(8) "Hold fire" device for each boiler shall operate stoker intermittently when load demand drops below _____ percent of "net boiler rating". Device shall be electrically actuated and include a synchronous timing mechanism to maintain fire in boiler during periods when combustion regulating equipment is not set for sufficient operation to keep fire alive; timing for on-off operation shall be adjustable over a period not exceeding one hour.

( ) Low water cut-off for each boiler shall be electrically actuated and shall stop stoker when water in steam boiler falls below a predetermined level. Control shall consist of a heavy cast-iron chamber fitted with copper or brass float and equipped with packless valve and corrosion-resisting trim. Working parts shall be easily removable from the seat of the float chamber without disconnecting equipment from piping.

(9) Chimney draft shall be controlled by a barometric damper installed in the main breeching to maintain a predetermined draft without regard to weather conditions. Area of damper opening shall be equal to cross sectional area of breeching. Counterbalancing shall be adjustable and final adjustment shall be made with draft gauge. Damper shall be quiet in operation.

(10) Electric current for power supply will be brought to a point in the boiler room and terminate with a disconnect switch, under the Division "INTERIOR ELECTRICAL WIRING". Wiring and connections shall continue from this point under this Division, to all motors, switches, starters, relays and combustion regulating appurtenances, and be installed and connected complete and ready for operation. Electrical materials, equipment and workmanship shall conform with the applicable requirements in the electrical divisions of the specifications and the electrical codes listed in the Division "SUPPLEMENTARY CONDITIONS FOR MECHANICAL AND ELECTRICAL DIVISIONS". Switches, relays, start-stop push botton starters, and applicable combustion regulating devices shall be mounted on a separate paint-enameled finish metal panel for each stoker.

(11) Furnish special tools or wrenches needed for operation and maintenance of each stoker.

(12) Make tests (flue gas temperature and CO_2) on each boiler when fired with the type and grade of coal specified. Exit flue gas temperature and CO_2 measured (with Orsat apparatus or CO_2 indicator) in each boiler uptake not over 18 inches from boiler smoke outlet shall comply with the following listed values. (Make tests under loads specified below with the firing equipment completely in place, supplying labor and all other items for tests). Take readings every _____ for a _____ period for each load, and then average for each load.

LOAD % BOILER RATING	FLUE GAS TEMP °F.	CO_2 %

( ) Oil burner for each boiler shall include all materials and equipment for storing and burning No. 6 fuel oil, as defined in Commercial Standard CS12-48, "Fuel Oils"; assembly and installation shall be complete and ready for operation, and have the capacity to pump, preheat and atomize the necessary amount of oil to develop _____ boiler horsepower at boiler nozzle.

(1) Entire oil burner system and its installation and operation shall conform with any applicable codes and with the applicable requirements of the National Board of Fire Underwriters. Each burner shall be equipped with appurtenances to program automatically the correct sequence of burner starting, and with devices to stop operation of burner system automatically on flame failure, sounding an alarm and showing a visible signal light; restart shall be by hand; operating cycle shall continue until gases are purged from boiler. Safety device or devices shall be of the photo-cell type, and have means such as flame rod for being sensitive to and detecting the presence of a gas pilot flame before oil is admitted for atomization.

(2) Burner shall be fully automatic (modulating) type, operating on the principle of mechanically atomizing fuel oil sprayed from a rotating cup or nozzle in contact with a stream of primary air entering through a vaned nozzle, or equivalent action. Ignition shall be automatic gas-electric. Burner shall start on low flame, gradually increasing to maximum firing rate. The flame shall then be modulated in direct proportion to the load demand on the boilers. Oil shall not be admitted to boiler until it has reached the proper temperature for burning. Rotary cup-type burner shall be arranged to swing back out of boiler front, and have means to stop flow of oil automatically when burner is drawn; piping to such burner shall be made through hinged joints with stuffing boxes to permit withdrawing burner without disconnecting oil piping. Install steel drip pan under each burner and wherever else needed.

(3) Centrifugal fan shall supply primary air in correct proportions to the fuel burning rate and shall be assembled integrally with the burner or be separate therefrom. If separate, fans shall be furnished in duplex arrangement, mounted on concrete foundations with isolators, each fan of adequate capacity to supply the air for all boilers operating in battery; fan shall have regulator or equivalent device to supply air in correct proportions and at the proper pressure under all operating conditions.

(4) Oil pump shall be of the rotary gear type with bronze bushings. Pump shall be capable of drawing oil from storage tanks in quantity up to maximum demand, and at the same time, circulate such excess quantity of oil through the piping system sufficient to maintain the oil at temperatures suitable for pumping from tank. Pump shall be assembled integrally with burner or be separate therefrom. If separate, they shall be furnished in duplex arrangement, mounted on concrete foundations with isolators, each pump of adequate capacity and properly valved to supply oil for all boilers when operating in battery; pump may be on same drive with each fan (when fan is furnished separate from burner).

(5) Equipment shall be driven by electric motor suited to the intended service. Motor sizes shall be not less than the following:

(a) Oil burner, oil pump and fan integral assembly;
____ hp, _____ volt.

(b) Separate oil pump and fan assembly; ____hp, _____ volt.

(c) Separate oil pump; _____ hp, ____ volt.

(d) Separate fan; ____ hp, ____ volt.

(6) Oil regulating and/or relief valves and automatic oil shut-off devices, as necessary, shall control the supply of oil for atomization and the recirculation of excess oil. Pressure and vacuum gauges shall be mounted at each burner.

(7) Strainers with 125 pound cast iron bodies and removable wire mesh steel baskets, piped with shut-off valves, full size of line, shall be installed at each burner.

(8) Electric oil heater for each burner with a steel shell and electric immersion element shall be installed at each boiler. Element shall have capacity to heat sufficient oil to maintain burner in continuous operation from a cold boiler start until main oil heater has raised oil temperature for proper atomization. Electric heater shall have control to cut-in and cut-out automatically. Capacity shall be not less than ____ kw, _____ volt.

(9) Main oil heater for each burner shall be shell and copper tube type, supported (independent of piping system) and shall use boiler water for the heating medium. Heater shall be piped and valved so that head may be removed for inspection and cleaning of tubes. Heater shall be fitted with automatic temperature control.

(10) Thermal electrical system controlled automatically and of adequate capacity to meet the requirements for preheating oil, may be provided, if approved by the Local Authority, in lieu of the boiler water method of preheating.

(11) Front plate for each boiler shall be not less than _____ inch steel, extending full width of boiler, reinforced with angle irons and secured to boiler setting. Plate shall have accurately spaced and drilled openings such as for mounting of burner, ignition assembly, safety devices, secondary air damper and observation port. Secondary air damper shall be actuated through the modulating device controlling the firing rate to furnish the necessary air to support combustion.

(12) Tanks shall be of steel built in accordance with local and Underwriters Laboratories requirements, and shall bear Underwriters Laboratories label. Size of tanks, location and methods of support and foundations shall be as indicated. Tanks of slightly different overall dimensions from those shown, but having the same capacity, will be accepted. Unless otherwise noted, tank shall have adequate earth cover so that burner is above suction well of tank; where burner is shown below suction well of tank, each

suction line shall be fitted with Underwriters' Laboratories approved anti-syphon valve. Paint tanks with red lead and oil at factory, and a heavy brush coat of coal tar at time of installation.

(a) Openings, such as for suction, return, gauge, fill and sounding connections shall be tapped or have flanged ends. Suction and return connections shall be closely adjacent. Manhole opening shall be _____ inch diameter, built with extension collar and bolted cover. Concrete or masonry enclosure of adequate size to permit removal of cover shall surround manhole opening and extend from top of tank to approximately 4 inches above grade, terminating with cast-iron or steel frame and cast-iron cover.

(13) Pipe, except as otherwise noted, shall be black steel, standard weight; fittings shall be 125 lb. black, malleable iron. Pipe for vent line shall be galvanized steel, standard weight, with 125 lb. galvanized malleable fittings. Pipe for liquid level oil gauge shall be copper tubing, type L, with compression fittings. Stop and check valves, 2 inches and under, shall be brass, and when over 2 inches shall be iron body with brass or bronze fittings. Stop valves shall be gate valves. Check valves shall be horizontal swing type. Pipe sizes shall be as shown and when not shown shall be in accordance with oil burner manufacturer's recommendation.

(a) Extend fill and sounding lines to grade and terminate each with waterproof box and locking key; extend fill line into tank within 6 inches from bottom. Furnish gauging rod for each boiler room installation graduated to indicate gallons or barrels of oil in tank. Extend vent line to nearest building wall and terminate, with galvanized weatherproof vent cap and screen, at least 6 feet above grade and not less than 2 feet from any window or building opening. Connection to equipment shall be made with ground-joint or flanged unions. Piping at tanks shall have swing joints arranged to self-tighten with settling of tank.

(b) Extend suction and return lines into tank a distance of 6 inches from bottom, and terminate in a confining chamber constructed of steel pipe _____ inches in diameter by _____ inches long secured to tank bottom. Confining chamber, in lieu of above, may consist of a steel pipe sleeve, _____ inches diameter, surrounding the suction and return pipes from a distance of 6 inches above bottom to about 6 inches from top of tank and be securely braced in a position symmetrical to the pipes. Arrange suction and return piping and controls to permit taking out of service any burner or its auxiliary apparatus without affecting the operation of any related equipment retained in service. Support piping in buildings from building construction; type of hangers or brackets and their spacing shall be same as for the general piping system.

(c) Insulate suction and return lines underground including fittings, with asbestos paper, 1 inch hair felt and three-ply tar paper secured with copper wire; seal joints with hot bituminous compound. Insulate

oil piping in buildings with standard 1 inch air cell, neatly pasted with canvas wrapping and banded; insulate fittings with cement, 85% magnesia, or equivalent, in insulating value, same thickness as pipe covering, wrapped with canvas, neatly pasted and banded. Insulate preheaters with 1 inch, 85% magnesia blocks, or equivalent in insulating value, finished smooth and hard with 85% magnesia cement, or equal in insulating value.

(14) Excavation for tank and piping shall not be beyond the actual depth required. Backfill shall be with sand or clean earth, free from rocks, boulders or debris; before backfill is started, make pressure tests in the presence of the Local Authority representative, on tanks and underground piping for tightness in accordance with local regulations. Make system tight without calking; furnish equipment and supplies for test.

(15) Oil level gauge for each tank shall be of type arranged for wall mounting and for connection by tubing with each tank. Gauge shall register directly in gallons or in inches, in which case, a conversion chart to gallons shall be furnished and set with each gauge.

(16) Control actuation, except as herein noted, shall be electric or pneumatic or electric-pneumatic. Control operation shall be governed as follows:

( ) A pressurestat, of the modulating type, for each boiler, responsive to steam pressure, shall start and stop burner when steam pressure falls below and rises above predetermined settings; pressurestat shall control the oil flow rate and volume of air in the operating steam pressure range to produce efficient and smokeless combustion in accordance with the load demand. When fan and/or oil pump set are on separate drive from oil burner assembly, control shall be included to start fan and pump when burner or burners are operating, and stop such equipment when oil burners are inoperative.

( ) An aquastat, of the immersion and modulating type, for each boiler, responsive to water temperature, shall start and stop burner when water temperature falls below and rises above predetermined settings; aquastat shall control the oil flow rate and volume of air in the operating water temperature range, to produce efficient and smokeless combustion, in accordance with the load demand. When fan and/or pump set are on separate drives from oil burner assembly, control shall be included to start fan and pump when burner or burners are operating, and stop such equipment when oil burners are inoperative.

( ) Low water cut-off for each boiler which shall stop burner when water in steam boiler falls below a predetermined level. Control shall consist of a heavy cast-iron chamber fitted with copper or brass float and equipped with packless valve and non-corrosive trim. Working parts shall be easily removable from the seat of the float chamber without disconnecting equipment from piping.

(17) Draft shall be controlled by an industrial type barometric damper installed in the main breeching, to maintain a predetermined draft without regard to weather conditions. Area of damper opening shall be not less than cross section area of breeching. Counterbalancing shall be adjustable, and final adjustment shall be made with draft gauge. Damper shall be quiet in operation.

(18) Explosion door shall be fitted to breeching and shall open under the force of positive explosive pressure. Door shall be constructed, equipped, and arranged to return to closed position by gravity. Thickness of metal shall be at least equal to that of breeching.

(19) Thermometers shall be of the mercury-in-glass, triangular bronze type, with separable socket, 12 inch scale, graduated from ____ to ____°F. Install thermometer at each burner.

(20) Fire extinguishers shall be Underwriters' Laboratories labelled, installed on bracket secured to wall in boiler room where shown or where directed by Local Authority. Capacity and type of chemical contained therein shall be in accordance with local and Underwriters' Laboratories regulations. Install not less than one in each boiler room.

(21) Gas for ignition shall be:

( ) Type available at the project. Unless otherwise noted, gas line will be brought to a point in the boiler room and terminate with a shut-off valve, under the Division "PLUMBING". Piping, including shut-off valves, regulators and controls concerned with burner operation shall continue from this point under this division and be installed and connected complete and ready for operation. Materials shall conform with the applicable requirements stipulated under the Division "PLUMBING".

( ) Liquefied petroleum, equipment and piping shall be furnished, installed and connected complete, of capacity and sizes shown and/or as necessary, and shall conform with the "Standards of the National Board of Fire Underwriters for the Design, Installation and Construction of Containers and Pertinent Equipment for the Storage and Handling of Liquefied Petroleum Gases" (NBFU Pamphlet No. 58). Equipment shall be arranged for storage and burning commercial propane as defined by the National Gasoline Association of America.

(22) Electric current for power supply will be brought to a point in the boiler room and terminate with a disconnect switch, under the Division INTERIOR ELECTRICAL WIRING. Wiring and connections shall continue from this point under this division to all motors and electrical appurtenances and controls and be installed and connected complete and ready for operation. Materials, equipment and workmanship shall conform with the applicable requirements in the electrical divisions of the Specifications and the electrical codes listed in the Division "SUPPLEMENTARY CONDITIONS FOR MECHANICAL

AND ELECTRICAL DIVISION". Switches, relays, starters (push-button type), and other devices shall be mounted on panelboards herein specified, separately for each burner. Oil level gauges shall be mounted on one of the panelboards.

(23) Panelboards shall be constructed of not less than No. 12 U.S. Standard Gauge steel, rigidly reinforced and secured to building construction, each panelboard to be located where shown or directed by Local Authority; paint board with two coats of paint finished in a dull black.

(24) Operating tools and special wrenches shall be furnished for each boiler room installation. Instructions shall be furnished to Local Authority, in the use and operation of the complete system and equipment.

(25) Tests (flue gas temperature and CO_2) shall be made on each boiler when fired with the type and grade of fuel specified. Exit flue gas temperature and CO_2 measured (with Orsat apparatus or CO_2 indicator) in each boiler uptake not over 18 inches from boiler smoke outlet shall comply with the following listed values. (Make tests under loads specified below with the firing equipment completely in place, supplying labor and all other items for tests). Take readings every ____ for a _____ period of each load, and then average for each load.

LOAD - % BOILER RATING	FLUE GAS TEMP. °F.	CO_2 %

( ) Oil burner for each boiler shall include all materials and equipment for storing and burning No. 2 fuel oil, as defined in Commercial Standard CS12-48, "Fuel Oils"; assembly and installation shall be complete and ready for operation, and have the capacity to pump and atomize the necessary amount of oil to develop _____ boiler horsepower at boiler nozzle.

(1) Entire oil burner system and its installation and operation shall conform with regulations of the local jurisdictional bodies and with the applicable requirements of the National Board of Fire Underwriters.

(2) Burner unit shall be direct connected electric-motor driven, mechanical draft type, completely self-contained, equipped with electric ignition, oil regulating and/or relief valves, pressure and vacuum gauges, and safety device or devices to stop operation in the event of flame failure and prevent restart unless reset manually; operation shall be such that flame will not impinge against chilling surfaces. Pump shall be of the rotary gear type capable of drawing oil from the storage tank, delivering

atomized oil to combustion chamber and returning excess oil to tank; protect oil delivered to each burner with an Underwriters' Laboratories approved strainer with cast-iron body and removable wire-mesh steel basket. Burner unit shall conform with the requirements in Commercial Standard CS75-42 "Automatic Mechanical Draft Oil Burners Designed for Domestic Installations". Motor size shall be not less than _____ horsepower, _____ volt.

(a) Operating tools shall be furnished with each boiler room installation.

(3) Front plate for each boiler shall be not less than _____ inch steel, extending full width of boiler, reinforced and secured to boiler setting. Plate shall have accurately drilled openings such as for mounting of burner.

(4) Tanks shall be of steel, built in accordance with Underwriters' Laboratories requirements and shall bear their label. Size of tanks, location and methods of supports and foundations shall be as indicated. Tanks of slightly different overall dimensions from those shown, but having the same capacity will be acceptable. Unless otherwise noted, tank shall have adequate earth cover so that burner is above suction well of tank; where burner is shown below suction well of tank, each suction line shall be fitted with Underwriters' Laboratories approval anti-syphon valve. Paint tanks with red lead and oil at factory, and with heavy brush coal tar at time of installation.

(a) Openings such as for suction, return, gauge, fill, and sounding connections shall be tapped. Suction and return connections shall be closely adjacent.

(5) Pipe except as otherwise noted, shall be black steel or wrought-iron standard weight; fittings shall be 125 lb. black, malleable iron. Pipe for vent line shall be galvanized or wrought-iron standard weight with 125 lb. galvanized malleable iron fittings. Pipe for suction and return and liquid level oil gauge shall be copper tubing, type L, with compression fittings. Stop valves shall be 125 lb. gate, brass; check valves shall be horizontal swing type, 125 lb. brass. Pipe sizes shall be as shown, or (where not shown) shall be in accordance with oil burner manufacturers' instructions.

(a) Extend fill and sounding lines to grade and terminate each with waterproof box and locking key; furnish gauging rod for each boiler room installation graduated to indicate gallons or barrels of oil in tank. Extend vent line to nearest building wall, and terminate with galvanized waterproof cap and screen, at least 6 feet above grade and not less than 2 feet from any window or building opening. Connection to equipment shall be made with ground-joint unions. Piping at tanks shall have swing joints arranged to self-tighten with any settling of tank.

(b) Extend fill, suction and return lines into tank within 6 inches from bottom, and fit suction end with a ball-type foot valve equipped with strainer. Arrange suction and return piping and controls to permit taking out of service any burner or its auxiliary appurtenances without affecting the operation of related equipment retained in service. Support piping in buildings from building construction; type of hangers or brackets and their spacing shall be same as for the general piping system.

(6) Excavation for tank and piping shall not be beyond the actual depth required. Backfill shall be with sand or clean earth, free from rocks boulders or debris; before backfill is started make pressure tests in the presence of the Local Authority representative, on tanks and underground piping for tightness in accordance with local regulations. Make system tight without calking; furnish equipment and supplies for test.

(7) Oil level gauge for each tank shall be of type arranged for wall mounting and for connections by tubing with each tank. Gauge shall register directly in gallons or may read in inches, in which case a conversion chart to gallons shall be furnished and set with each gauge.

(8) Control actuation shall be electric, and be governed as follows:

(a) A time switch shall stop oil burners at a predetermined time at night and start burners, subject to command of the controls, at a predetermined time in the morning.

( ) A pressurestat for each boiler responsive to steam pressure shall start and stop burner when steam pressure falls below and rises above predetermined settings. Operating pressure differential shall be adjustable over a scale range of 0-15 lbs. gauge.

( ) An aquastat of the immersion type for each boiler responsive to water temperature shall start and stop burner when water temperature falls below and rises above predetermined settings. Operating temperature differentials shall be 10-15°F. over a scale range of 80°-240°F.

( ) A low water cut-off for each boiler shall stop burner when water level in steam boiler drops below a predetermined level. Control shall consist of a heavy cast-iron chamber fitted with copper or brass float and equipped with packless valve and corrosion-resisting trim. Working parts shall be easily removable from the seat of the float chamber without disconnecting equipment from piping.

(9) Draft shall be controlled by a barometric damper installed in the main breeching, to maintain a predetermined draft without regard to weather conditions. Area of damper opening shall be not less than cross sectional area of breeching. Counterbalancing shall be adjustable, and final adjustment shall be made with draft gauge. Damper shall be quiet in operation.

(10) Fire extinguishers shall be Underwriters' Laboratories approved, shall bear their label, and shall be installed on brackets secured to wall in boiler room where shown or where directed by Local Authority. Capacity and type of chemical contained therein shall be in accordance with local and Underwriters' Laboratories regulations. Install not less than one in each boiler room.

(11) Electric current for power supply will be brought to a point in the boiler room and terminate with a disconnect switch, under the Division "INTERIOR ELECTRICAL WIRING". Wiring and connections shall continue from this point under this Division to all electric motors, electrical appurtenances and controls, and be installed and connected complete and ready for operation. Materials, equipment and workmanship shall conform with the applicable requirements in the Electrical Division of the Specifications and the electrical codes listed in the division, "SUPPLEMENTARY CONDITIONS FOR MECHANICAL AND ELECTRICAL DIVISIONS". Switches, relays, starters and such other devices as necessary shall be mounted on a steel panel, painted dull black, for each burner and secured to walls in front of boiler. Oil level gauge shall be mounted on one panel in each boiler room.

(12) Tests shall be made on each boiler when fired with the grade of oil specified. Test procedure and operation shall conform with the requirements of Commercial Standard CS75-42. Supply labor and all other items for test.

( ) Gas burner for each boiler shall include all material and equipment for burning _____ gas, having a gross heat value of _____ Btu per cubic foot, specific gravity _____, delivered to boiler room at _____ pressure. Assembly and installation shall be complete and ready for operation and have the capacity to develop _____ horsepower at the boiler nozzle. Entire system and its installation and operation shall conform with the regulations of the local municipality and applicable requirements of bodies such as the National Board of Fire Underwriters and the American Gas Association. Equipment for which the American Gas Association carries listings, shall bear the American Gas Association label.

(1) Burner assembly shall consist of venturi elements and burner heads, each cast in one piece and set vertically in parallel rows of manifolds, or shall consist of horizontal venturi tubes or a single venturi tube terminating in a cast-iron head or heads with raised and drilled ports or fitted with nozzles or jets, each type of burner supplemented with necessary refractory for the efficient burning of the gas; or burner shall be of the type with manifolds having a series of spuds or orifices delivering streams of gas through metal tubes set within (or directly through ports in) a refractory face block. Burners shall operate on natural draft or forced draft using electric motor driven centrifugal fan. Motor shall be not less than _____ horsepower, _____ volt. Air shutters shall have openings to permit small fixed quantities of air to enter combustion chamber when shutters are closed. Burners shall operate without pulsations or flarebacks.

(a) Operating tools shall be furnished with each boiler room installation.

(2) Gas controls for each boiler shall consist of a manually operated pilot and main burner shut-off cocks, pressure regulating valve, at least one safety pilot control, and pilot and main burner automatic gas valve.

(a) Shut-off cock for pilot burner shall be brass; shut-off cock for main burner shall be iron body with brass core.

(b) Pressure regulating valve shall be adjusted to effect a uniform outlet pressure to the burner and shall be vented.

(c) Safety pilot control shall be automatic, requiring an external electrical source for operation and shall include a flame detecting element such as a flame rod or equivalent device sensitive to the presence of a pilot flame before gas is admitted to the main burner. The control shall shut the main burner and pilot burner valve instantaneously upon flame failure. The valves shall remain closed until pilot is relighted by hand. Additional pilots over the required safety pilot shall be provided, if necessary, for smoother ignition; they may be of the manual type, but gas shall be supplied to manual pilots from the same automatic valve which monitors the safety pilot. Safety pilots shall be so located to ensure positive ignition when manual pilots are inoperative.

(d) Pilot burner automatic gas valve shall be solenoid or diaphragm type actuated from an external electrical source.

( ) Main burner automatic gas valve shall be diaphragm type whose opening and closing shall be actuated by a solenoid through an external electrical source. Solenoid operation shall be governed by thermostatic controls. Valve shall close on current failure but shall resume operation subject to command of the thermostatic controls, when current is again available. Valve shall be joined by linkage or by other means to device such as shutters admitting secondary air for combustion (where required) so that device will fall to open position should linkage become disconnected, and shall function in relation to such device permitting valve and device to open and close simultaneously. Valve shall have means for adjusting time of complete opening from about 10 to 60 seconds; valve and air admission device shall also be fitted for manual, independent of automatic, operation.

( ) Main burner automatic gas valve shall be diaphragm type whose opening and closing shall be actuated by a solenoid through an external electrical source. Solenoid operation shall be governed by thermostatic controls. Valve shall close on current failure, but shall resume operation, subject to command of the thermostatic controls, when current is again available. Valve shall be joined by linkage or by other means to device such as shutters admitting secondary air for combustion (where required) so that device will fall to open position should linkage be disconnected. Valve shall have means incorporated thereon, or separate valve of the spring-loaded type shall be

provided for: modulating the supply of gas and volume of air progressively and in correct ratio to meet the load demand; minimum low fire adjustment; adjusting time of complete opening from about 10-60 seconds; manual, independent of automatic operation. Air admission device shall have means for manual, independent of automatic, operation.

(3) Thermostatic controls shall be electrically actuated, and be governed as follows:

(a) A time switch shall close main burner automatic gas valve at a predetermined time at night and open valve, subject to command of the thermostatic controls, at a predetermined time in the morning.

( ) A pressurestat for each boiler, responsive to steam pressure, shall open and close gas valve when boiler steam pressure falls below and rises above predetermined settings. Operating pressure differential shall be adjustable over a scale range of 0-15 lbs. Pressurestat shall be modulating type, where gas valve modulates supply of gas.

( ) An aquastat of the immersion type for each boiler responsive to water temperature, shall open and close gas valve when boiler water temperature falls below and rises above predetermined settings. Operating temperature differential shall be 10-15°F. over a scale range of about 80-240° F. Aquastat shall be modulating type, where gas valve modulates supply of gas.

( ) A low water cut-off shall close gas valve when water level in steam boiler falls below a predetermined level. Control shall consist of a heavy cast-iron float chamber fitted with copper or brass float and equipped with packless valve and non-corrosive trim. Working parts shall be easily removable from the seat of the float chamber without disconnecting equipment from piping.

(4) Front plate for each boiler shall be not less than ____ inch steel, extending full width of boiler, reinforced and secured to boiler setting. Plate shall have accurately spaced and drilled openings, for mounting of burner parts and air admission assembly.

(5) Draft shall be controlled by a barometric damper installed in the main breeching to maintain a predetermined draft without regard to weather conditions. Area of opening shall be not less than cross sectional area of breeching. Counterbalancing shall be adjustable, and final adjustment shall be made with draft gauge. Damper shall be quiet in operation.

(6) Gas line, unless otherwise noted, will be brought to a point in the boiler room and terminate with a shut-off cock, under the division "PLUMBING". Piping shall continue from this point under this Division and be installed and connected complete. Materials and equipment shall conform with the applicable requirements stipulated under the division "PLUMBING".

(7) Electric current for power supply will be brought to a point in the boiler room and terminate with a disconnect switch under the Division "INTERIOR ELECTRICAL WIRING". Wiring and connections shall continue from this point under this Division to electrical devices and be connected complete and ready for operation. Materials, equipment and workmanship shall conform with the applicable requirements in the electrical divisions of the Specifications and the electrical codes listed in the Division "SUPPLEMENTARY CONDITIONS FOR MECHANICAL AND ELECTRICAL DIVISIONS". Switches, relays and such other appurtenances as necessary shall be mounted on a steel panel, painted dull black, for each burner unit and fastened to wall in front of boiler.

(8) An integral boiler-burner unit designed specifically for gas burning and meeting all the requirements for boiler and burner, may be provided in lieu of separate boiler and burner.

(9) Tests (flue gas temperature and CO_2) shall be made on each boiler when fired with the type of gas specified. Exit flue gas temperature and CO_2 measured (with Orsat apparatus or CO_2 indicator) in each boiler uptake not over 18 inches from boiler smoke outlet, shall comply with the following listed values. (Make tests under loads specified below with the firing equipment completely in place, supplying labor and all other items for tests). Take readings every _____ for a _____ period for each load, and then average for each load.

LOAD - % BOILER RATING	FLUE GAS TEMP - °F	CO_2 %

( ) STEAM HEAT CONTROL

a. Distribution of steam shall be balanced by an orifice in each radiator valve assembly or equivalent means to ensure radiators receiving steam in quantities proportional to radiator surface. Installation of complete system shall be in accordance with manufacturer's instructions. The flow of steam shall be:

(1) Continous and varied automatically and manually to meet the demand through control valves of the "floating" or " throttling" type, or

(2) Intermittent and be varied automatically and manually to meet the demand through control valves of the two-position, on-and-off type, or

(3) Continuous and intermittent as a combined system, and be varied automatically and manually to meet the demand. The system shall provide for continuous flow when the demand is more than 35-40 percent of full (design) load, and shall automatically shift to and provide for intermittent flow when demand is less than 35-40 percent of full (design) load.

b. Control valve including component parts shall be of current design, of a type that has been marketed, successfully operated and known to have given satisfactory service for the past two heating seasons on projects of comparable size to this project. Evidence shall be furnished to Local Authority prior to approval that a readily accessible source of service is available, and name and address of service agency submitted before proceeding.

c. Control system shall consist of ____ sections or zones with a control valve for each section or zone. Control valve shall be so constructed that it can be opened by hand in the event of failure to operate automatically. It shall be connected to a separate regulating device for each section or zone, actuated by a thermostatic element responsive to outside and/or inside temperatures. Regulating device shall automatically govern control valve to supply steam necessary to meet the demand. Outside thermostat element shall be protected from sun or wind. Valve shall close under automatic setting when outside temperature rises above 65°F. and when steam pressure on the downstream (delivery) side of the valve exceeds ____ pounds gauge; valve shall open when outside temperature and delivery pressure are restored to within operating range.

( ) Indoor regulating device shall have supplemental means for variably increasing or decreasing manually (above or below normal) the quantities of steam by turning a dial over a calibrated scale showing the amount of increase or decrease, and fully closing or opening the control valve automatically independent of control element operation. Regulating device with supplemental appurtenances shall be mounted on a paint-enameled finish metal panel or cabinet and secured to building construction.

( ) Mount regulating device on one panel in the boiler room where shown or directed. Lights for each section or zone shall indicate whether valve is open or closed, and be mounted with its regulating device.

( ) Mount regulating device in each room where control valve is installed where shown or directed. Lights shall indicate whether valve is open or closed, and be mounted with its regulating device.

( ) Outdoor regulating device shall be completely self-contained and shall include responsive thermostatic element, and clock mechanism to operate control valve at time intervals, increasing or decreasing the on-periods during each half hour as outside temperatures fall and rise. The device shall have supplemental means for resetting the length of on-periods for each half hourly period, above or below normal, by turning a dial or wheel on a calibrated scale showing the amounts of increase or decrease; making two predetermined settings, the first to start automatic operation in the morning and the second to close valve at night. The dial of the clock mechanism shall have the 24 hours of the day marked thereon, the night hour area from 6 p.m. to 6 a.m. to be finished in black and designated "night"; scale graduations between hours shall be in not less than 1/4 hour periods. All parts of regulating device except responsive element shall be housed in a waterproof box of cast aluminum or heavy plate.

d. Control actuation shall be electric or pneumatic or electric-pneumatic. Provide two spare wires (if electrically actuated) from panel to each control valve and each governing device, when system is controlled centrally from panel in boiler room.

(1) Appurtenances such as electric or pneumatic relays, transformers, or switches required in the operation of the control system, shall be mounted on a paint-enameled finish metal panel or cabinet, secured to building construction where shown or directed by Local Authority, or appurtenances may be mounted on the panel or cabinet with indoor regulating device or devices.

( ) Underground electric or air lines may be run in the same earth trench with, but not within, the conduits housing space heating and/or domestic water heating lines. Where this installation condition is not feasible or where drawings show separate trenches for the electric and/or air lines, do necessary excavation and backfill; earth cover shall be a minimum of two feet; air lines shall be laid on and surrounded with a minimum of 3 inches of clean sand; backfill shall be free from rocks, boulders and debris. Air piping shall be below frost line, with means for drainage.

( ) Sleeves for electric cable or air line shall be set in foundation wall during construction where cables or air lines are run in trenches separate from space heating and/or domestic water heating conduits. Extend sleeve one inch beyond inside and outside face of wall and calk annular space between cable or air line and sleeve with water-tight material; apply asphalt to outside face of wall around sleeve extension.

(2) Electric wiring shall be complete with necessary adjunct equipment such as terminal cabinets, fuses, switches, relays and transformers and all connections shall be made ready for operation. Supplies shall be taken from nearest electrical house panel or panels furnished and installed under Division "INTERIOR ELECTRICAL WIRING". Electrical materials, equipment and workmanship, unless otherwise noted, shall conform with the applicable requirements in the electrical divisions of the specifications and the electrical codes listed in the Division "SUPPLEMENTARY CONDITIONS FOR MECHANICAL AND ELECTRICAL DIVISIONS."

(a) Interior wiring carrying less than 30 volts shall be No. 18 or larger, as required by the control system manufacturer, rubber or plastic insulated. Where installed in trapped conduit or in conduits in floor slabs, wire shall be insulated and installed in lead sheathed cable; no conduit shall be installed in basement floor slab.

( ) Underground cable shall consist of No. 19 AWG solid copper wire, and when in conduit, shall have a dry core single wrap paper insulation and be lead-sheathed; conduit shall be of asbestos cement. When cable is buried directly in earth, cable shall, in addition to the paper insulation and lead sheathing be covered with a layer of jute, two plain steel tapes and a covering braid, corresponding with commercial parkway cable finish, and constructed for direct burial in earth. Cables shall be run to terminal cabinets

within buildings where shown or directed by Local Authority; be identified as to destination and so stamped on brass tags attached to cable stub with soldered tie wires. Cables shall be shipped, handled and stored with ends hermetically sealed by lead, and cable ends shall be soaked in metal beeswax and be bitumastic painted immediately after connection. Splices when necessary may be made only in buildings and in readily accessible pull, junction or outlet boxes.

( ) Terminal cabinets shall be of steel, enameled-painted and be complete with wiring devices; cabinet doors shall have locks arranged for master keying. Furnish six master keys. Directory framed in glass with schedule of circuits shall be mounted on inside of cabinet, and show the active and spare conductors for each circuit. Binding post chambers shall have a moisture-proof seal for incoming cables and be assembled at factory with cable stub. Cabinets shall be fitted with a one inch knockout for ventilation top and bottom, and be secured to building construction.

(3) Pneumatic system shall be complete with piping, piston type electric motor-driven air compressor with base, tank and accessories, switches, relays and auxiliary appurtenances connected ready for operation.

(a) Air lines shall be copper tubing conforming with Federal Specifications WW-T-799a, Type L or K. Fittings shall be copper or brass; joints shall be sweat or flared type for lines in buildings and flared type for underground lines. Materials, equipment and workmanship shall conform to the applicable requirements of this Division and Division "PLUMBING". Directory, framed in glass, mounted and secured to building construction where indicated or where directed by Local Authority shall show, properly identified, the schedule of circuits and their destination.

e. Tests on electric (and air lines) shall be made prior to concealing lines in ground or in buildings.

(1) Electric line tests shall conform with test requirements stipulated in the electrical division of the specifications.

(2) Air line tests shall be made with air pressure, minimum 50 pounds per square inch gauge or 50 percent higher than proposed maximum operating air pressure, whichever is higher. System shall be made tight at this pressure; system will be considered tight if drop in pressure over a twenty minute period is unnoticeable on the test gauge.

(3) Heat tests shall show that:

(a) Load on boilers will not fluctuate more than 10 percent plus or minus in an interval of 20 minutes over a continuous test period of 8 hours.

(b) System will maintain a temperature not less than 68°F. nor more than 74°F. in rooms where controlled radiation is located (when the outside temperature is less than 40°F.) and not less than 68°F. nor more than

76°F. (when outside temperature is over 40°F); except that rooms within a dwelling shall not vary under any condition more than 2°F. plus or minus. Compliance will be considered conclusive only after temperatures remain within the stipulated ranges for at least four consecutive hours. Test thermometers shall be calibrated within 0.5°F. of accuracy; evidence shall be submitted that thermometers have been so calibrated. Measure temperature 2 feet from an outside wall at center of room and 30 inches from floor. The above tests shall be made in _____ dwelling units for each section or zone selected by the Local Authority, but the Contractor shall not be relieved of the responsibility to meet the requirements in all other dwelling units.

f. Adjustments and replacements, to comply with specification requirements, shall be made as a result of all tests. Furnish (except as otherwise noted) fuel, energy, materials, instruments and labor for tests.

( ) HOT WATER HEAT CONTROL

a. Even heat distribution shall be continuously and automatically maintained by varying the temperature of the supply water to the heating system, proportionately with changes in outside air temperatures. The temperature of supply water shall be varied by using heated water directly from the boiler or heat exchanger (maintained at a constant predetermined temperature) mixed with return water from the heating system in such proportions as may be required. Boiler water temperature shall be controlled by an aquastat specified under the respective section on firing equipment.

b. Control valve including component parts shall be of current design, of a type that has been marketed, successfully operated and known to have given satisfactory service for the past two heating seasons on projects of comparable size as this project. Evidence shall be furnished to Local Authority that a readily accessible source of service is available. Submit name and address of servicing agency before proceeding.

c. Control system shall consist of _____ sections or zones with a three-way proportioning type mixing valve for each section or zone. Valve shall be so constructed that it can be opened by hand in the event of failure to operate automatically. Valve shall be operated electrically through a regulating device, monitored by a sensing capsule inserted in the supply water to the system at the downstream side of the valve, and actuated by a thermostatic (sensing) element responsible to outside temperatures. Valve shall return to a position, fully closed to the heated water and fully open to return water, when the system is not in operation.

(1) Regulating device shall have (a) supplemental means for variably increasing or decreasing, manually above or below normal, the water temperature to the system, by turning a dial over a calibrated scale showing the amount of increase or decrease; (b) a switch to permit manual operation independent of automatic operation, providing for quick heating up; (c) an auxiliary switch to stop the circulating pumps when the outside temperature is 65°F. and above, and start pump operation when temperature falls below

65°F. Device with supplemental appurtenances shall be mounted on a paint enamel-finish metal panel or cabinet, secured to the building construction and located, where shown or as directed by the Local Authority, in room where mixing valve is installed.

(2) Outside actuating (sensing) element shall be protected from sun or wind.

d. Anti-freeze safety device shall be in the form of a two-position temperature control, actuated by a sensing capsule located in the outside air, operated through a timing mechanism. The control shall be accurate to within 1°F, and shall start and stop the circulating pumps intermittently over a predetermined period when the outside temperature is 35°F or less. The anti-freeze control shall be fitted to function when the heat control equipment specified herein is not set for normal operation. Timing mechanism shall have means for adjustment to operate pumps continuously from about 1 to 7 minutes in a 30-minute or 60-minute period. One such control shall be provided for each circulating pump arrangement.

e. Electric wiring shall be complete with necessary accessory equipment, such as metal mounting panels or cabinets, fuses, switches, relays and transformers, and all connections shall be made ready for operation. Supplies shall be taken from nearest electric house panel or panels furnished and installed under the Division, "INTERIOR ELECTRICAL WIRING". Electrical materials, equipment and workmanship, unless otherwise noted, shall conform with the applicable requirements in the electrical divisions of the specifications and the electrical codes listed in the Division, "SUPPLEMENTARY CONDITIONS FOR MECHANICAL AND ELECTRICAL DIVISIONS".

f. Heat control devices in conjunction with other equipment in the piping system such as balancing cocks, and in the radiator connections such as balancing supply valves or return elbows shall be adjusted to maintain not less than 68°F. nor more than 74°F. in rooms where controlled radiation is located, when the outside temperature is less than 65°F (except that rooms within a dwelling shall not vary under any condition more than 2°F. plus or minus). Compliance will be considered conclusive only after temperatures remain within the stipulated ranges for at least 4 consecutive hours. Test thermometers shall be calibrated within 0.5°F. of accuracy; evidence shall be submitted that thermometers have been so calibrated. Measure temperature 2 feet from an outside wall at center of room and 30 inches from floor. Temperature tests shall be made in _____ dwelling units for each section or zone selected by the Local Authority, but the Contractor shall not be relieved of the responsibility to meet the requirements in all other dwelling units.

g. Adjustments and replacements to comply with specification requirements, shall be made as a result of all tests. Furnish (except as otherwise noted), fuel, energy, materials, instruments and labor for tests.

__. INSULATION. (IN BOILER ROOMS AND OTHER BUILDINGS)

a. Boilers. Insulate exposed surfaces, except manhole and handhole covers and front and rear door openings, with one layer of _____ inches thick 85 per

cent magnesia blocks or other blocks equivalent in overall insulation valve, wired on or otherwise secured to the boiler. Blocks shall be closely abutted and joints sealed with cement. Reinforce with chicken wire, over which apply 1/2 inch thickness insulating cement in two coats. One part portland cement may be mixed with 2 parts insulating cement for final coat, trowelled smooth, and beveled around openings.

b. Breeching. Wrap all surfaces except cleanout door or other door openings from boiler smoke collars to chimney or outside building wall (where shown) with a layer of hyrib lath with "V" irons attached to form not less than 3/4 inch air space. Over lath, apply blocks, chicken wire and finishing cement same as for boilers.

c. Piping.

( ) Insulate steam supply and pump discharge piping (except where otherwise noted). Atmospheric or vacuum condensate return and steam drip lines shall not be insulated unless otherwise noted. Apply insulation with sections closely butted. Piping exposed to view in dwelling units, and in finished spaces of administration and community buildings shall not be insulated. Insulate steam piping concealed in chases of outside walls and in partitions.

( ) Insulate hot water heating supply and return piping (except where otherwise noted). Apply insulation with sections closely butted. Piping exposed to view in dwelling units and in finished spaces of administration and community buildings shall not be insulated. Insulate piping concealed in chases of outside walls and in partitions.

__. Insulate fittings (except flanges and unions) and valves on covered pipe with two coats of insulating cement, the second finished smooth and the overall thickness not less than the adjacent piping; one part portland cement may be mixed with two parts insulating cement for the second coat. Wrap insulated fittings and valves (except where waterproof material is applied) with canvas pasted on, same as for piping.

__. Extend canvas jacket (except where otherwise noted) over pipe covering joints and paste in place, treating paste with one tablespoon bluestone to each gallon of paste; secure with bands spaced not over 18 inches on centers and one on each side of fitting. (Bands need not be applied on piping concealed in walls or chases or where waterproof wrapping is applied). Ram insulation material tightly in voids of covering protector saddles at pipe roller supports, and finish neatly into the cup flanges of the saddles.

( ) Wrap over insulated pipes, fittings and valves located in crawl spaces, a layer of coal tar saturated felt with joints lapped not less than 2 inches and secured with galvanized wire loops drawn tight and ends bent over to leave no projections. Fittings and valves may be protected with a heavy coat of waterproof bituminous compound, extended over the adjacent wrapping, in lieu of the wrapping.

( ) Insulate exposed surfaces of heat exchanger except manhole openings with one layer of _____ inch thick 85 percent magnesia blocks or other blocks equivalent in overall insulation value, wired on or otherwise secured to exchanger; blocks shall be closely abutted and sealed with cement. Reinforce with chicken wire over which apply not less than 1/2 inch thickness hard finishing insulating cement troweled to a smooth surface. One part portland cement may be mixed with two parts insulating cement.

d. Clean surfaces before insulation is applied.

( ) UNDERGROUND DISTRIBUTION

a. System of underground distribution shall consist of items such as piping, conduits for housing the piping, supports, insulation, excavation and backfill, anchors, expansion and drainage, furnished and installed complete except as otherwise noted. Joints on piping 1-1/2 inches and larger shall be welded; joints on smaller piping shall be screwed or welded.

(1) Domestic water heating lines and insulation therefor will be furnished and installed (when so indicated) under the Division "PLUMBING" in the same conduit with the heating lines, but Contractor under this Division shall provide the conduit of adequate size to house all such lines, pipe supports, alignment guides, shutter sleeves and other necessary hangers.

b. Conduits shall consist of one of the following types:

(1) Built-up types shall be constructed of tile, or precast concrete or cast-iron, strong enough to support any probable load. Joints shall be sealed with portland cement mortar 1:3 mix troweled on, and the cement water-proofed (after it has set) over the entire surface. Foundation base shall be a 1:3:5 mix concrete slab not less than 4 inches thick, troweled smooth; where separate external base drain (resting on concrete base) is furnished, slab shall extend 6 inches on each side of drain. Drain shall be continuous under conduit, either of the separate external type with open joints, constructed of tile, furnished as standard by conduit manufacturer or constructed internally beneath the pipe chamber to form a channel in the concrete base.

(a) Tile conduit shall be of first grade, hard vitrified terra cotta, sectional type, of a construction in which the upper and lower envelopes are set in place with lock-lip joints extending full length of section, cradled on a tile base drain, or of a construction in which a semi-circular tile envelope rests upon trapezoidal tile base blocks with longitudinal channels.

(b) Precast concrete conduit shall be sectional type, formed from two envelopes and sealed in place.

(c) Cast-iron conduit shall be sectional type, formed from two envelopes of heavy ribbed construction, clamped and sealed in place.

(2) Sealed unit systems shall be constructed of coated galvanized iron or insulating concrete or poured asphalt. Foundation base for each sealed unit system conduit (except where concrete base is part of the system) shall be cast-in-place or precast concrete blocks, cinder blocks, or other masonry materials of size and type recommended by conduit manufacturer, placed approximately 10 feet on centers; top of base shall be flat and level with top of gravel bed.

(a) Coated galvanized iron conduit and its connector sleeves shall be of galvanized iron not less than No. 18 gauge for conduit sizes 10 inches and smaller and not less than No. 16 gauge for sizes larger than 10 inches. Units shall be formed into a cylinder with helical corrugations having a lock seam paralleled with the corrugations; outside surface shall be coated with a bituminous material finished smooth, not less than 1/8 inches thick over the crest of the corrugations on which shall be applied a tight layer of coal tar saturated felt with joints lapped three inches and sealed with a heavy coat of coal tar pitch. Connector sleeves between units shall be plain cylinders, of same material as units. Protect sleeve with same material and by same method as units; weld longitudinal and circumferential joints.

(b) Insulating concrete conduit shall consist of vermiculite or perlite aggregate, portland cement and waterproofing admix poured monolithically in the field, and sealed in a waterproof envelope, free from foreign materials. Support for system shall be on a concrete slab, 4 inches thick, conforming to the Division of the specification on concrete work. Insulating concrete shall extend not less than 6 inches around pipes, except that horizontal distance between pipes in the same conduit may be reduced to not less than 4 inches.

(c) Poured asphalt conduit shall be formed by the application of a uniformly poured and concentric layer of high melting point (not less than 235°F.) asphalt, free from air pockets. The outside metal jacket used to form the conduit shall remain as part of the system, and shall be constructed from No. 24 gauge galvanized sheet steel. Connector sleeves shall be formed from the same material and by the same method as the units. Each line shall be housed into separate conduit.

(3) Concrete trench shall be constructed of Class A or 1:2:4 concrete to conform to the Division "CONCRETE". Floor of trench shall have an integrally built drain gutter. Cover shall be precast in three foot sections; each section shall be removable and have fitted thereto a minimum of two steel or cast-iron inserts to facilitate lifting; sections shall be constructed to fit together in a lap joint arrangement. Mop top of cover surface, and fill cover section joints and horizontal joint where cover fits over side walls, with a waterproof bitumatic. Concrete construction shall be reinforced as indicated on the drawings.

c. Insulation of underground lines shall be as follows:

( ) Insulate steam supply and pump discharge lines. Atmospheric and vacuum condensate return and steam drip lines shall be insulated when run singly in conduits.

( ) Insulate hot water supply and return lines.

__. Insulation (except where otherwise noted) shall be the sectional types not less than standard thickness 85% magnesia; (mineral wool or laminated asbestos or cellulated glass of equivalent insulating value may be used in lieu of the 85% magnesia).

__. Apply insulation with sections closely butted and joints sealed over surfaces previously cleaned of rust and scale. Insulate fittings (except flanges and unions) and valve bodies on insulated lines with two coats of 85% magnesia cement or equal (except as noted) of overall thickness equal to the adjacent piping. One part of portland cement may be mixed with two parts of insulating cement for the second coat. Finish surfaces smooth.

(a) Wrap (except where otherwise noted) insulated pipes, fittings and valves with a layer of coal tar saturated felt with joints lapped not less than 2 inches and secured with galvanized wire loops drawn tight and ends bent over to leave no projection; mop joints with coal tar pitch.

(b) Insulation and wrapping shall not be applied to pipe line systems when installed, wrapped and imbedded in an insulating concrete envelope which forms the insulation as well as the conduit cover.

(c) Wrapping over insulated lines is not required when lines are installed in a sealed unit system of poured asphalt conduit.

(d) Insulation for lines in asphalt poured sealed conduit shall be not less than 1-1/2 inches thick.

d. Excavation beyond the actual depth required shall be filled with concrete. Location and elevation (if shown) of conduits are approximate only and are not to be used as final for installation, but shall be followed as closely as possible, ground conditions permitting.

(1) Built-up conduits shall have not less than _____ inches of cover at all points.

(2) Sealed units systems conduits shall have not less than ____ inches of cover at all points, and shall rest on a 4-inch bed of clean graded aggregate, No. 4 minimum.

(3) Concrete trench shall have not less than _____ inches of cover at all points.

(4) Extend conduits through buildings, expansion or anchor chamber or manhole walls, and seal conduit ends. Calk joint between conduit and wall with waterproof mastic cement filler.

(5) Terminate drain, and make necessary connections, as and where shown.

e. Backfill shall be carried on simultaneously on both sides of conduit. Clean earth shall be deposited in uniform layers not over 6 inches thick, carefully and solidly tamped, moistening each layer before the next is applied, extending to the level shown. Backfill shall consist of:

(1) Clean graded aggregate No. 4 minimum, concrete sand and clean earth for built-up and sealed unit conduit systems.

(2) Clean earth for concrete trench.

f. Thermal expansion of piping shall be provided for by bends where and as shown, constructed and "cold sprung" in accordance with dimensions tabulated. Bends shall have uniform wall thickness not less than that of adjacent piping to which connected, and be capable of withstanding the stresses in service without deformation or rupture; bends shall be "cold sprung" in place after anchors, guides and supports are set.

( ) Supports for bend shall consist of angle or channel iron with ends securely imbedded in concrete and with steel plate or cast-iron covering protector saddle at each support for insulated bend; ram saddle voids tightly with insulation material. Provide two guides on each side of bend.

( ) Bends shall be housed in reinforced concrete chambers.

( ) Special means for housing expansion bends in sealed unit conduit systems as recommended by conduit manufacturer may be provided in lieu of concrete chambers.

( ) Anchors shall be constructed of heavy band iron or from structural shapes such as channel irons or be "U" bolt type welded to the pipe with ends imbedded in a concrete block.

( ) Expansion chambers shall be of reinforced concrete construction with reinforced slab covering, and walls not less than 8 inches thick, constructed of Class A or 1-2-4 concrete in accordance with the division "CONCRETE".

( ) Manholes shall be of reinforced concrete Class A or 1-2-4 construction with walls not less than 8 inches thick. Manhole extension shall be not less than ____ inches square or ____ inches diameter, and shall terminate 4 inches above grade with heavy gray cast-iron frame and cover; when over 4 feet in depth, manhole extension shall have wrought-iron or steel ladder with ends embedded in concrete. Slope backfill in all directions away from manhole cover to prevent surface water entering.

( ) Installation of complete conduit system shall be performed by mechanics experienced in this class of work.

(1) Supervision for installation of built-up and sealed-unit conduit systems shall be by certified representatives of conduit manufacturer.

(2) Paint anchors, supports, uninsulated ferrous piping, valves, fittings, flanges and expansion bends with a waterproof heat resisting coat containing no asphalt; paint shall be heavily bodied and of a consistency to permit easy application by hand brush at normal temperatures. Clean all surfaces free from rust and scale before paint is applied.

(3) Test entire system to a minimum hydrostatic pressure of _____ pounds per square inch or 50 percent higher than the maximum operating pressure, whichever is greater; maintain test pressure until entire system has been inspected. System shall be drip tight at test pressure; no calking will be permitted.

( ) INSTALLATION OF HEATING SYSTEM

Install and connect the heating system and related items specified and/or indicated to give proper and continuous service under all operating conditions. Complete make-up water connections to equipment from source provided for under Division "PLUMBING".

a. Piping (in boiler room and other buildings). Install piping to provide clearance for work of other trades. Make provision for expansion by swing joints, bends or long offsets (whichever is shown) or as necessary; use guides to direct expansion movement; anchors shall be constructed of heavy band iron or from structural shapes such as channel iron, or be "U" bolt type, welded to the pipe with ends secured to building construction directly or by heavy steel plate.

(1) Apply lubricant on male thread only. Keep joints free from scale or dirt; remove all burrs and cuttings; keep open ends closed during construction; make no direct welded connection to equipment; use welding flanges therefor.

(a) Joints on ferrous piping shall be screwed on lines 1-1/2 inches and smaller; screwed, flanged or welded on lines 1-1/2 inches and larger except that joints on boiler supply headers and connections to boilers shall be flanged or welded.

(b) Joints on copper tubing shall be flared for instrument lines and generally soldered for larger lines (except as otherwise noted).

(2) Support piping on hangers to maintain required pitch, to permit expansion and to prevent vibration.

(a) Secure hanger rods to inserts (when of concrete construction) set in place before concrete is poured, or directly to joists in other than concrete construction. Hanger rods shall be of steel or wrought-iron, 3/8 inch for pipes 2 inches and smaller, 1/2 inch for pipes 2-1/2 inches to 4 inches, 5/8 inch for 5 inch and 6 inch pipes, and 3/4 inch for pipes 8 inches and larger. Use bracket type hangers fastened to walls to support piping running adjacent to walls.

(b) Space hangers not over 8 feet on centers for piping 1 inch and smaller, and not over 10 feet on centers for larger piping.

( ) Set covering protector saddle at each roller support, positioned along center of roller.

(3) Run radiator runouts above floor, except where otherwise shown, close to wall and pitch down to risers not less than 1 inch in 10 feet, making adequate provision for expansion. Make connections to radiators (top and bottom, opposite ends) (top and bottom, same ends) (bottom and bottom, opposite ends).

(4) Pitch supply and return main branches down to mains, not less than 1 inch in 10 feet; take branches from top of mains, unless otherwise shown, at angle of _____ degrees from main.

( ) Pitch, unless otherwise noted, steam supply and atmospheric or vacuum return mains in the direction of flow, not less than 1 inch in 40 feet; when supply mains are indicated to pitch against flow, pitch shall be not less than 1 inch in 15 feet. Lifts in atmospheric or vacuum returns will not be accepted. Install steam drips where shown and, at point where steam supply main rises and at intermediate points when steam supply main exceeds about 200 feet. Use eccentric fittings for changes in pipe sizes, except on steam return mains and risers.

( ) Pitch hot water heating supply and return mains as shown; pitch shall be not less than 1 inch in 40 feet. Use eccentric fittings for changes in pipe sizes, except on risers.

( ) Pipe safety valve or relief valve outlets at boiler as indicated.

b. Set sleeves in place for all piping passing through any part of building construction; sleeve diameters shall be 1/2 inch larger than pipe or pipe and insulation. Extend sleeves to about 1/4 inch above finished floor. Remove any concrete, plaster, or other debris from space between pipe and sleeve.

c. Fit escutcheons around uninsulated exposed piping passing through floors, ceilings and walls of finished rooms.

d. Install valves (gate, globe, angle or check) where shown and as necessary to provide for proper control and maintenance of piping and equipment.

( ) Install balancing cocks or valves as shown or as required on each hot water heating circuit to balance heat distribution; install thermometer at each balancing valve or cock and at supply and return hot water heating main at boiler or at each heat exchanger.

( ) Install air relief valves at high points of mains where shown.

e. Radiation. Connect and install with radiator valve on supply end and (thermostatic trap) (union elbow) on return end, as shown. Keep radiation clear of other equipment and fixtures to permit unimpaired operation of such equipment and fixtures.

( ) Rest leg type radiators directly on floor.

( ) Support ceiling radiators from building by steel or wrought-iron hanger rods having free ends threaded with nuts and washers for proper leveling. Top of radiators shall be not less than 6 inches below ceiling.

( ) Fasten convector radiators and enclosures to adjacent wall construction by means of toggle or expansion bolts.

( ) Support baseboard radiation from wall by means of hangers furnished as standard equipment by radiator manufacturer. Tightly seal joints with rubber gasket to prevent discoloring of wall.

( ) Install air valve on each radiator of the _____ type.

f. Pumps. Install with valves and by-passes as shown or as necessary for correct operation; provide for extension of drainage of base to nearest floor drain for base-mounted pumps.

( ) Install pressure gauge and thermometer on suction and discharge sides of pumps circulating hot water.

( ) Steam traps. Install thermostatic trap on each radiator, and for each riser when it is the only source of heating and is carried through the top floor. Install combination float and thermostatic traps for steam main drips except that thermostatic traps may be used to drip mains 2 inches and less where length between drips is less than 50 feet. Install combination float and thermostatic trap or separate float and thermostatic trap at return connection of each piece of steam heated equipment.

(1) Install cooling legs not less than 5 feet long, and cleanout pockets not less than 6 inches long, for all traps at piping drips. For main sizes of 2 inches and larger, pockets shall be not less than 2 inch size and for main sizes smaller than 2 inches, pockets shall be same size.

( ) Strainers. Install strainer ahead of each pump, float and thermostatic trap, float trap and steam heat control valve.

( ) Domestic hot water generator will be furnished and installed under the Division "PLUMBING". Install and connect heating supply and return connections thereto.

( ) Install and connect temperature regulating valve. Regulator shall be furnished and delivered to Heating Contractor at building by Plumbing Contractor.

( ) Unit Heaters. Suspend unit heaters independent of piping with not less than 3/8 inch rods; top of heater shall be not over 1 foot from ceiling.

( ) Ventilating Ducts. Stiffen, construct air-tight, and support from building construction with braces or angle iron. Install dampers as shown and as necessary to provide for proper balancing and distribution of air quantities indicated. Make elbows with inside radius equal to width of duct. Prefabricated ducts and duct fittings may be used at Contractor's option. Secure registers or grilles to metal frame or wood ground, as shown or as required.

( ) Connect ducts to fans with flexible (canvas) collars.

( ) Insulate ducts and fittings with _____.

( ) Ventilating Fans (Propeller Type). Install in wall opening secured to channel iron frame.

( ) Install guard screen on inlet side of fan.

( ) Install louvre grille on discharge side of fan arranged not to interfere with shutter blades. Attach grille to angle irons secured to channel iron frame, and provide 1/2 inch clearance at bottom for drainage.

( ) Fasten grating to angle irons set in wall.

__. ELECTRICAL CONNECTIONS

a. Motors shall be of a type suited to the intended service, of the required sizes and conform with the current characteristics shown and available. Unless otherwise noted, wiring and connections to electrical devices (furnished and installed under this division) will be provided for under the Division, "INTERIOR ELECTRICAL WIRING". Refer to "SUPPLEMENTARY CONDITIONS FOR MECHANICAL AND ELECTRICAL DIVISIONS" for requirements on construction of motors and motor starter controls. Each motor shall have protective and disconnect equipment.

(1) Automatic or manual starter shall be fitted with thermal motor running protection. Automatic starter shall be furnished only where motors are automatically controlled; motors 5 hp and over shall have compensators. Push-button starters shall be furnished for apparatus such as pumps (except small circulators mounted on piping), centrifugal fans, and firing equipment. Starters for pumps and for fans may be mounted in assembly with each piece of equipment; starters for firing equipment shall be mounted as specified under the specific apparatus.

__. PAINTING (In Boiler Room and All Other Buildings).

a. Thoroughly clean all surfaces before paint is applied. Painting of piping and radiators and duct work in finished rooms will be provided for under the Division "PAINTING".

b. Paint uninsulated metal surfaces of boilers, boiler structural iron work, and breeching with two coats of heat resisting enamel conforming to Federal Specification TT-E-496, Type 1; apply enamel when surfaces are 140°F or less.

c. Paint uninsulated ferrous surfaces on pipe, fittings, valve bodies, ventilating ducts and iron work, except as noted for finished rooms, with a red lead primer conforming to Federal Specification TT-P-86 and a finish coat of enamel to be selected by the Local Authority.

d. Paint insulation on surfaces (excluding that specified to be waterproof wrapped), except as otherwise noted for finished rooms, with one heavy coat of lead and oil.

__. TESTS

Furnish labor, fuel and all other items necessary for tests required under this Division. Instruments required under this contract for permanent installation may be used for testing if readjusted and recalibrated (when required) for the service for which intended. Tests stipulated under other sections of this Division may be run concurrently with tests stipulated under this section.

a. Piping (in boiler rooms and in all other buildings). Subject piping to a minimum hydrostatic pressure of 25 pounds per square inch gauge at the highest point or 50 percent higher than the proposed maximum operating pressure, whichever is greater; maintain test pressure until entire system has been inspected by the Local Authority; make system drip-tight at test pressure. No calking will be permitted.

( ) Remove thermostatic elements from bodies of steam traps, replacing with temporary covers, and remove elements from strainers before any hydrostatic tests and system blowdowns are applied. After hydrostatic tests are completed and made tight, blow steam at not less than 8 lbs. gauge through entire system (including underground distribution when project is so equipped).

Continue this cleaning process until there is no evidence of rust, oil, scale, or dirt; discharge condensate to drain; after completion, replace thermostatic elements and strainer elements.

( ) Blow down entire system (including underground distribution when project is so equipped) with hot water not less than 200°F. Continue this process until there is no evidence of rust, oil, scale, or dirt; discharge all water to drain.

( ) Run operating tests, after completion of hydrostatic tests and after system blowdown, to ensure equalized or balanced heat distribution; continue tests to conform with the requirements stipulated under the section in this Division on heat control. Heating medium shall circulate without noise.

( ) Make alterations, additions or adjustments necessary for compliance with the contract requirements and repair damage done to work of the other trades without additional expense to the Local Authority.

GUIDE SPECIFICATIONS

DIVISION 15

CARPENTRY AND MILLWORK

NOTES TO THE ARCHITECT:

SCHEDULES SHOWING SIZES, PATTERNS AND THICKNESS OF DOORS AND SIZES AND PATTERNS OF WOOD WINDOWS, SCREENS AND TYPES OF FRAMES FOR BOTH SHOULD BE INCLUDED ON THE DRAWINGS.

LOCATION OF WOOD FLOORS AND WOOD INTERIOR TRIM SHOULD BE INDICATED ON A FINISH SCHEDULE ON THE DRAWINGS.

MOISTURE CONTENT OF TRIM AND FLOORING MAY BE VARIED WHEN LOCAL WEATHER CONDITIONS REQUIRE HIGHER OR LOWER LIMITS.

WOOD GROUNDS, BLOCKING AND STRIPS SHOULD BE INDICATED OR DETAILED ON THE DRAWINGS TO THE MAXIMUM EXTENT PRACTICABLE.

CONSULT UNDERWRITERS LABORATORIES REPORTS FOR "LISTED" TYPE B VENTS FOR GAS BURNING APPLIANCES, AND MAKE DRAWINGS ACCORDINGLY.

DO NOT SPECIFY TYPE B VENTS IN ANY BUILDING WHERE OIL OR COAL FUEL IS EXPECTED TO BE USED AT A LATER DATE.

SHOW DRAIN FROM DRIP CAPS TO BELOW FIRST FLOOR WHEN PRACTICABLE.

THE ADDITION OF BRIDGING TO WOOD FLOOR STRUCTURES OF 14 FEET OR LESS SPAN ADDS VERY LITTLE TO THE STIFFNESS OF THE FLOOR STRUCTURE. WHEN

NOTE: This revised Division 15 supersedes Division 15, dated 10-2-50

BUILDING CODES PERMIT, BRIDGING MAY BE OMITTED FROM SUCH FLOORS, WITH ONLY A TRIFLING LOSS IN STIFFNESS.

PARAGRAPHS MARKED THUS ( ) COVER VARYING TYPES OF CONSTRUCTION AND MAY NOT BE REQUIRED IN THE PROJECT. SELECT THE TYPE OR TYPES SUITED TO THE PROJECT AND OMIT THOSE NOT SUITABLE.

ADD NUMBER OR LETTER TO PARAGRAPHS MARKED THUS ___. AND REVISE PARAGRAPH IDENTIFICATION AS NECESSARY.

CHANGE TEXT OF ANY PARAGRAPH TO SUIT THE PROJECT. STRIKE OUT ITEMS NOT APPLICABLE, INSERT ADDED TEXT AS NECESSARY AND FILL IN BLANK SPACES.

GUIDE SPECIFICATIONS

DIVISION 15

CARPENTRY AND MILLWORK

1. SCOPE

This division includes all carpenty and millwork and related items required to complete the work indicated on the drawings and specified except that forms for concrete are included in the division CONCRETE and wood floors in mastic are included in the division WOOD FLOORS IN MASTIC.

2. MATERIALS

a. Softwood lumber shall conform to Federal Specifications MM-L-751c.

b. Hardwood lumber shall conform to Federal Specifications MM-L-736.

c. Grade Marking. "Grade Mark", "Trade Mark", and "Mill Identification Mark" of the associations having jurisdiction shall appear on each piece of standard yard dimension lumber (not boards), except that shipments may be accompanied by a certificate of inspection identifying the shipment and certifying compliance with the requirements of this specification. This certificate of inspection shall be issued by an agency authorized to grade by the manufacturer's association recognized as responsible for the grading rules for the species involved.

d. Moldings shall be stock pattern. Trim shall conform to details on the drawings except that stock trim of the same general type fulfilling all functions of the work will be accepted.

e. Plywood. Douglas fir plywood shall conform to U. S. Department of Commerce, Commercial Standard CS-45-48 and shall be branded or stamped with type and grade. Hardwood plywood shall conform to U. S. Department of Commerce, Commercial Standard CS-35-49 and shall be branded or stamped with type and grade.

f. Moisture content of structural lumber 2 inches and less in thickness and boards shall not exceed 19 percent. Finish lumber and millwork shall not exceed 12 percent moisture content. Flooring shall have a moisture content of not less than 6 percent nor more than 12 percent.

g. Sizing. Surface lumber 4 sides to conform to Simplified Practice Recommendation SR-16-39.

h. Dimensions specified for lumber are nominal.

i. Work to detail where indicated on the drawings or as required by conditions.

3. GRADES AND SPECIES

a. Structural lumber for framing light roof trusses not over 2 feet on center, joists, rafters, lintels, beams, studs, plates and members stressed in bending, compression or tension shall be common dimension or better of the following:

Fir	Douglas, West Coast 1/ W.C.L. Rules	No. 2
Fir	Douglas 2/ W.P.A. Rules	No. 1
Fir	White	No. 1
Larch	Western	No. 2
Pine	Southern, Longleaf	No. 2
Pine	Southern, Shortleaf	No. 2
Pine	Lodgepole	No. 1
Pine	Norway	No. 1
Pine	Ponderosa	No. 1
Hemlock	West Coast	No. 2
Hemlock	Eastern	No. 2
Cypress	Tidewater Red	1300f
Spruce	Eastern	No. 1, 1200f
Spruce	Engelmann	No. 1
Spruce	Sitka	No. 1
Redwood		Construction Heart

b. Sub-flooring, wall and roof sheathing shall be common, any of the following:

		Sub-flooring, Wall sheathing	Roof sheathing
Fir	Douglas - W.P A. Rules	No. 4	No. 3
Fir	Douglas - W.C.L. Rules	No. 3	No. 2
Fir	White	No. 4	No. 3
Larch	Western	No. 4	No. 3
Pine	Southern	No. 3	No. 2
Pine	Northern White	No. 4	No. 3
Pine	Western (Idaho)	No. 4	No. 3
Pine	Norway	No. 3	No. 3
Pine	Sugar	No. 4	No. 3
Pine	Ponderosa	No. 4	No. 3
Pine	Lodgepole	No. 4	No. 3
Cedar	Western Red-W.P.A. Rules	No. 4	No. 3
Hemlock	West Coast	No. 3	No. 2
Hemlock	Eastern	No. 3	No. 2
Cypress	Tidewater Red	No. 3	No. 2
Spruce	Eastern	No. 3	No. 2
Spruce	Sitka	No. 3	No. 2
Spruce	Engelmann	No. 4	No. 3
Redwood		No. 3	No. 2
Plywood	Douglas Fir	Interior type	grade C-D
Cedar	Western Red-W.C.L. Rules	No. 3	No. 2

1/ West Coast Lumberman's Association Rules.
2/ Western Pine Association Rules.

- -

(1) Plywood sub-flooring under linoleum, asphalt tile, or ceramic tile shall be Douglas fir plywood, exterior type, grade B-C.

c. Miscellaneous. Furring, grounds, bridging, and blocking shall be suitable for the purpose intended. Wall furring shall be all heart.

(1) Ribbons shall be straight 1" boards selected for quality.

d. Stress grade lumber for heavy roof trusses supporting purlins shall be a minimum stress grade of 1400 pounds per square inch.

e. Exterior trim, wood ceilings and soffits, frames for doors, windows and louvers shall be any of the following:

Fir	Douglas - W.C.L. Rules	D Finish V. G.
Fir	Douglas - W.P.A. Rules	D Select & Better V. G.
Fir	White	D Select
Larch	Western	D Select
Pine	Lodgepole	D Select & Better
Pine	Idaho	Quality
Pine	Northern White	C Select
Pine	Sugar	D Select
Pine	Ponderosa	D Select
Pine	Norway	D Select
Spruce	Engelmann	D Select
Spruce	Sitka	D Finish
Cedar	Red & Incense-W.P.A. Rules	D & Better Select
Hemlock	West Coast	D Finish
Cedar	Western Red-W.C.L. Rules	C Finish
Cypress	Tidewater Red	D Finish
Redwood		A Grade

(1) Ceilings and soffits may be exterior type Douglas fir plywood, grade A-C (Sound 1 side) 1/4 inch thick.

f. Exterior siding shall be any of the following:

Fir	Douglas -W.P.A. Rules	D Select
Fir	Douglas-W.C.L. Rules	C Select
Pine	Southern	B
Pine	Northern White	C Select
Pine	Idaho	Quality
Pine	Sugar	D Select
Pine	Ponderosa	D Select
Hemlock	Western	C
Cypress	Tidewater Red	C Select
Cedar	Western Red-W.P.A. Rules	D Select
Cedar	Western Red-W.C.L. Rules	B-Bevel or Bungalow
Cedar	Western Red-W.C.L. Rules	C-Drop siding
Larch	Western	D Select

Spruce	Engelmann	D Select
Spruce	Sitka	B
Pine	Lodgepole	D Select
Redwood	for Stain	Clear Heart
Redwood	for Paint	A Grade
Plywood	Douglas Fir, Exterior Type	Grade A-C

g. Exterior stair treads, carriages and exterior wood flooring shall be "100 percent heart" of any of the following:

Fir	Douglas
Larch	Western
Pine	Southern
Cypress	Tidewater Red
Redwood	Vertical Grain

h. Interior trim to be painted, and shelving, shall be any of the following:

Fir	Douglas-W.C.L. Rules	D Finish V. G.
Fir	Douglas-W.P.A. Rules	D Select & Better V. G.
Fir	White	D Select
Larch	Western	D Select
Pine	Lodgepole	D Select
Pine	Sugar	D Select
Pine	Idaho	Quality
Pine	Ponderosa	D Select
Pine	Northern White	C Select
Pine	Norway	D
Spruce	Engelmann	D Select
Spruce	Sitka	D Finish
Cedar	Red & Incense-W.P.A. Rules	D & Better Select
Cedar	Western Red-W.C.L. Rules	C Finish
Hemlock	West Coast	D Finish
Cypress	Tidewater Red	D Finish
Redwood		A Grade
Poplar	Yellow	Grade B
Magnolia		Grade B
Birch		Grade B
Walnut		Grade B
Gum		Grade B

i. Interior trim to be stained shall be any of the following:

Fir	Douglas or White-W.C.L. Rules	C Finish V.G.
Fir	Douglas-W.P.A. Rules	C & Better Select
Fir	White	C & Better Select
Larch	Western	C & Better Select
Pine	Lodgepole	C & Better Select
Pine	Sugar	C Select

Pine	Idaho	C Select
Pine	Ponderosa	C Select
Pine	Northern White	B & Better Select
Pine	Norway	C
Spruce	Engelmann	C & Better Select
Spruce	Sitka	C Finish V. G.
Cedar	Red & Incense - W.P.A. Rules	C & Better Select
Cedar	Western Red - W.C.L. Rules	C Finish
Hemlock	West Coast	C Finish
Cypress	Tidewater	C Select Finish
Redwood		Clear all heart
Poplar	Yellow	Grade A
Magnolia		Grade A
Birch		Grade A
Walnut		Grade A
Gum		Grade A
Oak		Grade A
Ash		Grade A

j. Wood doors shall conform in quality and pattern to Grade No. 1 of Commercial Standard CS-120-48 for Ponderosa pine doors except as specified elsewhere or Grade A of Commercial Standard CS-73-48 for fir doors, except that fir exterior doors shall conform to Commercial Standard CS-91-41 and interior doors to be painted may be Grade B fir doors or Grade No. 2 Ponderosa doors provided paragraph 19 of CS-120-48 is omitted and the following paragraph inserted in lieu thereof:

> GRADE # 2 SUITABLE FOR ORDINARY PAINT OR ENAMEL FINISH. Stiles and Rails: The stock may contain light blue stain, medium-brown stain, or medium-red kiln-burn, showing on not to exceed 50% of the area of any piece, as well as pitch pockets and other imperfections not one of which shall be more serious in nature than those enumerated above. Each stile shall contain one such imperfection and may have two, but no piece shall contain more than two, and no door shall contain more than eight on each side. Plugs shall be admitted but regarded as imperfections. Rails wider than 4-3/4 inches may be glued up. A water-resistant glue shall be used. Stiles and rails may be solid or veneered at the option of the manufacturer. If veneered a water-resistant glue shall be used.

(1) Exterior doors and screen or combination doors shall be fabricated of any of the following:

Fir	Douglas
Pine	Southern, Longleaf
Pine	Northern, White
Pine	(Idaho) White
Pine	Sugar
Pine	Ponderosa
Cypress	Tidewater Red
Redwood	

(2) Interior doors shall have stiles and rails solid or veneered of any of the following softwoods:

Fir	Douglas	V. G.
Larch	Western	V. G.
Pine	Southern	
Pine	Northern White	
Pine	(Idaho) White	
Pine	Sugar	
Pine	Ponderosa	
Cypress	Tidewater Red	
Redwood		

or veneered with any of the high or medium density hardwoods as defined in Commercial Standard CS-35-49.

k. Wood window sash, storm sash and window screens shall conform to sizes and details of Commercial Standard 163-49 and be fabricated of any of the following:

Fir	Douglas "100% heart"	Clear V. G.
Pine	Northern White	Clear
Pine	(Idaho) White	Clear
Pine	Sugar	Clear
Pine	Ponderosa	Clear
Pine	Southern	Clear
Cypress	Red (Coast Type)	Clear
Redwood		Clear all heart

l. Finished wood flooring shall conform to grading rules of the association under whose jurisdiction the flooring is manufactured, except as modified herein; bear manufacturer's "Trade Mark" and "Grade Mark" of association, or be accompanied by a certificate from the manufacturer identifying each shipment and stating that the flooring complies with these specifications.

(1) Hardwood flooring shall be strips of not less than 25/32 inch thick and not more than 3-1/4 inch face, side and end matched of any of the following:

Oak	Red or White	No. 2 Common
Pecan		Third Grade
Maple		Third Grade
Birch		Third Grade
Beech		Third Grade

(2) Softwood flooring shall be side matched strips of not less than 25/32 inch thick and not more than 3-1/4 inches wide of any of the following:

Fir	Douglas-W.C.L. Rules	C V. G.
Fir	Douglas-W.P.A. Rules	C Select V. G.
Larch	Western	C Select V. G.
Hemlock	Western	C V. G.
Pine	Southern	C V. G.

- -

(3) Finish flooring may be any combination of the above species and grades, bundled separately, except that only one species may be used in any one story of a dwelling.

(4) Factory finished wood flooring meeting requirements specified above for wood flooring may be used when approved by the Local Authority.

m. Strip flooring to be covered with a finish floor shall be flat grain, side matched strips not over 3-1/4 inch face of:

Fir	Douglas - W.C L. Rules	D
Fir	Douglas - W.P.A. Rules	No. 2 Common
Fir	White	No. 2 Common
Larch	Western	No. 2 Common
Pine	Ponderosa	No. 2 Common
Pine	Sugar	No. 2 Common
Pine	Idaho	Sterling
Pine	Lodgepole	No. 2 Common
Spruce	Engelmann	No. 2 Common
Cedar	Western	No. 2 Common
Hemlock	Western	D
Pine	Southern	D

4. WOOD PRESERVATIVE TREATMENT

Door frames and doors in exterior walls, window frames and sash, and window and door screens shall be fabricated from all heart lumber or be preservative treated and bear the Seal of Approval of National Woodwork Manufacturers Association, or be accompanied by an affidavit from manufacturer identifying each shipment and certifying that they have been preservative treated in compliance with minimum standards established by National Woodwork Manufacturers Association. Brush coat cut surfaces with a heavy application of the preservative used for treatment.

5. STORAGE AND PROTECTION

a. Pile lumber to insure proper ventilation and drainage.

b. Protect millwork and flooring against dampness during and after delivery. Store in well-ventilated building and where not exposed to extreme changes of temperature and humidity.

c. Do not store or install millwork and flooring in any building until plaster work is dry.

6. GENERAL

a. Layout, cut, fit and erect framing, sheathing, sub-flooring, bridging, blocking and all items of trim and other carpentry. Do cutting work of

carpentry for other trades. Brace, plumb and level all members and secure with sufficient nails, spikes and bolts to insure rigidity.

(1) Defects which render any piece unable to serve its intended purpose shall be cut out or the piece discarded.

b. Chimney Clearance. Provide 2 inch clearance between chimneys and wood construction, except that base, finish flooring, trim and grounds may be 4 inches (minimum) away from flue lining.

7. FRAMING

a. Floor and Roof

(1) Set plates and sills on masonry walls and wedge, level and bed in mortar.

(2) Bolt plates and sills to foundation and masonry walls at corners, and at intermediate points approximately 5 feet apart with 1/2 inch diameter bolts 2 feet long unless otherwise indicated on the drawings.

(3) Firecut joists built into masonry to 3 inch bevel and provide at least 3 inch bearing.

(4) Double joists under partitions over 6 ft. long parallel to joists and headers and trimmers around stair wells. Headers and joists shall be connected by approved metal clips or securely spiked.

(5) Anchor every third joist built into masonry walls with 1/8 x 1 inch T-shaped or pin-anchored strap iron extended at least 4 inches into masonry wall and attached to lower half of joist with 3 8d nails. Anchor joists parallel with masonry walls with similar anchors spaced not over 8 feet apart, extended over 3 joists and spiked to each joist.

(6) Joists meeting over girder or bearing partitions shall be lapped and nailed together with two 10d nails and toe nailed to girder or plate with one 10d nail on each side of pair of joists. Joists butting or notched and bearing on ledger strip shall be attached with 1/8 x 1 inch metal straps flush with joists and nailed with two 8d nails or 1 x 4 x 18 inch wood scabs nailed with two 8d nails each joist. Block between ends of joists to provide nailing for sub-flooring and ceiling lath. Joists bearing on ribbon shall be nailed to each stud with three 10d nails.

(7) Bridge joists with nominal 1 x 3. Install one row for spans up to 15 feet and two rows for greater spans. Secure bridging at each end with two 8d nails. Do not nail bottom end until sub-flooring has been laid.

- -

( ) Rafters resting on wall plates shall have a bearing of not less than 3 1/2 inches. Nail to plates with four 10d nails, two each side. Anchor rafters to resist uplift with 1/8 x 1 inch strap iron or approved metal nailing clips spaced not over 4 feet apart. Nail to each framing member with three 8d nails.

( ) Roof trusses shall be of the design and sizes of materials as indicated on drawings. Pre-cut members and assemble in jig frames to assure uniformity. Nail to wall plate and anchor to resist uplift with 1/8 x 1 inch strap iron or approved metal nailing clips spaced not over 4 feet apart. Nail anchors with three 8d nails each end.

b. Walls and Partitions

(1) Studs unless otherwise shown, shall be nominal 2 x 4 inch, spaced 16 inches on centers, doubled at sides and heads of openings, tripled at corners, and placed to provide end nailing for sheathing and lath. Truss over openings over 3 feet wide. Toe nail to sole plate with two 8d nails on each wide face or use approved metal nailing clips. Secure studs abutting masonry walls, thereto, at mid-height of each story.

(a) Exterior studs shall extend full height from foundation sill to eave (balloon framing) where possible. Extend bearing partition studs through floor construction to bear upon plates or beams or extend through two stories without splicing, where possible.

(2) Plates for bearing partitions and for walls shall be single 2 inch thick for sole plates and double 2 inch thick for top plates. Plates for non-bearing partitions shall be single 2 inch thick. Plates shall be same width as studs and shall form continuous horizontal ties with single plates spliced and ends of double plates staggered.

(a) Nail lower plate to each stud and corner post with two 16d nails. Nail top plate to lower with 10d nails, two near the ends of each piece, others staggered 16 inches. Sole plates shall be nailed through sub-floor to headers and joists with 16d nails staggered.

(b) Anchor wall studs to sills by nailing wall sheathing to sills with 8d nails 8 inches on center and to studs as specified elsewhere herein.

(3) Diagonal brace exterior walls less than fifty feet in length or any wall when fiberboard sheathing is used. Bracing shall extend from foundation to eave level, consist of 1 x 4 boards housed into the studs, or 2 x 4s fitted between the studs in 2 directions and nailed, or diagonal wood sheathing or fir plywood, 5/16 inch thick applied with face grain at right angles to supports, for approximately 10 feet from each corner. Bracing let into face of studs shall be nailed at each crossing stud with not less than two 8d nails and at ends with three 8d nails.

(4) Horizontal block between studs with 2 x 4s so as to provide one row each story height. Where plates do not form a firestop, provide firestop in walls and partitions at each floor, and at ceiling of top story.

- -

(5) Ribbons (in balloon framing) shall be let in to studs. Break joints at bearing and nail with two 8d nails at each bearing.

(6) Frame as required for installation and support of plumbing, heating, and other work.

c. Sub-flooring shall be 1 x 4 or 1 x 6 inch square edge stock or 5-ply 1/2 inch plywood.

(1) Sub-flooring except plywood shall be laid at a 45 degree angle with floor joists. In buildings more than one story, lay sub-flooring on upper floor at right angles to sub-flooring on floor below. Break end joints over bearings only, with cuts parallel to run of joists. Face nail each board to each bearing with at least two 8d nails.

(2) Plywood sub-flooring shall be laid with surface grain at right angles to joists. Break joints over joists with alternate courses in line. Provide solid blocking under edges in bathrooms and under linoleum floors. Nail with 6d cement coated nails 12 inches on center on intermediate supports and 6 inches on center at edges.

d. Wall sheathing shall be 1 x 4 to 1 x 12 inch boards ship-lapped or tongued and grooved, 5/16 inch plywood for 16 inch stud spacing; 3/8 inch plywood for 24 inch stud spacing or fiberboard complying with Federal Specification LLL-F-321b, Class E, 25/32 inch thick, treated to inhibit absorption and decay.

(1) Wood wall sheathing shall be face nailed to each support with at least two 8d nails for 6 and 8 inch, and three 8d nails for 10 and 12 inch boards.

(2) Fiberboard wall sheathing shall have butt joints over supports with solid blocking under edges. Break vertical joints so that joints will not be on same stud in succeeding rows of sheathing. Nail with 8d nails spaced 6 inches around edges and 10 inches on intermediate framing.

(3) Plywood wall sheathing shall have butt joints over supports with solid blocking under edges. Break vertical joints so that joints will not be on same stud in succeeding rows of sheathing. Nail with 6d nails spaced 6 inches around edges and 12 inches on intermediate framing.

e. Roof sheathing shall be nominal 1 x 6 or 1 x 8 inch tongued and grooved boards, or 3-ply plywood, 3/8 inch for 24 inch spans or 5/16 inch for 16 inch spans. Break joints of sheathing boards and face nail each board with at least two 8d nails to each support.

(1) Plywood roof sheathing shall be laid with surface grain at right angles to main supports with butt joints over supports and solid blocking under edges. Break joints. Nail with 6d nails spaced 6 inches around edges and 12 inches on intermediate framing.

(2) Wood cants, crickets and water sheds shall be provided as required for installation of roofing materials. Wood cant strips used with thermal insulation over roof decks shall be set on wood blocking strips which are flush with the top of the insulation. Secure strips to roof deck and cant strip to blocking strip and walls with bolts or nails.

8. BUILDING PAPER

Exterior wall building paper shall comply with Federal Specification UU-P-147, Grade D, and be applied over wall sheathing from bottom up, shingle fashion, lapping edges and ends at least 3 inches. Nail with 1 inch roofing nails through metal discs not over 12 inches on center.

9. WALL FURRING

( ) Fur exterior masonry walls to be plastered with nominal 1 x 2 inch strips. Space not over 16 inches on centers and secure to walls with approved metal ties or nails, not over 3 feet apart. Firestop at ceilings. Block to true planes when dry interior finish is to be used.

10. WOOD GROUNDS

Provide wood grounds, strips and blocking, as indicated on the drawings or required by conditions, of thickness and shape required for stucco, plaster, wood trim, base and to secure roofing and other work or equipment in place. Wood blocking or nailers on steel shall be bolted; fasten wood grounds, furring and other engaging woodwork to wood, concrete and masonry with approved types and sizes of nails, ties or inserts spaced to provide rigid secure supports.

11. WOOD CENTERS

Wood centering for masonry arches or soffits shall be framed, braced and allowed to remain in position until masonry has firmly set.

12. WOOD DOOR BUCKS

Provide wood bucks of nominal 2 inch thick stock of widths required, where indicated. Nail not less than three 1/4 x 1 inch metal strap anchors 8 inches long with 2 inch hooks on back of each jamb of bucks to be built into masonry.

13. PLANK SLIDES

Wood slides shall be nominal 2 x 6 inch plank for openings to coal storage space where indicated. Fit into frames provided in division MISCELLANEOUS AND ORNAMENTAL METAL.

14. WOOD NAILERS

Wood nailers in concrete of dimensions indicated on drawings shall be sound, all heart grade of cedar, redwood or cypress. Place nailers where indicated on

drawings or specified in other divisions of this specification. Align tops to levels required. Provide wood nailers bolted to steel and to concrete for attachment of roofing and sheet metal work as indicated on the drawings.

15. ROOF SCUTTLES

Frame and secure in place curbs for roof scuttles and provide covers of lumber specificed for roof sheathing.

16. TEMPORARY ENCLOSURES AND PROTECTION

Temporary enclosure of doors, windows and other exterior openings shall be provided when necessary to meet conditions specified, maintained in good repair, and removed when no longer required. Protect door and window frames from traffic and cut stone from mortar drippings.

17. ROUGH HARDWARE

Provide and install all rough hardware for proper installation of carpentry and millwork. Nails, spikes, screws, bolts and similar items shall be of types and sizes sufficient to draw and rigidly secure members in place.

18. MILLWORK AND TRIM

Install exterior and interior millwork and finish trim with tight joints securely nailed. Secure interior trim with finishing nails and exterior trim with galvanized siding nails. Set exposed heads of finishing nails for putty. Sand interior woodwork as necessary to remove irregular ties and machine marks. Leave work free from defects and blemishes.

a. Joints shall be tight and formed to conceal shrinkage. Make outside joints to exclude water and set in lead paste. Door and window trim shall be in single lengths without splicing; corners shall be mitered unless otherwise indicated. Running trim shall be in long lengths and jointed only where solid fastenings can be made. End joints in built-up members shall be well distributed. Miter exterior corners and cope interior angles. Where required, scribe woodwork to plaster and other adjacent work.

b. Prime surfaces in contact with concrete or masonry with one coat of paint specified for exterior priming (see Division PAINTING) before setting exterior finish and millwork, window and door frames.

19. DOOR FRAMES

a. Fabricate exterior frames 1-5/8 inch thick with rabbets for doors and screens and staff beads as detailed.

(1) Set frames occurring in exterior masonry walls, before masonry is laid and anchor in place with three 1/4 x 1 inch metal strap anchors 8 inches long with 2 inch hooks to each jamb. Plumb and brace frames to prevent distortion.

b. Fabricate interior door frames of not less than 3/4 inch thick stock with 1/2 inch applied stops. Heads and jambs shall be housed together.

(1) Set door frames plumb and square. Drive double wedge blocking back of jambs at nailing points, back of butts, and lock strikes. Secure with finishing nails.

20. WOOD DOORS

a. Exterior doors (unless otherwise indicated) shall be fabricated 1-3/4 inches thick, of solid stiles and rails, with standard sticking worked from the solid or applied moldings set in white lead. Make panels flat or raised as indicated, solid or laminated of exterior grade plywood, and of standard stock thickness. Set panels in place without gluing or nailing. Provide loose wood molds for glazing. Provide wood drip mold at bottom edge rabbeted into door and set in white lead paste.

b. Interior Doors

(1) Panel Doors. Fabricate interior doors (unless otherwise indicated) 1-3/8 inches thick solid or veneered on cores of white pine, ponderosa pine, Douglas fir, or redwood. Build up cores of strips not over 2 inches wide glued together under pressure and then machined smooth to receive face and edge veneer. Make face veneer for stiles and rails 1/16 inch thick before sanding. Edge veneer strips on vertical stiles shall be 3/4 inch thick and of same material as face veneer. Molds may be solid stuck, or loose with molding (of same material as veneer) nailed to stiles and rails only. Panels may be solid or plywood, with both faces of veneered doors of same material as veneer or stiles and rails. Do not glue or nail panels.

(2) Hollow core flush doors shall be bonded throughout with moisture resistant glue, with stiles 1-1/8 inch minimum width, rails 2-3/4 inch minimum width, with lock block at least 20 inches long extending back from edge of door at least 4 inches, of pine (northern white, Idaho, sugar or ponderosa), yellow poplar, or Douglas fir. Core strips shall be either of same wood as stiles and rails at least 3/16 inch thick or of fiberboard at least 3/8 inch thick, in grid pattern spaced not more than 3 inches center to center. Veneers for crossbanding and faces shall be plywood of two or more plies with a combined thickness of not less than 1/8 inch before sanding. Face veneers shall be hardwood of standard commercial thickness, but not less than 1/28 inch before sanding. Faces of all hollow core doors shall be equal to Grade 1 (Good) for the species of wood specified and as defined in Commercial Standard CS-35-49. Hollow core flush doors complying with Commercial Standard CS 171-50 will be accepted. Faces of doors may be 1/8 inch thick, hardpressed fiberboard complying with Federal Specification LLL-F-311, Class B, when doors are specified or indicated to be painted.

(3) Solid core flush doors shall have cores of low density wood blocks s2s not more than 2-1/2 inches wide of varying lengths with end joints in adjacent rows staggered. No core shall contain more than one species of wood.

Core blocks shall be bonded with moisture resistant glue. Cores shall be planed or sanded smooth to a uniform thickness. Edge strips shall be not less than 1/2 inch thick after trimming of wood to match the face veneers. Top and bottoms of doors may be without edge strip if painted or varnished at the factory. Face veneers shall be hardwood not less than 1/28 inch thick before sanding conforming to Grade 1 (Good) for the species of wood specified as defined in Commercial Standard CS-35-49. Crossbanding shall be hardwood not less than 1/10 inch thick.

21. WOOD WINDOW FRAMES

Fabricate frames in accordance with stock patterns recommended by National Woodwork Manufacturers Association Incorporated, unless otherwise shown or detailed.

a. Window frames shall be not less than 3/4 inch thick, with sills of clear stock dressed to finish 1-5/8 inches thick, beveled as detailed. Furnish staff beads for window frames in masonry walls.

(1) Box type window frames shall have pendulums of wood or metal. Sash pulleys shall conform to Federal Specification FF-H-111a Type F1233. Sash weights shall be castiron; reasonably smooth, free from fins, with well formed eyes, of weights as required. Sash cord shall be solid braided and comply with Federal Specifications T-C-571a, Type B.

(2) Plank type double hung window frames counter-balancing equipment for sash shall comply with Federal Specification FF-H-111a, Type F 1240 or F 1245. Dimensions of counter-balance shall be as required for weight of glazed sash.

b. Set window frames plumb and level and properly braced.

22. WOOD SASH

Wood sash shall be check rail sash 1-3/8 inches thick for widths up to and including 42 inches and 1-3/4 inches thick, for wider sash. Transom sash shall be the same thickness as the accompanying door. Fit sash and attach balances and hardware. Adjust to operate without binding and to balance.

( ) Storm sash shall conform to U.S. Department of Commerce, Commercial Standard CS-163-49, Grade No. 1.

(1) Fit closely to sill and blind stop and install complete with hardware consisting of top hangers, Federal Specification FF-H-111a, Type F 1825, interchangeable with screen hangers, two 2-1/2 inch hooks for holding sash closed and one 6 inch hook in center of bottom rail to hold sash open. Install hardware to template so screens and storm sash are interchangeable. Allow 1/8 inch play at sides and top.

23. PRE-FITTED WOOD WINDOW UNITS

Pre-fitted wood window units, factory assembled, complete with sash and counter balancing devices, may be furnished if equal to the window frames and sash specified herein.

24. WOOD WINDOW SCREENS

Window screens shall conform to U.S. Department of Commerce, Commercial Standard CS-163-49 full length, of clear stock.

a. Screen cloth shall conform to Federal Specification RR-C-451a, Type G, 16 x 16 or 14 x 18 mesh aluminum wire having a diameter .0110 inch. Stretch cloth taut, without warp or buckle and secure in place in accordance with manufacturers' standard practice to permit rescreening.

b. Fit closely to sill and blind stop and install screen complete with hardware consisting of top hangers, Federal Specification FF-H-IIIa, Type F 1825, interchangeable with storm sash hangers and two 2-1/2 inch hooks for holding screen closed. Install hardware to template so storm sash are interchangeable with screens. Allow 1/8 inch play at sides and top.

25. SCREEN DOORS

a. Screen doors shall be fabricated of clear stock not less than 1-1/16 inch thick after sanding; with stiles and top rail not less than 3-5/8 inches wide, intermediate lock rail 5-5/8 inches and bottom rail 7-1/2 inches minimum widths. Mortise and blind tenon, wedge and set joints in moisture resistant glue or make joints with 1/2 inch hardwood spiral grooved dowels not less than 5 inches long set in moisture resistant glue. Provide 2 dowels to each joint at top and intermediate rail and 3 at bottom rail.

(1) Screen cloth shall be the same as specified for window screens.

(2) Furnish guard grills in lower panels of not less than 19 gauge 1/2 inch mesh galvanized hardware cloth.

(3) Fit and hang doors with 1/8 inch clearance at sides and top and 3/16 inch at bottom. Set hardware to template so that screen doors are interchangeable. (See division HARDWARE).

( ) Combination screen and storm doors shall conform to U.S. Department of Commerce, Commercial Standard CS-120-48.

(1) Screen cloth shall be as specified for window screens.

(2) Fit and hang doors with 1/8 inch clearance at sides and top and 3/16 inch at bottom (see division "HARDWARE").

26. EXTERIOR FINISH

( ) Beveled wood siding shall be 1/2 inch by 6 or 8 inch or 5/8 inch by 10 inch, laid with not less than one inch lap.

( ) Flush joint siding shall be 25/32 inch shiplap by any standard width not more than 6 inches wide.

( ) Drop siding shall be 3/4 inch by 6 inch of pattern as shown.

( ) Plywood siding shall be 3/8 inch thick, applied with face grain vertical and all joints over solid blocking. Apply 2 inch wide strips of roofing felt under vertical joints. Flash horizontal joints with 10 oz. copper or aluminum .020 inch thick, 1/2 inch high in back of upper sheet and 1/2 inch deep in front of lower sheet, formed to fit closely to plywood. Lap flashing joints 1 inch. Joints between sheets shall be open 3/16 inch for calking. Nail plywood siding 6 inches on center at edges and 12 inches at intermediate supports with 6d galvanized siding nails. Vertical and horizontal joints between sheets shall be calked as specified under the division CALKING.

( ) Fit strip wood siding closely at joints, openings and corner boards and bed ends in calking compound. Nail to each stud with two 8d galvanized siding nails. (Use 10d galvanized nails over fiberboard sheathing.) Strips immediately above and below the opening shall be continuous past the opening.

( ) Exterior Wood Ceiling. Ceiling shall be 9/16 inch thick; dressed, matched and "V" jointed or beaded; well driven up and blind nailed at each bearing or shall be 1/4 inch thick Douglas fir plywood, laid with butt joints over bearing and with solid blocking under edges. Blind nail strip ceiling at each bearing. Nail plywood ceiling 6 inches on center at edges and 12 inches on center at intermediate supports.

( ) Asbestos Cement Shingle and Clapboard Siding. Asbestos cement shingle and clapboard siding shall conform to Federal Specification SS-S-346a, manufacturers' standard color, smooth or textured or as selected. They shall be an average thickness of not less than 0.150 inch of uniform width and length. Siding shall be furnished with holes for fastening. Install shingle or clapboard siding in accordance with manufacturers' specific printed or written directions. Nail with 2 inch needle point galvanized nails at top and face nail at bottom with cadmium plated nails. Cut or punch with asbestos shingle cutting machine only.

(1) Fit asbestos cement shingles or siding at openings and cornerboards, bed in calking cement and nail in place. Reverse lap and calk joint at corners.

( ) Wood shingle siding shall be Western Red cedar, Tidewater Red cypress or California Redwood; No. 1 grade conforming to U.S. Department of Commerce, Commercial Standard CS-31-38; random widths in 16, 18 or 24 inch lengths with 5/2 butts for 16 inch, 5/2-1/4 for 18 inch, 4/2 for 24 inch shingles and be

stained uniformly (manufacturers' standard color as selected) at the factory by a penetrating preservative process standard with the manufacturer. Each bundle shall bear manufacturer's label certifying grade. If laid in double courses, shingles in concealed courses may be No. 3 or undercoursing grades without stain.

(1) Shingle courses shall be arranged to fit heads and sills of doors and windows as directed. Apply shingles in horizontal courses to true lines. Shingles laid in single courses shall not exceed 7-1/2 inch exposure for 16 inch, 8-1/2 inch for 18 inch, and 11 inches for 24 inch shingles, or in double courses not to exceed 12 inch exposure for 16 inch, 14 for 18 inch, and 16 inches for 24 inch shingles. Double first course at bottom; triple if coursing is doubled. Set butts of concealed courses 1/2 inch above outer course. Lay shingles with not over 1/8 inch joints; joints in any one course shall be not less than 1-1/2 inches away from joints in the course next below.

(2) Wood strips 1-5/8 inch square s4s shall be provided at internal angles and 1-1/8 inch corner boards at external angles, joint shingles against strips and corner boards, or omit corner boards, lace alternate shingle courses at corners. Edges of shingles at corner boards, internal angles and openings shall be bedded in calking cement.

(3) Nail each shingle in place with not less than two hot-dipped heavily zinc-coated shingle nails. Place nails 3/4 inch from edges of shingles and from 3/4 to 2 inches above butt line of shingles in the next course above. Use 3d for 16 and 18 inch and 4d for 24 inch shingles laid in single courses. Butt nail doubled courses with 5d hot-dipped zinc-coated double course (casing or small flat head) nails.

(4) Stain exposed edges of shingles which have been cut with stain as specified.

( ) Wood Louvers. Fabricate wood louvers as indicated on drawings.

(1) Insect screen as specified for window screens shall be tacked in place on back of louver frame.

(2) Shutter door, batten type, shall be made of T. & G. ceiling boards with cross battens. Hinge and fit shutter to back of louver frame. Provide latch or bolt for securing in closed position and hooks or other device for holding shutter in open position.

(3) Set louvers plumb and level and brace until built in.

( ) Cornice. Frame lookouts as detailed. Brace and miter or cope cornice members at angles and assemble to form protection to vertical joints.

(1) Vent openings in soffits at eaves shall be covered with insect screen as specified for window screens. Lap opening 1/2 inch and tack or staple in place on 6 inch centers or as indicated on the drawings.

- -

( ) Wood Railings. Railings shall be as indicated. Top and bottom members of wood railings shall be cut from not less than nominal 2 inch stock, upper surfaces of rails shall have ample wash; top rails shall be grooved to receive balusters. Balusters shall finish 1-5/16 inches square unless otherwise shown; be fitted to bottom rail and securely toe nailed in place. Set all joints in white lead paste.

( ) Exterior Wood Flooring. Flooring shall be not less than 1-1/6 inches thick with 2-3/8 or 3-1/4 inch face, square edge when laid with open joints, and side matched when laid with tight joints.

(1) Prime each board all over (see division PAINTING) before laying, and if tight joints are used, coat edges with heavy white lead paste when laying.

(2) Blind nail each board if tongued and grooved, double face nail if square edge, to each joist. Make joints on bearings with at least two boards between joints.

27. INTERIOR TRIM

a. Trim shall be as indicated on drawings.

(1) Casings shall be set 1/4 inch back from face edge of jambs and head and nail to finish and to rough jambs. Carefully joint and rigidly secure joints between frames.

(2) Window stool shall be dressed to not less than 1-1/16 inch thickness and rabbeted over rough sills. Provide apron as shown with neat return cuts at ends.

(3) Wood base shall be one member type, with wood shoe. Nail base to grounds and draw tight to plaster. Nail shoe mold to base.

(4) Wood rail 3/4 x 3-5/8 inch shall be installed around inside walls of bathrooms and toilets for attachment of accessories. Securely fasten strips to bearings.

b. Closets. Install a 4 inch hook strip around 3 sides of each clothes closet and two shelves of nominal 12 inch wide boards, lengthwise of closets. Support bottom shelf on hook strip and top shelf on cleats. Provide intermediate supports for shelves more than 5 feet in length. Space linen and utility closet shelves as indicated and support on nominal 2 inch cleats. Install one 1-3/8 inch round wood clothes hanger pole lengthwise (or as shown) in each closet and 1-3/8 inch round curtain pole at open closet fronts.

(1) Coat and hat hooks shall be provided and installed where directed. (see division HARDWARE-BUILDERS)

c. Scuttle and access doors shall be installed where indicated on the drawings. Construct with frame, trim and hinged 5 ply 1/2 inch plywood or 3/4 inch panel door.

28. FINISH WOOD STAIRS

a. General. See details on drawings for finished wood stairs.

(1) Carriages shall be cut from nominal 2 x 12 inch framing lumber and spaced not over 18 inches apart.

(2) Treads shall be Character Marked Grade hardwood complying with U. S. Commercial Standard CS-89-40. Rabbet treads and risers, block, wedge and securely glue and nail together and to stringers. Make strings and risers of grade and species of wood used for interior finish, and handrails of oak, ash, birch, beech or maple. House balusters into treads or strings and secure and block into handrails. Fit handrails at newels and secure at joints and ends with stair rail bolts.

(3) Wood handrail shall be provided on one wall of enclosed stairs, set on metal brackets (see division HARDWARE-BUILDERS), spaced not over 6 feet apart and rigidly secured in place.

b. Basement Stairs.

(1) Fabricate (unless otherwise indicated) with open risers, carriages and treads of nominal 2 x 10 inch stock; newels of nominal 4 x 4 inch stock chamfered and rails nominal 2 x 4 inch stock chamfered.

(2) Spike all stair members together and bolt rails in place.

29. KITCHEN CABINETS

a. Wood kitchen cabinets shall be as indicated on the drawings.

(1) Fabricate from sound, kiln-dried lumber with frames, rails, stiles and intermediate members not less than 3/4 inch thick and of sufficient width to insure sturdy rigid construction.

(2) Work tops for base cabinets shall be 1-1/16 inch thick maple, ash or birch, T. & G. strips not more than 3 inches wide, glued together. Bread boards shall be 13/16 inch of similar material and construction with cleated ends. Wood work tops around sinks shall be ash or all heart cypress.

(3) Shelves may be of 5 ply plywood or solid stock not less than 3/4 inch thick. Let shelves into ends and glue with all corner joints nailed. Support open shelving on cleats securely fastened to adjacent construction.

(4) Doors shall be of 5 ply plywood or hard pressed fiberboard not less than 1/2 inch thick, edges sanded smooth, or paneled with solid stiles and rails with 3 ply plywood panel.

(5) Drawer fronts shall be of straight grained stock 3/4 inch thick. Slide drawers on hardwood slides with stops. Partition one drawer for silverware.

(6) Erect cabinets straight, level, and plumb. Securely anchor in place with finish moldings and fillers to fit cabinet to walls and ceilings.

(7) Shop drawings shall be furnished correctly dimensioned to fit spaces as erected, and approval by Local Authority shall be obtained before fabrication.

(8) Prefabricated wood kitchen cabinets, shelving, work tables, and counters (factory assembled complete with hardware) may be furnished if equal to requirements specified herein and if variations standard with manufacturer are approved by Local Authority.

b. Metal Kitchen Cabinets. Kitchen cabinets may be metal as follows:

(1) Cabinets shall be of furniture steel not less than No. 22 gage except that backs and door backs may be No. 24 gage, primed with rust-inhibitive paint, furnished with two coats of enamel separately baked on in colors as selected and factory assembled complete with hardware.

(2) Work tops shall be 1-1/16 inch thick maple, ash or birch, T. & G. strips not more than 3 inches wide, glued together or 1/8 inch thick linoleum cemented to metal and bound with metal edges. Woodwork top around sink shall be ash or all heart cypress.

(3) Doors shall be hollow and filled with sound deadening material.

(4) Open shelving shall be of metal finish to conform to metal cabinets.

(5) Shop drawings shall be furnished correctly dimensioned to fit spaces as erected and approval by Local Authority shall be obtained before fabrication.

30. OFFICES

a. Counters. Construct wood counters in administration offices in accordance with applicable specified requirements for wood kitchen cabinets as to shelves, frames, doors, drawers and hardware.

(1) Frames shall be assembled with full mortise and tenoned, or doweled, and glued joints.

(2) Counter tops shall be of 5/8 inch thick plywood covered with 1/8 inch thick linoleum conforming to Federal Specifications LLL-L-359 or 367 of color approved by Local Authority, cemented to counter top. Bind edges with non-ferrous edging strip.

(3) Gates for counters shall be 3 ply veneer panels set in 1-1/16 inch thick rails and stiles, mortised, tenoned and glued

(4) Foot rails shall be of iron pipe with standard fittings. Secure in place with screws in wood or expansion bolts in masonry or concrete.

(5) Guard screens shall be provided for top of counters, not less than 20 inches high unless otherwise shown of 1/4 inch plate glass set in non-ferrous frames, and hinged non-ferrous metal wickets in openings in front of cash drawer.

31. MEDICINE CABINETS

a. Cabinets shall be recessed type metal with mirror door over lavatory in each bathroom; of dimensions as follows:

Wall opening (minimum)	13-1/2 x 19-1/2 inches
Mirror size (minimum)	16 x 24 inches
Depth of cabinet	3-1/2 inches

(1) Cabinets shall be not less than No. 20 gage furniture steel with welded joints ground smooth. Provide cabinet with three bulb edged glass adjustable shelves. Rust-proof metal by cleaning after fabrication and "Bonderizing", "Parkerizing", hot zinc coating or cadmium plating. Finish interior and exposed portions with two coats of baked-on enamel of color approved by Local Authority.

(2) Mirrors shall be made with D.S.A. glass and shall conform to U.S. Department of Commerce, Commercial Standard CS-27-36. Label with manufacturer's dated certification of quality. Set mirrors in metal frame approximately 1/2 inch wide with a fiber or felt cushion and metal backing. Fit doors with (brass pin) hinges, catch, stop and pull.

( ) Cabinets of Wood shall be as detailed, of wood as specified for interior finish with plywood back. Finish interior with prime coat, undercoat and one coat of enamel; exterior as specified for interior trim (see division, PAINTING).

(1) Mirror shall be made of D.S.A. glass and shall conform to U. S. Department of Commerce Commercial Standard CS-27-36. Label with manufacturer's dated certification of quality. Set mirrors in wood frames with a fiber or felt cushion and plywood backing. Provide each cabinet with two adjustable rolled-edge glass shelves. Fit doors with hinges, catch, stop and pull.

___. Install cabinets on center line of lavatories with center of mirror 5 feet 0 inches above finished floor line.

32. BATHROOM ACCESSORIES

a. Paper Holder. For each water closet provide one paper holder, having wood or metal roller bar held between chromium plated heavy spring wire or bracket secured to chromium plated back or base. Screw holders to wood rail.

b. Towel Bar. In each bathroom provide two 24 inch towel bars with non-ferrous chromium plated posts and 3/4 inch chromium plated non-ferrous metal bar or 3/4 inch pyroxylin enameled finish hardwood bar. Secure to wood rail.

c. Tumbler and Toothbrush Holder; Soap Dish. In each bathroom provide one combination tumbler and toothbrush holder conforming to Federal Specification WW-P-541a, Type 412, and one soap dish conforming to Federal Specification WW-P-541a, Type 405. Install these accessories on wood rail, as directed, and fasten with chromium-plated or stainless steel screws.

33. IRONING BOARDS - PUBLIC LAUNDRIES

a. Provide ironing boards where indicated, stationary type securely bolted to wall and supported by 1 inch diameter zinc-coated steel pipe and malleable fittings. Stationary ironing boards of stock design and manufacture will be acceptable.

34. WOOD FLOORS AND THRESHOLDS

a. General. Clean subfloors free from rubbish and dust. Inspect subfloors for damage, level uneven or high spots and repair damaged places. Re-nail loose subflooring.

(1) Asphalt saturated felt weighing not less than 14 pounds per 100 square feet, shall be laid over wood subfloors. Lap felt at least 3 inches.

(2) Finish flooring shall be sorted and cut before laying to exclude any of the following defects: voids on finished edges, rot, knotholes over 3/8 inch in diameter, unsound knots, shakes, heart checks, split ends that cannot be drawn tight, torn grain and defects which will not sand, fill or finish smooth. Permitted holes and defects shall be plugged with similar wood or be filled as specified in the division PAINTING.

(3) Strip flooring to be covered with a finish floor shall have knotholes over 3/8 inch in diameter and similar defects cut out so that the strip flooring will provide adequate support for the finish floor. Sand to an even surface.

(4) Lay wood flooring square with sides and (generally) the longest way of room with close joints snugly driven up. Stagger ends to avoid joints close together. Use short and poorer pieces inside closets. Blind nail with 8d wire flooring or cut steel flooring nails spaced not more than 12 inches apart or over bearings. Countersink heads.

(5) Machine sand wood floors to a true smooth finish surface, starting with No. 2 sand paper and graduating to No. 0. Hand scrape parts of floors which cannot be machine sanded.

(6) Final sanding must be followed same day by application (see division PAINTING) of stain, filler or other finish. Protect floors with building paper and leave free from damage and machine marks.

b. Thresholds. See drawings for locations, dimensions and details.

(1) Thresholds shall be of same species of wood used for flooring and securely nailed in place.

35. HARDWARE-BUILDERS

a. Materials (see division HARDWARE-BUILDERS). Receive, store and be responsible for builders and cabinet hardware. Properly tag, index and file keys in key cabinet as directed. Deliver all keys locking the key cabinet at completion of work.

(1) Fit all hardware accurately, apply securely and adjust carefully.

(2) Door knobs shall be centered 38 inches above floor and center door pulls 45 inches above floor. Leave in working order free from defects.

( ) TYPE B VENTS

Provide vents for gas burning appliances of size indicated on the drawings. Vents shall be asbestos-cement or other material approved by the Underwriters for Type B venting.

a. Install Type B vents in accordance with the National Building Code recommended by the National Board of Fire Underwriters.

b. Provide drip cap at bottom of flue, a rain cap at top of flue and a flue thimble with rain and wind tight flashing of the same metal as specified for sheet metal in the division SHEET METAL.

( ) INSULATION OVER HEATING EQUIPMENT

Insulate ceilings over heating equipment when so indicated on the drawings.

a. Install 2 x 4 wood furring strips 16 inches on center. Support strips with No. 8 wire or 5/16 inch bolts 4 feet on center or as indicated on the drawings. Provide solid blocking for edges. Furring strips shall clear the ceiling 6 inches to provide a plenum.

b. Apply a ceiling of 1/2 inch fiberboard conforming to Federal Specification LLL-F-321b, Class C. Nail edges and along intermediate supports with roofing nails 6 inches on center.

( ) DEPRESSED SUBFLOOR FOR CERAMIC TILE

Depressed subfloor resting on 1 x 2 cleats nailed to sides of wood joists, allowing space for 2 inches of concrete fill and 3/4 inch mortar bed, shall be provided under areas to be finished with ceramic tile floors on a concrete fill. Chamfer top edges of joists.

( ) WOOD SUB-FRAMES FOR METAL CASEMENT WINDOWS

a. Sub-frames shall be fabricated from any of the following species and grades of lumber:

Cedar, any kind	No. 1
Cypress, Tidewater Red	No. 1
Fir, Douglas	No. 1 Dense
Pine, Southern	No. 1 Dense
Redwood	Construction Heart

Lumber specified to be dense shall have not less than an average of 5-1/2 rings per inch. In addition lumber shall be all heart or shall be treated as follows:

(1) Treat 2 inch lumber from which sub-frames are to be fabricated in accordance with Federal Specifications TT-W-571c, Table II or III or,

(2) Treat sub-frames after fabrication but before assembly by completely immersing them for 10 minutes in a toxic bath. The toxic bath shall consist of a nearly colorless petroleum distillate containing 10% of pine oil or other suitable solvent to prevent precipitation of the toxic agent and 5% by weight of pentachlorophenol conforming to Federal Specification TT-W-570.

b. Cut sub-frames accurately to size with mechanical saws, shape all corners to the same pattern with mechanical dado cutters and assemble frames with 4 - 10d galvanized nails at each corner.

c. Erect sub-frames ahead of masonry work. Set sub-frames accurately in position, brace against movement, bowing of the wood members, or distortion. Secure in place. Anchor sub-frames in masonry walls as indicated on the drawings. Wedge, block and nail sub-frames in place in wood frame walls with 16d nails 18 inches apart.

( ) REINFORCEMENT OF PARTITIONS FOR LAVATORIES

Reinforce masonry partitions 3 inches and 4 inches thick and 3/4 inch metal stud partitions at pipe spaces with 2 - 2 x 4 studs to each lavatory, anchored to floor slabs as indicated on the drawings.

PUBLIC HOUSING ADMINISTRATION
HOUSING AND HOME FINANCE AGENCY WASHINGTON 25, D. C.

4-30-51 LOW-RENT HOUSING BULLETIN Transmittal No. 45

Remove from Low-Rent Housing Bulletin No. LR-13, GUIDE SPECIFICATIONS:

1. Pages 3 and 4 dated 4-3-50.

Insert in Low-Rent Housing Bulletin No. LR-13, GUIDE SPECIFICATIONS:

1. Pages 3 and 4 dated 4-30-51.

apply to materials complying with performance requirements of Federal Specifications or other recognized standards, where a competitive status is assured because they are made by a number of manufacturers.

6. OPTIONS

Contractor's options, when specified, should be realistic. To permit the optional use of articles or materials which vary considerably in cost (for example, ferrous or non-ferrous gutters) has little or no effect, and options which may unfavorably affect the appearance or maintenance cost of the project should be avoided. When more than one article or material is satisfactory for use, it is obviously proper to include options in the Specification. The Architect shall incorporate in the Specification a descriptive and inclusive List of Options. The Contractor shall be required to state, in connection with his bid, the optional articles or materials which he elects and will use in constructing the project. Optional articles or materials are defined (for the purpose of these Specifications) as those which are stated in the Specification as being optional; such items as the several kinds of acceptable lumber, masonry wall back-up material, and metal reinforcement listed in these Guide Specifications are not considered as optional materials.

7. RELATION OF SPECIFICATIONS TO DRAWINGS

These Technical Specifications have been prepared on the theory that all designers will include in the working drawings those delineations most aptly shown by drawings. These should include schedules of room finishes, door and window sizes and details, since such schedules are the best known device by which the requirements as to kind of finish and material for any particular place can be shown. Conversely, the specifications--not the drawings--should cover requirements of type, quality, workmanship and finish which can be clearly defined and limited as to extent by words. Examples of the above principles are the use of the term "roofing" or "flashing" or "porous fill" or "paint" on the drawings or in the schedules, while the specifications describe the materials acceptable for such items. To the maximum extent practicable, the drawings should show the scope of requirements for any item. The use of finish schedules will contribute greatly to that end.

A word of caution regarding coordination of plans with specifications is pertinent. A close review and comparison of all drawings and the specifications should be made to eliminate discrepancies and conflicts, and to avoid gaps where no information is given.

NOTE: These pages 3 and 4 supersede the corresponding pages 3 and 4 of the FOREWORD to Bulletin No. LR-13, Guide Specifications, dated 4-3-50. Paragraph 10 has been added, and other paragraphs have been corrected, or revised without substantial change in requirements.

8. LANGUAGE AND ORGANIZATION

These Technical Specifications have been written, in many instances, in an attempt to economize words, but no effort has been made to achieve the maximum possible brevity. Further simplification of wording may be made, but care must be exercised to avoid ambiguity. The first requirement of a specification is clarity, the second is completeness, and simplification is in order after those ends are achieved. This does not mean that repetition is proper, and in these Guide Specifications an effort has been made to state any requirement clearly, and once only. It is advisable to avoid mention in the Technical Specifications of requirements which should properly be described in the General Conditions of the Contract, since such duplication is unnecessary and can lead to differences in requirements and resulting confusion and misunderstanding. Therefore, all of the documents in Bulletin No. LR-12, Construction Contract Documents should be studied carefully at the outset, and their provisions kept fully in mind when writing the Technical Specifications.

9. SUGGESTED USE OF GUIDE SPECIFICATIONS

Technical Specifications divisions, generally, are prefaced by suggestions relative to their applicability and use in the form of NOTES TO THE ARCHITECT. While all such notes should receive careful attention, it cannot be assumed that they cover all pertinent conditions or suggestions.

The use of these Guide Specifications is no substitute for a complete and thorough knowledge of construction techniques and of the design of the specific project which is to be constructed. However, if properly used and amended as may be necessary, they will save much time which would otherwise be used in study of the basic form and substance of the specifications. The writer must think his way through the project, and construct an outline in which the various paragraphs may be incorporated. The applicable parts of these Guide Specifications may be so used when they are consistent with the design and construction of the particular project.

10. DOLLAR ALLOWANCES NOT TO BE INCLUDED

Dollar allowances, to cover materials or items which are not specified outright or in detail, should not be included in the specifications. In all cases the architect (or his engineer) shall specify materials or items which are appropriate and acceptable for the work and are fully competitive.

11. INDEXING

Each Specification should include a comprehensive, accurate Table of Contents of the Bid and Contract Documents and the Technical Specifications covering all divisions of the work.

12. ISSUE

The Guide Specifications will be issued in divisions, as they are completed for publication and without regard to the numerical sequence of division numbers.

GUIDE SPECIFICATIONS

DIVISION 20a

FABRIC WALL COVERING

NOTES TO THE ARCHITECT:

THIS SHEET IS FOR THE USE OF THE ARCHITECT ONLY. DO NOT INCLUDE IN PROJECT SPECIFICATIONS.

FABRIC WALL COVERING MAY BE USED INSTEAD OF PAINT OVER DRY INTERIOR FINISH AND OVER PLASTER.

SINCE FABRIC WALL COVERING IS A GOOD VAPOR BARRIER (.75 GRAINS PER SQ. FT. PER HR. PER INCH HG.) OTHER VAPOR BARRIERS SHOULD BE OMITTED WHEN FABRIC WALL COVERING IS USED. DO NOT ENCLOSE DAMP PLASTER BETWEEN FABRIC WALL COVERING AND OTHER VAPOR BARRIERS SUCH AS REFLECTIVE INSULATION OR BARRIERS ON BLANKET INSULATION SINCE THIS CONSTRUCTION WOULD PREVENT MIGRATION OF MOISTURE IN THE PLASTER TO THE EXTERIOR.

THE COST OF FABRIC WALL COVERING IS USUALLY LESS THAN THE COMBINED COST OF A VAPOR BARRIER AND 2 COATS OF OIL PAINT, BUT MORE THAN A VAPOR BARRIER AND RESIN EMULSION PAINTS.

THE USE OF FABRIC WALL COVERING IS NOT CONSIDERED ECONOMICAL ON CEILINGS SINCE BUILT-IN VAPOR BARRIERS AND RESIN EMULSION PAINT ARE SATISFACTORY FOR CEILINGS.

PARAGRAPHS MARKED THUS ( ) COVER VARYING TYPES OF CONSTRUCTION AND MAY NOT BE APPROPRIATE IN THE PROJECT. SELECT THE TYPE OR TYPES SUITED TO THE PROJECT AND OMIT THOSE NOT SUITABLE.

CHANGE TEXT OF ANY PARAGRAPH TO SUIT THE PROJECT REQUIREMENTS; STRIKE OUT ITEMS NOT APPLICABLE, INSERT ADDED TEXT AS NECESSARY AND FILL IN BLANK SPACES.

- -

GUIDE SPECIFICATIONS

DIVISION 20a

FABRIC WALL COVERING

1. SCOPE

This Division includes covering wall surfaces with fabric wall covering and related items required to complete the work indicated on the drawings and specified.

2. MATERIAL

Fabric wall covering shall be a prefinished factory product weighing at least 10 ounces per square yard; consisting of a cotton fabric foundation treated with at least five coats of lead and oil paint or the equivalent, each coat roller-coated and oven dried separately; unfading, washable and impervious to dust, stain, grease, or water, and free from defects affecting serviceability or appearance. Surface shall not crack when creased at 70° temperature.

a. Paste shall be mildew and vermin proof adhesive (wheat paste not acceptable) especially developed for application of fabric wall covering and approved by the manufacturer of the fabric. Waterproof adhesive shall be used around plumbing fixtures.

b. Not more than 8 plain colors or non-matching patterns will be required and not more than 4 colors or patterns will be required in any one dwelling unit: 50% flat non-matching patterns and 50% flat solid colors for walls.

c. The permeance to water vapor of the fabric wall covering shall not be more than 1 grain per hour per square foot per inch of mercury when tested in accordance with A.S.T.M. Standard D-988-48.

3. APPLICATION

Store fabric wall covering where temperature is at least 60° for at least 48 hours immediately preceding application. Maintain room temperature at least 60° during and for at least 24 hours after application.

a. Install wall covering before installing radiators, kitchen cabinets, shelving, lighting, and plumbing fixtures (except tubs). Other trim shall have been placed and painted.

b. Surface to be covered shall be true, even, and smooth, free from grease, glossy paint and dirt, and dry to the touch.

c. Fabric shall be applied with as few joints as possible. Joints shall be vertical. Sheets shall lap 1/2 inch or more under adjoining sheets at internal angles. External angles shall have the fabric from one side extended around the corner at least 2 inches.

(1) Apply paste to wall, not to fabric.

(2) Locate joints to avoid joints in wallboard and lap joints at least 1-1/2 inch.

(3) Cut through both sheets with razor blade along a straight edge after initial set has taken place. Trim to neat line along trim and exposed edges at ceilings.

(4) Brush and roll fabric edges in place. Wash with mild soap and water and rinse clear as soon as possible after joint cut is made.

d. Finished wall covering shall be clean with no open joints or loose edges and be free from blisters, wrinkles, dirt and paste.

( ) Furnish a factory representative to supervise the start of the work.

- -

GUIDE SPECIFICATIONS

DIVISION 1 1/

DEMOLITION AND CLEARING OF SITE
(Included in General Construction Contract)

NOTES TO THE ARCHITECT:

THIS DIVISION IS TO BE USED WHEN DEMOLITION IS INCLUDED IN THE GENERAL CONSTRUCTION CONTRACT. EXTENSIVE CHANGES MAY BE REQUIRED TO ADAPT THIS SPECIFICATION TO SITE CONDITIONS.

NOTE THAT THE DEMOLITION OF SURFACE IMPROVEMENTS SUCH AS WALKS, CURBS, PAVEMENTS AND RETAINING WALLS, AND UNDERGROUND STRUCTURES SUCH AS CISTERNS AND CESSPOOLS, IS NOT COVERED HEREIN, BUT IS PLACED UNDER "EXCAVATING, FILLING AND GRADING". FURTHER, THIS DIVISION COVERS, AS A RULE, WALL DEMOLITION ONLY DOWN TO EXISTING GROUND LEVEL; THE NECESSARY ADDITIONAL WALL REMOVAL BEING SPECIFIED UNDER "EXCAVATION, FILLING AND GRADING." (THIS DIVISION OF WORK IS CONSIDERED GENERALLY TO BE THE MOST PRACTICAL.)

SECTION 1. SCOPE. THE "EXCEPTIONS" TO BE INSERTED IN THIS SECTION MAY INCLUDE WALKS, PAVEMENTS, ETC., AND ANY BUILDINGS OR OTHER STRUCTURES WHICH ARE NOT TO BE REMOVED OR WHICH THE CONTRACTOR MAY DESIRE TO UTILIZE TEMPORARILY. THE SPECIFICATIONS SHOULD STATE THAT ANY BUILDING(S) SO RESERVED

1/ This Division 1, Notes to the Architect and Technical Specifications, supersedes Division 1, dated 6-15-50. It has been rewritten to cover "Demolition and Clearing of Site" when this work is to be included in the general construction contract. See Division 1a for "Demolition and Clearing of Site", when such work is to be done under a separate contract. See also, Demolition Contract Documents, Bulletin No. LR-36.

SHALL BE DEMOLISHED AND REMOVED BEFORE COMPLETION OF THE WORK.

SECTION 4. RODENT EXTERMINATION. THIS SECTION SHOULD BE INCLUDED, PARTICULARLY FOR PROJECTS ON SLUM-CLEARED SITES, UNLESS LOCAL HEALTH AUTHORITIES ADVISE THAT IT IS UNNECESSARY.

SECTION 5. UTILITIES. PARAGRAPH "a" SHOULD BE EXPANDED TO DESCRIBE FULLY THE REQUIREMENTS FOR EACH UTILITY, AS ASCERTAINED FROM THE UTILITY COMPANY OR MUNICIPAL DEPARTMENT CONCERNED.

SECTION 6. DEMOLITION AND REMOVAL. IF CONDITIONS PERMIT, PARAGRAPH "d", "DEMOLITION ON PREMISES", MAY BE REVISED TO REQUIRE THAT ONLY SUBSTANDARD STRUCTURES BE DEMOLISHED ON THE PREMISES, AND TO PERMIT BUILDINGS IN GOOD REPAIR TO BE REMOVED AS A WHOLE.

WHERE THE AMOUNT OF DEMOLITION TO BE PERFORMED IS OF SUCH EXTENT AS MIGHT WARRANT AN AWARD UNDER A SEPARATE PRIME CONTRACT FOR DEMOLITION, REMOVAL AND CLEARING ONLY, BUT FOR GOOD AND SUFFICIENT REASON THE LOCAL AUTHORITY DECIDES TO INCLUDE IT IN THE MAIN CONSTRUCTION CONTRACT, THE CONSTRUCTION CONTRACT DOCUMENTS AS SET FORTH IN BULLETIN NO. LR-12 ARE APPLICABLE WITHOUT CHANGE, PROVIDED THE ADDITIONAL PROVISIONS STATED BELOW ARE INSERTED IN THE APPROPRIATE PLACES AS NOTED.

ADD TO INSTRUCTIONS TO BIDDERS

"___. RELEASE OF BUILDINGS: SEQUENCE OF WORK

"Bidders are referred to the Special Conditions for information regarding the manner in which the existing buildings will be released and the site made available for demolition purposes, and the sequence in which the demolition work shall be performed."

ADD TO GENERAL CONDITIONS (IF DESIRED BY LOCAL AUTHORITY) "INSURANCE" A SUBSECTION"___" PROVIDING FOR PROPERTY DAMAGE INSURANCE:

"The Contractor shall carry, during the life of the Contract, Property Damage Insurance in an amount of not less than $5000 to protect him and his subcontractors from claims for property damage which might arise from operations under the contract."

ADD TO GENERAL CONDITIONS

"___. REMOVAL AND SALVAGE OF EXISTING BUILDINGS

"a. Upon receipt by the Contractor of a Notice to Proceed with the work on all or any part of the premises, all right, title and interest of the Local Authority in and to buildings, structures and other property to be demolished and/or removed by the Contractor, on said part or all of the premises as described in such Notice, shall be deemed to be vested in the Contractor, subject to all provisions of the Contract and the following:

"(1) No right, title, property or interest of any kind whatsoever in or to land or premises upon which such buildings or structures stand, is created, assigned, conveyed, granted or transferred to the Contractor, or any other person or persons, except only the license and right of entry to remove such buildings and structures in strict accordance with the Contract.

"(2) Property belonging to public bodies or public service companies shall not become the property of the Contractor by reason of the transfer herein provided for, and the Local Authority does not warrant title to such property.

"(3) Except as otherwise provided all salvage and materials become the property of the Contractor and shall be taken from the premises. Storage of materials and equipment on the site will not be permitted. All rubbish and debris found existing on the site at the start of the work shall be removed from the premises.

"(4) Personal property of third persons or of occupants of buildings on the site shall not become the property of the Contractor.

"(5) If the Local Authority terminates the Contractor's right to proceed in accordance with Section, RIGHT OF LOCAL AUTHORITY TO TERMINATE CONTRACT, or DELAYS - DAMAGES, of the General Conditions all right and all title in and to buildings, structures, material and property transferred by this Section shall revert to and vest in the Local

Authority without prejudice to any claim which the Local Authority may have against the Contractor arising from the Contractor's default.

"(6) Materials left on the site, after acceptance of the work by the Local Authority, shall be deemed to have been abandoned by the Contractor to the Local Authority and title thereto shall thereupon revert to and vest in the Local Authority, without prejudice, however, to any claim which the Local Authority may have against the Contractor arising from the action of the Contractor in so leaving such materials on the site.

"(7) If the Technical Specifications provide that the Contractor may elect to remove underground utilities with title thereto being vested in the Contractor, he shall, within ten days after the award of the Contract, notify the Local Authority of his election to remove such property. If any such property is not removed within the time for completion of that portion of the work within which it lies, or any extension thereof, title to such property not removed shall revert to the Local Authority.

"b. Unless otherwise specified, no dwelling buildings shall be removed from the premises as a whole, or in a substantially whole condition, but shall be demolished on the premises."

ADD TO GENERAL CONDITIONS

"___. LIVE UTILITIES AND OTHER PROPERTY

"a. The Contractor shall assume all responsibility for damage to any property upon, or passing through, the site but excluded from the work or not owned by the Local Authority, such as utility lines or like items.

"b. Where disconnections of underground services are required to be made at street mains the Contractor shall, at his own expense, restore the pavement over such cuts in accordance with local regulations".

SPECIAL NOTE: ESTABLISHMENT ON THE SITE OF A SALES OFFICE BY THE CONTRACTOR AND CONDUCTING THE SALE OF SALVAGED MATERIALS, IF PERMITTED BY LOCAL MUNICIPAL AUTHORITIES, MAY BE OF SUCH ADVANTAGE AS TO RESULT IN MORE FAVORABLE BIDS THAN IF PROHIBITED. THE DECISION MADE BY THE LOCAL AUTHORITY IN THIS MATTER SHOULD BE MADE PLAIN TO BIDDERS. A NEW SUBSECTION SHOULD BE ADDED TO THE SECTION, "USE OF PREMISES" IN THE GENERAL CONDITIONS, STATING WHAT THE CONTRACTOR MAY (OR MAY NOT) DO WITH RESPECT TO SUCH SALES ON THE PREMISES.

- -

ADD TO SPECIAL CONDITIONS

A NEW SECTION READING AS FOLLOWS, IF THE ENTIRE CONTRACT AREA WILL BE TURNED OVER TO THE CONTRACTOR FOR DEMOLITION PURPOSES AT ONE TIME:

"___. RELEASE OF BUILDINGS

"The entire Contract area will be released to the Contractor for demolition purposes at one time under the Notice to Proceed, whereupon the Contractor shall have full control of the progress and sequence of the demolition, removal and clearing work, subject to all Contract stipulations and covenants."

NOTE: WHERE THE SITUATION IS SUCH THAT THE ENTIRE SITE CANNOT BE TURNED OVER TO THE CONTRACTOR AT ONE TIME, BUT THE BUILDINGS OR AREAS MUST BE RELEASED FOR DEMOLITION SINGLY OR BY GROUPS AS THEY ARE VACATED, THIS SECTION MUST BE WRITTEN IN TWO SUBSECTIONS, AS FOLLOWS:

"___. RELEASE OF BUILDINGS

"a. When vacated, the buildings and structures to be demolished will be released to the Contractor for demolition purposes either singly or in groups, as rapidly as circumstances permit, and the Contractor agrees to perform the demolition, removal and clearing work in such order as the Local Authority in its discretion may require.

"b. The Contractor shall be entitled to an extension of Contract time if the Local Authority fails to release any building or structure within such time as will enable the Contractor to complete the Contract work within the Contract time, but the Local Authority shall be under no further liability to the Contractor for such failure."

SPECIAL NOTE: IF THE SITUATION PERMITS GIVING MORE DEFINITE INFORMATION TO THE BIDDERS, SUCH AS IDENTIFICATION OF GROUPS OF STRUCTURES AND DATES OF RELEASE, IT IS PERTINENT TO MODIFY CLAUSE "a" ABOVE ACCORDINGLY. WITH RESPECT TO DEMOLITION WORK, THE BETTER INFORMED A BIDDER IS AS TO WHEN AND

- -

IN WHAT MANNER HE WILL BE ABLE TO DEVELOP SALEABLE SALVAGE MATERIALS FROM THAT OPERATION, IF AWARDED THE CONTRACT, THE MORE REALISTIC WILL BE THE BIDS RECEIVED.

CHANGE TEXT OF ANY PARAGRAPH TO SUIT THE PROJECT REQUIREMENTS, STRIKE OUT ITEMS NOT APPLICABLE, INSERT ADDED TEXT AS NECESSARY, AND FILL IN BLANK SPACES.

- -

GUIDE SPECIFICATIONS

DIVISION 1

DEMOLITION AND CLEARING OF SITE
(Included in General Construction Contract)

1. SCOPE

This division includes the demolition and removal of buildings, sheds, fences, steps and other structures from the project site, except the following: (1) _____, (2) _____, (etc.) which construction shall be left intact. Existing rubbish, trash and junk apart from that of demolished buildings shall be removed and the site left clear of such materials. Except as otherwise shown or stipulated, the demolition work here specified shall be carried down to existing ground level. The required demolition and removal of construction below existing ground level is covered by the division EXCAVATING, FILLING AND GRADING.

2. NOTICE TO PROCEED

(See Section, RELEASE OF BUILDINGS, SPECIAL CONDITIONS)

3. TITLE TO BUILDINGS AND STRUCTURES

(See Section, REMOVAL AND SALVAGE OF EXISTING BUILDINGS, GENERAL CONDITIONS.)

4. RODENT EXTERMINATION

Before commencing demolition work, carry out through an experienced subcontractor effective measures for rodent extermination over the entire site. The method of extermination employed shall be one in successful local use, and shall meet the approval of the local health department. Upon completion of the extermination work, present to the Local Authority a certificate from the health department stating that the work has been performed satisfactorily.

5. UTILITIES

a. Disconnection. Before starting demolition, disconnect, or arrange for the disconnection of utility service connections, such as water, gas, steam, electricity, and telephone, to buildings to be demolished, in accordance with the regulations of the utility concerned. Seal storm and sanitary sewers leading from structures to be demolished. (See also, Section PERMITS AND CODES, and Section, CARE OF WORK, GENERAL CONDITIONS.)

b. Protection. Preserve in operating condition all active utilities traversing the project site; protect all property, including but not limited

- -

to, mains, manholes, catch basins, valve boxes, poles, guys, and other appurtenances. Repair damage to any such utility, due to work under this contract, to the satisfaction of the Local Authority.

6. DEMOLITION AND REMOVAL

a. Extent. Except as otherwise shown or specified, demolish structures and foundations to existing ground level; remove completely steps, posts, porches, and similar construction.

b. Provide adequate protection to persons and property. Execute the work in such a manner so as to avoid interference with the use of or passage to and from adjoining buildings and facilities.

c. Trees. Before starting demolition, fence all trees, or groups of trees, designated on the drawings as to remain, to the outer limits of the spread of branches. Such fenced areas shall not be used for storage of building materials or for any purpose likely to damage tree roots or branches.

d. Demolition on Premises. Demolish masonry walls in small sections. Remove structural steel, cast iron and heavy timbers by individual pieces and lower carefully. Remove, regardless of elevation, floor construction over basements and cellars. Remove partitions (except masonry cross-walls), stairways, furnaces, piping, apparatus and debris from within existing basements. Break up basement and cellar floors sufficiently to permit drainage. (See also, Section, REMOVAL AND SALVAGE OF EXISTING BUILDINGS, GENERAL CONDITIONS.)

e. Dust Control. Wet down thoroughly masonry walls during demolition to prevent spread of dust; provide water and necessary connections therefor.

f. Use of Explosives. Do no blasting on the project site except after written permission from the Local Authority and in the manner prescribed by local regulations.

g. Fires. Burn no materials or debris on the premises without specific permission, and not under or near trees to remain.

h. Salvage for Local Authority. Preserve and stack for use by the Local Authority the following salvaged materials:

(1)
(2)

i. Clean-up. Remove from the site rubbish and debris found thereon and, except as otherwise specified, materials and debris resulting from the work of demolition; leave the site in safe and clean condition. Storage of materials resulting from demolition and/or of tools and equipment, relating thereto on the site will not be permitted after completion of this demolition and removal work.

GUIDE SPECIFICATIONS

DIVISION 1a 1/

DEMOLITION AND CLEARING OF SITE
(Separate Contract)

NOTES TO THE ARCHITECT:

THIS DIVISION IS TO BE USED FOR A SEPARATE DEMOLITION CONTRACT, WHICH IS INDEPENDENT OF THE GENERAL CONTRACT, AND IN CONNECTION WITH "DEMOLITION CONTRACT DOCUMENTS", BULLETIN NO. LR-14. CHANGES MAY BE REQUIRED TO ADAPT THE SPECIFICATION TO THE EXISTING LOCAL OR SITE CONDITIONS.

NOTE THAT THE DEMOLITION OF SURFACE IMPROVEMENTS SUCH AS WALKS, CURBS, PAVEMENTS AND RETAINING WALLS, AND UNDERGROUND STRUCTURES, SUCH AS CISTERNS AND CESSPOOLS, IS NOT COVERED HEREIN, BUT IS PLACED UNDER DIVISION, "EXCAVATION, FILLING AND GRADING" OF THE GENERAL CONTRACT. FURTHER, THIS DIVISION COVERS, AS A RULE, WALL DEMOLITION ONLY DOWN TO EXISTING GROUND LEVEL; THE NECESSARY ADDITIONAL WALL REMOVAL BEING SPECIFIED UNDER "EXCAVATION, FILLING AND GRADING" OF THE GENERAL CONTRACT. (THIS DIVISION OF WORK IS CONSIDERED GENERALLY TO BE THE MOST PRACTICAL.)

SECTION 1. SCOPE. THE "EXCEPTIONS" TO BE INSERTED IN THIS SECTION MAY INCLUDE WALKS, PAVEMENTS, ETC., AND ANY BUILDINGS OR OTHER

1/ This Division covers Demolition and Clearing of Site, when this work is to be done under a separate contract. See Division 1, for specifications covering such work, when it is to be done under the general construction contract. See also Demolition Contract Documents, Bulletin No. LR-36.

STRUCTURES WHICH ARE NOT TO BE REMOVED, OR COULD BE USED TEMPORARILY BY THE GENERAL CONTRACTOR, PROVIDED THEY ARE NOT IN THE WAY OF PROJECT STRUCTURES AND ARE DEMOLISHED BY HIM BEFORE COMPLETION OF CONTRACT.

SECTION 2. RODENT EXTERMINATION. THIS SECTION SHOULD BE INCLUDED, PARTICULARLY FOR PROJECTS ON SLUM-CLEARED SITES, UNLESS LOCAL HEALTH AUTHORITIES ADVISE THAT IT IS UNNECESSARY.

SECTION 3. UTILITIES. PARAGRAPH "a" SHOULD BE EXPANDED TO DESCRIBE FULLY THE REQUIREMENTS RELATIVE TO EACH UTILITY, AS ASCERTAINED FROM THE UTILITY OR MUNICIPAL DEPARTMENT CONCERNED.

SECTION 4. DEMOLITION AND REMOVAL. IF CONDITIONS PERMIT, PARAGRAPH "d. DEMOLITION OR PREMISES", MAY BE REVISED TO REQUIRE THAT ONLY SUBSTANDARD STRUCTURES BE DEMOLISHED ON THE PREMISES, AND TO PERMIT BUILDINGS IN GOOD REPAIR AND HAVING ACCEPTABLE SANITARY CONVENIENCES TO BE REMOVED AS A WHOLE, IF DESIRED.

SPECIAL NOTE: ESTABLISHMENT ON THE SITE OF A SALES OFFICE BY THE CONTRACTOR AND CONDUCTING THE SALE OF SALVAGED MATERIALS, IF PERMITTED BY LOCAL MUNICIPAL AUTHORITIES, MAY BE OF SUCH ADVANTAGE AS TO RESULT IN MORE FAVORABLE BIDS. THE DECISION MADE BY THE LOCAL AUTHORITY IN THIS MATTER SHOULD BE MADE PLAIN TO BIDDERS. A NEW SUBSECTION SHOULD BE ADDED TO SECTION 20, "USE OF PREMISES" IN THE GENERAL CONDITIONS STATING WHAT THE CONTRACTOR MAY (OR MAY NOT) DO WITH RESPECT TO SALES ON THE PREMISES.

CHANGE TEXT OF ANY PARAGRAPH TO SUIT THE PROJECT REQUIREMENTS, STRIKE OUT ITEMS NOT APPLICABLE, INSERT ADDED TEXT AS NECESSARY, AND FILL IN BLANK SPACES.

- -

GUIDE SPECIFICATIONS

DIVISION 1a

DEMOLITION AND CLEARING OF SITE
(Separate Contract)

1. SCOPE

This division includes the demolition and removal of buildings, sheds, fences, steps and other structures from the project site as detailed under "GENERAL SCOPE OF WORK", except the following: (1) _____, (2) _____, (etc.) which construction shall be left intact. Existing rubbish, trash and junk, apart from that of demolished buildings, shall be removed and the entire site left clear of such materials. Except as otherwise shown or stipulated, the demolition work herein specified, shall be carried down to existing ground level. The required demolition and removal of construction below existing ground level is not included.

2. RODENT EXTERMINATION

Before commencing demolition work, carry out through an experienced subcontractor effective measures for rodent extermination over the entire site. The method of extermination employed shall be one in successful local use and shall meet the approval of the local health department. Upon completion of the extermination work, present to the Local Authority a certificate from the health department stating that the work has been performed satisfactorily.

3. UTILITIES

a. Disconnections. Before starting demolition, disconnect, or arrange for the disconnection of utility service connections, such as water, gas, steam, electricity and telephone, to buildings to be demolished in accordance with the regulations of the utility concerned. Seal storm and sanitary sewers leading from structures to be demolished. (See also, Section, PERMITS AND CODES, and Section, CARE OF WORK, GENERAL CONDITIONS.)

b. Protection. Preserve in operating condition active utilities traversing the project site; protect property, including, but not limited to, mains, manholes, catch basins, valve boxes, poles, guys and other appurtenances. Repair damage to any such utility, due to work under this contract, to the satisfaction of the Local Authority.

4. DEMOLITION AND REMOVAL

a. Extent. Except as otherwise shown or specified, demolish structures

and foundations to existing ground level; remove completely steps, posts, porches and similar construction.

b. Provide adequate protection to persons and property. Execute the work in such a manner so as to avoid interference with the use of or passage to and from adjoining buildings and facilities.

c. Trees. Before starting demolition, fence all trees or groups of trees to the outer limits of the spread of branches. Such fenced areas shall not be used for storage of building materials or for any purpose likely to damage tree roots or branches. Leave fencing in place upon completion of work under this contract.

d. Demolition on Premises. Demolish masonry walls in small sections. Remove structural steel, cast iron and heavy timbers by individual pieces and lower carefully. Remove, regardless of elevation, all floor construction over basements and cellars. Remove partitions (except masonry cross-walls, stairways, furnaces, piping, apparatus and debris from within existing basements. Break up basement and cellar floors sufficiently to permit drainage. (See Section, REMOVAL AND SALVAGE, GENERAL CONDITIONS.)

e. Dust Control. Wet down masonry thoroughly during demolition to prevent spread of dust; provide water and necessary connections therefor.

f. Use of Explosives. Do no blasting on the project site except after written permission from the Local Authority and in the manner prescribed by local regulations.

g. Fires. Burn no materials or debris on the premises without specific permission, and not under or near trees to remain.

h. Barricades, Basement Filling. Provide substantial barricades around all basements and cellars, as soon as such openings are uncovered, adequate to block access, and to afford protection to workmen and the public. Materials salvaged from the demolition work may be used for the purpose. Where the basement or cellar openings adjoin, or are within a distance of 6 feet from sidewalk lines, fill such basement or cellar openings along the sidewalks as follows: top of fill shall be at existing ground level and at least 6 feet wide; slope of fill to basement or cellar floor shall be no steeper than 1-1/2 to 1; fill material shall be free from debris and trash, with any masonry material well distributed in the earth. The above-specified barricade and adjacent and parallel to the sidewalk shall be placed at top of the slope.

i. Salvage for Local Authority. Preserve and stack for use by the Local Authority the following salvaged materials:

(1)
(2)
(3)

Such materials shall be stacked or deposited at the point(s) on the site as indicated on the plans or as may be designated by the Local Authority.

j. Clean-up. Remove from the site rubbish and debris found thereon or resulting from the work of demolition. At completion leave the site in a safe and clean condition, free from materials or equipment except salvaged materials to be retained by the Local Authority.

PUBLIC HOUSING ADMINISTRATION
Housing and Home Finance Agency

9-5-51 Low-Rent Housing Bulletin Transmittal No. 50

Remove from Low-Rent Bulletin No. LR-13, GUIDE SPECIFICATIONS:

1. Division 14, LATHING AND PLASTERING, dated 9-28-50.

Insert in Low-Rent Housing Bulletin No. 13, GUIDE SPECIFICATIONS:

1. Division 14, LATHING AND PLASTERING, dated 9-5-51.

HHFA-PHA, Wash. D.C.

GUIDE SPECIFICATIONS

DIVISION 14

LATHING AND PLASTERING

NOTES TO THE ARCHITECT:

* WHEN CODES IMPOSE FIRE RESISTANCE RESTRICTIONS ON PARTITIONS THE FOLLOWING TABLES MAY BE USEFUL BUT AUTHORITIES HAVING JURISDICTION SHOULD BE CONSULTED.

WOOD FRAMED PARTITIONS					
Description	Ultimate fire resistance period				Authority
	Thickness of board or plaster				
	1/2 in	3/4 in	7/8 in	1 in	
1:2, 1:2 Gypsum:sand plaster on gypsum lath with one 3/4 in hole each 16 in^2	1 hr				N.B.S.
1:2, 1:2 Gypsum:sand plaster on metal lath		1 hr			N.B.S.
1:2, 1:3 Gypsum:sand plaster on metal lath			1 hr		N.B.S.
1:2-1/2 Gypsum: perlite or vermiculite plaster on gypsum lath with one 3/4 in hole each 16 in^2	1-1/4 hr				N.B.S.
1:2, 1-3 Gypsum:perlite or vermiculite plaster on metal lath		1 hr			U.L.
1/2 inch gypsum wall board nailed	2/3				N.B.S.
2 layers of 1/2 inch gypsum wall board nailed				1-1/2 hr	N.B.S.

NOTE: PROPORTIONS OF PLASTER AND SAND ARE BY WEIGHT, 1 BAG OF NEAT PLASTER = 100 LBS. = 1.54 CU. FT. PROPORTIONS OF PLASTER AND PERLITE OR VERMICULITE ARE 100 LBS. (1 BAG) OF NEAT PLASTER TO X CUBIC FEET OF AGGREGATE *

NOTE: THIS REVISED DIVISION SUPERSEDES DIVISION 14, DATED 9-28-50.

TEXT * BETWEEN ASTERISKS * IS NEW OR REVISED.

*

SOLID PARTITIONS		
Description	Ultimate fire resistance period	Authority
2 inch thick studless partition with 1:2, 1:3 gypsum;perlite or vermiculite plaster on gypsum lath	1-1/2 hour	N.B.S.
2 inch thick, metal lath and stud partition with 1:1, 1:1 gypsum sand plaster	1 hr.	N.B.S.
2-1/2 inch thick partition with 1:2, 1:3 gypsum:perlite or vermiculite plaster on metal lath and stud	2 hr	N.B.S.

*

* SEE BUILDING MATERIALS AND STRUCTURES REPORT, (BMS) 92 1/ FOR FIRE RESISTANCE OF OTHER TYPES OF PARTITIONS AND FOR WOOD STUD PARTITIONS FACED WITH OTHER MIXES. ALSO, SEE CURRENT "LIST OF INSPECTED FIRE PROTECTION EQUIPMENT AND MATERIALS" PUBLISHED BY UNDERWRITERS LABORATORIES, INCORPORATED, NEW YORK 13, CHICAGO 11, AND SAN FRANCISCO 11. *

WHERE CLIMATIC CONDITIONS ARE COOL, EXTERIOR MASONRY WALLS SHOULD BE FURRED.

THIS SPECIFICATION IS INTENDED TO COVER ONLY THE SIMPLER FORMS OF CONSTRUCTION. SUSPENCED CEILINGS, ACOUSTICAL PLASTER AND LIKE ITEMS WHICH WILL SELDOM BE REQUIRED, ARE NOT INCLUDED.

KEENES CEMENT PLASTER SHOULD BE LIMITED TO BATHROOMS AND MAY BE OMITTED ENTIRELY.

1/ BMS 92 CAN BE PROCURED FROM THE SUPERINTENDENT OF DOCUMENTS, WASHINGTON 25, D. C., for 25¢.
N.B.S. - National Bureau of Standards
U.L. - Underwriters Laboratories

- -

THE TYPE OF WALL AND CEILING FINISHES SHOULD BE INDICATED IN A FINISH SCHEDULE ON THE DRAWINGS.

DO NOT USE ANY CREOSOTED WOOD IN CONTACT WITH PLASTER.

WHEN SOLID PLASTER PARTITIONS ARE USED, MAKE PROVISIONS FOR ATTACHING BASE AND REINFORCE AS NECESSARY FOR ATTACHING PLUMBING FIXTURES, KITCHEN CABINETS, AND SHELVING.

PARAGRAPHS MARKED THUS ( ) COVER VARYING TYPES OF CONSTRUCTION, AND MAY NOT BE APPROPRIATE IN THE PROJECT. SELECT THE TYPE OR TYPES SUITED TO THE PROJECT, AND OMIT THOSE NOT SUITABLE.

ADD NUMBER OR LETTER TO PARAGRAPHS MARKED THUS __. AND REVISE PARAGRAPH IDENTIFICATION AS NECESSARY.

CHANGE TEXT OF ANY PARAGRAPH TO SUIT THE PROJECT REQUIREMENTS. STRIKE OUT ITEMS NOT APPLICABLE, INSERT ADDED TEXT AS NECESSARY, AND FILL IN BLANK SPACES.

GUIDE SPECIFICATIONS

DIVISION 14

LATHING AND PLASTERING

1. SCOPE

This division includes interior lathing, furring, plastering, and related items required to complete the work as indicated on the drawings, and as specified, except wood furring and wood grounds which are specified in the division CARPENTRY AND MILLWORK.

a. Plastered ceilings shall include beams and soffits of stairs and other overhead plaster work.

b. Plastered walls shall include walls, piers, columns, and plaster reveals.

2. MATERIALS

a. Channels shall be hot-rolled or cold-rolled steel, free from rust and coated with rust inhibitive paint and shall have the following minimum weights per thousand lineal feet:

SIZE	HOT-ROLLED	COLD-ROLLED
3/4 inch	300	300
1-1/2 inch	1120	475

*b. Metal lath shall be expanded metal lath or paper-backed wire fabric. Expanded metal lath shall conform to Federal Specification QQ-B-101c Type F, FR, or F 3/8 R. Paper-backed wire fabric shall consist of galvanized wire not less than 16-gage, spaced 2 inches on center in two directions with stiffening ribs spaced not over 5 inches on center, and an absorptive paper backing securely attached to the fabric so as to provide full embedment of at least 1/8 inch in plaster for at least 1/2 of the total length of the strands, and 1/2 of the total weight of the metal. The design shall provide a mechanical bond and continuous reinforcement in both directions. Wire shall extend 1 inch beyond the paper backing on 2 adjoining edges. *

The following table gives maximum spans in inches for the various weights and types of lath:

TYPE OF LATH	WEIGHT OF LATH IN POUNDS PER SQ. YD.	MAXIMUM SPANS				
		Wired to Metal			Nailed to Wood	
		Solid Partition	Walls	Ceilings	Walls	Ceilings
Flat Expanded	2.5	16	---	---	---	---
Flat Expanded	3.4	16	16	13½	16	16
Flat 1/8" Rib	2.75	24	---	---	---	---
Flat 1/8" Rib	3.4	24	19	19	19	19
3/8" Rib	3.4	2/	24	24	24	24
3/8" Rib	4.0	2/	24	24	24	24
* Paper-backed wire fabric	---	---	16	16	16	16 *

2/ The extra stiffness of 3/8" Rib Lath is not needed for solid partitions.

c. Accessories

(1) Tie wire shall be soft annealed, * 16 or * 18 gage galvanized steel, monel metal, or other corrosion resistant metal of sufficient strength for the purpose as approved by the Local Authority.

(2) Corner beads shall be zinc coated sheet metal not lighter than 26 gage with perforated or expanded continuous flanges not less than 2-1/2 inches wide.

(3) Metal grounds and screeds shall be zinc coated sheet metal not lighter than 26 gage with perforated or expanded flanges not less than 2 inches wide.

(4) Cornerites shall be 2.5 pound flat expanded metal lath bent at right angles to form not less than 3 inch legs on each side.

( ) Metal runners for solid plaster partitions shall consist of 18 gage galvanized clips, and metal base as specified in the division METAL BUCKS, DOOR AND TRIM for floor runners; and not less than 24 gage galvanized metal for ceiling runners. Runners for gypsum lath partitions shall provide not less than 1/2 inch laps over both faces of the lath.

( ) Wood runners for solid plaster partitions shall be as detailed on the drawings.

- -

_. Gypsum lath shall conform to Federal Specification SS-P-431a. Gypsum lath shall be 3/8 inch thick for 16-inch spans and 1/2 inch thick for 24 inch spans, plain or perforated.

( ) Aluminum insulating lath shall be 1/2 inch or 3/8 inch plain gypsum lath to which has been cemented a layer of bright aluminum foil not less than .00035 inches thick over one entire surface.

( ) Fiber insulating lath shall be 1/2 inch thick and conform to Federal Specification LLL-F-321b, Class B. Lath shall be proofed against vermin and rot producing fungi and treated or coated to provide a vapor barrier as specified in the division THERMAL INSULATION.

_. Gypsum plaster shall conform to Federal Specification SS-P-402 Type N (neat) fibered with sisal for application over metal lath.

_. Gaging plaster (calcined gypsum) shall conform to Federal Specification SS-P-402, Type G.

_. Keenes cement shall conform to Federal Specification SS-C-161, Type 1 or Type 2, pure white and capable of taking a high polish.

_. Lime shall be hydrated lime or finely pulverized quick lime.

(1) Hydrated lime shall conform to ASTM Specification C206-49-Type S.

(2) Pulverized quick lime shall conform to Federal Specification SS-Q-351, Type C. All material shall pass a No. 20 sieve and not less than 90 per cent shall pass a No. 50 sieve.

(3) Aged lime putty made from lump lime may be used provided it meets the requirements for hydrated lime. The putty shall be made by a firm regularly engaged in supplying the trade with lime putty in bulk, and in a plant fully equipped with proper machinery and storage capacity; the plant and method used shall be subject to inspection and approval by the Local Authority.

_. Bond plaster shall be a factory-mixed product specially prepared for use directly on concrete surfaces and shall contain not less than 60 per cent by weight of calcined gypsum calculated from SO_3 content. The remainder shall consist of material to control working quality, setting time, bonding property and expansion on setting. Bond plaster shall require only the addition of water to make it ready for use, and shall set in not less than 1-1/2 hours nor more than 8 hours. It shall have a tensile strength of not less than 150 pounds per square inch after 7 days in moist air at a temperature of 70 degrees to 100 degrees F. The method of testing shall conform to ASTM C26-42.

- -

_. Portland cement shall conform to Federal Specification SS-C-192, Type 1 or Type 1-A.

_. Sand shall conform to ASTM Specification C35-39.

_. Light weight aggregate may be used in lieu of sand for scratch and brown coats only. In making a sieve analysis of light weight aggregate under ASTM Specification C136-46, a 50 grain sample shall be used. When such a determination is made for bagged materials samples shall be obtained by mixing and then quartering. Where a "Rotat" or other mechanical sieve device is used, the sieving time shall be 5 minutes.

(1) Vermiculite shall be a mica mineral, properly expanded by a heating process, conforming in particle size to the requirements of the standard specifications for sand for plaster. The weight shall be not less than 7-1/2 nor more than 10 pounds per cubic foot, as determined by measurement in a cubic foot box, using the shoveling procedure outlined in the Standard Method for Unit Weight of Aggregate, ASTM Specification C29-42.

(2) Perlite shall be a volcanic rock properly expanded by a heating process conforming in particle size to the requirements of the standard specification for sand for plaster, except that the minimum percentage retained on a No. 100 (149 micron) sieve shall be decreased from 95 to 90 per cent. The weight shall be not less than 7-1/2 nor more than 15 pounds per cubic foot as determined by measurements in a cubic foot box, using the shoveling procedure outlined in the Standard Method of Tests of Aggregate, ASTM Specification C29-42.

_. Water shall be clean, fresh and free from alkali or such amounts of mineral and organic substances as would affect the set of the plaster.

_. All manufactured materials shall be delivered in the original packages, containers, or bundles bearing the name of the manufacturer and the brand.

_. Protect plaster and all cementitious materials against dampness. Store off the ground, under cover and away from sweating walls and other damp surfaces.

_. Protect metal goods against rusting.

_. Affidavits. Furnish affidavits from manufacturers certifying that materials delivered to the job conform to the requirement of these specifications.

- -

3. SAMPLES

Samples, as listed below, of materials proposed by the Contractor for use in the work shall be submitted to the Local Authority for approval:

Metal Lath	12 sq. ft.
Tie Wire	1 lb.
Corner Bead	6 lin. ft.
Metal Grounds and Screeds	6 lin. ft.
Cornerites	6 lin. ft.
Insulating Lath	12 sq. ft.
Sand	2 cu. ft.
Light Weight Aggregate	4 cu. ft.
Metal Runners for Solid Plaster Partitions	6 lin. ft.

4. INSTALLATION OF LATH AND ACCESSORIES

a. Metal furring shall be 3/4 inch channels, unless otherwise indicated on the drawings, spaced as required for the type of lath to be used.

(1) Fur over chases, recesses, pockets, and other gaps. Provide necessary clips, wire and channels to bring plaster to lines indicated on the drawings. Furring shall be fastened securely in place.

( ) Metal exterior wall furring shall be supported at floor and ceiling only with approved fastening devices.

*b. Metal lath shall be laid with sides of sheets lapped 1/2-inch for expanded metal lath and 1-inch for paper-backed wire fabric and end of sheets lapped 1-inch. Laps shall be made with metal to metal contact. Ribbed lath shall have the ribs nested at joints. End joints of sheets shall be made only at bearings and shall be staggered. Lath shall be continuous around corners of intersecting plaster surfaces with laps at least 4 inches from the corner. Metal lath shall be secured to supports at edges and at intervals of not over 6 inches and tied together at edges once between supports. *

*(1) Fasten expanded metal lath to wood joists with 1-1/2 inch barbed roofers' nails, to studs or furring with 4d common or 1-inch roofing nails and to metal channels with single loops of 16-gage or 2 loops of 18-gage tie wire or approved galvanized metal clips not less than 12-gage. Fasten paper-backed wire fabric to wood joists with 1-1/4-inch galvanized wire fence staples or 1-3/4-inch large head roofing nails and to wood studs or furring with 13-gage hook nails furnished by the manufacturer of the lath and penetrating the wood 1 inch. Nails or staples shall engage a main mesh member between ribs. Paper-backed wire fabric shall contact supports only at the stiffening ribs. *

*(2) Fasten metal lath to light gage joists by twisted loops of 14-gage or heavier galvanized steel wire or 10-gage or heavier galvanized wire hangers with hooked ends. *

- -

(3) Fasten expanded metal lath to open web steel joists by 2 loops of 18-gage or 1 loop of 16-gage galvanized steel wire. Fasten paper-backed wire fabric to open web steel joists by means of 1-inch V shaped strips not thinner than 19-gage for 24-inch spans or 16-gage for 36-inch spans, attached to joists 16 inches on center by 12-gage galvanized clips or 2 turns of 12-gage galvanized wire, to which are welded galvanized 12-1/2 gage wire prongs 6 inches on center. Attach V strips 16 inches on center at right angles to joists. Attach fabric, with stiffener ridges at right angles to the V strips, to the strips by pushing fabric over the prongs tightly to the V strip and bending prongs around main members of the fabric.

(4) Fasten metal lath to light gage steel studs with 1-3/4 inch galvanized roofing nails.

(5) Fasten metal lath to channels with tie wire.

(6) Bridge joints, between differing materials which are to be plastered, with expanded metal lath.

(7) Lap expanded metal lath 4 inches beyond sides of chases and recesses.

c. Gypsum lath shall be applied with the long dimension at right angles to the framing members. Cross joints shall be broken in each course and so staggered that joints on the walls shall not meet corresponding ceiling joints. Gypsum lath shall be nailed with 4 nails to each stud 5 inches apart and 3/8 inch from the edge. Nails shall be 13-gage, blued 19/64 inch flat head, smooth diamond point nails, 1-1/8 inches long for 3/8-inch lath or 1-1/4 inch long for 1/2 inch lath, driven so that the underside of the nail head will be flush with lath.

*( ) Aluminum insulating gypsum lath shall be applied on exterior walls only in the same manner as standard gypsum lath and with the foil toward the framing. Horizontal joints shall be tight and closure joints shall not be larger than 1/8-inch. Fit tightly against outlet boxes and other obstacles on exterior walls. *

*( ) Fiber insulating lath shall be applied on exterior walls and top floor ceilings only with the long edge at right angles to the framing. Start lath application along top of wall with back edge of shiplapped edge down. Vertical joints shall be staggered. Bring joints to moderate contact. Secure in place with 1-1/4 inch blued fiberboard nails or 4d box nails spaced 4 inches apart. Fit tightly against outlet boxes and other obstacles on exterior walls. *

*_. Corner beads shall be furnished full length for all vertical and arched external angles. Set corner beads true to line, solid and anchored every 16 inches and at ends. *

_. Metal grounds and base screeds shall be set to true straight lines parallel with floor or rake of stairs where cement base is indicated and securely fastened in place at each end and at intervals not to exceed 16 inches on centers.

- -

_. Cornerites shall be installed on all interior angles where gypsum or fiber insulating lath is used for one or both surfaces or where different plaster bases occur on each surface unless metal lath from one surface is continued around the angle for not less than 3 inches. Secure along each edge at 16-inch intervals.

( ). Solid Plaster Partitions

(1) Floor and ceiling runners shall be provided for solid plaster partitions, set true to line with ceiling runners vertically over floor runners. Runners shall be secured in place by 6-gage concrete nails, drive anchors, or equivalent fasteners not over 24 inches apart.

(2) Metal lath and plaster type shall be framed of 3/4-inch channels 16 or 24 inches apart and metal lath. Secure channels to runners by tie wire or wire clips or set in holes punched in runners. Double channels at openings and at corners and secure to door frames or buck and securely anchor to adjacent walls. Apply metal lath as specified elsewhere in this division. The studs will require temporary bracing. See APPLICATION OF PLASTER.

(3) Gypsum lath and plaster type shall be framed of gypsum lath 1/2 inch thick by 24 inches wide and ceiling height set in the grooves of runners and door bucks. Allow 1/4-inch top clearance for lath. Partitions shall be securely anchored to adjacent walls at mid-height. Provide diagonal reinforcing of flat 3.4 pound expanded metal lath 24 inches long and 4 inches wide at corners of opening. This partition will require temporary bracing. See APPLICATION OF PLASTER.

(4) Do not anchor door bucks to ceilings.

5. PROPORTIONING AND MIXING

a. Plaster mixes shall be proportioned according to the following table.

	NEAT GYPSUM PLASTER AND SAND		
	Neat Gypsum Plaster	Sand	
		Volume	Weight
Scratch coat On lath	100 lbs. (1.54 cu. ft.) 1 cu. ft.	2.0 cu. ft. 1.3 cu. ft.	200 lbs. 130 lbs.
Brown coat on lath and all coats on masonry	100 lbs. 1 cu. ft.	3.0 cu. ft. 1.95 cu.ft.	300 lbs. 195 lbs.
* Doubled up on lath Both coats	100 lbs. 1 cu. ft.	2.50 cu.ft. 1.63 cu.ft.	250 lbs. 163 lbs. *
Smooth white coat 3/	1 part gaging plaster by volume	3 parts of lime putty by volume	
Keenes Cement-Lime Putty Finish	100 lbs. Keenes Cement	100 lbs. lime putty (1.17 cu. ft.)	

3/ Factory prepared finishes which require the addition of water only may be used at the option of the Contractor, when approved by the Local Authority.

NEAT GYPSUM PLASTER AND LIGHT WEIGHT AGGREGATE

	Neat Gypsum Plaster	Light Weight Aggregate
Scratch coat on lath	100 lbs.	2 cu. ft.
Brown coat on lath and all coats on masonry	100 lbs.	3 cu. ft.
Doubled up on lath both coats	100 lbs.	2-1/2 cu. ft.

PORTLAND CEMENT PLASTER

All coats	1 sack 94 lbs.(Cement) 1/10 to 1/4 cu. ft. lime putty as required for a plastic mortar.	3 cu. ft. sand
Hair or fiber may be added to scratch coat on metal lath as required.		
Bond Plaster	Neat as supplied by manufacturer	

b. Mixing. Measurement by volume, except for finish coats, shall be by barrow or buggy or other containers of know capacity, or by manufacturers' packages or any similar method of equal accuracy for maintaining consistent proportions. No lumps or caked or frozen material shall be used. No mortar that has commenced to set shall be retempered or used. Mixing equipment, boxes, machines and tools shall be clean.

The materials shall be proportioned as specified with such variations only as will, under prevailing conditions, improve the quality of the mortar and are approved by the Local Authority. Mixing shall be continuous until complete and the ingredients are evenly distributed.

(1) Hand Mixing. Plaster and aggregate shall be mixed dry to a uniform color at one end of the box, hoed into the water at the other end, and thoroughly mixed.

(2) Machine mixing shall be in a machine made for this purpose. Aggregate shall be added at the job. The following cycle of operation shall be followed: while the mixer is in continuous operation put in approximate amount of water; add approximately half the amount of aggregate; add all the plaster; add the remainder of the aggregate; mix, adding water if necessary.

(3) Factory proportioned plaster shall be mixed as follows: put in approximate amount of water, add aggregate and mix adding water as necessary.

(4) Overmixing of light weight aggregate shall be avoided. Mix light weight aggregate in accordance with manufacturers' directions.

- -

c. Hydrated lime shall be converted to lime putty in accordance with the printed instructions of the manufacturer.

6. THICKNESS

The minimum thickness of plaster on various materials shall be:

On metal lath	3/4 inch
On gypsum and fiber lath	1/2 inch
On masonry	5/8 inch
Solid plaster partitions, including base	

7. PREPARATION FOR PLASTER

a. Temperature. Plaster shall not be applied to materials that contain frost. A minimum temperature of 40° F. shall be maintained in the building for an adequate period prior to the application of the plaster, while plastering is being done, and until it is dry.

b. Masonry surfaces to be plastered shall be clean, and free from loose particles, grease, oil, acid or foreign matter. When necessary excessive suction of masonry shall be reduced by wetting.

c. Gypsum and fiber lath shall not be wetted before applying plaster.

d. Plaster on concrete surfaces shall not be applied until surfaces have been properly roughened as specified in the division CONCRETE. Before application of plaster, the surface shall be evenly dampened as necessary to regulate suction.

e. All surfaces shall be carefully examined and the Local Authority notified of any and all unsatisfactory conditions before the plaster is applied. Applications of plaster shall not proceed until such unsatisfactory conditions have been satisfactorily remedied.

f. Metal grounds and other accessories such as corner beads, screeds, etc., shall be carefully examined to see that they are straight, curved, plumb, level square or true to the required angles as the case may require and all defective work or material replaced or corrected before plaster is applied.

8. APPLICATION OF PLASTER

Plaster shall be applied to surfaces, indicated to be plastered, to true straight lines, level and plumb with corners square. Compact brown coats by floating the surface. Trowel finish coats to a hard finished surface. Plaster on walls and partitions, except finish coat, shall extend to the floor and all spaces between grounds shall be filled.

a. Plaster screeds for brown coat including bond plaster on concrete shall be brought into good line and level to establish the exact surface of the brown coat and allowed to set up, and used as a guide for rodding the brown coat.

b. Number of Coats. Plaster on metal lath, concrete, and fiber insulating lath shall be 3-coat work. Plaster on masonry and gypsum lath shall be 2-coat work or 3-coat work.

(1) Two-Coat Work. Base (first) coat shall be applied with sufficient material and pressure to form good bond on gypsum lath or masonry as the case may be, and to cover well. Then material of the same proportions shall be doubled back to bring the plaster out to grounds, struck to a true surface and left ready to receive the finish coat.

(2) Three-Coat Work. The scratch (first) coat shall be applied with sufficient material and pressure to form good bond and to cover well, and then be scratched to rough surfaces. The brown (second) coat shall be applied after the scratch (first) coat has set firm and hard, brought out to grounds and straightened to a true surface and left ready to receive the finish (third) coat. When fiber insulating lath is used the set of the scratch coat shall be accelerated.

c. Plaster on Concrete Surfaces. After preparation of the surface as specified elsewhere, surfaces of concrete walls and columns shall have a scratch coat or bond plaster, followed by a brown coat of gypsum plaster troweled into the scratch coat before it has set. The brown coat shall be brought out to grounds, using a double-back application if required, straightened to a true surface and left ready to receive the finish coat.

( ) Solid plaster partitions shall be not less than 2 inches thick with details and accessories as indicated on the drawings. Check thickness by driving nails through and withdrawing them before finish coat is applied.

(1) Solid plaster partitions with steel studs and metal lath shall have scratch, back up, brown and finish coats. Temporary bracing of studs shall be furnished on the channel side of the partition and maintained until the scratch coat has set.

(a) Scratch coat shall be applied on the lath side with sufficient material and pressure to form good keys and to cover well, and be scratched to a rough surface. Fill solidly between metal bases.

(b) Back-up coat shall be applied on the channel side, after the scratch coat on the lath side has set firm and hard, in not less than two operations, the first to adequately cover the keys of the scratch coat, and the other coat or coats to bring the plaster out to grounds. It shall be straightened to true surfaces and left ready to receive the finish coat.

(c) Brown coat on the lath side shall be applied over the scratch coat, after the back-up on the channel side has set, straightened to true surfaces, and left ready for the finish coat.

(2) Solid plaster partitions with gypsum lath shall have scratch coat, brown and finish coats on both sides. Temporary bracing shall be provided.

(a) Scratch coat approximately 3/8 inch in thickness shall be applied first to the side opposite the temporary bracing with sufficient pressure to form a good bond, followed by a 3/8 inch thick scratch coat applied to the side on which the bracing occurs. Scratch coats shall be scratched to form rough surfaces.

(b) Brown coat shall be applied to the side opposite the bracing after the scratch coat has set firm and hard and is partially dry. When this brown coat has set firm and hard, temporary bracing shall be removed and brown coat applied to bracing side. Brown coat shall be straightened to a true surface and left ready to receive the finish coat, allowing 1/16 to 1/8 inch on each side for finish coat.

( ) Portland cement plaster shall have a scratch coat, a brown and a finish coat. Scratch coat shall be applied 3/8 inch thick with sufficient pressure to form good bond and then uniformly scratched. Brown coat shall be applied 3/8 inch thick not sooner than 48 hours after the application of the scratch coat. It shall be straightened to a true surface by floating or rodding and left ready for finish coat.

(1) Finish coat shall be applied not less than 1/8 inch thick not sooner than 7 days after application of brown coat and shall be troweled smooth and free from tool marks or blemishes. Before application of each coat, the base or previously applied coat shall be evenly dampened to control suction. Cement plaster shall be kept moist for at least 3 days and protected against rapid drying until cured.

__. Finish coats shall be applied to a partially dry brown coat or to a thoroughly dry brown coat which has been evenly wetted by brushing or spraying. The use of excessive water shall be avoided.

(1) Gypsum line putty trowel finish shall be applied over the base course, laid on well, doubled back and filled out to true even surfaces. The general thickness shall be 1/16 inch to 1/8 inch. The finish shall be allowed to draw a few minutes and then well troweled with water to a smooth finish, free from blemishes or irregularities.

(2) Prepared gypsum trowel finish shall be applied in accordance with manufacturer's directions. The general thickness shall be from 1/16 inch to 1/8 inch. It shall be well troweled with water to a smooth finish free from blemishes or irregularities.

( ) Keenes cement lime putty finish shall be applied over the base course, laid on well, doubled back and filled out to a true even surface. The general thickness shall be from 1/16 inch to 1/8 inch. The finish coat shall be allowed to draw a few minutes and then well troweled with water to a smooth finish. Troweling shall be continued until the plaster has set.

9. CURING AND VENTILATION

During the application of each coat of plaster the exterior openings shall be adjusted for proper continuous ventilation to control the drying out and curing of the plaster until it is dry. Plaster shall be protected against rapid drying and frost.

10. PATCHING

Point up around trim and other set work. Patch and point all cracks and defects. Patching plaster shall match and finish smooth and level with adjoining plastering.

PUBLIC HOUSING ADMINISTRATION
Housing and Home Finance Agency

9-19-51 Low-Rent Housing Bulletin Transmittal No. 52

EXPLANATION: Through inadvertence the copy of page 21-7 dated 9-10-51, which was issued by Transmittal No. 51, did not have page 21-8 printed on its reverse side. The attached copy of pages 21-7 and 21-8 should be substituted in Low-Rent Housing Bulletin No. LR-13 for all previously issued versions of these pages.

GROUP	MORTISE	TUBULAR
A	194-185	182A-2B
B	3B	2A
C	3D-CS	2B
D	86-B	182A-2B
E	3AA	182A-2B
F	194-185	182A-2B
G	3D	2B

Series 160 cylindrical case lock and latch sets may be furnished in lieu of other lock and latch sets described herein where they provide substantially the same performance in operation and control and have substantially the same quality of construction and wrought trim as the lock and latch sets for which they are substituted.

Bath room locks shall have an emergency access device and the locking mechanism shall release automatically.

e. Lock schedule

		TYPE
( ) Apartment buildings:		
Front entrance doors (from street)		G
Public stairhalls or corridors to apts.	Group	A
Bathroom doors	"	B
Closet doors (one each dwelling unit)	"	E
Closet doors (except as above)	"	C
Inter-communicating and bedroom doors	"	C
Exterior doors (not otherwise specified)		D
Interior doors (not otherwise specified)	"	D
Exterior basement doors	"	D
Service rooms, storage rooms, machine rooms, pump rooms, equipment rooms, tool rooms, workshops, incinerator rooms	"	D
Administration rooms, offices, auditoriums, assembly, play, craft, and recreational rooms	"	D
Penthouse Doors	"	G
( ) Houses		
Front entrance doors	"	A
Rear entrance doors	"	F
Bathroom doors	"	B
Closet doors (one each dwelling unit)	"	E
Closet doors (except as above)	"	C
Inter-communicating and bedroom doors	"	C
Service rooms, storage rooms, machine rooms, pump rooms, equipment rooms, tool rooms, workshops, incinerator rooms	"	D
Administration rooms, offices, auditoriums assembly, play, craft, and recreation rooms	"	D

Material *between asterisks * is new or revised.
This page supersedes page 21-7 of Division 21, dated 12-7-50.

		Group	TYPE
( )	Flat buildings:		
	Front entrance doors (from street)	"	G
	Entrance doors from stairhall to dwelling unit	"	A
	Rear entrance doors	"	F
	Bathroom doors	"	B
	Closet doors(one each dwelling unit)	"	E
	Closet doors(except as above)	"	C
	Inter-communicating and bedroom doors	"	C
	Service rooms,storage rooms,machine rooms,pump rooms,equipment rooms,tool rooms,workshops, incinerator rooms	"	D
	Administration rooms,offices,auditoriums, assembly,play,craft and recreational rooms	"	D
( )	Access doors to crawl space:	"	D

f. Knobs and spindles shall be as herein specified. Variations from these requirements not involving increased cost may be required at the time samples are approved. Knobs for cylindrical and tubular locks shall be manufacturers' standard complying generally with requirements for other knobs.

(1) Knobs for mortise locks for exterior doors and doors from corridors to stair halls in apartment and flat buildings shall be Type 202. Outside knobs shall be pinned to spindles. Other knobs shall be Type 203. except closet doors shall have closet spindle with thumb turn and plate on inside.

g. Roses for locks and latches shall be Type 335 or 336 except as otherwise necessary for the operation of the lock furnished.

(1) Cylindrical case lock and latch sets shall have roses that are standard for the manufacturer of the lock.

(2) Double doors, except for locks, shall have both leaves trimmed alike.

9. PADLOCKS

a. Padlocks shall be Type EPA size 2 inches and shall be provided for the following locations: _____

_____

_____

(1) Provide hasps, Type F-1405E, 4-1/2 inches in size, or similar type safety hasp required to suit conditions for all padlocks, except where hasps are called for in other divisions of the specifications.

GUIDE SPECIFICATIONS

DIVISION 15

CARPENTRY AND MILLWORK

NOTES TO THE ARCHITECT: 1/

SCHEDULES SHOWING SIZES, PATTERNS AND THICKNESS OF DOORS AND SIZES AND PATTERNS OF WOOD WINDOWS, SCREENS AND TYPES OF FRAMES FOR BOTH SHOULD BE INCLUDED ON THE DRAWINGS.

LOCATION OF WOOD FLOORS AND WOOD INTERIOR TRIM SHOULD BE INDICATED ON A FINISH SCHEDULE ON THE DRAWINGS.

MOISTURE CONTENT OF TRIM AND FLOORING MAY BE VARIED WHEN LOCAL WEATHER CONDITIONS REQUIRE HIGHER OR LOWER LIMITS.

WOOD GROUNDS, BLOCKING AND STRIPS SHOULD BE INDICATED OR DETAILED ON THE DRAWINGS TO THE MAXIMUM EXTENT PRACTICABLE.

CONSULT UNDERWRITERS LABORATORIES REPORTS FOR "LISTED" TYPE A VENTS FOR GAS BURNING APPLIANCES, AND MAKE DRAWINGS ACCORDINGLY. DO NOT SPECIFY TYPE B VENTS IN ANY BUILDING WHERE OIL OR COAL FUEL IS EXPECTED TO BE USED AT A LATER DATE. SHOW DRAIN FROM DRIP CAPS TO BELOW FIRST FLOOR WHEN PRACTICABLE.

THE ADDITION OF BRIDGING TO WOOD FLOOR STRUCTURES OF 14 FEET OR LESS SPAN ADDS VERY LITTLE TO THE STIFFNESS OF THE FLOOR CONSTRUCTION. WHEN BUILDING CODES

NOTE: This revised sheet supersedes the corresponding sheet (pages 15-1 and 15-2) dated 4-12-51.

1/ Text * between asterisks * is new or revised.

PERMIT, BRIDGING MAY BE OMITTED FROM SUCH FLOORS, WITH ONLY A TRIFLING LOSS IN STIFFNESS.

PARAGRAPHS MARKED THUS ( ) COVER VARYING TYPES OF CONSTRUCTION AND MAY NOT BE REQUIRED IN THE PROJECT. SELECT THE TYPE OR TYPES SUITED TO THE PROJECT AND OMIT THOSE NOT SUITABLE.

ADD NUMBER OR LETTER TO PARAGRAPHS MARKED THUS ___. AND REVISE PARAGRAPH INDENTATION AS NECESSARY.

CHANGE TEXT OF ANY PARAGRAPH TO SUIT THE PROJECT. STRIKE OUT ITEMS NOT APPLICABLE. INSERT ADDED TEXT AS NECESSARY AND FILL IN BLANK SPACES.

- -

(1) Plywood sub-flooring under linoleum, asphalt tile, or ceramic tile shall be Douglas fir plywood, exterior type, grade B-C.

c. Miscellaneous. Furring, grounds, bridging, and blocking shall be suitable for the purpose intended. Wall furring shall be all heart.

(1) Ribbons shall be straight 1" boards selected for quality.

d. Stress grade lumber for heavy roof trusses supporting purlins shall be a minimum stress grade of 1400 pounds per square inch.

e. Exterior trim, wood ceilings and soffits, frames for doors, windows and louvers shall be any of the following:

	Fir	Douglas - W.C.L. Rules	D Finish V. G.
	Fir	Douglas - W.P.A. Rules	D Select & Better V. G.
	Fir	White	D Select
	Larch	Western	D Select
	Pine	Lodgepole	D Select & Better
	Pine	Idaho	Quality
	Pine	Northern White	C Select
	Pine	Sugar	D Select
	Pine	Ponderosa	D Select
	Pine	Norway	D Select
*	Pine	Southern	C *
	Spruce	Engelmann	D Select
	Spruce	Sitka	D Finish
	Cedar	Red & Incense - W.P.A. Rules	D & Better Select
	Hemlock	West Coast	D Finish
	Cedar	Western Red - W.C.L. Rules	C Finish
	Cypress	Tidewater	D Finish
	Redwood		A Grade

(1) Ceilings and soffits may be exterior type Douglas fir plywood, grade A-C (Sound 1 side) 1/4 inch thick.

f. Exterior siding shall be any of the following:

	Fir	Douglas - W.P.A. Rules	D Select
*	Fir	Douglas - W.C.L. Rules	C *
	Pine	Southern	B
	Pine	Northern White	C Select
	Pine	Idaho	Quality
	Pine	Sugar	D Select
	Pine	Ponderosa	D Select
*	Pine	Southern	C *

NOTE: This revised sheet supersedes the corresponding sheet (pages 15-5 and 15-6) dated 4-12-51.

Hemlock	Western		C
Cypress	Tidewater Red		C Select
Cedar	Western Red - W.P.A. Rules		D Select
Cedar	Western Red - W.C.L. Rules		B-Bevel or Bungalow
Cedar	Western Red - W.C.L. Rules		C Drop siding
Larch	Western		D Select
Spruce	Engelmann		D Select
Spruce	Sitka		B
Pine	Lodgepole		D Select
Redwood		for Stain	Clear Heart
Redwood		for Paint	A Grade
Plywood	Douglas Fir	Exterior Type	Grade A-C

g. Exterior stair treads, carriages and exterior wood flooring shall be "100 percent heart" of any of the following:

Fir	Douglas
Larch	Western
Pine	Southern
Cypress	Tidewater Red
Redwood	Vertical Grain

h. Interior trim to be painted, and shelving, shall be any of the following:

	Fir	Douglas - W.C.L. Rules	D Finish V. G.
	Fir	Douglas - W.P.A. Rules	D Select & Better V. G.
	Fir	White	D Select
	Larch	Western	D Select
	Pine	Lodgepole	D Select
	Pine	Sugar	D Select
	Pine	Idaho	Quality
	Pine	Ponderosa	D Select
	Pine	Northern White	C Select
	Pine	Norway	D
*	Pine	Southern	C *
	Spruce	Engelmann	D Select
	Spruce	Sitka	D Finish
	Cedar	Red & Incense - W.P.A. Rules	D & Better Select
	Cedar	Western Red - W.C.L. Rules	C Finish
	Hemlock	West Coast	D Finish
	Cypress	Tidewater Red	D Finish
	Redwood		A Grade
	Poplar	Yellow	Grade B
	Magnolia		Grade B
	Birch		Grade B
	Walnut		Grade B
	Gum		Grade B

i. Interior trim to be stained shall be one of the following:

Fir	Douglas or White - W.C.L. Rules	C Finish V. G.
Fir	Douglas - W.P.A. Rules	C & Better Select
Fir	White	C & Better Select
Larch	Western	C & Better Select
Pine	Lodgepole	C & Better Select
Pine	Sugar	C Select
Pine	Idaho	C Select
Pine	Ponderosa	C Select
Pine	Northern White	B & Better Select
Pine	Norway	C
* Pine	Southern	B *
Spruce	Engelmann	C & Better Select
Spruce	Sitka	C Finish V. G.
Cedar	Red & Incense - W.P.A. Rules	C & Better Select
Cedar	Western Red - W.C.L. Rules	C Finish
Hemlock	West Coast	C Finish
Cypress	Tidewater	C Select Finish
Redwood		Clear all heart
Poplar	Yellow	Grade A
Magnolia		Grade A
Birch		Grade A
Walnut		Grade A
Gum		Grade A
Oak		Grade A
Ash		Grade A

j. Wood doors shall conform in quality and pattern to Grade No. 1 of Commercial Standard CS-120-48 for Ponderosa pine doors except as specified elsewhere or Grade A of Commercial Standard CS-73-48 for fir doors, except that fir exterior doors shall conform to Commercial Standard CS-91-41 and interior doors to be painted may be Grade B fir doors or Grade No. 2 Ponderosa doors provided paragraph 19 of CS-120-48 is omitted and the following paragraph inserted in lieu thereof:

GRADE #2 SUITABLE FOR ORDINARY PAINT OR ENAMEL FINISH.
Stiles and Rails: The stock may contain light blue stain, medium-brown stain, or medium-red kiln-burn, showing on not to exceed 50% of the area of any piece, as well as pitch pockets and other imperfections not one of which shall be more serious in nature than those enumerated above. Each stile shall contain one such imperfection and may have two, but no piece shall contain more than two, and no door shall contain more than eight on each side. Plugs shall be admitted but regarded as imperfections. Rails wider than 4-3/4 inches may be glued up. A water-resistant glue shall be used. Stiles and rails may be solid or veneered at the option of the manufacturer. If veneered a water-resistant glue shall be used.

NOTE: These pages supersede the corresponding pages 15-7 and 15-8, dated 4-12-51.

(1) Exterior doors and screen or combination doors shall be fabricated of any of the following:

Fir	Douglas
Pine	Southern, Longleaf
Pine	Northern, White
Pine	(Idaho) White
Pine	Sugar
Pine	Ponderosa
Cypress	Tidewater Red
Redwood	

(2) Interior doors shall have stiles and rails solid or veneered of any of the following softwoods:

Fir	Douglas	V. G.
Larch	Western	V. G.
Pine	Southern	
Pine	Northern White	
Pine	(Idaho) White	
Pine	Sugar	
Pine	Ponderosa	
Cypress	Tidewater Red	
Redwood		

or veneered with any of the high or medium density hardwoods as defined in Commercial Standard CS-35-49.

k. Wood window sash, storm sash and window screens shall conform to sizes and details of Commercial Standard 163-49 and be fabricated of any of the following:

Fir	Douglas "100% heart"	Clear V. G.
Pine	Northern White	Clear
Pine	(Idaho) White	Clear
Pine	Sugar	Clear
Pine	Ponderosa	Clear
Pine	Southern	Clear
Cypress	Red (Coast Type)	Clear
Redwood		Clear all heart

l. Finished wood flooring shall conform to grading rules of the association under whose jurisdiction the flooring is manufactured, except as modified herein; bear manufacturer's "Trade Mark" and "Grade Mark" of association, or be accompanied by a certificate from the manufacturer identifying each shipment and stating that the flooring complies with these specifications.

(1) Hardwood flooring shall be strips of not less than 25/32 inch thick and not more than 3-1/4 inch face, side and end matched of any of the following:

Oak	Red or White	No. 2 Common
Pecan		Third Grade
Maple		Third Grade
Birch		Third Grade
Beech		Third Grade

(2) Softwood flooring shall be side matched strips of not less than 25/32 inch thick and not more than 3-1/4 inches wide of any of the following:

Fir	Douglas-W.C.L. Rules	C V. G.
Fir	Douglas-W.P.A. Rules	C Select V. G.
Larch	Western	C Select V. G.
Hemlock	Western	C V. G.
Pine	Southern	C V. G.

NOTE: This new page is a continuation of the material formerly on page 15-8, dated 4-12-51.

( ) Rafters resting on wall plates shall have a bearing of not less than 3-1/2 inches. Nail to plates with four 10d nails, two each side. Anchor rafters to resist uplift with 1/8 x 1 inch strap iron or approved metal nailing clips spaced not over 4 feet apart. Nail to each framing member with three 8d nails.

( ) Roof trusses shall be of the design and sizes of materials as indicated on drawings. Pre-cut members and assemble in jig frames to assure uniformity. Nail to wall plate and anchor to resist uplift with 1/8 x 1 inch strap iron or approved metal nailing clips spaced not over 4 feet apart. Nail anchors with three 8d nails each end.

b. Walls and Partitions

(1) Studs unless otherwise shown, shall be nominal 2 x 4 inch, spaced 16 inches on centers, doubled at sides and heads of openings, tripled at corners, and placed to provide end nailing for sheathing and lath. Truss over openings over 3 feet wide. Toe nail to sole plate with two 8d nails on each wide face or use approved metal nailing clips. Secure studs abutting masonry walls, thereto, at mid-height of each story.

(a) Exterior studs shall extend full height from foundation sill to eave (balloon framing) where possible. Extend bearing partition studs through floor construction to bear upon plates or beams or extend through two stories without splicing, where possible.

(2) Plates for bearing partitions and for walls shall be single 2 inch thick for sole plates and double 2 inch thick for top plates. Plates for non-bearing partitions shall be single 2 inch thick. Plates shall be same width as studs and shall form continuous horizontal ties with single plates spliced and ends of double plates staggered.

(a) Nail lower plate to each stud and corner post with two 16d nails. Nail top plate to lower with 10d nails, two near the ends of each piece, others staggered 16 inches. Sole plates shall be nailed through sub-floor to headers and joists with 16d nails staggered.

(b) Anchor wall studs to sills by nailing wall sheathing to sills with 8d nails 8 inches on center and to studs as specified elsewhere herein.

(3) Diagonal brace exterior walls less than fifty feet in length or any wall when fiberboard sheathing is used. Bracing shall extend from foundation to eave level, consist of 1 x 4 boards housed into the studs, or 2 x 4s fitted between the studs in 2 directions and nailed, or diagonal wood sheathing or fir plywood, 5/16 inch thick applied with face grain at right angles to supports, for approximately 10 feet from each corner. Bracing let into face of studs shall be nailed at each crossing stud with not less than two 8d nails and at ends with three 8d nails.

* (4) Horizontal block between studs with 2 x 4s so as to provide one row near mid-height of each story. Where plates do not form a firestop, provide firestop in walls and partitions at each floor, and at ceiling of top story. *

NOTE: This page supersedes the corresponding page 15-11, dated 4-12-51.

(5) Ribbons (in balloon framing) shall be let in to studs. Break joints at bearing and nail with two 8d nails at each bearing.

(6) Frame as required for installation and support of plumbing, heating, and other work.

c. Sub-flooring shall be 1 x 4 or 1 x 6 inch square edge stock or 5-ply 1/2 inch plywood.

(1) Sub-flooring except plywood shall be laid at a 45 degree angle with floor joists. In buildings more than one story, lay sub-flooring on upper floor at right angles to sub-flooring on floor below. Break end joints over bearings only, with cuts parallel to run of joists. Face nail each board to each bearing with at least two 8d nails.

(2) Plywood sub-flooring shall be laid with surface grain at right angles to joists. Break joints over joists with alternate courses in line. Provide solid blocking under edges in bathrooms and under linoleum floors. Nail with 6d cement coated nails 12 inches on center on intermediate supports and 6 inches on center at edges.

d. Wall sheathing shall be 1 x 4 to 1 x 12 inch boards ship-lapped or tongued and grooved, 5/16 inch plywood for 16 inch stud spacing; 3/8 inch plywood for 24 inch stud spacing or fiberboard complying with Federal Specification LLL-F-321b, Class E, 25/32 inch thick, treated to inhibit absorption and decay.

(1) Wood wall sheathing shall be face nailed to each support with at least two 8d nails for 6 and 8 inch, and three 8d nails for 10 and 12 inch boards.

(2) Fiberboard wall sheathing shall have butt joints over supports with solid blocking under edges. Break vertical joints so that joints will not be on same stud in succeeding rows of sheathing. Nail with 8d nails spaced 6 inches around edges and 10 inches on intermediate framing.

(3) Plywood wall sheathing shall have butt joints over supports with solid blocking under edges. Break vertical joints so that joints will not be on same stud in succeeding rows of sheathing. Nail with 6d nails spaced 6 inches around edges and 12 inches on intermediate framing.

e. Roof sheathing shall be nominal 1 x 6 or 1 x 8 inch tongued and grooved boards, or 3-ply plywood, 3/8 inch for 24 inch spans or 5/16 inch for 16 inch spans. Break joints of sheathing boards and face nail each board with at least two 8d nails to each support.

(1) Plywood roof sheathing shall be laid with surface grain at right angles to main supports with butt joints over supports and solid blocking under edges. Break joints. Nail with 6d nails spaced 6 inches around edges and 12 inches on intermediate framing.

* 23. PRE-FITTED WOOD WINDOW UNITS

Prefitted wood double hung window units, consisting of frames, sash, hardware and means of operation, may be furnished subject to the following conditions: both sash must be capable of being easily raised and lowered and maintain their position at any point of travel; adjustable means of control lifting tension and holding friction shall be provided; the specific unit proposed for use shall have been in use in the locality for not less than three years and shall have demonstrated equality with the windows specified and indicated on the drawing to the satisfaction of the Local Authority. *

* Sash shall be prime coated before glazing (see Specification for painting and glazing). *

* 24. SCREENS FOR WOOD WINDOWS

Screen cloth for insect screens shall be aluminum, 16 x 16 or 14 x 18 mesh conforming to Commercial Standard C.S. 138-49. Screen wire shall be stretched taut free from wrinkles and buckles and secured in place in wood framed screens in accordance with manufacturers standard practice, but in a manner to permit rescreening with hand tools. Window screens shall be so made and installed as to effectively bar the passage of insects. *

*( ) Full Length Wood Screens. Window screens for wood double hung windows shall be 1-1/8 inches thick and conform to Commercial Standard C.S. 163-49 for two-light full size window screens except that width and length shall be as required. Fit closely to sill and blind stops and install complete with hardware consisting of top hangers Federal Specifications FF-H-111a, Type F 1825 so located that screens are inter-changeable with any wood storm sash to be furnished. Allow space for expansion at sides and top as directed. *

( ) Half Length Wood Screens. Window screens for wood double hung windows shall be not less than 3/4 inches thick and conform to Commercial Standard C.S. 163-49 for half window screens except that widths and lengths shall be as required. Stiles shall be grooved to slide on wood or corrosion resisting metal guides attached to blind stops. One groove shall be provided with 2 compression springs to hold the screen in place. Half window screens shall be removable by sliding upward off the guides and be replaced by the reverse procedure. At completion remove any paint from screen grooves and edge of guide and apply parafin lubricant to guide and groove. Attach 2 screen lifts Federal Specifications FF-14-111a, Type F 1223, to top of bottom rail. Half length wood screens shall be installed and removed from the inside or outside.

25. SCREEN DOORS

a. Screen doors shall be fabricated of clear stock not less than 1-1/16 inch thick after sanding; with stiles and top rail not less than 3-5/8 inches wide, intermediate lock rail 5-5/8 inches and bottom rail 7-1/2 inches minimum widths. Mortise and blind tenon, wedge and set joints in moisture resistant

NOTE: This revised sheet supersedes the corresponding sheet (pages Nos. 15-17, and 15-18) dated 4-12-51.

glue or make joints with 1/2 inch hardwood spiral grooved dowels not less than 5 inches long set in moisture resistant glue. Provide 2 dowels to each joint at top and intermediate rail and 3 at bottom rail.

(1) Screen cloth shall be the same as specified for window screens.

(2) Furnish guard grills in lower panels of not less than 19 gauge 1/2 inch mesh galvanized hardware cloth.

(3) Fit and hang doors with 1/8 inch clearance at sides and top and 3/16 inch at bottom. Set hardware to template so that screen doors are interchangeable. (See division HARDWARE).

( ) Combination screen and storm doors shall conform to U. S. Department of Commerce, Commercial Standard CS-120-48.

(1) Screen cloth shall be as specified for window screens.

(2) Fit and hang doors with 1/8 inch clearance at sides and top and 3/16 inch at bottom (see division "HARDWARE").

26. EXTERIOR FINISH

( ) Beveled wood siding shall be 1/2 inch by 6 or 8 inch or 5/8 inch by 10 inch, laid with not less than one inch lap.

( ) Flush joint siding shall be 25/32 inch shiplap by any standard width not more than 6 inches wide.

( ) Drop siding shall be 3/4 inch by 6 inch of pattern as shown.

( ) Plywood siding shall be 3/8 inch thick, applied with face grain vertical and all joints over solid blocking. Apply 2 inch wide strips of roofing felt under vertical joints. Flash horizontal joints with 10 oz. copper or aluminum .020 inch thick, 1/2 inch high in back of upper sheet and 1/2 inch deep in front of lower sheet, formed to fit closely to plywood. Lap flashing joints 1 inch. Joints between sheets shall be open 3/16 inch for calking. Nail plywood siding 6 inches on center at edges and 12 inches at intermediate supports with 6d galvanized siding nails. Vertical and horizontal joints between sheets shall be calked as specified under the division CALKING.

( ) Fit strip wood siding closely at joints, openings and corner boards and bed ends in calking compound. Nail to each stud with two 8d galvanized siding nails. (Use 10d galvanized nails over fiberboard sheathing.) Strips immediately above and below the opening shall be continuous past the opening.

( ) Exterior Wood Ceiling. Ceiling shall be 9/16 inch thick; dressed, matched and "V" jointed or beaded; well driven up and blind nailed at each bearing or shall be 1/4 inch thick Douglas fir plywood, laid with butt joints

over bearing and with solid blocking under edges. Blind nail strip ceiling at each bearing. Nail plywood ceiling 6 inches on center at edges and 12 inches on center at intermediate supports.

( ) Asbestos Cement Shingle and Clapboard Siding. Asbestos cement shingle and clapboard siding shall conform to Federal Specification SS-S-346a, manufacturers' standard color, smooth or textured or as selected. They shall be an average thickness of not less than 0.150 inch of uniform width and length. Siding shall be furnished with holes for fastening. Install shingle or clapboard siding in accordance with manufacturers' specific printed or written directions. Nail with 2 inch needle point galvanized nails at top and face nail at bottom with cadmium plated nails. Cut or punch with asbestos shingle cutting machine only.

(1) Fit asbestos cement shingles or siding at openings and cornerboards, bed in calking cement and nail in place. Reverse lap and calk joint at corners.

( ) Wood shingle siding shall be Western Red cedar, Tidewater Red cypress or California Redwood; No. 1 grade conforming to U. S. Department of Commerce, Commercial Standard CS-31-38; random widths in 16, 18, or 24 inch lengths with 5/2 butts for 16 inch, 5/2-1/4 for 18 inch, 4/2 for 24 inch shingles and be

NOTE: This new page is a continuation of the material formerly on page 15-18, dated 4-12-51.

GUIDE SPECIFICATIONS

DIVISION 32a

ELECTRIC RANGES

1. SCOPE

This division includes furnishing and delivering electric ranges as herein specified.

2. DESCRIPTION

a. Ranges shall be of current design, made by a manufacturer regularly engaged in this work. Side and back construction shall permit the ranges being placed directly against kitchen cabinet, walls, etc. Ranges shall comply with the applicable requirements of Underwriters' Laboratories, Inc., "Standard for Domestic Electric Ranges". The listing of Underwriters' Laboratories, Inc., in their latest, "List of Inspected Electrical Equipment" or supplements thereto, or card report in effect on date of delivery may be accepted as evidence that the ranges comply with the requirements of the Underwriters' Laboratories, Inc. Ranges shall meet the minimum * requirements of American Standard "Household Electric Ranges" latest publication and amendments, American Standards Association C 7-1-1950, and National Manufacturers Association Pub. No. ER 1-1950. *

b. Current characteristics shall be _____ volts, _____ wire, _____ cycle.

c. The total connected load at design voltage shall be not more than 11.7 KW exclusive of any appliance receptacle.

d. The type and quantity of electric ranges shall be as follows:

( )_____ three surface cooking unit type, one 8 inch and two 6 inch heating elements, with oven located directly under the surface units. The maximum overall dimensions shall be 22½ inches wide; 27½ inches deep; 36 inches in height to cooking top and 42 inches in height to top of the back splasher. The minimum oven size, with door closed, shall be 15½ * inches wide from wall to wall; 15 inches high from top to bottom; and 18½ inches deep from front to back. Oven shall have a minimum of two heating elements. *

* ( )_____ four surface cooking unit type, one 8 inch and three 6 inch heating elements, with oven located directly under the surface units. The maximum overall dimensions shall be 22½ inches wide; 27½ inches deep; 36 inches

NOTE: This page and the following page 32a-4 supersede pages 32a-3 and 32a-4 of Division 32a, dated 6-15-51.
Material * between asterisks * is new or revised.

- -

in height to cooking top and 42 inches to top of the back splasher. The minimum oven size, with door closed, shall be 15½ inches wide from wall to wall; 15 inches high from top to bottom; and 18½ inches deep from front to back. The oven shall have a minimum of two heating elements. *

* ( )_____ four surface cooking unit type, two 8 inch and two 6 inch heating elements. The oven shall be located directly under the clear work top space. The maximum overall dimension shall be 38 inches wide; 27-1/2 inches deep; 36 inches in height to the cooking and work surface top, and 42 inches in height to the top of the back splasher. The minimum oven size with the door closed shall be 15-5/8 inches wide, from wall to wall; 16 inches high, from top to bottom; 19-1/2 inches deep, from front to back. The oven shall have a minimum of two heating elements. *

* ( )_____ four surface cooking unit type, two 6 inch and two 8 inch heating elements. The oven shall be located directly under the surface unit section. Storage space may be provided. The maximum overall dimensions shall be 30 inches wide; 27-1/2 inches deep; 36 inches in height to the cooking top, and 48-1/2 inches to the top of the back splasher. The minimum oven size, with the door closed, shall be 16 inches wide, from side to side; 15 inches high, from top to bottom; 16 inches deep, from front to back. The oven shall have a minimum of two heating elements. *

* ( )_____ four surface cooking unit type, two 6 inch and two 8 inch elements or two 6 inch, one 8 inch and one deep well unit elements. The oven shall be located directly under the clear work top surface area. The storage drawer(s) shall be located directly under the surface cooking unit section and/or under the oven compartment. The maximum overall dimensions shall be 40 inches wide; 27-1/2 inches deep; 36 inches in height to the cooking and work top surface and 45 inches to the top of the back splasher. The minimum oven size, with the door closed, shall be 16 inches wide, from side to side; 15 inches high, from top to bottom; 19 inches deep, from front to back. The oven shall have a minimum of two heating elements. *

3. CONSTRUCTION

a. Oven lining shall be of enameled sheet steel not less than .031 inch thick, enameled inside and out in ground coat porcelain enamel, with joints so formed that moisture from cooking cannot be forced through joints into insulation. Provide adequate rack supports and rack lock stops. Provide suitable vent for escape of steam; vent shall have outlet through an opening either in front of back splasher, through oven door, or cooking top.

b. Boxes and Covers

(1) Interior Work
Cadmium or Zinc Coated
Federal Specification WC-821a
Enameled - Underwriters' Laboratories approved
* Non-metallic - Underwriters' Laboratories approved *

(2) Exterior Work
Exposed - weatherproof (galvanized or cadmium plated)
Conduit or tube fittings with suitable covers

c. Wires and Cables

(1) Conductors (Building) shall be soft-annealed tinned copper
Federal Specification J-C-103

(2) Conductors (Fixtures) shall be flexible stranded wires having Underwriters' approved heat resisting insulation

* (3) Heat Resistant or Rubber Covered Fixture wire
Underwriters' Laboratories approved *

( ) Code Grade Types R and RL
Federal Specification J-C-103

( ) Moisture Resistant Type RW
Federal Specification J-C-103

( ) Heat Resistant Type RH
Federal Specification J-C-103

( ) Armored Bushed Type Cable (Type R insulation)
Federal Specification J-C-71a

( ) All Rubber Cord, heavy duty Type S (Range Connection)
Underwriters' Laboratories approved

( ) Non-Metallic Sheathed Cable (Type R insulation)
Underwriters' Laboratories approved

( ) Thermoplastic - Types T and TW
* Federal Specification J-C-129 *

d. Wiring devices shall conform to Federal Specifications W-R-151a, Type II, Style 102, W-S-893, and/or W-S-896, respectively. Plaster ears are optional.

NOTE: These pages 29-5 and 29-6 supersede pages 29-5 and 29-6 of Division 13, dated 4-3-50. Material * between asterisks * is new or revised.

(1) Flush duplex receptacles (15 ampere, 125 volt)

(2) Flush tumbler switches ("T" rated - not less than 10 ampere, 125 volt)

*(a) The operating mechanism of the switch shall include a positive mechanical means to initiate motion tending to close and/or open the circuit in addition to a spring actuating the disconnecting means. *

(3) Combination of devices shall be single gang mounting wherever practicable.

(4) Polarized receptacles (2 wire, 3 pole, 15 ampere, 125 volt)

e. Plates and finishes for switches, receptacles, and other outlets (in connection with concealed wiring), requiring plates, shall be non-metallic. Provide corrosion-resisting coating on metallic plates for exposed raceway fittings.

f. Service and motor disconnects shall be:

( ) fused safety switch (Type C)

( ) fused safety switch ("Pull out" Type)

( ) Circuit breakers

In general, motor disconnect switches are furnished with most equipment provided under other divisions of the specifications. Any motors not provided with disconnect switches under other divisions shall be provided with disconnect switches under this division.

g. Feeder panels and branch circuit panels shall consist of the required number of protective devices and required disconnects. Where panels are located outside of area served, provide a typewritten circuit directory protected by a durable transparent covering, mounted in a suitable frame on panel door.

h. Individual Check Metering

(1) Feeder or branch circuit panels shall be designed and constructed to provide ready means of check metering the current supplied to each dwelling unit, by the installation of socket type meter receptacles (with coverplate and sealing ring) so constructed that the meter can be connected or disconnected from the circuit without interruption to the dwelling unit service and without exposing the person connecting or disconnecting the meter to accidental contact with live parts of the panel, or meter terminal block (with cover and means for sealing) so constructed that the meter can be connected or disconnected from the circuit with a minimum of interruption to the dwelling unit service (by means of removable insulated links and/or loops) and without exposing the person

Switches (Public Spaces)	5 Feet
Switches (General)	4 Feet
Combination Switch and Receptacle	4 Feet
Insertion Receptacle	1 Foot
Bracket Fixture	5 Feet, 6 inches
Receptacle adjacent to Refrigerator	3 Feet, 8 inches (approx.)

Locate receptacle 1 foot, 8 inches from center line of refrigerator to the side which will permit serving work space and table appliances. The kitchen equipment layout governs exact height; check kitchen details before installation.

Bathroom Fixture - Locate in ceiling one foot from wall, centered over lavatory or on wall centered above medicine cabinet.

Range Outlet - Locate on wall 6 inches below range top on center line of range.

h. If wiring devices without plaster ears are used, care should be exercised in pulling "wiring devices" up for alignment on plates.

i. Close openings in outlets during the plastering and/or concreting of structures with plain paper, excelsior or clip-on blank metal plates. THE USE OF NEWSPAPER WILL NOT BE PERMITTED.

6. INSTALLATION OF WIRES AND CABLES.

a. Use lead covering over rubber insulation in underground locations; in trapped raceways not provided with bleeder boxes and in moist locations use lead or moisture resisting rubber covering. Armored cable imbedded in masonry shall be lead covered.

b. Eliminate splices wherever possible; where necessary, splice in readily accessible pull, junction or outlet box.

c. Make taps and splices in wire #8 and smaller mechanically tight by using "Western Union" or pigtail splice, properly cleaned, soldered and insulated with rubber and friction tapes, flashover or insulation value of joints being at least 100 per cent in excess of wire insulation. Mechanical wire splicers and joints, except those using set screws bearing directly on conductor, may be used.

d. Make taps and splices in wire #6 and larger by means of brass or copper pressure connectors applied after wire has been cleaned; make tight and fully insulate as specified in preceding paragraph. Use parallel taps where necessary to conserve working space.

NOTE: These pages 29-11 through 29-17 supersede pages 29-11 through 29-16 of Division 29, dated 4-3-50. Material *between asterisks* is new or revised.

- -

* ( ) In non-fireproof construction conceal wiring except where otherwise specified. Outside studs shall not be cut. Inside studs shall be drilled where necessary. *

* (1) Wire of knob and tube systems shall be installed at least 1 inch away from thermal insulation or each conductor shall be separately encased in flexible tubing continuous between supports or supports and outlet boxes. Run wires singly on separate framing members where practicable. *

* __. Wiring shall be installed in surface metal moulding, tubing or conduit, when walls or partitions are masonry without furring or prefabricated panels with wall finish applied at the factory. *

7. WIRING CONNECTIONS (GENERAL)

a. Provide required number of branch circuits, with one circuit for receptacle outlets in kitchen and dining space and additional circuits for remainder of general lighting and receptacle outlets.

b. Where terminals permit, connections for wire #8 and larger to switches, panelboards, etc., shall be with soldered copper lugs or terminals of style to fit terminal and of size to handle full wire capacity; mechanical lugs, except those using set screws bearing directly on conductors, may be used.

c. Balance load as nearly as possible where three wire panels are provided.

d. Where service enters overhead, locate service head fitting above point of service loop attachment on building.

( ) Electric refrigerators will be furnished, uncrated, delivered in kitchens by others. This contractor shall insert the cord connection in the receptacle provided at each refrigerator location.

8. ELECTRICAL CONNECTIONS (EQUIPMENT)

a. Overcurrent protection and disconnecting means as required by the NEC shall be provided for motors. Motor driven equipment specified under "PLUMBING" and "HEATING" divisions may be factory wired complete with controllers and motor disconnects, therefore, this contractor should check equipment purchased under those divisions so as to avoid duplication of protective and disconnecting means.

b. Motor and control apparatus specified under other divisions, unless specifically mentioned as being connected under such divisions, shall be connected ready for operation under this division.

( ) Electric water heaters specified under the "PLUMBING" division shall be electrically connected ready for operation under this division.

9. SERVICE CONNECTIONS

( ) Overhead. The electrical system covered by this division shall commence at the "overhead" point of service contact on exterior of building. From this point of contact extend wiring to meter cabinet and service equipment and panels thence to outlets. At service contact leave slack cable or conductors for connecting to service loop; provide and install adequate anchorage at building to receive service loop. When "service drop and entrance cable" is used, the cable shall be carried without splice to the first electrical fitting at building. (See division titled "OVERHEAD DISTRIBUTION - ELECTRICAL").

( ) Underground. The electrical system covered by this division shall commence at the point of contact with the "underground" system; this point of contact being a junction box, disconnect, or conduit fitting, immediately inside of building in basement or crawl space, or on exterior of building approximately 24 inches above grade. From this point of contact extend wiring to meter cabinet and service equipment and panels, thence to outlets. At service contact leave slack cable or conductors for connecting to underground service (See Division, "UNDERGROUND DISTRIBUTION - ELECTRICAL").

10. DISTRIBUTION PANELS, BRANCH CIRCUIT PANELS, METER CABINETS, SERVICE EQUIPMENT AND JUNCTION BOXES.

a. Install service equipment (grounded as required by NEC), circuit protective devices and metering facilities for individual dwelling units as indicated on drawings.

b. Circuits shall be closed at meter outlets to permit operation without meters as previously described under "MATERIALS".

c. Install contactor, time clock, disconnect and protective devices to control outlets in public stairwells, halls and for yard lighting.

d. Pull and junction boxes shall be furnished and installed where necessary to permit easy pulling in and withdrawal of conductors in raceways. All covers, trims and doors shall be accessible.

e. Support cabinets, boxes, etc., independently of raceways. Provide iron framework for distribution panel cabinets, etc., requiring same, fastened to floor and ceiling. Paint framework two coats of asphaltum base paint before mounting cabinets, etc.

f. Load centers shall have the number of circuit protective devices, switch or switches as indicated on drawings.

g. Fuses - Circuit Breakers. If contractor elects to use circuit breakers, such equipment shall also be used in feeder protection; likewise, with respect to fuses. Protective devices in a circuit shall be so coordinated as to cause the protective device nearest the load to open first in case of overload, short circuit or ground.

11. INSTALLATION OF LIGHTING FIXTURES AND LAMP BULBS.

a. Install a lighting fixture on each fixture outlet of the type and size as indicated on drawing.

b. Each fixture shall be polarized. Where illumination on floor surfaces is interfered with by pipes, ducts, etc., fixtures shall be located at the under side of such obstruction.

c. Lamp bulbs of the size noted shall be installed in each lighting fixture, exclusive of dwelling units.

( ) Lamp bulbs for use within dwelling units shall be delivered in original cartons to the Local Authority.

12. INSTALLATION OF FUSES OR CIRCUIT BREAKERS.

a. All branch lighting and appliance circuits, unless otherwise specified, shall be protected by circuit breakers or fuses rated at 15 amperes.

( ) Furnish and install at the completion of the work, one complete set of fuses for all fuseholders requiring same. Furnish the following number of spare fuses in original carton to the Local Authority:

(1) Non-renewable (cartridge) one complete set.

(2) Renewable - 15 per cent of the number of each size fuse installed; where less than 20 fuses of a certain size are installed, provide three (3) spare links.

(3) Plug fuses - 15 per cent of the number installed.

( ) WIRING CONNECTIONS (RANGES)

a. Electric ranges will be furnished, uncrated, delivered in kitchen by others. This contractor shall furnish and install cable connection as specified hereinafter.

b. Range circuit, when supplied from panels, located directly above range, shall consist of 3 or 4 conductors all rubber cord continuous from panel to range terminal. At point where cable leaves wall, provide outlet

box or special fitting. Where circuit protection is not located at range, install three conductors from panel to outlet box in wall back of range, and splice to four conductor, all rubber cord range cable (or provide range receptacle and plug).

c. Provide cable support or grip on all rubber cord to avoid mechanical strain on splice in outlet box and on terminals in panel or on range.

d. Connect grounding conductor of cable to range frame, ground at outlet box or panel box.

e. Provide slack in connecting cable permitting range being moved three (3) feet from wall without disconnecting. Form conductors with lugs (if necessary) to accommodate range terminal block.

( ) INSTALLATION OF YARD LIGHTING

Furnish and install that portion of the yard lighting system consisting of branch circuits, exterior fixtures, controls, and junction boxes. Connect to the yard light section of the distribution panel ready for operation as indicated on drawings.

___. TELEPHONE SYSTEM

a. The telephone system as shown on drawings and as specified shall be installed in accordance with recommendations of local telephone company, leaving system clear for installation of telephone company's plant, wires and cables.

( ) Furnish and install a 1/2 inch conduit nipple through exterior wall in each dwelling unit, with a bushing on the interior and a plug on the exterior; locate near ceiling of storage space. Install suitable anchorage on building to receive service drop as required by telephone company.

( ) Furnish and install necessary conduit, sleeves, outlet boxes, covers, etc., from basement or point of entry of telephone service drop to each dwelling unit, and as shown on drawings. All sleeves or conduits installed from dwelling unit to dwelling unit shall be capped.

( ) Where telephone service enters underground, provide sleeve through foundation wall at point and/or points indicated on drawing.

___. INSTALLATION OF SEALS. Pull and junction boxes, raceway fittings, outlets, etc. (located in tenant spaces and containing wiring not on the tenant's meter), meter sockets and/or metering terminal blocks, shall be provided with means for sealing covers. Seal all such covers. Furnish one pocket type sealing tool with engraved die, and 250 seals in addition to those required. Die to be engraved as directed by the Local Authority.

___. MARKING EQUIPMENT. Service switches, motor disconnects, controllers, distribution centers, meter sockets, etc., whether or not furnished under this division shall be marked to identify the service. Stenciling shall be done by contrasting color, enamel paint, with lettering of size approved by the Local Authority.

( ) POWER PANEL. Power panel in _____ room shall consist of main lugs, 3 phase, 3 wire, with pull disconnect and fuse or circuit breakers, 3 pole branches. Capacities shall be as required by NEC. Panel shall be mounted dead front in cabinet of similar construction to distribution cabinets with minimum 4-inch guttersat four sides. Cabinets shall be surface or flush mounting as noted on drawings.

( ) LIGHTNING PROTECTION (BOILER PLANT CHIMNEYS)

a. Furnish and install complete lightning conductor equipment for each chimney consisting of the following:

(1) Four vertical copper rods 3/4 inch diameter, 5 feet long, secured and braced at top of chimney. The points shall be tipped with platinum or white gold.

(2) Cooper cable encircling chimney at base of rods and clamped to them.

(3) Copper conductor cable 1/2 inch in diameter, 7 strand, No. 10 gauge anchored to outside of chimney with brass or bronze stub anchors, approximately 6 feet on centers, extending from encircling cable above, down to ground plate; no splicing of cable will be permitted.

(4) Ground plate of wing type, buried in the earth a minimum of 5 feet from base of chimney and at a depth to provide an adequate ground.

(5) The upper 25 feet of the lightning conductor equipment shall be lead coated 1/16 inch thick.

(6) Connections of all parts shall be made with approved clamps, fittings and connectors, so that an uninterrupted electric circuit conductor from rod terminals at top to ground plate distributor is obtained. All connections shall be heavily tinned.

(7) The material and installation shall be in accordance with the Underwriters' requirements.

___. GROUNDING.

a. Ground each service entrance to cold water piping, in a manner prescribed by the National Electrical Code. Ground clamps shall be approved type and installed accessible.

- -

b. Provide such other system and/or equipment grounds as may be required by the National Electrical Code.

* ( ) Where "knob and tube" wiring and/or non-metallic sheathed cable is to be used in conjunction with armored cable, the grounding requirements are of special importance. *

* ( ) Where metal boxes are used in conjunction with non-metallic sheathed cable, each such box and the non-current carrying metal posts of other fixed equipment shall be grounded in accordance with Art. 2557 (a) of the National Electrical Code. *

___. FINAL INSPECTION AND TESTS. Prior to test, feeders and branch circuits shall be continuous from service contact point to each outlet; all panels, feeders and devices connected and fuses in place. Test system free from short circuits and grounds with insulation resistances, not less than outlined in Section 1119, 1951 National Electrical Code. Provide testing equipment necessary and conduct text in presence of the Local Authority's authorized representative. Submit three (3) certified copies of test reports to the Local Authority for record.

c. Cable racks and hooks shall be hot galvanized malleable iron or steel, size as required.

d. Rack insulators shall be wet process white glazed porcelain of proper radius for cable.

e. Pulling-in irons shall be of 7/8 inch round galvanized steel.

f. Ground rods shall be steel, 5/8 inch diameter and 8 feet minimum length, protected by a copper or galvanized coating.

g. Manhole ladder shall be steel, galvanized, 5/8 inch round steel rungs spaced 12 inches apart.

h. Wires and Cables.

(1) Duct and vault installation:

( ) Rubber covered, lead sheathed Type RHL - ASTM D 469-46 - Federal Specification J-C-103 (0-600 volt)

( ) Paper insulated, lead sheathed - I.P.C.E.A.

* ( ) Varnished cambric, lead sheathed, Type VML - Federal Specification J-C-138. *

( ) Varnished cambric, Type AVA - I.P.C.E.A. (vault only)

* ( ) Thermoplastic, Type TW - Federal Specification J-C-129 (0-600 volt) *

( ) Rubber covered Type RW - Federal Specification J-C-103 (0-600 volt)

(2) Direct earth installation:

( ) Lead covered metallic armored, Type RLJFJ-ASTM D 469-46- Federal Specification J-C-103.

* ( ) Non-metallic cable, heat and moisture resistant grade rubber insulated conductors, ASTM D 469-46T, with outer jacket of GRM polychloroprene sheathed compound ASTM D 752-46T (0-600 volts) *

* ( ) Non-metallic cable, ozone resistant grade rubber insulated conductors, ASTM D 574-46T with outer jacket of GRM polychloroprene sheathed compound ASTM D 752-46T. (5000 volts). *

NOTE: These pages 30a-5 and 30a-6 supersede pages 30a-5 and 30a-6 of Division 30a, dated 5-23-50. Material * between asterisks* is new or revised.

All cable conductors shall be color coded at the factory, to permit ready means of identification.

Cable installed directly in earth shall be guaranteed by the manufacturer (in writing), not to be affected by soil conditions at the project site.

i. Splice boxes for non-metallic sheathed cable shall be malleable or cast iron of ample size to contain the required number of cables and connectors.

They shall be plain without interior fittings, arranged to be solidly filled with compound and held together with corrosion resisting bolts.

j. Transformers - Federal Specification W-T-631, Type I, voltage taps as per Table IV, Federal Specification W-T-631.

The transformer mountings shall be as indicated on the drawings. Primary voltage _____, secondary voltage _____ and KVA size as indicated on the drawings.

Each transformer shall be shipped with proper quantity of insulating oil in tank. Oil shall be pure clear grade mineral oil, of high dielectric strength; flashpoint not less than 130 degrees C. and dielectric strength at least 26,000 volts when tested between vertical surfaces 1 inch in diameter and 0.10 inch apart.

Furnish with each transformer an oil gauge, 1/2 inch oil drain valve, 1/4 inch sampling valve and 1 inch filter press connection top and bottom. Transformers, 25 KVA and larger, shall be furnished with a thermal indicator.

k. Primary disconnects shall be:

( ) Porcelain enclosed expulsion type, interrupting capacity of _____ amperes at _____ cycle _____ volts. Fuse links for mains shall be _____ amperes and for feeder to transformer _____ amperes.

( ) Primary cutouts (oil filled type) complete with wiping sleeves, oil fuse links, manifold and expansion pipes; arranged for gang operation. The interrupting capacity shall be _____ amperes at _____ cycle _____ volts and fuse links _____ amperes.

( ) Oil circuit breakers complete pole single throw, non-automatic, manually operated and arranged for _____ mountings. The interrupting capacity shall be _____ amperes at _____ cycle _____ volts.

___. Potheads shall be type _____, shape _____, volts _____ complete with sleeves for lead sheathed cable or provided with a hub suitable for the type of cable used.

___. Filling compound for potheads, splice boxes and cable splices shall be of proper flow of temperature and type as required and/or as recommended by the manufacturer for the particular cable, pothead and splice box.

___. Yard lighting fixtures shall consist of metal lighting standard, or reinforced concrete standard (standard with trade) approximate height to light source _____ feet, provided with a handhole in the base, and equipped with lumenaire and 2500 lumen lamp bulb. All metal parts shall have a corrosion-resistive coating inside and out.

GUIDE SPECIFICATIONS

DIVISION 31

REFRIGERATORS, ELECTRIC

NOTES TO THE ENGINEER:

THIS SPECIFICATION MAY BE USED AS A PART OF THE GENERAL CONTRACT SPECIFICATIONS

PUBLIC HOUSING ADMINISTRATION
Housing and Home Finance Agency

10-1-51 **Low-Rent Housing Bulletins** **Transmittal No. 57**

Remove from Low-Rent Bulletin No. LR-13, GUIDE SPECIFICATIONS:

1. Division 31, REFRIGERATORS, ELECTRIC, dated 6-15-50.

Insert in Low-Rent Bulletin No. LR-13, GUIDE SPECIFICATIONS:

1. Division 31, REFRIGERATORS, ELECTRIC, dated 10-1-51.

HHFA-PHA, Wash. D.C.

NOTE: This revised Division 31 supersedes Division 31, dated 6-15-50.
Material * between asterisks * is new or revised.

- -

GUIDE SPECIFICATIONS

DIVISION 31

REFRIGERATORS, ELECTRIC

1. SCOPE

This Division includes the furnishing and delivery of_____ 4 Cu. Ft., _____ 6 Cu. Ft., _____ 7 Cu. Ft., and _____ 8 Cu. Ft. electric refrigerators as herein specified.

2. DESCRIPTION

a. Type. Refrigerators shall be complete, self contained, air-cooled units, of portable type with front door openings, charged with the proper amount of refrigerant and lubricant, properly adjusted at the manufacturer's place of business and ready to operate when connected to a suitable power supply. All parts or mechanism on which field servicing is intended shall be accessible for servicing and adjustments.

b. Design. Refrigerators shall be of current design and conform to the applicable requirements of the Underwriters' Laboratories, Inc., "Standard for Unit Refrigeration Systems." The listing of the Underwriters' Laboratories, Inc., in their latest, "List of Inspected Electric Equipment," or supplements thereto, or card report in effect on date of delivery, may be accepted as evidence that the electric refrigerators conform to the requirements of the Underwriters' Laboratories, Inc.

c. The net volume and shelf area shall conform to the requirements of the latest issue of the National Electrical Manufacturers' Association's publication No. 47-126.

d. The overall dimensions shall not exceed (tolerance 5 per cent) the following:

Nominal Size	4 Cu. Ft.	6 Cu. Ft.	7 Cu. Ft.	8 Cu. Ft.
Width	25 inches	25 inches	32 inches	34 inches
Height	55 inches	56 inches	58 inches	63 inches
Depth	29 inches	29 inches	29 inches	30 inches

e. Doors for refrigerators shall swing to open as follows:

4 Cu. Ft._____ Right _____ Left
6 Cu. Ft._____ Right _____ Left
7 Cu. Ft._____ Right _____ Left
8 Cu. Ft._____ Right _____ Left

f. Electrical characteristics shall be _____ volts, _____ wire, _____ cycle.

- -

3. CONSTRUCTION

a. Materials for construction of refrigerators shall be new. Wood shall not be used in the refrigerators. Materials which may cause toxic reaction or poisonous oxides in the presence of foods shall not be used in the interior of the refrigerators.

* b. Doors shall be of a suitable overlapping type with square or beveled jambs, insulated, sealed, and finished as specified hereinafter. Doors and frames shall be sealed tightly when closed with rubber (or equivalent) compression gaskets (which shall not absorb odors) securely mounted on the overlapping edges of the doors. Door hinges shall be substantial and the latches strong, self-closing, quick-acting, and capable of holding the doors in alignment and tightly closed. *

c. Exposed hardware shall be of a simple substantial design and securely attached. The finish shall be corrosion resistant and not affected when subjected for 16 hours to a spray of sodium chloride (20% solution) at a maintained temperature between 93 and 97 degrees F.

d. Shelves shall provide maximum utilization of storage space; have corrosion resistant finish. Sliding shelves, if provided, shall have stops to prevent being pulled out accidentally and striking against food liner when pushed in.

e. Trays and grids shall be of non-ferrous metal adequately treated to inhibit corrosion and discoloration, equipped with release lever or equivalent means to quickly and effectively loosen frozen-in trays. Trays shall be of the following capacity:

Refrigerator Size	Pounds of Ice
4 Cu. Ft.	4.0
* 6 Cu. Ft.	4.0
7 Cu. Ft.	6.0
8 Cu. Ft.	7.25 *

f. Cabinet insulation shall have a maximum conductivity value of 0.31 Btu per hour per square foot per inch of thickness per degree temperature difference. Insulation shall not settle. Joints between sheet or slab forms shall fit snugly and be sealed.

* g. Exterior casing front, sides and top and exterior of doors shall be not less than 0.028 inch and the back and bottom not less than 0.018 inch sheet steel coated with lacquer, enamel, or porcelain fused-on steel. Sheet steel with lacquer or enamel finish shall be suitably bonderized or ground coated or otherwise treated to resist rusting. *

- -

* h. Interior linings of food storage compartment shall be not less than 0.025 inch thick sheet steel with all corners smoothly rounded and finished with fused-on white vitreous porcelain enamel. Bottom shall be finished white, acid resisting porcelain enamel meeting the requirements of "Class B" finish defined in the Porcelain Enamel Institute, Inc., Standard Test for Acid Resistance of Porcelain Enamels. *

* i. Interior lining of door shall be (a) steel finished with fused-on white vitreous porcelain enamel, (b) laminated thermosetting materials with a white facing material incorporated in the laminate, or (c) laminated thermosetting materials finished with a white organic finish as specified for exterior casing. The thickness of steel shall be not less than 0.025 inch thick; the laminated thermosetting material shall be not less than 0.075 inch thick and shall conform to Federal Specification HH-P-256, Type I. *

j. Cooling units shall be plate, or coil type, show no sign of rusting or corrosion of basic material or porosity of coating when tested for 500 hours at 100 degrees F. and 100% relative humidity, and have smooth surfaces permitting easy cleaning.

k. Defrosting trays shall be large enough to catch all drip from the cooling units during defrosting.

l. Refrigerating units shall be efficient, quiet and entirely automatic in operation, and of the following type:

( ) Sealed. The entire motor and compressor shall be completely enclosed and hermetically sealed in a metal housing. The refrigerating system shall be completely removable and replaceable without disconnecting any refrigerant-containing lines.

( ) Open. The compressor shall be of the open type with shaft sealed to atmosphere. The entire mechanism or its parts shall be accessible for service, replacement, or adjustment.

m. Temperature controls shall be sensitive, reliable, durable, and provide all necessary adjustments, including a graduated dial with pointer and position for defrosting the cooling unit. The food storage space shall be controlled by automatic starting and stopping of the prime mover as required in order to maintain substantially constant temperature.

n. Manual controls shall be conveniently located for varying the rate of freezing in the low temperature compartment and the temperature of the food compartment.

o. Motors and wiring shall be furnished as follows:

(1) The motor shall be of adequate capacity to start and operate under any condition in an ambient temperature of 100 degrees F.

- -

(2) Thermal protection of the automatic re-set type shall be provided for each motor to prevent excess temperature rise of the motor windings.

(3) Control wiring shall be complete and fully connected ready for operation of the refrigerator.

(4) Service cord, six feet in length, shall be provided with an attachment plug at the outer end.

4. PERFORMANCE

a. The "cooling system" shall maintain an average temperature of 46 degrees F. plus or minus 2 degrees F. in the food storage space in a room temperature of 110 degrees F. The temperature in the food storage space shall be determined in accordance with the American Standard Association's bulletin No. B 38.2 - 1944.

b. Ice making shall be considered satisfactory when the complete charge of water (at room temperature) shall be frozen in not more than 8 hours, with the control set for fastest freezing, in a room temperature of 110° F.

c. Supply voltage variations of plus or minus 10% from normal shall not interfere with the operation of the refrigerator.

d. Radio and television shall not be subjected to objectionable interference as a result of refrigerator operation.

5. DELIVERY

a. The electric refrigerators shall be delivered, by the contractor, to:

( ) the railhead nearest to the project
( ) the trucking terminal nearest to the project
( ) the project site.

b. The electric refrigerators will be uncrated, distributed to each kitchen and connected by others.

c. The electric refrigerators shall be delivered free from damage and blemishes. After connections are made as required under division INTERIOR ELECTRICAL WIRING, place in operation and check for proper performance, certifying to the Local Authority that the equipment has been tested in place and found satisfactory. Energy required for testing will be supplied at the Local Authority's expense.

6. INSTRUCTIONS

Furnish with each refrigerator descriptive literature giving simple instructions as to operation and maintenance. Furnish 3 service manuals including complete wiring diagram of each type and size of refrigerator furnished.

7. GUARANTEES

* a. Contractor shall guarantee that if equipment becomes inoperative as defined in the following paragraph, he will, within 12 hours after being notified of such condition, repair or replace, and install, any part, free of charge (except enamel, porcelain and lacquer) necessary to make it operative. The guarantee shall continue for one year, beginning on the day following the "Final Installation Test." This guarantee does not apply to damage due to abuse or misuse. *

b. A refrigerator shall be considered inoperative within the meaning of the preceding paragraph when the interior cabinet temperature rises above 50 degrees F. and is maintained at such temperature for 6 or more consecutive hours after the usual normal adjustments have been made, or other mechanical and electrical trouble affecting normal operations has been corrected.

8. COOLING UNIT REPLACEMENT

a. The contractor shall furnish new or reconditioned cooling system units, replacing in refrigerators furnished under this contract any units which become defective (excluding damage due to visible abuse), during a four-year period, commencing at the expiration of the one-year guarantee period. The contractor shall provide the labor and materials required to make the exchanges. Defective units become the property of the contractor.

b. The contractor shall submit to the Local Authority THE NAME AND ADDRESS OF THE AGENT WHO WILL FURNISH SERVICE in connection with the guarantee and unit replacement as herein specified.

9. AFFIDAVIT

An affidavit shall be submitted to the Local Authority, certifying that the electric refrigerators furnished under the contract conform to the requirements stated in this specification.

10. TESTS

a. The Local Authority reserves the right to conduct tests on two refrigerators to check equipment supplied for compliance with the specification. Such tests shall be performed within 90 days from the date of delivery; tests to be performed by an impartial laboratory selected by the Local Authority, subject to approval of the contractor; expense to be borne by the Local Authority.

- -

b. This contractor may have not more than two representatives present to witness the tests; their expenses shall be borne by the contractor.

c. Tests shall be conducted in accordance with procedures established in The American Standards Association B 38.2 - 1944 for household electric refrigerators.

PUBLIC HOUSING ADMINISTRATION

HOUSING AND HOME FINANCE AGENCY WASHINGTON 25, D. C.

10-15-51 Low-Rent Housing Bulletin Transmittal No. 58

Remove from Low-Rent Bulletin No. LR-13, GUIDE SPECIFICATIONS:

1. Division 31a, GAS REFRIGERATORS, dated 6-15-50.

Insert in Low-Rent Bulletin No. LR-13, GUIDE SPECIFICATIONS:

1. Division 31a, REFRIGERATORS, GAS, dated 10-15-51.

Remove from Low-Rent Bulletin No. LR-22, SPECIFICATIONS FOR RURAL NONFARM HOUSES:

1. Division 21, REFRIGERATORS, ELECTRIC, dated 3-6-51.

2. Division 21a, REFRIGERATORS, GAS, dated 3-6-61.

Insert in Low-Rent Bulletin No. LR-22, SPECIFICATIONS FOR RURAL NONFARM HOUSES:

1. Division 21, REFRIGERATORS, ELECTRIC, dated 10-15-51.

2. Division 21, REFRIGERATORS, GAS, dated 10-15-51.

GUIDE SPECIFICATIONS

DIVISION 31a

REFRIGERATORS, GAS

NOTES TO THE ENGINEER:

THIS SPECIFICATION MAY BE USED AS A PART OF THE GENERAL CONTRACT SPECIFICATION OR IN CONNECTION WITH A SEPARATE CONTRACT FOR THE PURCHASE OF GAS REFRIGERATORS.

* FOR A DISCUSSION OF RECOMMENDED REFRIGERATOR CAPACITIES, TYPES AND DIMENSIONS SEE BULLETIN NO. LR-10, PART II. *

PARAGRAPHS MARKED THUS ( ) COVER VARYING DELIVERY POINTS. SELECT THE DELIVERY POINT REQUIRED AND OMIT THOSE NOT SUITABLE.

CHANGE THE TEXT OF ANY PARAGRAPH TO SUIT THE PROJECT REQUIREMENTS, STRIKE OUT ITEMS NOT APPLICABLE, INSERT ADDED TEXT AS NECESSARY, AND FILL IN BLANK SPACES.

NOTE: This page supersedes the corresponding page of Division 31a, dated 6-15-50. Material * between asterisks * is new or revised.

GUIDE SPECIFICATIONS

DIVISION 31a

REFRIGERATORS, GAS

1. SCOPE

This division includes the furnishing and delivering _____ 4 Cu. Ft. _____ 6 Cu. Ft., and _____ 8 Cu. Ft. gas refrigerators as herein specified.

2. DESCRIPTION

a. Type. Refrigerators shall be complete, self-contained, air-cooled units, of the portable type with front door openings, charged with the proper amount of refrigerant and ready to operate when installed in a suitable location and properly connected and adjusted to a suitable gas supply. All parts or mechanisms on which field servicing is intended shall be accessible for servicing and adjustments.

b. Design. Refrigerators shall be of current design and conform to the requirements of the latest issue of the American Gas Association's "American Standard Approval Requirements for Refrigerators Using Gas Fuel," No. Z 21.19, 1941.

* c. The net volume and shelf area shall conform to the requirements of the latest issue of the National Electrical Manufacturers' Association's publication No. 47-126. Minus tolerance of 5% is allowed. *

d. The overall dimensions shall not exceed (tolerance 5 per cent) the following:

Nominal Size	4 Cu. Ft.	6 Cu. Ft.	8 Cu. Ft.
Width	24 inches	24-3/8 inches	34-1/8 inches
Height	54-1/2 inches	55-1/8 inches	63-3/4 inches
Depth	27-3/4 inches	29-1/2 inches	29-3/4 inches

e. Doors for refrigerators shall swing to open as follows:

4 Cu. Ft.	_____ Right	_____ Left
6 Cu. Ft.	_____ Right	_____ Left
8 Cu. Ft.	_____ Right	_____ Left

3. CONSTRUCTION

a. Materials for construction of refrigerators shall be new. Materials which may cause toxic reaction or poisonous oxide in the presence of foods shall not be used in the interior of the refrigerators.

* b. Doors shall be of a suitable overlapping type with square beveled jambs, insulated, sealed and finished as specified hereinafter. Doors and frames shall be sealed tightly when closed with rubber (or equivalent) compression gaskets (which shall not absorb odors) securely mounted on the overlapping edges of the door. Door hinges shall be substantial and the latches strong, self-closing, quick-acting and capable of holding the doors in alignment and tightly closed. *

c. Exposed hardware shall be of a simple substantial design and securely attached. The finish shall be corrosion resistant and not affected when subjected for 16 hours to a spray of sodium chloride (20% solution) at a maintained temperature between 93 and 97 degrees F.

d. Shelves shall provide maximum utilization of storage space, and have corrosion resisting finish. Sliding shelves, if provided, shall have stops to prevent being pulled out accidentally and striking against food liner when pushed in.

e. Trays and grids shall be of non-ferrous metal adequately treated to inhibit corrosion and discoloration; equipped with release lever or equivalent means to loosen frozen-in trays quickly and effectively. Trays shall be of the following minimum capacity:

Refrigerator Size	Pounds of Ice
4 Cu. Ft.	4.0
6 Cu. Ft.	6.0
8 Cu. Ft.	8.0

f. Cabinet insulation shall have a maximum conductivity value of 0.31 Btu per hour per square foot per inch of thickness per degree temperature difference. Insulation shall not settle; joints between sheet or slab forms shall fit snugly and be sealed.

* g. Exterior casings and exterior of doors shall be of seamless one piece steel, bonderized or equivalent; finished with baked-on enamel. *

* h. Interior linings of food storage compartment shall be seamless welded steel with rounded corners; finished with stain resistant porcelain enamel. *

* i. Interior lining of door shall be (1) steel finished with fused-on white vitreous porcelain enamel, (2) laminated thermosetting materials with a white facing material incorporated in the laminate, or (3) laminated thermosetting materials finished with a white organic finish as specified for exterior casing. The thickness of steel shall be not less than 0.025 inch thick; the laminated thermosetting material shall be not less than 0.075 inch thick and shall conform to Federal Specification HH-P-256, Type I. *

j. Defrosting tray shall be of a capacity to catch and retain all drippings from the cooling unit during defrosting.

k. Gas burners shall be accessible, designed and fitted to the type of gas available at the project, which is _____ gas, _____ Btu per Cu. Ft.

l. The "cooling system" shall be compact, complete with refrigerant, practically noiseless in operation, and fully automatic.

4. PERFORMANCE

a. The "cooling system" shall maintain in the food storage space an average temperature of 46 degrees F. plus or minus 2 degrees F. in a room temperature of 110 degrees F. The temperature in the food storage space shall be determined in accordance with the American Standards Association's Bulletin No. B 38.2 - 1944.

b. Gas pressure regulator shall be provided to maintain a substantially constant pressure to the burner.

c. An automatic thermostatic control shall regulate the cabinet temperature and maintain a substantially constant temperature in the food storage space. Provide a conveniently located manual temperature control for changing the setting of the thermostatic control. Highest operating position to the lowest shall change the thermostatic setting by not less than 20 degrees F. When the control is in the defrosting position, the gas flame shall not be extinguished.

* d. An automatic cutoff shall be provided and shall, within a period of 5 minutes, shut off the gas supply to the burner in case the flame is extenguished. *

5. DELIVERY

a. The gas refrigerators shall be delivered, by the contractor, to:

( ) the railhead nearest to the project
( ) the trucking terminal nearest to the project
( ) the project site

b. The gas refrigerators will be uncrated, distributed to each kitchen and connected by others.

c. Refrigerators shall be delivered free from damage and blemishes. After connections are made as required under division PLUMBING, place refrigerator in operation and check for proper performance, certifying to the Local Authority that the equipment has been tested in place and found satisfactory. Fuel required for testing will be supplied at the Local Authority's expense.

6. INSTRUCTIONS

Furnish with each refrigerator, for tenant use, descriptive literature giving simple instructions for operation and maintenance.

7. GUARANTEES

a. Contractor shall guarantee that if equipment becomes inoperative, as defined in the following paragraph, he will, within 12 hours after being notified of such condition, repair or replace any part (except enamel, porcelain, and lacquer) necessary to make it operative. Guarantee shall continue for one year, beginning on the day following the "Final Installation Test." This guarantee does not apply to damage due to abuse or misuse.

b. A refrigerator shall be considered inoperative within the meaning of above paragraph when interior cabinet temperature rises above 55 degrees F. and is maintained at such temperature for 6 or more consecutive hours after the usual normal adjustments have been made, or other mechanical trouble affecting normal operations has been corrected.

8. COOLING UNIT REPLACEMENT

a. The contractor shall furnish new or reconditioned cooling system units, replacing in refrigerators furnished under this contract any units which become defective (excluding damage due to visible abuse), during a four-year period, commencing at the expiration of the one-year guarantee period. The contractor shall provide the labor and materials required to make the exchanges. Defective units become the property of the contractor.

b. The contractor shall submit to the Local Authority, THE NAME AND ADDRESS OF THE AGENT WHO WILL FURNISH SERVICE in connection with the guarantee and unit replacement as herein specified.

9. AFFIDAVIT

An affidavit shall be submitted to the Local Authority certifying that the gas refrigerators furnished under the contract conform to the requirements stated in this specification.

10. TESTS

a. The Local Authority reserves the right to conduct tests on two refrigerators to check equipment supplied for compliance with the specification. Such tests shall be performed within 90 days from the date of delivery; tests to be performed by an impartial laboratory selected by the Local Authority, subject to approval of the contractor; expense to be borne by the Local Authority.

b. This contractor may have not more than two representatives present to witness the tests; their expenses shall be borne by the contractor.

GUIDE SPECIFICATIONS

DIVISION 4

CONCRETE (Long Form)

NOTES TO THE ARCHITECT:

THIS SPECIFICATION COVERS CONCRETE WORK FOR PROJECTS HAVING CONCRETE FRAMED BUILDINGS OR BUILDINGS OF CONCRETE AND MASONRY WALL BEARING DESIGN: AND RELATED ITEMS.

SLABS SUPPORTED ON THE GRADE SHOULD NOT BE LAID ON FILLS OVER 5 FEET DEEP.

CONCRETE PORCH SLABS, ENTRANCE STEPS, OR AREAWAYS SHOULD NOT BE PERMANENTLY SUPPORTED ON FILLED GROUND.

*EDGE INSULATION OF CONCRETE FIRST FLOORS (EXCEPT ABOVE HEATED CRAWL SPACES) SHOULD BE INCLUDED IN AREAS HAVING HEATING SEASONS OF 3500 DEGREE DAYS OR MORE (SEE BULLETIN LR-5, PART XI, OR THE A.S.H.V.E. GUIDE, FOR DEGREE DAY INFORMATION). WHEN EDGE INSULATION IS KEPT ABOVE POSSIBLE WINTER GROUND WATER LEVELS MATERIAL CONFORMING TO FED. SPEC. HH-M-371a TYPE 1 (WATER PERMEABLE) IS ACCEPTABLE. WHEN EDGE INSULATION IS USED IN CLAY SOILS WHERE WATER CAN ACCUMULATE IN WINTER, MATERIAL LIKE CELLULAR GLASS, IMPERMEABLE TO WATER, SHOULD BE USED. *

*MATERIAL CONFORMING TO FEDERAL SPECIFICATION HH-M-371a, TYPE 1 WILL SAFELY SUSTAIN THE LOAD OF A 5 INCH CONCRETE FLOOR PLUS NORMAL FLOOR LOADS BUT SHOULD NOT BE USED WHEN INSULATION OVERLAPS FOUNDATIONS UNDER FRAME WALLS

NOTE: This page 4-1 and the following page 4-2 supersede page 1 of Division 4, dated 4-20-50. Text *between asterisks * is new or revised.

- -

BECAUSE SETTLEMENT OF FILL UNDER FLOORS WILL THEN IMPOSE LOADS GREATER THAN THE BEARING CAPACITY OF THE INSULATION. *

*WHEN BOTH TYPES OF INSULATION ARE USED BUT RESTRICTED TO SPECIFIC POSITIONS REVISE THE SPECIFICATION ACCORDINGLY AND INDICATE THE POSITION OF EACH TYPE ON THE DRAWINGS. *

PARAGRAPHS MARKED ( ) COVER VARYING TYPES OF CONSTRUCTION AND MAY NOT BE REQUIRED IN THE PROJECT. SELECT THE TYPE OR TYPES SUITED TO THE PROJECT AND OMIT THOSE NOT SUITABLE.

CHANGE THE TEXT OF ANY PARAGRAPH TO SUIT THE PROJECT REQUIREMENTS. STRIKE OUT ITEMS NOT APPLICABLE, AND INSERT ADDED TEXT AS NECESSARY.

GUIDE SPECIFICATIONS

DIVISION 4

CONCRETE (Long Form)

1. SCOPE

This Division includes concrete and related items required to complete the work indicated on the drawings and specified, except the concrete work which is specified in the divisions HEATING, PLUMBING, ELECTRICAL, SITE IMPROVEMENTS, AND UTILITIES.

2. MATERIALS

* a. Portland cement shall conform to A.S.T.M. "Standard Specifications for Portland Cement", C150-49, Type I. *

* b. High-Early-Strength portland cement shall conform to A.S.T.M."Standard Specifications for Portland Cement", C150-49, Type III. *

* c. Aggregates for concrete shall conform to A.S.T.M. "Standard Specifications for Concrete Aggregates", C33-49 or light weight aggregate C130-42. *

(1) Aggregates shall be natural sand and gravel or prepared from stone, blast furnace slag, gravel, or burned clay, burned shale, pumice, tufa or cinders resulting from high temperature combustion of coal or coke or a combination thereof, free from adherent coatings. Maximum size of pieces shall be 1 inch, except for footings and foundation walls which may be 1-1/2 inch maximum size.

d. Water shall be clean, and free from injurious amounts of oils, acid, alkalis, organic materials, or other deleterious substances.

e. Metal reinforcement shall be deformed bars, conforming to one of the following requirements:

(1) A.S.T.M. "Standard Specifications for Billet - Steel Bars for Concrete Reinforcement", A15-46.

(2) A.S.T.M. "Standard Specifications for Rail - Steel Bars for Concrete Reinforcement", A16-46.

(3) A.S.T.M. "Standard Specifications for Axle - Steel Bars for Concrete Reinforcement", A160-46.

NOTE: These pages 4-3 and 4-4 supercede pages 4-3 and 4-4 of Division 4, dated 4-20-50. On page 4-3, text * between asterisks * is new or revised. Page 4-4 has been rerun without change.

(4) A.S.T.M. "Standard Specifications for Cold - Drawn Steel Wire for Concrete Reinforcement", A82-46.

(5) A.S.T.M. "Standard Specifications for Welded Steel Wire Fabric for Concrete Reinforcement", A185-46.

f. Metal accessories, including spacers, chairs, ties and other devices necessary for properly assembling, placing, spacing and supporting all reinforcement in place, shall be provided. Legs of accessories resting on ceiling and beam forms shall be coated after fabrication to avoid rust spots.

( ) Metal fabric used in the concrete fireproofing of steel columns and beams as indicated on the drawings shall be No. 12 gauge steel wire, spaced 9 inches on centers both ways, secured 3/4 inch away from flat surface steel members.

( ) Structural clay tile shall conform to A.S.T.M. "Standard Specifications for Structural Clay-Load-Bearing Wall Tile," C34-41.

3. TESTING AND INSPECTION

Testing and inspection of concrete and materials shall be made under the direction of the Local Authority, who shall have access to all places where concrete materials are stored, proportioned, mixed, or placed. (See GENERAL CONDITIONS, Bulletin 110, LR-12).

a. Mill, laboratory tests reports and affidavits shall be furnished by the manufacturer, certifying that all materials delivered to the project conform to these specifications, when requested by the Local Authority.

b. Load Tests. When load tests are required, the members or portions of the structure under consideration shall be subject to a superimposed load equal to two times the live load plus one-half of the dead load. This load shall be left in position for a period of 24 hours before removal. If, during the test, or upon removal of the load, a member or portion of the structure shows evident failure, such changes or modifications shall be made as are necessary to make the structure adequate. The structure shall be considered to have passed the test if the maximum deflection at the end of the 24 hour period does not exceed the value of "D" as given in the following formula:

$$D = \frac{L2}{12{,}000\ t}$$

In which D (deflection) L (span) and t (depth) are expressed in the same units.

(1) If the deflection at the end of a 24 hour period exceeds the value of "D" as given in formula, the construction shall still be considered to have passed the test if within 24 hours after removal of the load the residual deflection does not exceed either forty per cent of the maximum deflection observed under load or sixty per cent of that given by the above formula. Under no circumstances will the construction be considered acceptable if the deflection under load exceeds three times that given by the formula.

- -

( ) Metal anchors or ties for securing masonry work to concrete walls, columns, beams, etc., shall be of non-corroding metal, wrought iron or steel zinc coated after fabrication, and approved by the Local Authority. Install the necessary metal slots or inserts in the concrete and provide at least one anchor for every 300 square inches of concrete surface. Install and provide anchors for not less than 2 lines of slots or inserts between openings with anchors spaced not more than 16 inches apart.

9. DEPOSITING CONCRETE

a. Soil bottoms for footings and slabs shall be approved by the Local Authority before placing concrete. No foundations shall be placed on backfilled soils.

b. Remove water and all foreign matter from forms and excavations. Unless otherwise directed, wood forms and sand or sandy loam shall be thoroughly wetted just prior to placing concrete.

c. Deposit concrete as nearly as practicable in its final position to avoid segregation due to re-handling or flowing. Place no concrete until all reinforcing steel, pipes, conduits, sleeves, hangers, and other work required to be built into concrete have been inspected and approved by the Local Authority.

d. Retempering. No concrete that has partially hardened, become contaminated by foreign materials, or been retempered, shall be used.

e. Continuity of Placing. Concreting shall generally be carried on as a continuous operation until the placing of an individual section is completed. When construction joints are necessary they shall be made and located with the approval of the Local Authority. Concrete shall be carefully worked around reinforcement and embedded fixtures, along surfaces and into the corners of forms. Vibrators may be used, provided they are operated under experienced supervision, and forms are constructed to withstand their action.

f. Concrete Construction Joints. Before placing new concrete the surface of the concrete already in place shall be picked, brushed clean, and given a coat of neat cement grout for a proper bond.

10. CONCRETE FLOOR SLABS ON GROUND

( ) Self Supporting Slabs Where Ground Below is Used as a Temporary Form Only. Compact fill under slab sufficiently to support it during construction. After leveling, lay a 30 pound tar paper over the entire slab area before placing concrete.

NOTE: These pages 4-7, 4-8 and the following page 4-8a supersede pages 4-7 and 4-8 of Division 4, dated 4-20-50. Page 4-7 has been rerun without change. On page 4-8, text * between asterisks * is new or revised.

( ) Solid Concrete Slabs on the Grade. Fills shall be made in 6-inch layers, sprinkled and rolled with a 5-ton roller, making four passes over each layer. On this leveled-out grade, place a 6-inch layer of crushed stone, slag, or gravel, graded from 3/4 to 1-1/2 inches. Level off and place a layer of tough waterproof paper (Federal Specification UU-P-147, Type IV) over the entire slab area before placing concrete. Reinforce the 4-inch slab with No. 10 wire mesh, 6 inches center, both ways.

( ) Combination Tile and Concrete Slab on the Grade. Make fills in 6-inch layers and sprinkle and roll with a 5-ton roller, making four passes over each layer. Level sub-grade by screeding a thin layer of sand on it. Before laying tiles, place a 30 pound tar paper on the sand cushion, or dip bottom face of tiles in liquid asphalt or coal tar pitch. Lay hard grade structural tiles, 3 inches thick, over grade with cells alternating in direction to create dead air spaces. Place a 2-inch concrete topping, without reinforcing, on tiles, and finish as specified elsewhere.

* ( ) Insulate edges of concrete first floors along exterior walls as indicated on the drawings. Set edge insulation in coal tar (not asphalt) plastic cement conforming to Federal Specifications SS-C-153, Type II, supplied in the original unopened containers plainly marked at the factory as a coal tar product. Spread plastic cement over surfaces of walls and blocks not less than 1/8 inch thick and force insulation into place to close completely all interstices through which moisture or termites could enter the dwelling. Finally, place concrete floors against blocks of insulation previously coated with plastic cement.

( ) Edge insulation shall be mineral wool blocks conforming to Federal Specifications HH-M-371a, Type 1 without outside sheaths and with asphalt or resin binder, or cellular glass conforming to Federal Specifications HH-I-551.

( ) Edge insulation shall be cellular glass conforming to Federal Specifications HH-I-551. *

11. CEMENT FLOOR FINISHES

Screed the entire surface of the concrete slab at proper level to receive finish. Remove surface water, laitance or dirt, before applying specified finish. Finish floors with a minimum of steel trowelling to produce a smooth surface, free from blemishes, and true to a maximum tolerance of 1/8 inch in 6 feet. Dusting dry sand and cement over the slab will be permitted for Type I finish only.

( ) Type I Finish. For all slabs which are to be covered with asphalt or ceramic tile, linoleum, wood laid in mastic, roofing or roof insulation, use a dry mix, of 1 part cement and 2 parts fine aggregate, spread evenly 1/8 inch thick over the entire surface of moist slab. Float and finish floors with a steel trowel. Roofs shall be finished with a float.

( ) Type II Monolithic Finish. For all cement finished floors, porches,

steps, and platforms not otherwise specified, use a mix composed of 1 part cement, 1 part fine aggregate and 1-3/4 parts coarse aggregate (1/8" to 3/8"). This mix may be varied, but in no event shall the coarse aggregate be less than 1-1/2 times volume of fine aggregate. Mechanically mix for not less than 1-1/2 minutes after all ingredients are in the mixer, using not more than 5 gallons of water, including free water in aggregates, for each sack of cement used. Spread evenly over screeded moist slab to a depth not less than 1/2 inch, strike off, compact by wood floating, and finish with steel trowel. Delay finishing until concrete has hardened sufficiently to prevent excess water or fine aggregate working to the surface with troweling.

( ) Non-Monolithic Finish. When cement floor finish cannot be applied to the concrete until after it has set, clean surface of slab, remove laitance and loose particles, and roughen the surface to insure a complete bond between the slab and finish. Wet slab and then place the 1/2 inch floor finish specified under "Type II Monolithic Finish". Finish with float and steel trowel.

GUIDE SPECIFICATIONS

DIVISION 4a

CONCRETE (Short Form)

NOTES TO THE ARCHITECT:

THIS SPECIFICATION COVERS ONLY PROJECTS WHERE CONCRETE CONSTRUCTION IS LIMITED TO:

FOUNDATIONS
FOUNDATION WALLS
GRADE BEAMS AND PIERS
FLOOR SLABS LAID ON THE GRADE
PORCH FLOORS AND STEPS
ISOLATED SLABS, AREAWAYS, ETC.

THE SPECIFICATION FOR PROJECTS HAVING CONCRETE FRAMED BUILDINGS IS COVERED UNDER "CONCRETE WORK" (LONG FORM). SOLID CONCRETE SLABS ON THE GRADE SHOULD NOT BE LAID ON ANY FILL WHICH IS OVER 5 FEET IN DEPTH.

CONCRETE PORCH SLABS, ENTRANCE STEPS, OR AREAWAYS, SHOULD NOT BE SUPPORTED ON FILLED GROUND.

*EDGE INSULATION OF CONCRETE FIRST FLOORS (EXCEPT ABOVE HEATED CRAWL SPACES) SHOULD BE INCLUDED IN AREAS HAVING HEATING SEASONS OF 3500 DEGREE DAYS OR MORE (SEE BULLETIN LR-5, PART XI, OR THE A.S.H.V.E. GUIDE, FOR DEGREE DAY INFORMATION).

WHEN EDGE INSULATION IS KEPT ABOVE POSSIBLE WINTER GROUND WATER LEVELS MATERIAL CONFORMING TO FED. SPEC. HH-M-371a TYPE 1 (WATER PERMEABLE) IS ACCEPTABLE.

WHEN EDGE INSULATION IS USED IN CLAY SOILS WHERE WATER CAN ACCUMULATE IN WINTER, MATERIAL LIKE CELLULAR GLASS, IMPERMEABLE TO WATER, SHOULD BE USED. *

NOTE: This Division 4a supersedes Division 4a of Bulletin LR-13, dated 4-3-50. Text * between asterisks * is new or revised.

*MATERIAL CONFORMING TO FEDERAL SPECIFICATION HH-M-371a, TYPE I WILL SAFELY SUSTAIN THE LOAD OF A 5 INCH CONCRETE FLOOR PLUS NORMAL FLOOR LOADS BUT SHOULD NOT BE USED WHEN INSULATION OVERLAPS FOUNDATIONS UNDER FRAME WALLS BECAUSE SETTLEMENT OF FILL UNDER FLOORS WILL THEN IMPOSE LOADS GREATER THAN THE BEARING CAPACITY OF THE INSULATION. *

*WHEN BOTH TYPES OF INSULATION ARE USED BUT RESTRICTED TO SPECIFIC POSITIONS REVISE THE SPECIFICATION ACCORDINGLY AND INDICATE THE POSITION OF EACH TYPE ON THE DRAWINGS. *

PARAGRAPHS MARKED ( ) COVER ALTERNATE TYPES OF CONSTRUCTION, AND MAY NOT BE APPROPRIATE IN YOUR PROJECT SPECIFICATIONS. SELECT THE TYPE OR TYPES SUITED TO YOUR PROJECT AND OMIT THOSE NOT SUITABLE.

CHANGE THE TEXT OF ANY PARAGRAPH TO SUIT THE PROJECT REQUIREMENTS, STRIKE OUT ITEMS NOT APPLICABLE, AND INSERT ADDED TEXT AS NECESSARY.

GUIDE SPECIFICATIONS

DIVISION 4a

CONCRETE (Short Form)

1. SCOPE

This Division includes concrete work and related items required to complete the work indicated on the drawings and specified, exept concrete work which is specified in the divisions HEATING, PLUMBING, ELECTRICAL DISTRIBUTION, SITE IMPROVEMENTS AND UTILITIES.

2. MATERIALS

*a. Portland cement shall conform to A.S.T.M. "Standard Specifications for Portland Cement", C-150-49 Type I. *

*b. High-Early-Strength portland cement shall conform to A.S.T.M. "Standard Specifications for portland cement", C-150-49 Type III. *

*c. Aggregates for Concrete shall conform to A.S.T.M. "Standard Specifications for Concrete Aggregates", C-33-49 or light weight aggregates C-130-42. *

(1) Aggregates shall be natural sand and gravel or prepared from stone, blast furnace slag, gravel, or burned clay, burned shale, pumice, tufa or cinders resulting from high temperature combustion of coal or coke or a combination thereof, free from adherent coatings. Maximum size of pieces shall be 1 inch, except for footings and foundation walls which may be 1-1/2 inch maximum size.

d. Water shall be clean, and free from injurious amounts of oils, acids, alkalies, organic materials, or other deleterious substances.

e. Metal reinforcement shall be deformed bars, conforming to one of the following requirements:

(1) A.S.T.M. "Standard Specifications for Billet-Steel Bars for Concrete Reinforcement", A-15-46.

(2) A.S.T.M. "Standard Specifications for Rail-Steel Bars for Concrete Reinforcement", A-16-46.

(3) A.S.T.M. "Standard Specifications for Axle-Steel Bars for Concrete Reinforcement", A-160-46.

(4) A.S.T.M. "Standard Specifications for Cold-Drawn Steel Wire for Concrete Reinforcement", A-82-46.

(5) A.S.T.M. "Standard Specifications for Welded Steel Wire Fabric for Concrete Reinforcement", A-185-46.

f. Metal accessories, including spacers, chairs, ties, and other devices necessary for properly assembling, placing, spacing and supporting all reinforcement in place shall be provided.

( ) Structural clay tile shall conform to A.S.T.M. "Standard Specifications for Structural Clay Load - Bearing Wall Tile", C-34-41.

3. TESTING AND INSPECTION OF MATERIALS

Tests of concrete and materials shall be made under direction of the Local Authority who shall have access to all places where concrete materials are stored, proportioned or mixed.

4. STORAGE OF MATERIALS

Cement and aggregates shall be stored in such a manner as to prevent deterioration or intrusion of foreign matter. Any material which has deteriorated or has been damaged shall not be used for concrete.

5. PROPORTIONING AND MIXING

a. Job mixed concrete shall be composed of one part cement, 2 parts fine aggregate and not more than 4 parts of coarse aggregate. Mixing water shall not exceed 7-1/2 gallons per sack of cement, including the free water in the aggregates. Mixing shall be continued for at least one minute after all materials are in the mixer.

b. One brand of cement only shall be used on any one building, except when given written permission from the Local Authority.

( ) "Ready-mix" concrete may be used. Certificates shall be furnished by the mixing plant that the concrete has a minimum 28 day compressive strength of 2000 pounds per square inch when tested by methods described in A.S.T.M. Standard C-39-44.

6. FORMS

Forms shall conform to the shape, lines, and dimensions of members called for on plans, and shall be sufficiently substantial and tight to prevent leakage of mortar. They shall be properly braced or tied together to maintain their position and shape and be removable without damage to the concrete.

Forms for footings may be omitted when soil and workmanship permit accurate excavation to size.

7. REINFORCEMENT

Reinforcement shall be free from excessive scale, rust or coatings that will reduce the bond to the concrete. Bars shall be accurately bent and placed in positions shown on drawings, securely supported and fastened, to prevent movement during placement of concrete.

( ) Shop drawings shall be furnished to the Local Authority for approval.

8. FASTENING DEVICES AND OTHER WORK

Install all inserts, anchors, and other fastening devices, thimbles, sleeves, etc., required for the installation of other work.

9. DEPOSITING CONCRETE

a. Soil bottoms for footings and slabs shall be approved by the Local Authority before placing concrete.

b. Remove water and foreign matter from forms and excavations. Unless otherwise directed, wood forms and sand or sandy loam shall be thoroughly wetted just prior to placing concrete.

c. Deposit concrete as nearly as practicable in its final position to avoid segregation due to re-handling or flowing.

d. Retempering. No concrete that has partially hardened, become contaminated by foreign materials, or has been retempered, shall be used.

e. Continuity of Placing. Concreting shall generally be carried on as a continuous operation until the placing of an individual section is completed. When construction joints are necessary they shall be made and located with the approval of the Local Authority.

f. Compaction. Concrete shall be thoroughly compacted by suitable means during placement, and shall be carefully worked around reinforcement and embedded fixtures, along surfaces and into the corners of forms. Vibrators may be used, provided they are operated under experienced supervision and forms are constructed to withstand their action.

g. Cleaning Concrete Construction Joints. Before placing concrete adjoining construction joints in walls or slabs, the surface of the concrete already in place shall be picked, brushed clean and given a coat of neat cement grout to provide a proper bond.

( ) Metal form ties shall be cut off at least 3/4 inch deep in the concrete immediately after removal of forms, and holes filled with 1:3 cement and sand mortar approximately the same color as the concrete. Mortar shall be mixed and placed as dry as practicable, and finished flush with the adjacent surface.

10. CONCRETE FLOOR SLABS ON GROUND

( ) Self Supproting Slabs Where Ground Below is Used as a Temporary Form Only. Compact fill under slab sufficiently to support it during construction. After leveling, lay a 30-pound roofing felt over the entire area before placing concrete.

( ) Solid Concrete Slabs on the Grade. Make earth fills in 6-inch layers, and sprinkle and roll with a 5-ton roller, making four passes over each layer. On this leveled-out grade place a 6-inch layer of crushed stone, slag or gravel, graded from 3/4 to 1-1/2 inches. Level at sub-grade of concrete and place a layer of tough waterproof paper (Federal Specification UU-P-147, Type IV) before depositing concrete. Reinforce the 4-inch slab with No. 10 wire mesh, 6-inches center, both ways.

( ) Combination Tile and Concrete Slab on the Grade. Make fills in 6-inch layers, and sprinkle and roll with a 5-ton roller, making four passes over each layer. Level sub-grade by screeding a thin layer of sand on it. Before laying tiles, place a 30 pound tar paper on the sand cushion, or dip bottom face of tiles in liquid asphalt or coal tar pitch. Lay hard grade structural tiles, 3 inches thick, over grade with cells alternating in direction to create dead air spaces. Place a 2-inch concrete topping, without reinforcing, on tiles, and finish as specified elsewhere.

*( ) Insulate edges of concrete first floors along exterior walls as indicated on the drawings. Set edge insulation in coal tar (not asphalt) plastic cement conforming to Federal Specifications SS-C-153, Type II, supplied in the original unopened containers plainly marked at the factory as a coal tar product. Spread plastic cement over surfaces of walls and blocks not less than 1/8 inch thick and force insulation into place to close completely all interstices through which moisture or termites could enter the dwelling. Finally place concrete floors against blocks of insulation previously coated with plastic cement.

( ) Edge insulation shall be mineral wool blocks conforming to Federal Specifications HH-M-371a, Type I without outside sheaths and with asphalt or resin binder, or cellular glass conforming to Federal Specifications HH-I-551.

( ) Edge insulation shall be cellular glass conforming to Federal Specifications HH-I-551. *

11. CEMENT FLOOR FINISHES

Screed and float the entire surface of the concrete slab at the proper level

to receive finish. Remove surface water, laitance, or dirt, before applying specified finish. Finish floors with a minimum of steel trowelling to produce a smooth surface, free from blemishes, and true to a maximum tolerance of 1/8 inch in 6 feet.

( ) Type I Finish. For all floor slabs which are to receive asphalt or ceramic tile, linoleum, or wood laid in mastic, use a dry mix, 1 part cement and 2 parts fine aggregate, spread evenly 1/8 inch thick over the entire surface of the moist slab. Float and finish with a steel trowel.

*( ) Type II Monolithic Finish. For all finished floors, porches, steps and platform finishes, not otherwise specified, use a mix composed of 1 part cement, 1 part fine aggregate and 1-3/4 parts coarse aggregate (1/8" to 3/8"). This mix may be varied, but in no event shall the coarse aggregate be less than 1-1/2 times volume of fine aggregate. Mechanically mix for not less than 1-1/2 minutes after all ingredients are in the mixer, using not more than 5 gallons of water, including free water in aggregates, for each sack of cement used. Spread evenly over screeded moist slab to a depth not less than 1/2 inch, strike off, compact by wood floating and finish with steel trowel. Delay finishing until concrete has hardened sufficiently to prevent excess water or fine aggregate working to the surface with trowelling. *

( ) Type III Vacuum Mat Finish. For all finished floors, porches, steps and platform finishes, apply vacuum suction mats to the surface of the slab, to extract surplus water. Remove mats when the concrete has become sufficently hard to support a man's weight. Wood float the surface, raising sufficient grout to finish with a steel trowel.

( ) Non-Monolithic Finish. When cement floor finish cannot be applied immediately, clean surface of slab, remove laitance and loose particles, and roughen the surface to insure a complete bond between the slab and finish. Wet slab and then place the 1/2 inch floor finish specified under Type II monolithic finish. Finish with float and steel trowel.

12. CURING

a. Protect all concrete work and cement finishes against injury from the elements and defacement of any nature during construction operations.

b. Curing. All concrete made with normal portland cement shall be maintained in a moist condition for at least the first seven days after placing, and high-early-strength concreate for at least the first three days. One of the following methods shall be used for curing unless another equally efficient method is approved by the Local Authority.

(1) Burlap Cover. Keep the slab wet by light sprinkling for the first twelve hours, and then cover with two layers of burlap kept continuously wet for the balance of the curing period.

(2) Paper Cover. Immediately following an initial 12 hour sprinkling period, the surface shall be covered with a strong kraft waterproof paper (Federal Specification UU-P-147 Type IV Class C), with perimeter edges and laps carefully sealed with tape, and left in place for the balance of the curing period.

(3) Calcium Chloride.

(a) Immediately after the initial 12-hour sprinkling period, spread calcium chloride crystals (ASTM D-98-46) uniformly over the entire surface, at the rate of 1-1/2 pounds per square yard.

(b) If used integrally in concrete, add one to two pounds of calcium chloride per bag of cement, depending on the prevailing temperature, placed in the aggregates before the cement is added and just prior to putting into the mixer.

13. COLD WEATHER REQUIREMENT

Adequate equipment shall be provided for heating the concrete materials and protecting the concrete during freezing or near freezing weather. Concrete materials and reinforcement, forms fillers and ground with which the concrete is to come in contact, shall be free from frost. Whenever the temperature of the surrounding air is below 40°F., concrete shall have a temperature of between 60°F and 90°F when placed in the forms, and shall be maintained at a temperature of not less than 50°F for at least 72 hours for normal portland cement concrete, 24 hours for high-early-strength concrete, or for as much more time as is necessary to insure a proper rate of curing of the concrete. The covering protection used in connection with curing shall remain in place, and intact, at least 24 hours after artificial heating is discontinued.

14 CLEANING

Clean all exposed concrete surfaces and all adjoining work which has been stained by the leakage of concrete, to meet the approval of the Local Authority.

Surface defects which do not impair the structural strength shall be carefully cut out and refilled with fresh concrete. Cuts shall not be less than one inch deep, and thoroughly wetted just prior to filling with concrete of stiff consistency, and mixed approximately the same as the adjoining work. After partial set, compress and rub to produce a finish similar in texture and color to adjoining work.

( ) Rafters resting on wall plates shall have a bearing of not less than 3-1/2 inches. Nail to plates with four 10d nails, two each side. Anchor rafters to resist uplift with 1/8 x 1 inch strap iron or approved metal nailing clips spaced not over 4 feet apart. Nail to each framing member with three 8d nails.

( ) Roof trusses shall be of the design and sizes of materials as indicated on drawings. Pre-cut members and assemble in jig frames to assure uniformity. Nail to wall plate and anchor to resist uplift with 1/8 x 1 inch strap iron or approved metal nailing clips spaced not over 4 feet apart. Nail anchors with three 8d nails each end.

b. Walls and Partitions

(1) Studs unless otherwise shown, shall be nominal 2 x 4 inch, spaced 16 inches on centers, doubled at sides and heads of openings, tripled at corners, and placed to provide end nailing for sheathing and lath. Truss over openings over 3 feet wide. Toe nail to sole plate with two 8d nails on each wide face or use approved metal nailing clips. Secure studs abutting masonry walls, thereto, at mid-height of each story.

(a) Exterior studs shall extend full height from foundation sill to eave (balloon framing) where possible. Extend bearing partition studs through floor construction to bear upon plates or beams or extend through two stories without splicing, where possible.

(2) Plates for bearing partitions and for walls shall be single 2 inch thick for sole plates and double 2 inch thick for top plates. Plates for non-bearing partitions shall be single 2 inch thick. Plates shall be same width as studs and shall form continuous horizontal ties with single plates spliced and ends of double plates staggered.

(a) Nail lower plate to each stud and corner post with two 16d nails. Nail top plate to lower with 10d nails, two near the ends of each piece, others staggered 16 inches. Sole plates shall be nailed through sub-floor to headers and joists with 16d nails staggered.

(b) Anchor wall studs to sills by nailing wall sheathing to sills with 8d nails 8 inches on center and to studs as specified elsewhere herein.

(3) Diagonal brace exterior walls less than fifty feet in length or any wall when fiberboard sheathing is used. Bracing shall extend from foundation to eave level, consist of 1 x 4 boards housed into the studs, or 2 x 4s fitted between the studs in 2 directions and nailed, or diagonal wood sheathing or fir plywood, 5/16 inch thick applied with face grain at right angles to supports, for approximately 10 feet from each corner. Bracing let into face of studs shall be nailed at each crossing stud with not less than two 8d nails and at ends with three 8d nails.

* (4) Horizontal block between studs with 2 x 4s so as to provide one row near mid-height of each story. Where plates do not form a firestop, provide firestop in walls and partitions at each floor, and at ceiling of top story. *

NOTE: These pages 15-11 and 15-12 supersede page 15-11, dated 8-29-51 and page 15-12, dated 4-12-51. Page 15-11 has not been revised. The material on page 15-12 * between asterisks * is new or revised.

(5) Ribbons (in balloon framing) shall be let in to studs. Break joints at bearing and nail with two 8d nails at each bearing.

(6) Frame as required for installation and support of plumbing, heating, and other work.

* c. Sub-flooring shall be 1/2 inch plywood or 1 x 4 or 1 x 6 square edge boards under strip flooring or 5/8 inch 5-ply plywood under block, asphalt tile or linoleum floors. Apply 25/32 inch furring strips to joists under 5/8 inch plywood. *

(1) Sub-flooring except plywood shall be laid at a 45 degree angle with floor joists. In buildings more than one story, lay sub-flooring on upper floor at right angles to sub-flooring on floor below. Break end joints over bearings only with cuts parallel to run of joists. Face nail each board to each bearing with at least two 8d nails.

* (2) Plywood sub-flooring shall be laid with surface grain at right angles to joists. Break joints over joists with alternate courses in line. Provide solid blocking under edges in bathrooms and under linoleum floors. Nail with 8d nails 12 inches on center on intermediate supports and six inches on center at edges. *

d. Wall sheathing shall be 1 x 4 to 1 x 12 inch boards ship-lapped or tongued and grooved, 5/16 inch plywood for 16 inch stud spacing; 3/8 inch plywood for 24 inch stud spacing or fiberboard complying with Federal Specification LLL-F-321b, Class E, 25/32 inch thick, treated to inhibit absorption and decay.

(1) Wood wall sheathing shall be face nailed to each support with at least two 8d nails for 6 and 8 inch, and three 8d nails for 10 and 12 inch boards.

(2) Fiberboard wall sheathing shall have butt joints over supports with solid blocking under edges. Break vertical joints so that joints will not be on same stud in succeeding rows of sheathing. Nail with 8d nails spaced six inches around edges and ten inches on intermediate framing.

(3) Plywood wall sheathing shall have butt joints over supports with solid blocking under edges. Break vertical joints so that joists will not be on same stud in succeeding rows of sheathing. Nail with 6d nails spaced six inches around edges and 12 inches on intermediate framing.

e. Roof sheathing shall be nominal 1 x 6 or 1 x 8 inch tongued and grooved boards, or 3-ply plywood, 3/8 inch for 24 inch spans or 5/16 inch for 16 inch spans. Break joints of sheathing boards and face nail each board with at least two 8d nails to each support.

(1) Plywood roof sheathing shall be laid with surface grain at right angles to main supports with butt joints over supports and solid blocking under edges. Break joints. Nail with 6d nails spaced 6 inches around edges and 12 inches on intermediate framing.

GUIDE SPECIFICATIONS

DIVISION 18

ASPHALT TILE

NOTES TO THE ARCHITECT:

THE EXTENT OF ASPHALT TILE FLOORING AND COMPOSITION BASE SHOULD BE INDICATED ON A SCHEDULE OF ROOM FINISHES ON THE DRAWINGS.

ASPHALT TILE GIVES EXCELLENT SERVICE OVER CONCRETE AND SLIGHTLY LESS EFFICIENT SERVICE WHEN LAID OVER WOOD

ASPHALT TILE MAY BE 1/8 INCH THICK OVER CONCRETE OR PLYWOOD.

FELT UNDERLAYMENT IS UNNECESSARY OVER CONCRETE OR PLYWOOD BECAUSE OF THE LOW EXPANSION COEFFICIENTS OF THESE MATERIALS.

ASPHALT TILE OVER STRIP WOOD UNDERFLOORS SHOULD BE 3/16 INCHES THICK.

*WOOD FLOORS TO BE COVERED WITH ASPHALT TILE SHOULD BE SINGLE 5/8 INCH PLYWOOD FOR 16 INCH JOIST SPACING OR BE STRIP FLOORS OVER SUB-FLOORS WELL NAILED TO PREVENT SPRINGINESS. *

PARAGRAPHS MARKED ( ) COVER VARYING TYPES OF CONSTRUCTION AND MAY NOT BE REQUIRED IN THE PROJECT. SELECT THE TYPE OR TYPES SUITED TO THE PROJECT AND OMIT THOSE NOT SUITABLE.

ADD NUMBER OR LETTER TO PARAGRAPHS MARKED THUS, _____ AND REVISE PARAGRAPH IDENTIFICATION AS NECESSARY.

CHANGE THE TEXT OF ANY PARAGRAPH TO SUIT THE PROJECT REQUIREMENTS. STRIKE OUT ITEMS NOT APPLICABLE. INSERT ADDED TEXT AS NECESSARY AND FILL IN BLANK SPACES.

NOTE: This page 18-1 supersedes pages 18-1 and 18-2 of Division 18 dated 9-12-50. Material * between asterisks * is new or revised.

GUIDE SPECIFICATIONS

DIVISION 3a

PILING, CONCRETE

1. SCOPE

This division includes piling and related items required to complete the work indicated on the drawings and specified, except concrete caps, which are specified in the division CONCRETE. For scope and limitations of subsurface soil data shown on the plans, see division EXCAVATING, FILLING, AND GRADING.

2. MATERIALS

* a. Types of Piles. Piles shall be either precast or cast-in-place, and may be round, octagonal, or square. Square piles shall have chamfered corners. Piles may be of constant cross-section (with or without beveled tips) or tapered their full length (stepped or uniform). Piles tapered full length shall have a minimum lateral dimension of 10 inches at tip, uniformally increasing not less than 1 inch in every 8 feet of length with butt not less than 13 inches. Piles of constant cross-section shall have a nominal diameter of 12 inches. The tips of precast piles may be tapered not more than 1 inch in every 4 feet to 10" minimum dimension. *

Before piles are fabricated, submit to the Local Authority for approval complete data, including design drawings and specifications of the pile proposed to be used, and the proposed method of installation.

(1) Precast piles shall be reinforced to resist handling and driving stresses. The longitudinal reinforcement shall be at least 1% of the average gross cross sectional area of the pile, and the lateral reinforcing shall be at least 1/4 round ties or spirals spaced 3 inches apart for 3 feet at each end of the pile and 12 inches apart for the remainder of the pile. Forms shall be tight and rigid. Mark piles with casting date. Protect piles against frost and damage; keep them wet and do not move them from the casting position until test specimens show an attained compressive strength of at least 2500# per square inch. Bank piles not over 3 tiers high. Finished piles shall be sound and free from cracks, spalls and voids.

* (2) Cast-in-place piles shall consist of steel shells, installed and left permanently in place. Shells shall have sufficient strength to withstand driving forces and the pressure of surrounding soil. Do not fill shells with concrete until all shells within a 15 feet radius have been driven and approved by the Local Authority. *

NOTE: These pages 3a-3 and 3a-4 supersede pages 3a-3 and 3a-4 of Division 3a, dated 6-29-50. Text * between asterisks * is new or revised.

Fill no shell containing water or where, in the opinion of Local Authority, it is leaking sufficiently to damage the concrete. Provide facilities for lowering a light into the shell for inspection.

b. Concrete shall conform to Class B as specified in the division CONCRETE.

3. PILE DRIVING

a. Driving equipment shall be a single acting steam hammer capable of developing an energy per blow of at least 12,000 foot pounds. Before driving begins, submit a descriptive catalog of the steam hammer proposed for use, to the Local Authority with a statement giving the weight of the striking part and its free fall in feet.

b. Bearing Value. Drive piles or shells to final penetration as determined by the formula P equals 2WH divided by (S Plus .1), where

P equals bearing value of pile in pounds.
W equals weight in pounds of striking part of hammer.
H equals height of hammer fall in feet.
S equals the average penetration in inches per blow for the last 10 blows.
* (Any "bounce" on the part of the hammer shall be taken into account in applying the formula.) *

c. Allowable Driving Deviation. Drive piles vertically with a variation of not more than 1/4 inch per foot. Pile heads shall center within 3 inches of their shown locations, except as permitted by the Local Authority.

d. Driving shall be continuous for each pile, from the time of starting until the required bearing value has been reached. Where driving is interrupted before pile reaches its final penetration, the Local Authority may request it to be withdrawn for examination. If damaged, a new pile shall be driven as directed; if not damaged, it shall be redriven. Not more than 3 withdrawn and redriven piles shall be included in the contract, except that where obstructions are encountered which are not more than 6 feet blow cut-off elevation and which interfere with the driving, withdraw the pile and redrive where directed by the Local Authority without extra payment.

e. Pile Head. The heads of piles shall be free from damage. Provide collars, caps, bands, and shoes of approved design, when necessary to protect the piles.

f. Followers. Do not use followers, except where specifically permitted by the Local Authority.

g. Jetting. Water jets may be used in driving only where the type of jet and the extent of jetting is approved by the Local Authority. All jetted piles must be driven by the hammer to the specified bearing value after jets are withdrawn. In any pile group this final driving shall be done on all piles subsequent to any jetting in the group.

GUIDE SPECIFICATIONS

DIVISION 32

GAS RANGES

NOTES TO THE ENGINEER:

THIS SPECIFICATION MAY BE USED AS A PART OF THE GENERAL CONTRACT SPECIFICATION, OR IN CONNECTION WITH A SEPARATE CONTRACT FOR THE PURCHASE OF GAS RANGES.

* IN SELECTING TYPES AND SIZES OF RANGES FOR THE PROJECT, THE FOLLOWING IS A SATISFACTORY GUIDE: FOR ONE AND TWO BEDROOM DWELLINGS USE THE "APARTMENT" SIZE RANGES HAVING FOUR TOP COOKING UNITS. FOR LARGER DWELLING UNITS USE 36", 37", 38" OR 40" WIDTH, WHICHEVER CAN BE ACCOMMODATED IN THE SPACE PROVIDED BY THE PLAN, BUT THIS SPACE SHOULD BE CAREFULLY CHECKED AND THE DRAWINGS AND SPECIFICATIONS PROPERLY COORDINATED. *

LATCHING TYPE VALVES SHOULD BE SPECIFIED FOR TOP BURNERS ONLY WHEN TOP BURNER LIGHTERS ARE OMITTED.

PARAGRAPHS MARKED THUS ( ) COVER ALTERNATE TYPES OF GAS RANGES, ACCESSORIES, AND DELIVERY POINTS WHICH MAY NOT BE REQUIRED IN THE PROJECT SPECIFICATION. SELECT THE TYPE OR TYPES OF RANGES, ACCESSORIES, AND DELIVERY POINT SUITED TO THE PROJECT AND OMIT THOSE NOT SUITABLE.

CHANGE THE TEXT OF ANY PARAGRAPH TO SUIT THE PROJECT REQUIREMENTS. STRIKE OUT ITEMS NOT APPLICABLE; INSERT ADDED TEXT AS NECESSARY, AND FILL IN BLANK SPACES.

NOTE: This revised Division 32 supersedes Division 32 dated 6-29-50.
Material * between asterisks * is new or revised.

GUIDE SPECIFICATIONS

DIVISION 32

GAS RANGES

1. SCOPE

This division includes furnishing and delivering gas ranges as herein specified.

2. DESCRIPTION

* a. Ranges shall be of current design, made by a manufacturer regularly engaged in this work. Side and back construction and insulation shall permit the range to be placed directly against kitchen cabinet, or walls, etc. Ranges shall be listed as approved equipment by the American Gas Association, be so labeled, and conform to the requirements of the American Standards Association's Publication No. Z 21.1 - 1948, and subsequent addenda. Ranges shall be fully insulated, concealed manifold type, with four top burners, open cooking top, with baking oven (below cooking surface) and with broiler located below the oven. *

b. Fuel characteristics of ranges shall be for _____ gas _____btu per cu. ft.

c. The type and quantity of gas ranges shall be as follows:

( ) _____four top burner type with oven and broiler unit. The maximum overall dimensions shall be 22 inches wide, 25 inches deep (excluding handles and flue collar) and 36 inches high to cooking top. The minimum oven sizes, with the door closed, shall be 16 inches wide, from side to side; 12 inches high, from top to bottom; 18 inches deep, from front to back.

* ( ) _____four top burner type with oven and broiler unit and storage space. The maximum overall dimensions shall be _____ inches wide, 25 inches deep (excluding handles and flue collar) and 36 inches high to cooking top. The minimum oven sizes, with the door closed, shall be 16 inches wide, from side to side; 13 inches high, from top to bottom; 18 inches deep, from front to back. The distance between cooking top burner centers shall be 9 inches (minimum). The storage spaces shall be of the door or drawer opening type. *

3. CONSTRUCTION

a. Oven and broiler linings - sides, back, door, and bottom, broiler glides, pans and inserts shall be vitreous enameled steel, chromium or stainless steel. The top of oven interior shall have a rust resisting finish.

b. Oven and door insulation shall be white wool, fibreglass, rock wool, or white glass wool insulating materials.

c. Oven equipment shall be furnished as follows:

(1) One smokeless type broiler pan and grill of porcelain enameled steel, non-ferrous metal, or equivalent material.

(2) Two baking racks of porcelain enameled steel, non-ferrous metal, or equivalent material. The broiler and baking racks shall remain practically horizontal when pulled two-thirds out.

* d. Oven doors shall be drop type, broiler doors shall be drop or swing type. In full open position, the doors shall permit easy removal of the racks and broiler pans. The oven drop type door shall be fully counter-balanced. Swing type doors shall be rigidly hinged. Doors shall be reinforced for attachment of hinges. All doors when in closed position shall remain tightly closed. Hinges shall not be welded to the door or frame. *

e. A vent shall be provided for each oven to discharge flue gases away from the kitchen wall or partition.

* f. Burner valves shall conform to the requirements of the American Standards Association's publication No. Z 21-15 - 1944 and subsequent addenda. Latching type burner valves shall be provided for oven burners. Top burner valves shall be of the: *

( ) Latching type.
( ) Stop cock type.

* g. Top burners shall be round, non-clog type, with minimum thermal efficiency of 45 percent when tested by the American Gas Association method, ASA publication No. Z 21.1 - 1948, except that for liquefied petroleum gas the minimum thermal efficiency shall be 50 per cent. *

h. Manifold shields shall be separate from doors and easily removable.

i. Drip trays or combustion pans shall be removable, of enameling steel with finish ground coat of vitreous enamel.

j. Back splashers shall be not less than 4 inches high, and shall extend the full width of the range cooking top.

k. Aluminum tubing in passing through insulating material shall be adequately protected from contact with such insulation, by the use of steel or copper sleeves or equivalent protection to prevent alkaline reaction.

l. Exposed areas of the back splasher, manifold sheild, front, door, and side panels shall be steel finished with vitreous enamel. The cooking top shall be steel finished with vitreous enamel, monel metal, or equivalent material. The back panel shall be steel finished with baked-on-enamel. Legs or bases shall be steel finished with vitreous enamel or synthetic baked-on-enamel.

* m. Thermostats shall conform to the requirements of the American Standards Association's publication No. Z 21.23 - 1940 and subsequent addenda. *

* n. Top burner lighters shall conform to the requirement of the American Standards Association's publication No. Z 21.1 - 1948 and subsequent addenda. *

4. PERFORMANCE

* a. The oven and its controls shall be designed for a minimum temperature of 250 degrees F., and shall heat to 400 degrees F. in a 70 degree F. room temperature in not more than 10 minutes. *

* b. The broiler temperature shall reach 530 degrees F. above room temperature in 16 minutes; the minimum effective broiling area shall be equal to 70 per cent of the broiling grill area and not less than 0.7 of a square foot. *

5. DELIVERY

a. The gas ranges shall be delivered, by the contractor to:

( ) the railhead nearest to the project
( ) the trucking terminal nearest to the project
( ) the project site.

b. The gas ranges will be uncrated, distributed to each kitchen, and connected by others.

c. Ranges shall be delivered free from damage and blemishes. After connections are made as required under division PLUMBING, place range in operation and check for proper performance, certifying to the Local Authority that the equipment has been tested in place and found satisfactory. Fuel required for testing shall be supplied at the Local Authority's expense.

6. INSTRUCTIONS

Furnish with each range, for tenant use, descriptive literature giving simple instructions for operation and maintenance.

7. GUARANTEES

* This contractor shall guarantee the gas ranges to be free from defects in design, workmanship, and materials and agree to repair, replace, and install, free of charge any part, except vitreous enamel, becoming defective within one year from the day of acceptance by the Local Authority. THE NAME AND ADDRESS OF THE AGENT WHO WILL FURNISH SERVICE under the guarantee shall be submitted to the Local Authority. *

8. AFFIDAVIT

An affidavit shall be submitted to the Local Authority, certifying that the ranges furnished under the contract conform to the requirements stated in this specification.

9. TESTS

a. The Local Authority reserves the right to conduct tests on two ranges, to check equipment supplied for compliance with the specification. Such tests shall be performed within 90 days from the date of delivery; tests will be performed by an impartial laboratory selected by the Local Authority; subject to approval of the contractor; and the expense will be borne by the Local Authority.

b. This contractor may have not more than two representatives present to witness the tests, and their expenses shall be borne by the contractor.

PUBLIC HOUSING ADMINISTRATION

HOUSING AND HOME FINANCE AGENCY

CIRCULAR
November 13, 1951

TO: All Local Housing Authorities

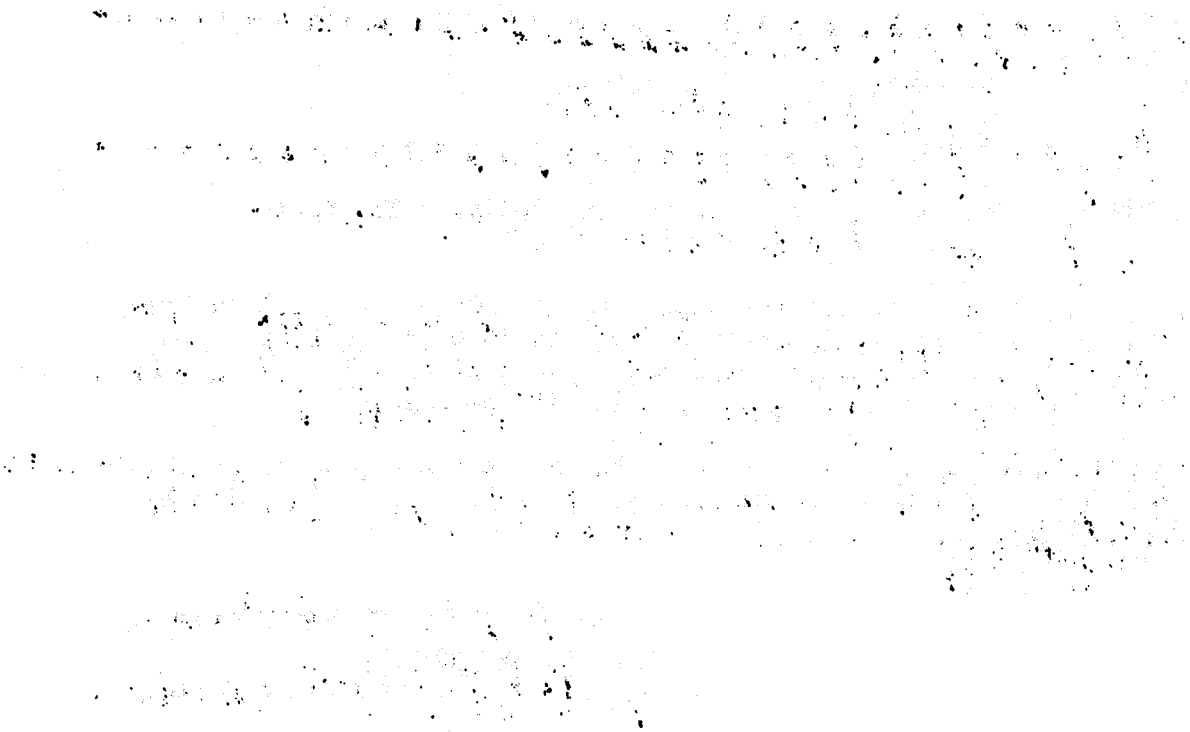
SUBJECT: Revision of Low-Rent Housing Bulletin No. IR-14

Transmitted herewith are two copies of Addenda Sheet No. 1 to Low-Rent Housing Bulletin IR-14 dated October 1950, subject "Equipment Contract Documents", which contains certain changes that should be made in the Bulletin in order to bring it up-to-date.

Your cooperation in effecting the changes in the copies of the Bulletin in your possession or in the possession of your Architect will be appreciated.

for M. B. SATTERFIELD
Director, Atlanta Field Office

Attachments



ADDENDA SHEET NO. 1

I. CONDITIONS

Delete the list of materials set forth in the last paragraph of Section 9 entitled "DOMESTIC MATERIALS" and insert in lieu thereof the following list:

Antimony	Cork	Manganese Ore - 35% and over	Platinum
Asbestos	Flax	Mercury	Rubber, natural
Asphalt-native	Hemp	Mica	Silk
Carnauba Wax	Jute	Nickel	Sisal
Chromium	Kaurigum	Oil, China wood (tung oil)	Tin
Copper, Natural - nickel alloy	Lac		Titanium
			Tungsten

II. NOTES TO LOCAL AUTHORITY

a. If the Local Authority is exempt from local or state sales taxes, a statement to this effect should be added to Section 8 entitled "Taxes" of the Conditions.

b. In preparing the Equipment Specifications, the utmost care should be observed to eliminate any possible conflict between the provisions of the General Construction Contract with respect to point of delivery and installation requirements provided in the General Construction Specifications and the point of delivery and installation requirements specified in the Equipment Specifications. The responsibility of the General Contractor with respect to the delivery of the equipment is set forth in Section 10 of the Special Conditions of Bulletin LR-12, and is explained in the "NOTES TO THE ARCHITECT" on Page 101 of said bulletin.

ADDENDA SHEET NO. 1

I. CONDITIONS

Delete the list of materials set forth in the last paragraph of Section 9 entitled "DOMESTIC MATERIALS" and insert in lieu thereof the following list:

Antimony	Cork	Manganese Ore - 35% and over	Platinum
Asbestos	Flax	Mercury	Rubber, natural
Asphalt-native	Hemp	Mica	Silk
Carnauba Wax	Jute	Nickel	Sisal
Chromium	Kaurigum	Oil, China wood (tung oil)	Tin
Copper, Natural - nickel alloy	Lac		Titanium
			Tungsten

II. NOTES TO LOCAL AUTHORITY

a. If the Local Authority is exempt from local or state sales taxes, a statement to this effect should be added to Section 8 entitled "Taxes" of the Conditions.

b. In preparing the Equipment Specifications, the utmost care should be observed to eliminate any possible conflict between the provisions of the General Construction Contract with respect to point of delivery and installation requirements provided in the General Construction Specifications and the point of delivery and installation requirements specified in the Equipment Specifications. The responsibility of the General Contractor with respect to the delivery of the equipment is set forth in Section 10 of the Special Conditions of Bulletin LR-12, and is explained in the "NOTES TO THE ARCHITECT" on Page 101 of said bulletin.

INVITATION, BID AND AWARD

Project No._____ [Contract No._____]

_____
(Local Authority)

_____ _____
(Address) (Date)

INVITATION

Sealed bids, in _____ subject to the Conditions attached hereto, will be received at this office until _____ o'clock _____M. (_____S.T.) (_____Daylight Saving Time), on _____, 19____, and then publicly opened, for furnishing the following supplies, and/or equipment, for delivery at _____

_____.

_____ _____
(Name) (Title)

ITEM NO.	ARTICLES OR SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT Dollars	AMOUNT Cents

NOTE: These pages 1 and 2 supersede pages 1 and 2 dated 10-18-50.

BID

_____
(Date

In compliance with the above invitation for bids, and subject to all the Conditions thereof, the undersigned offers, and agrees, if this bid be accepted within _____ calendar days from the date of the opening, to furnish any or all of the items upon which prices are quoted, at the price set opposite each item, delivered at the point(s) as specified, and within _____ calendar days after receipt of this order.

Discounts will be allowed for payment as follows: _____ percent 10 calendar days; _____ percent 20 calendar days; _____ percent 30 calendar days.

Bidder _____ Address _____

_____ _____

By _____ _____
(Signature of person authorized to sign this Bid) (Title)

AWARD

_____
(Date)

Accepted as to items numbered _____

_____ in the total amount of $_____

_____
(Local Authority)

By _____ _____
(Name) (Title)

request that he submit three executed copies of his performance bond. If such bond proves satisfactory, a copy should be attached to each copy of the contract in order to complete the contract documents.

One complete executed set is then to be retained in the Local Authority file, the other two executed sets transmitted to the PHA. Additional conformed sets may be made as the Local Authority or the Architect may desire for their use.

8. USE OF CONTRACT FORM

Although this form is drafted primarily for use in connection with the purchase of equipment to be supplied for installation in the project by the construction contractor, such as ranges, refrigerators, and space heaters, this form may also be used in connection with the purchase of other movable equipment and supplies needed during the development period and for materials and supplies needed during the management period. Because of the relatively smaller size of office supply contracts as distinguished from contracts for ranges, refrigerators, and space heaters, the former type of contract, in all probability, need not require that the bidder supply bid security and performance bonds. Further, bid security and performance bonds probably will not be necessary in connection with management contracts generally, but in certain instances purchases of replacement items for management may be sufficiently large and of a character to justify the requirement of bid security and performance bonds. The supplying of bid security and performance bonds offers a substantial assurance that the contract will be awarded to a responsible bidder who will perform promptly. On the other hand, such bonds cost a substantial amount of money, and such bonds frequently limit competition in that certain bidders may not, with a limited bidding period, be able to obtain such a bond.

In accordance with paragraph 2d of Section 214.2 of the Low-Rent Housing Manual, which deals with the purchase of equipment during development, bonds are mandatory in connection with equipment contracts involving over $5,000; except for this rule, we cannot recommend in each particular case whether a bond be supplied.

NOTE: This page supersedes page 15 dated 10-18-50. The last paragraph of Section 8 has been revised to remove an inconsistency with paragraph 2d of Section 214.2 of the Low-Rent Housing Manual.

BULLETIN NO. LR-18

PREPARATION OF EXTERIOR SURFACES FOR REPAINTING

ONE OF A SERIES OF BULLETINS
ON REPAINTING

P H A LOW-RENT HOUSING
BULLETIN

PUBLIC HOUSING ADMINISTRATION
HOUSING AND HOME FINANCE AGENCY WASHINGTON 25, D.C.

DECEMBER 1950

LIST OF BULIETINS

WHICH HAVE BEEN PUBLISHED

Bulletin No.	T i t l e
LR-1	ZONING AND REZONING
LR-2	SUBSURFACE SOIL INVESTIGATION
LR-3	SITE PLANNING
LR-4	SITE ENGINEERING
LR-5	STRUCTURAL DESIGN, MATERIALS AND METHODS
LR-6	ARCHITECTURAL PLANNING AND DESIGN
LR-7	PLUMBING, HEATING AND VENTILATION
LR-8	ELECTRICAL
LR-9	LAWNS AND PLANTING
LR-10	GENERAL DESIGN
LR-11	SELECTION OF UTILITIES
LR-12	CONSTRUCTION CONTRACT DOCUMENTS
LR-13	GUIDE SPECIFICATIONS
LR-14	EQUIPMENT CONTRACT DOCUMENTS
LR-15	OPERATION AND REPAIR OF HEATING SYSTEMS (Care of Boilers Out of Service)
LR-16	CORROSION OF UNDERGROUND PIPING
LR-17	RULES FOR BOILER OPERATION
LR-18	PREPARATION OF EXTERIOR SURFACES FOR REPAINTING

NOTE: Some Bulletins will be issued in parts, of which one or more will be contained in the initial release of each bulletin; other parts will be issued subsequently from time to time as they are completed.

PREPARATION OF EXTERIOR SURFACES FOR REPAINTING

1. Introduction

Noah knew a thing or two when he "pitched the Ark within and without with pitch." He wasn't taking any chances. He wanted his craft to be safe from the destructive force of storm and sea. So he used the best method of protection he knew and coated the surface of his boat with asphalt.

People of today take similar precautions and coat the surface of their structures with paint. They know that they are engaged in an endless war against weather. But unlike Noah they also have to combat the forces which cause paint to fail. They know that not only must they prepare surfaces of structures against the ravages of climate but with the high cost of labor and material such surfaces must be properly prepared in order to get the most for the money.

You may not be the skipper of an Ark but you're "in the same boat" as Noah. Whether you realize it or not, everyone concerned with paint maintenance is fighting a continual war against "paint failure." If you are to come out of the battle as conqueror, you need to know exactly the nature of the attack your enemy employs and what to do to control him.

2. When to Repaint. One of the most important things to know is when to repaint. Your enemy "paint failure" is particularly fond of structures painted too soon or too frequently. In such cases a thick coating of paint is built up. Due to its thickness, this coating is unable to readily expand and contract with the changes in temperature. Then the villain "paint failure" goes to work and the result is cracking and scaling of the finish paint and the undercoat. So before renewing any surface, be certain that repainting is needed. White and light colored house paints should not be repainted until they are at least four years old, and deep colors should not be renewed for five or six years. If paint failure occurs before that time, you can be sure this old villain has entered the scene in another form to be disclosed as we continue with this article. In any case, don't repaint until "paint failure" has been routed from his hiding place and banished.

3. Causes of Paint Failure. There are other causes of paint failure in addition to painting too frequently. This troublemaker comes in as many guises as a chameleon. Sometimes he appears when structures are painted too infrequently. He may also start his dirty work in the form of construction defects or in paints of unsuitable composition. Then again, he may arise as steam and produce condensation when you boil the baby's bottle or take a hot bath without ventilating the room. Another, and probably one of the most important methods in his program of trouble, is to enlist the aid of the painter who fails to properly prepare the surface before repainting.

(Cont'd)

4. Construction Defects. Some of the construction defects through which our enemy may enter the scene are at ineffective flashings, improperly installed interior moisture barriers, or where woodwork touches the ground. You may find him where there is condensation within walls, leaky plumbing, and a defective wall surface. As a defense against the attack of paint failure, loose boards must be renailed; rotted lumber and shingles replaced; rusted-out gutters, downspouts and valleys renewed; and loose masonry joints repointed.

5. Condensation

a. When disguised as condensation, "paint failure" works without attracting attention. But he works steadily day and night. Steam and vapor rising in the bathroom, kitchen or laundry fills the air with tiny droplets of moisture, too small for the naked eye to see. This moisture has an engagement. "Where?" you may ask. At the dew point 1/ of course. The dew point, incidentally, may be at the walls or ceiling or any surface within a room which is cool enough to condense rising vapor or steam. And when this moisture settles upon a cooler surface it turns into drops of water. This water may enter the plaster and stain it; it may rot the woodwork or rust metal surfaces. In any event, when vapors reach the dew point, they're ready for concentrated destruction. Vapor will force its way through wood siding or masonry. And as a final gesture, it will push the paint loose from its mooring and cause it to blister and peel.

b. What can be done about it? There are three important steps to take in beating your adversary. One is to improve your facilities for ventilation. A second is to guard against excess humidity in your household. And the third is to install barriers to halt the moisture before it gains real headway. Improving the ventilation involves the very simple process of slightly opening the windows of the room in which steam or moisture is being produced, such as the bathroom, laundry and kitchen. Excess humidity is minimized by being careful at all times to avoid the introduction of additional moisture to the household. Vapor barriers are important. Their purpose is to stop moisture from gaining access to the walls from the room side. In buildings already constructed, moisture can be barred from entering wall and ceiling surfaces by applying certain paints of the type that impede the passage of vapor. Inside walls and ceilings applied with synthetic rubber base primer and finish paints, or with an aluminum primer and oil paint gloss finish, have shown excellent resistance against the admission of interior vapors.

(Cont'd)

1/ Technically, the "dew point" is a temperature and not a place. When the atmosphere is cooled to the temperature at which dew (condensation) begins to form, it is then in a saturated condition and is said to be at the dew point temperature.

6. Preparing the Surface for Repainting. Lack of good surface preparation is an invitation to our enemy "paint failure" to start his destruction. And here's how he does it. One of his tricks is to cling to the old paint surface in the form of foreign matter, such as dirt or grease or even as a nice shiny gloss. He hopes that maybe the painter will neglect to remove him and will cover him with a coating of paint. Then he can go to work from under the surface and break the bond between the old and new coats.

7. Removing Dirt and Grease. Excessive amounts of dirt and grease must be removed before repainting. This is such a simple process and yet it is so important to the durability of the paint job that it should never be neglected. Remove dirt by brushing the surface with a stiff bristled brush. If this fails, wash the surface with a solution made of two ounces of trisodium phosphate added to a gallon of water. Rinse with clean water before repainting. To remove grease from wood, masonry or metal, wipe the surface with a cloth dampened with mineral spirits, turpentine, or lead-free gasoline. Since these are solvents, they too must be removed before repainting the surface. The trisodium phosphate solution as described may be used for that purpose on wood and masonry. Remove the solvent from metal by heating the surface for a minute or two with a blow torch.

8. Removing Gloss. Glossy surfaces are surfaces which are not ready for repainting when the rest of the structure is. They are usually found in the shaded parts of a house such as under overhanging eaves. When the remainder of the structure needs repainting, it is necessary for the sake of appearance to paint the glossy areas also, even though they do not need it. Therefore as little paint as possible should be applied to glossy areas. It should be realized that in time there will be intercoat flaking on these surfaces. So on glossy surfaces, sand or wire brush the surface and remove dust before repainting. This improves adhesion between the old and new finishes.

9. Removing Rust. The best aid to paint failure on metal is rust. It retains moisture and when painted over, operates in a two-way sneak attack while working under cover. Moisture in the rust prevents proper adhesion of paint to the metal and causes it to blister. In addition, the metal continues to corrode under the paint coating. A wire brush and flint paper are the best means of removing rust. Wire brush the surface and remove as much rust and blistered paint as possible. Remove final traces of rust and paint by rubbing with flint paper and wipe off dust before repainting. A motor driven sanding machine may also be used to remove rust.

(Cont'd)

10. Removing Old Paint

a. Paint failures are inevitable as no paint is intended to last indefinitely. But the important point is to repaint before the failure becomes too serious. If that is done, preparation of the surface will be easier and less expensive and the ultimate cost of the finished job will be proportionately reduced.

b. In the early stages of paint failure, wire brushing of surfaces which are blistered, cracking, checking or chalking is ample treatment to remove loose paint and prepare the surface for repainting. To minimize the depressions where paint has been removed, sand down paint remaining around the edges of bare surfaces. Spot prime bare surfaces before repainting. If paint failure is allowed to continue, complete removal of the coating may be necessary. This is an expensive proposition and its cost often is prohibitive. Even when the alternative procedure of scraping off loose paint and repainting is not entirely satisfactory, it is frequently selected in preference to complete removal due to the expense involved.

c. A factor to consider when complete removal of paint appears necessary is the number and thickness of coats which have been previously applied. Although the old paint may have failed extensively, if it is not more than 0.010 inch thick, which is equivalent to about one priming coat and three finish coats, it should not be entirely removed when repainting except if it is of unsuitable composition and will not adhere to the surface to support an additional coat. Likewise, coatings of the above thickness which show excessive chalking and bad cracking do not have to be removed when repainting. When thoroughly wire brushed to remove loose paint, such coatings will serve as satisfactory undercoats for new finishes. When repainting old coatings in the intermediate range from 0.010 to 0.020 inch thick, or a maximum of about eight coats of paint, complete removal is recommended for first class work. Satisfactory work may be obtained without complete removal but there is no assurance in that respect. If existing coatings are more than 0.020 inch thick and are breaking up, they should be completely removed before repainting. As an alternative, the less expensive procedure of removing loose paint by wire brushing and scraping may be applied but results are not guaranteed and warning is given that the new coating may not prove very durable.

d. For complete removal of oil base paint from wood and metal surfaces, a trisodium phosphate solution, house paint remover, or a blow torch may be used. Paint of any type may be removed from

(Cont'd)

masonry by sand-blasting. Motor-operated sanding machines are frequently used for removing any type of paint from wood and metal surfaces. Further detail on paint removal methods mentioned in this article is given below.

11. Paint Removing Methods

a. Paint Remover. Use house paint remover when removing exterior paint. This type of remover is about as thick as syrup. It is more suitable than organic solvent removers because it will not dry out as quickly when applied to exterior surfaces and will not run on a vertical surface. A varnish brush is best suited for applying it. Apply the remover slowly but liberally with a one-way stroke only. Allow it to remain on the surface for about 15 minutes or until the coating wrinkles, then scrape off the softened paint with a putty knife or paint scraper. Remove remaining paint spots by rubbing with steel wool soaked in turpentine. Wash off the turpentine before supplying new paint. House paint remover may be used for removing paint from wood and metal surfaces.

b. Trisodium Phosphate. Three pounds of this chemical dissolved in a gallon of water is an effective solution for softening paint. It should be liberally applied to the surface and allowed to soak into the paint for about 15 minutes. The paint will then be softened and may be scraped off with a scraper. Rinse the surface with clean water and allow it to dry thoroughly before repainting.

c. Burning. Paint may be removed by burning with a blow torch. The object of burning paint is to soften it and cause it to blister and curl. Care must be taken to avoid burning the wood. After the torch is applied, the softened paint may be removed with a paint scraper or sharpened putty knife. Scrape with the grain. Avoid use of the blow torch on a windy day as a precaution against fire and because it is difficult to direct the flame on the surface.

d. Scraping. Use a scraper or sharpened putty knife for scraping away paint and rust. When using the putty knife or scraper, hold the tool at an angle of about 30° to the surface as it may gouge the surface at a greater angle and will not be effective at a lesser one. Always scrape wood in the direction of the grain.

e. Brushing. Use a stiff bristled wire or fibre brush when dust, dirt, loose paint film or rust can be removed by brushing. Hold it parallel to the surface and brush with medium pressure.

(Cont'd)

f. Hand Sanding. Hand sanding is used to remove gloss from the old finish or paint which has failed in some degree. Use finer grades of sandpaper where the old coat is in fair condition and the coarser grades where the old coating is in bad condition.

g. Motor-Operated Sanding. Use motor-operated sanding on wood and metal for removing old paint in an advanced stage of failure. This method of paint removal is best adapted to exterior surfaces but may be used on the interior. No special precautions are observed except that care must be taken to avoid grinding away structural material. Sanding or grinding has the advantage of roughening the base so that better adhesion is obtained when the paint is applied.

12. Priming. The need for priming depends upon the condition of the surface to be repainted. On painted surfaces which are not badly weathered and are generally in good condition, the priming coat may be eliminated. Surfaces on which the paint has failed in small patches but is otherwise in good condition should be spot-primed before repainting. Where the old paint has failed generally over the entire surface, or where it is badly weathered, a full priming coat is required. On badly weathered surfaces the old paint is usually porous and the new finish coat will be robbed of its oils if a priming coat is not first applied. Building up of too many paint coats on the surface contributes to early cracking and pealing of the finish. One-coat house paint has been developed and is now available. This paint is formulated on the basis of providing all the essentials of two-coat work with one coat. The durability and good appearance of exterior paints are so dependent on the condition of the surface to which they are applied that the importance of preparatory work cannot be overstressed. Moreover, the cost of careful preparation work will be repaid many times through the longer life of the paint job.

13. Conclusion. The defense of your property against "paint failure" lies in your hands -- in your constant watchfulness for the signals of paint failure -- and in the preparation you make for the finish paints which give you continuous round-the-clock protection. Make full use of the instructions given in this bulletin and of the fine durable coatings that represent the modern paint technician's highest skill. Obey these three "commandments" and you will win every engagement with your enemy "paint failure:"

a. Don't repaint before it is necessary but when it is necessary, don't delay. Paint failures caused by too frequent painting are equally as expensive to correct as those resulting from too infrequent painting.

(Cont'd)

b. Properly prepare all painted surfaces before repainting. Good preparation provides a firm foundation for the new finish and may determine the success or failure of the paint job. It is an investment which returns good dividends.

c. Make sure that your paint protection is adequate. Fight moisture and vapors. Provide proper ventilation for the escape of interior vapors and repair defects in construction to stop the entrance of exterior moisture.

BULLETIN NO. LR-19

CONTROL OF CONDENSATION IN CRAWL SPACES

ONE OF A SERIES OF BULLETINS
ON CONDENSATION

P H A LOW-RENT HOUSING
BULLETIN

PUBLIC HOUSING ADMINISTRATION
HOUSING AND HOME FINANCE AGENCY WASHINGTON 25, D.C.

DECEMBER 1950

LIST OF BULLETINS

WHICH HAVE BEEN PUBLISHED

Bulletin No.	Title
LR-1	ZONING AND REZONING
LR-2	SUBSURFACE SOIL INVESTIGATION
LR-3	SITE PLANNING
LR-4	SITE ENGINEERING
LR-5	STRUCTURAL DESIGN, MATERIALS AND METHODS
LR-6	ARCHITECTURAL PLANNING AND DESIGN
LR-7	PLUMBING, HEATING AND VENTILATION
LR-8	ELECTRICAL
LR-9	LAWNS AND PLANTING
LR-10	GENERAL DESIGN
LR-11	SELECTION OF UTILITIES
LR-12	CONSTRUCTION CONTRACT DOCUMENTS
LR-13	GUIDE SPECIFICATIONS
LR-14	EQUIPMENT CONTRACT DOCUMENTS
LR-15	OPERATION AND REPAIR OF HEATING SYSTEMS (Care of Boilers Out of Service)
LR-16	CORROSION OF UNDERGROUND PIPING
LR-17	RULES FOR BOILER OPERATION
LR-18	PREPARATION OF EXTERIOR SURFACES FOR REPAINTING
LR-19	CONTROL OF CONDENSATION IN CRAWL SPACES

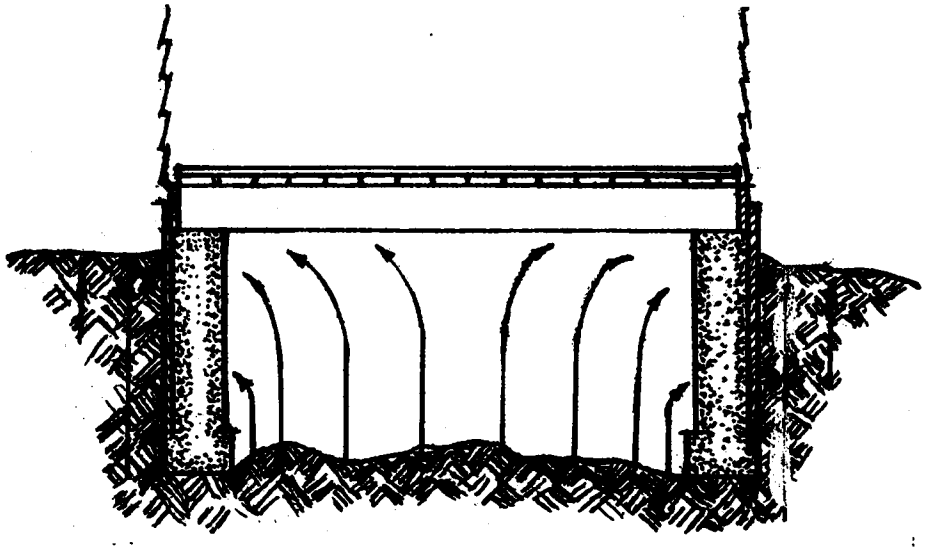
NOTE: Some Bulletins will be issued in parts, of which one or more will be contained in the initial release of each bulletin; other parts will be issued subsequently from time to time as they are completed.

Control of Condensation in Crawl Spaces

1. Purpose. Experience has shown that condensation in public housing projects presents a serious problem. This section discusses briefly the causes and effects of condensation in crawl spaces and suggests certain corrective measures. 1/ The question of condensation in other than crawl spaces will be discussed elsewhere.

2. Causes and Effects of Condensation in Crawl Spaces

a. The ground in crawl spaces gives off moisture even though it may appear dry. With the coming of cold weather the sills and ends of joists become chilled and the vapor in the crawl spaces condenses on them in the same manner that moisture "frosts" or "sweats" on a window or glass of ice water. This moisture soaks into the wood and may eventually make the wood wet enough for decay fungi to develop; this is one of the chief causes of wood rot. Condensation is heaviest in



Vapor Rising from
Earth Floor of Crawl Space

the late fall or early winter and generally shows up first along the northern or most exposed (i.e., the coldest) side of the building. Not uncommonly, damage occurs in houses situated on lower levels or on poorly drained or filled-in sections of a site.

(Cont'd)

1/ Much of the information given derives from an 8-year study of crawl spaces in basementless houses, conducted by Dr. J. D. Diller, Pathologist with the Division of Forest Pathology, U. S. Department of Agriculture. During a part of the study, Dr. Diller was assisted by members of the technical staffs of HHFA and PHA.

b. Inspections have shown that, in many projects, supporting timbers have disintegrated and floors have sagged, due to decay. In many cases, management is unaware of trouble until a tenant reports that his floor is sagging; inspection may then disclose that sills and floor joists are completely rotted and that expensive repairs are necessary.

3. Inspection of Crawl Spaces

a. To determine if condensation is present and, if so, to what extent, the maintenance man should make a moisture content check of sills in the project buildings. In making his observations he should determine whether moisture on timbers is due to contact with the earth, leaking pipes, etc., or to condensation of atmospheric moisture. All the maintenance man will need for such a check is a nail puller if it is necessary to remove a skirting board for entrance to a crawl space, a knowledge of compass directions when under a building, a flashlight, a moisture meter, and a "swivel" neck and loose body joints.

b. The moisture meter is operated by inserting two metal prongs into the wood. An electric current flows from one prong to the other. This flow is registered on a dial and shows the moisture content of the wood. A small, rugged, easily operated meter can be purchased for $45.

c. From a moisture content check of the entire project, a program of corrective measures can be developed.

4. Corrective Measures

a. Even if a building shows moisture on the north sill only, the matter requires attention. But if moisture is found on three sides, or, particularly, on the south side, the condition is critical and requires immediate attention. The matter is even more urgent if some vents were found open at the time of inspection, since this would indicate that excessive ground moisture is being given off.

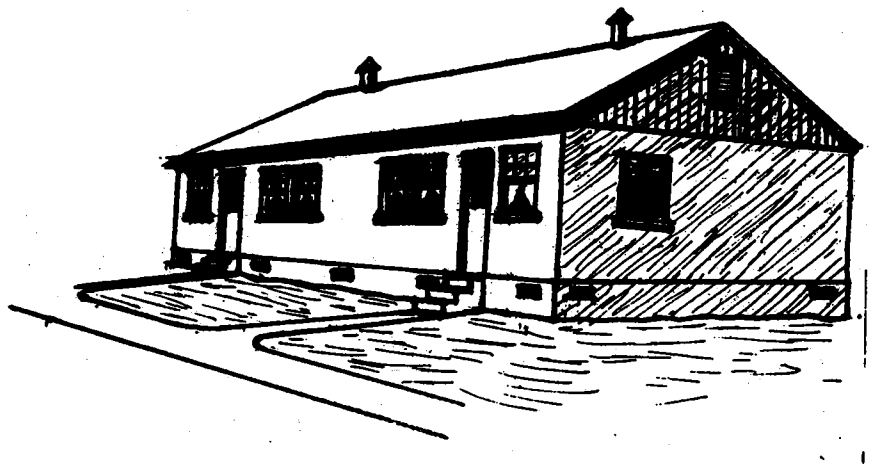
b. If damage has already resulted, necessary repairs should be made. In any case, measures to correct dampness should be taken; it is important that the most critical conditions receive attention first, but none should be neglected. Some satisfactory corrective methods are outlined below.

(1) Prevention of Water Accumulation. The first step toward correcting dampness in crawl spaces is to prevent water from entering from the outside. Splash blocks, downspouts, and the outside grade should be made to slope away from the building. If water seeps through or under the foundation to such an extent that there are pools of water in a crawl space it may be necessary to install a drain or even a sump pump.

(Cont'd)

(2) Ventilation. The next step is to investigate crawl space ventilation. If there is less than 15 inches of clearance between the floor joists and the crawl space floor (not allowing room for a man to work) sufficient venting is the only solution. A standard for crawl space ventilation has been established as a guide for designers and is based on the so-called "two-and-one-half" formula. This means that for each 100 lineal feet of wall, 2 square feet of opening should be provided, plus 1/2 square foot for each 100 square feet of crawl space area. It must not be assumed that this amount of ventilation is necessarily correct for every building. After a number of buildings are vented, it may be necessary to adjust ventilation for each building to meet its particular needs; this requires a systematic study in the form of periodic tests of moisture content of crawl space timbers. In connection with ventilation, several points should be particularly observed:

(a) Location of vent openings should be such that no stagnant ("dead air") spaces occur. This usually happens at corners; therefore, there should be a generous opening in each wall, within a foot or two of the corner. There must not, however,



Building with Crawl Space Ventilation
Showing Vents Near Corners

be long unvented wall surfaces. All vents must be placed high, as this not only allows moisture to escape but prevents explosive gases from "pocketing" near the first floor.

(b) Vent openings should not be obstructed. Cast iron or other grilles not only obstruct air movement to the extent of the

(Cont'd)

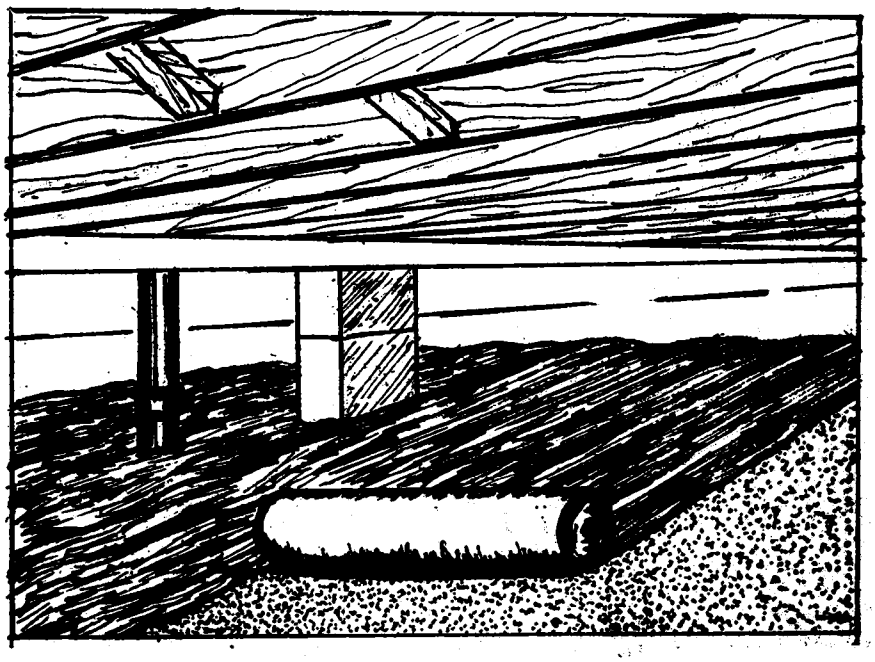
area of the bars of the grilles, but due to eddy currents the effect is greater. Under no circumstances should insect wire be used because its effect is to reduce air circulation approximately 50 percent or even, when clogged with dirt, to stop it altogether. Quarter-inch hardware cloth is recommended to keep out rats and mice.

(c) Explosion hazards must be avoided. Where underground gas piping exists in the project, whether or not gas lines enter a crawl space, ventilation to the full extent should be provided and maintained.

(d) If the floors become too cold in winter and vents cannot be closed in the most rigorous weather because of the gas hazard, it may be necessary to insulate the floors of the units.

(3) Crawl Space Coverings

(a) Where there is over 15 inches of clearance in a crawl space and there is no danger of explosive gases accumulating, the most practical and the cheapest way of allaying dampness is to cover the soil with a moisture barrier.



Roll Roofing to Stop Rise of Vapor

The chief advantage of covering the crawl space floor to prevent condensation is that it requires less ventilation to dry the timbers. This, in turn, reduces the chilling effect of cold air on the floor

(Cont'd)

boards and thus increases the comfort in the dwellings above. However, it must be emphasized that gas hazards demand full ventilation regardless of the condensation problem.

(b) Even if full ventilation is supplied, it may be advisable in many cases to cover the crawl space, as a sub-floor furnace or heating pipes may cause speedy evaporation of the soil moisture. No signs of condensation may appear in the crawl space but it may be that the moisture is driven off to another location, such as the attic space or side walls of the building.

(c) The moisture barrier can be asphalt-coated rolled roofing weighing approximately 55 pounds per square, or two layers of 15-pound asphalt saturated felt laid at right angles. While the effective life of these soil covers has not been determined, they have been in test use for seven years with no evident loss of effectiveness.

(d) Rot-resistant reinforced laminated paper has also been effective for the 20 months it has been in test use. Recently, three Local Authorities were furnished with 10,000 feet of aluminum foil to be used in covering crawl spaces. It can be purchased for approximately half the cost of rolled roofing. The next few years will determine its durability. When laying the paper, the joints of the cover need not be sealed nor stapled as long as the strips overlap approximately 2 inches, nor does the soil have to be leveled before the cover is applied. It is important that the entire area be covered, even though certain areas of the crawl space appear dry.

BULLETIN NO. LR-20

GLAZING

ONE OF A SERIES
OF OPERATION AND ENGINEERING BULLETINS

P H A LOW-RENT HOUSING
BULLETIN

PUBLIC HOUSING ADMINISTRATION

HOUSING AND HOME FINANCE AGENCY WASHINGTON 25, D. C.

JANUARY 1951

LIST OF BULLETINS

WHICH HAVE BEEN PUBLISHED

Bulletin No.	Title	
LR-1	ZONING AND REZONING	
LR-2	SUBSURFACE SOIL INVESTIGATION	
LR-3	SITE PLANNING	A series of eight Housing Design Notes
LR-4	SITE ENGINEERING	
LR-5	STRUCTURAL DESIGN, MATERIALS AND METHODS	
LR-6	ARCHITECTURAL PLANNING AND DESIGN	
LR-7	PLUMBING, HEATING AND VENTILATION	
LR-8	ELECTRICAL	
LR-9	LAWNS AND PLANTING	
LR-10	GENERAL DESIGN	
LR-11	SELECTION OF UTILITIES	
LR-12	CONSTRUCTION CONTRACT DOCUMENTS	
LR-13	GUIDE SPECIFICATIONS	
LR-14	EQUIPMENT CONTRACT DOCUMENTS	
LR-15	OPERATION AND REPAIR OF HEATING SYSTEMS (Care of Boilers Out of Service)	
LR-16	CORROSION OF UNDERGROUND PIPING	
LR-17	RULES FOR BOILER OPERATION	
LR-18	PREPARATION OF EXTERIOR SURFACES FOR REPAINTING	
LR-19	CONTROL OF CONDENSATION IN CRAWL SPACES	
LR-20	GLAZING	

NOTE: Some bulletins will be issued in parts, of which one or more will be contained in the initial release of each bulletin; other parts will be issued subsequently from time to time as they are completed.

Glazing

1. Introduction. Glass and its uses reach back into the pages of history to as early as the 3rd century A.D. Its manufacture was probably discovered many years before that time, but objects of an earlier period have never been found. It was not until the 13th century A.D. that glass was used in windows and then only in the form of stained glass to grace the windows of European cathedrals. As late as the 15th century it had not yet reached even the homes of the wealthy, and there was a time not so long ago when structures were planned to provide the smallest windows necessary, each one being designed for the smallest possible window panes. Today the great benefits of glass are realized and every effort is made when designing new structures to take full advantage of the advancements in the glazing industry.

2. Glaziers. Today the setting of glass is a specialized trade, and persons trained in that work are called glaziers. The knowledge and experience of such an artisan is most valuable, particularly when a number of window panes are to be installed. But in the case of a small job, such as the replacement of only one or a few broken panes, it may be more desirable to have the painter, maintenance man, or tenant do this work. When guided by specific instructions, they should have no difficulty in handling such a task.

3. Preparation of Surface. When our early settlers covered their window openings either for protection from savages or the wintry blasts, they had to prepare them for the material they used, whether it was skins, linen, or whatever was available. For example: The logs surrounding a window opening in a wall were shaved as level as possible with an adze or knife. The window covering was then placed against this flat surface and held with wood battens nailed or pegged on top of the cover. (In some instances clay was used to fill the open spaces between the window covering and wall.) We likewise have learned that some preparatory work is also necessary when installing window glass. Such preparation is important although it is by no means complicated, for it consists of only two steps.

   a. The first step after taking out the old glass is to scrape the glazing rabbet (the surface upon which the glass rests) clean of all loose paint and old putty. (Fig. 1) On metal sash a rubbing

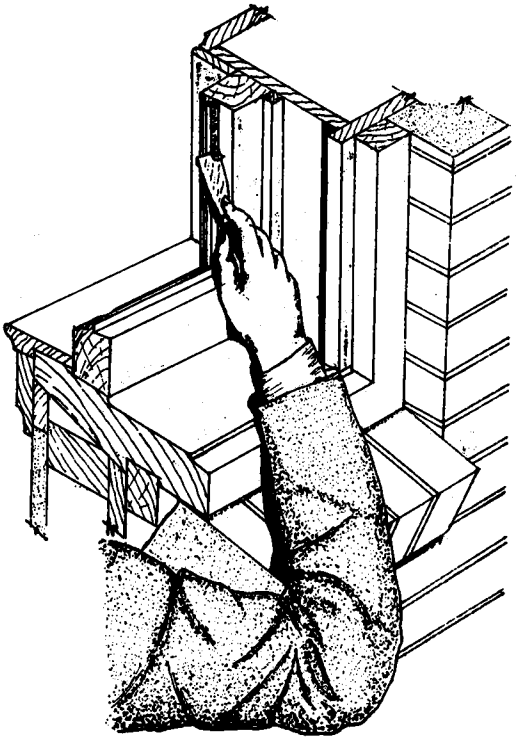


Fig. 1
Remove loose paint and old putty from the glazing rabbet

(Cont'd)

with sandpaper will remove rust from the glazing rabbet. Final traces of old paint or dust are removed by rubbing with a cloth dampened with mineral spirits or turpentine.

b. The second step calls for coating the rabbet with a priming paint. (Fig. 2) Use a white linseed oil paint for wood sash and a rust-inhibitive paint such as red lead or zinc chromate for metal sash. Painting of the rabbet on wood sash prevents the oil in the putty from being absorbed by the wood thus causing the putty to shrink and pull away. On metal sash it protects the metal against corrosion. If practicable, allow the paint to dry before installing the glass.

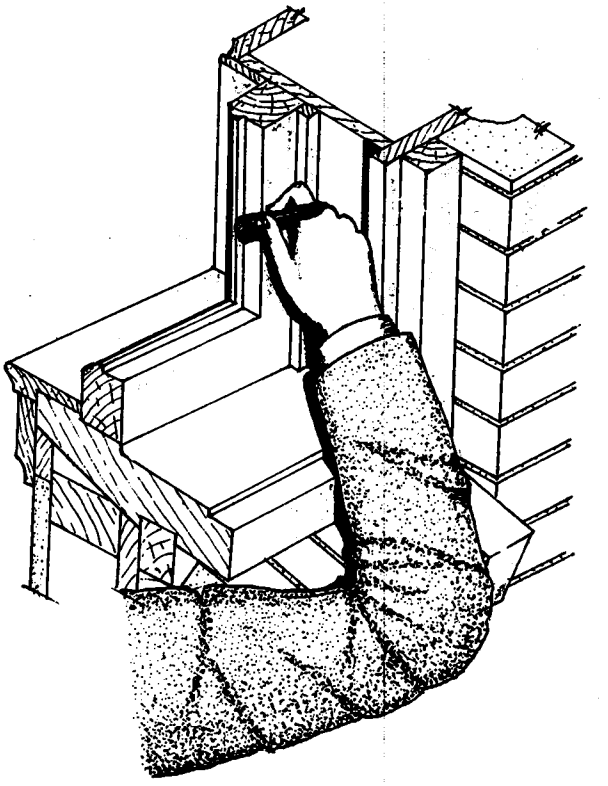


Fig. 2
Prime the glazing rabbet

4. Preparation of Glass. Your supplier of window glass is experienced in handling this material so make use of his services and avoid trouble in fitting the glass. Furnish him with the exact size of the pane required and have him cut it. Glass-cutting is not a difficult task and if instructions are given the proper attention, it can be done even by the inexperienced. To cut a pane of glass, you will need a glazier's cutting wheel (Fig. 3) and a flat surface upon which to place the glass. Measure off on the glass the height and width of the pane desired and mark these points by scratching the glass with the cutter. Cut glass sufficiently scant so that it will fit into the opening of the window frame without crowding or forcing. Glass which fits the opening too tight frequently cracks. Complete one cut in the glass at a time (points

Fig. 3
Glazier's cutting wheel

(Cont'd)

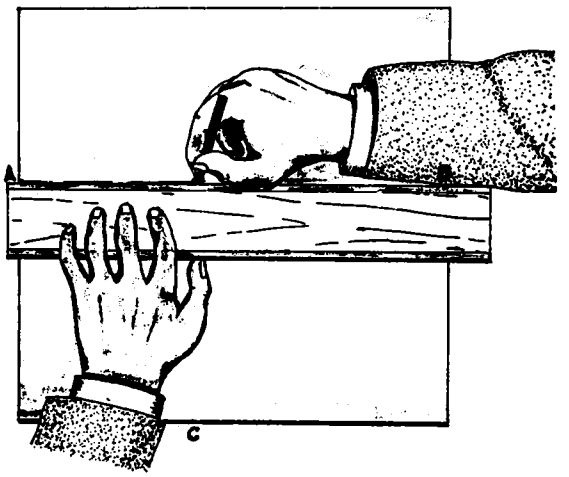


Fig. 4
The first cut

A to B, Fig. 4) and break it off at the cut before starting another one at a right angle to the first cut, otherwise the glass is likely to split. For example: At the point representing the exact height of the pane required (point A, Fig. 4) cut across the glass with the cutting wheel from one side to the other (point B, Fig. 4) using a straight edge as a guide. Apply good pressure and make a deep scratch in the glass. Tap the glass lightly on the underside along the cut with the cutter handle until the two sections of glass part. Then, at the point marking the desired width of the pane (point C, Fig. 4 and 5), make another cut (point C to D, Fig. 5) and separate these sections in the manner previously mentioned. Rough edges which remain on the glass after cutting can be removed by crushing them with a pair of pliers or nippers, and sharp corners on the glass are smoothed by rubbing with a carborundum stone or a file dipped in turpentine.

5. Installation of Glass. Our forefathers were able to seal their windows and hold the covering in place by various primitive methods as mentioned, but we of today have more durable and workable substances for this purpose, such as putty and glazing compound. Before installing the glass in wood sash, spread a thin layer of putty all around the bottom of the glazing rabbet. This is known as back-puttying. Place the glass in the opening and gently force and press it into place. Excess putty will be squeezed out on the room side of the glass and must be cut off even with the edge of the muntin or rail. Hold the glass in place with glazier's

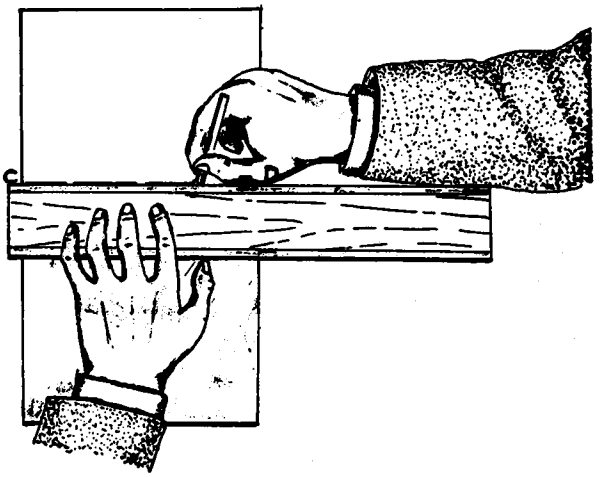


Fig. 5
The second cut

(Cont'd)

points (Fig. 6). These are small triangular pieces of metal which are forced into the sash in front of the glass on the outside with a screw driver or glass setting tool. To complete the work, apply putty around the perimeter of the rabbet and glass, using a putty knife. Bevel the putty and remove the excess (Fig. 6). Do not allow putty to extend on to the outside face of the glass further than the wood extends on the inside, as this makes a poor appearance and indicates careless workmanship. Metal sash are glazed in the same manner as wood sash, except that spring clips are used to hold the glass in place and glazing compound is used instead of putty.

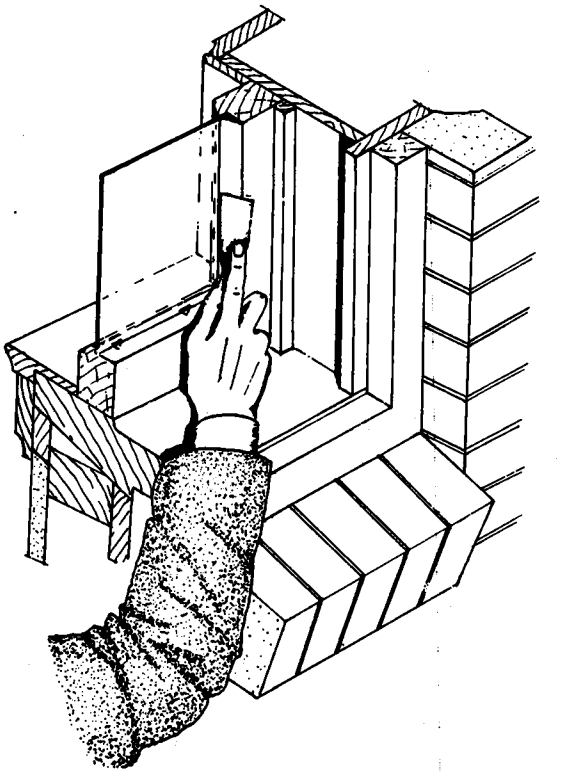


Fig. 6
Installing window glass

6. Putty and Elastic Glazing Compounds. Putty and glazing compound should be painted within two months after application. But neither should be painted until it is hard and thoroughly set. The application of an airtight film, such as paint, retards drying and may later cause the paint and putty or compound to crack. Apply paint carefully and extend it far enough onto the glass to form a seal between putty or compound and the glass. Keep your materials in tightly covered cans, otherwise they will dry out. When storing, pour a sufficient amount of linseed oil in the can to cover the surface of the putty or compound; but when in day to day use, an inch of water over the surface will prevent their drying out.

a. Linseed Oil Putty, Fed. Specification TT-P-791a

(1) Type I. Whiting putty, composed of whiting and linseed oil, contains no white lead used for glazing. Not recommended where a hard drying material is necessary.

(2) Type II. White-lead-whiting putty has white lead added. Recommended where a hard material is necessary, as for filling holes and cracks.

b. Elastic Glazing Compound, Fed. Specification TT-P-781a

(Cont'd)

(1) Type I. For glazing interior or exterior metal sash and primed wood sash. Material dries hard on surface but remains plastic underneath for a reasonable time. Recommended for use on glazing under considerable vibration or where maximum durability is required.

(2) Type II. For uses as described for Type I. This material is of lower price and quality than Type I. Dries hard and is difficult to remove.

BULLETIN NO. LR-21

MAINTENANCE OF WOOD FLOORS

ONE OF A SERIES OF
OPERATIONS ENGINEERING BULLETINS

P H A LOW-RENT HOUSING
BULLETIN

PUBLIC HOUSING ADMINISTRATION
HOUSING AND HOME FINANCE AGENCY WASHINGTON 25,D.C.

MAY 1951

LIST OF BULLETINS

WHICH HAVE BEEN PUBLISHED

Bulletin No.	Title	
LR-1	ZONING AND REZONING	
LR-2	SUBSURFACE SOIL INVESTIGATION	
LR-3	SITE PLANNING	A series of eight Housing Design Notes
LR-4	SITE ENGINEERING	
LR-5	STRUCTURAL DESIGN, MATERIALS AND METHODS	
LR-6	ARCHITECTURAL PLANNING AND DESIGN	
LR-7	PLUMBING, HEATING AND VENTILATION	
LR-8	ELECTRICAL	
LR-9	LAWNS AND PLANTING	
LR-10	GENERAL DESIGN	
LR-11	SELECTION OF UTILITIES	
LR-12	CONSTRUCTION CONTRACT DOCUMENTS	
LR-13	GUIDE SPECIFICATIONS	
LR-14	EQUIPMENT CONTRACT DOCUMENTS	
LR-15	OPERATION AND REPAIR OF HEATING SYSTEMS (Care of Boilers Out of Service)	
LR-16	CORROSION OF UNDERGROUND PIPING	
LR-17	RULES FOR BOILER OPERATION	
LR-18	PREPARATION OF EXTERIOR SURFACES FOR REPAINTING	
LR-19	CONTROL OF CONDENSATION IN CRAWL SPACES	
LR-20	GLAZING	
LR-21	MAINTENANCE OF WOOD FLOORS	

NOTE: Some bulletins will be issued in parts, of which one or more will be contained in the initial release of each bulletin; other parts will be issued subsequently from time to time as they are completed.

PREFACE

W A R N I N G

This bulletin recommends the use of certain coating materials thinners, and solvents, which, if not used with caution, may prove to be fire or health hazards, or both.

Inflammable liquids such as trupentine, mineral spirits, gasoline, denatured alcohol, and some commercial varnish removers, and the vapors therefrom, are frequently the causes of explosions and fires. Likewise, varnish, shellac, and wood filler are dangerous when exposed to fire or high temperatures or when left standing in open containers permitting inflammable vapors to escape. These vapors and liquids can be ignited by spontaneous combustion of nearby substances, or by flames, sparks, or excessive heat. Since all of the materials mentioned are highly volatile, extreme precautions must be taken, such as providing full ventilation, extinguishing all gas-burning appliances and their pilot lights, prohibiting all smoking, and turning off electric stoves, hot plates and heaters.

These coating materials, solvents, and thinners can also become a hazard from the standpoint of health, if used in a room which is not well ventilated. Inhaling of vapors and mists given off by these materials may cause irritation of the mucous membrane, headaches, dizziness, and injury to the liver and kidneys. Exposure of the hands to these materials may result in dermatitis and other skin inflammations. Operators shall be guided by warnings, instructions, and antidotes printed on labels of containers.

(Cont'd)

NOTE: This Bulletin supersedes Bulletin No. LR-21, dated February 1951. A preface has been added, emphasizing the necessity for caution in using certain materials discussed herein. Editorial changes have been made throughout.

Maintenance of Wood Floors

1. Introduction. The use of wood for floors comes down to us through the centuries. History relating to England from the time of legendary King Arthur makes reference to floors of sturdy oak; some of these historical floors are still to be seen in ancient castles and other buildings, bearing witness to the durable quality of wood for flooring when properly cared for. In the early days of America, because of the lack of appropriate tools, the use of wood floors was limited, but through the years the development of tools and machinery made such floors increasingly practicable until today the builder has at his command not only a choice of numerous types of wood for flooring but also many patterns to suit the particular situation, whether it be moderate or high in cost.

2. Purpose. This Bulletin describes methods for maintaining wood floors and their various finishes and for refinishing such floors when their condition requires it. It is also designed to standardize procedures in floor care, which it is expected will effect substantial savings in the purchase of materials and man-hours of labor and result in better maintenance.

3. Importance of Regular Maintenance. Wood floors are economical both in first cost and upkeep. Being durable, they require little, if any, outlay for repairs if they are properly maintained. Floors which show wear or discoloration indicate they have been neglected or improperly maintained. In such instances the most practical measure and frequently the only one which will restore such a floor is to remove what remains of the old coating and completely refinish the surface. Therefore it is more economical to provide regular care to floor finishes than to allow them to run down to the point where treatment comparable to that given a new floor is necessary.

4. Maintenance of Floors. It is assumed that originally all floors have been given some type of finish. Therefore, to maintain and refinish a used floor will involve one of the procedures listed in the following text. To simplify these instructions, a chart showing, in brief, the essential steps in floor maintenance has been prepared for ready reference.

5. Protection of Floors. Denting and scratching of wood floors are frequently due to heavy and movable pieces of furniture. Furniture resting upon its small supports will permanently indent floors and such surfaces are often deeply scored by dragging and moving of furniture. Floors injured in this manner are not easily repaired and the damage is usually permanent unless the surface is machine sanded, sometimes to a considerable depth. Casters provided under the legs of furniture will serve to avoid such damage and thereby reduce maintenance or restoration costs.

(Cont'd)

Process	Surface	Treatment
SURFACE CLEANING WHEN ONLY THE FINISH MATERIAL IS DIRTY AND ONLY SLIGHTLY WORN		
Surface Cleaning Varnished, Sealed and Shellacked Floors	Unwaxed Floors	Dust floor. Rub with oil-treated mop moistened with polish, turpentine, or mineral spirits. If badly soiled, rub with cloth moistened in soapy water. Rinse with clean water, let dry and polish with oil-treated mop or machine.
	Waxed Floors	Dust floor. If badly soiled, rub with steel wool dampened with gasoline. Apply a little wax and polish with weighted brush or machine polisher.
REFINISHING OVER OLD FINISH IF OLD FINISH MATERIAL IS WORN FROM AGING AND CLEANING		
Refinishing over old Finish	Varnished & Shellacked Floors	Remove dirt and wax. Apply one coat of finish as previously applied. When dry, sand lightly with 00 sandpaper. Apply two coats of paste wax. Polish each coat.
	Sealed Floors	Remove dirt and wax. Apply two coats of sealer diluted 50% with mineral spirits. Buff each coat, while moist, with steel wool. Wait one day between coats. Apply two coats of wax and buff each. When sealing worn spots, apply sealer full strength.
REMOVAL OF OLD FINISH MATERIAL IF FINISH IS BADLY WORN AND IN POOR CONDITION BUT FLOOR IS IN GOOD CONDITION		
Removing old Finish Material and Stains	Varnished Floors	Remove varnish by hand or machine sanding, or varnish remover. Apply remover with paint brush and let remain on floor until finish softens. Scrape off varnish with paint scraper or sharpened putty knife.
	Sealed Floors	Remove sealer by hand sanding or machine sanding.
	Shellacked Floors	Flood small area with denatured alcohol. When soft, rub shellac with steel wool or scraper. Machine or hand sanding may be used.
	Stained and Discolored Floors	Apply oxalic acid solution or commercial bleach. Wash bleach on floor and when stain is erased, rinse with clean water. Repeat if necessary. Do not allow bleach or rinse to remain on floor longer than necessary.
COMPLETE REFINISHING, INCLUDING SANDING, IF FLOOR IS WORN AND SCARRED FROM SEVERE WEAR		
Complete Refinishing of Floors	Varnished and Shellacked Floors	Remove old finish by sanding. Refill floors with large pores, such as oak, with wood paste filler. Apply two coats of varnish or shellac. Lightly rub each coat after drying with 00 sandpaper or steel wool. Apply two coats of paste wax and buff each coat.
	Sealed Floors	Remove old finish by sanding. Refill floors with large pores, such as oak, with wood paste filler. Apply two coats of sealer undiluted. Apply first coat against grain. While still moist, buff with steel wool. When dry, apply second coat with grain and buff with steel wool while moist. When dry, apply two coats of paste wax and buff each coat.

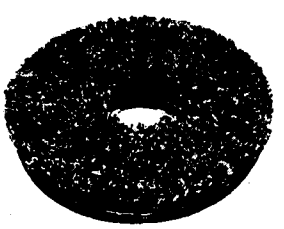
6. Surface Cleaning. All wood floors which have been cleaned with liquid cleaner or water must be thoroughly dry before applying any type of finish material. Ideal drying conditions for all types of floor cleaners and finishes are good ventilation and 70 degrees temperature.

a. Varnished, Sealed, and Shellacked Floors

(1) Unwaxed Surfaces. Dusting with a soft brush or mop is the best method of removing mild dirt and dust from a wood floor. Penetrating-sealed, varnished, or shellacked floors which have never been waxed should be dusted clean and then rubbed with an oil-treated mop or cloth slightly moistened with furniture polish, turpentine, or mineral spirits.

(2) Waxed Surfaces. Waxed floors, whether sealed, varnished, or shellacked, should be dusted clean with an oil-free mop, since oil softens the wax. Many kinds of spots can be removed from floors by rubbing the surface with a steel wool pad dampened with gasoline or turpentine. This treatment is preferred over the use of soap and water, particularly on waxed floors as gasoline or turpentine brightens as well as cleans the surface whereas soap and water dulls and whitens wax.

b. Use of Water and Soap. Water and soap should not be used to clean the floor except in extreme cases where the surface is badly soiled and then only when a cleaning preparation is not available. Today there are many excellent cleaners on the market which are not as strong as most soaps and detergents. A cloth or mop wrung almost dry in warm slightly soapy water may be used on occasion but such cleaning should not be the general practice. Water and soap used too freely on a floor tend to darken and soften the surface and to raise the grain. When the wood is softened and the grain raised, the floor wears away rapidly, necessitating major refinishing work. When soap has been used in connection with cleaning the floor, wipe the surface with a cloth or mop dampened with clean water to ensure removal of a film usually left by the soap. If strong alkali and abrasive soap solutions have been used on the floors, neutralize the surface before applying a finish. Alkalies, if present on the floor, will react with practically all types of sealers, varnish, and shellac. Therefore, after scrubbing with strong alkali soaps, use a mild acid rinse, such as vinegar and water (about 1 pint of vinegar to 1 gallon water) on the floor. If alkali remains in the wood after the acid rinse and continues to react on the finish, the only method for its complete removal is by machine sanding.



Scrubbing Brush

(Cont'd)

7. Refinishing Over the Old Finish

a. Varnished Floors. When refinishing over old varnish, remove all dirt and wax (paragraph 8d) from the surface. Best results will be obtained if the new finish coating is the same type as originally used. Apply varnish with a clean brush. Take a full load of the coating material on the brush but not enough to drip off. Do not scrape the brush on the side of the can more than necessary to remove excess varnish from the brush as this fills the material with air bubbles, making brushing difficult. Use quick brush strokes and distribute varnish as far as possible without too much stretching. Then brush across the grain with an empty brush. When the coating material is evenly distributed, brush with the grain, using tip ends of brush bristles. Allow the floor to dry thoroughly, then rub with 00 sandpaper or very fine steel wool by hand or machine to remove glaze and air bubbles. Remove all dust with a mop or soft cloth and apply two coats of wax (paragraph 7d).

Steel wool pad for cleaning and buffing floors

b. Shellacked Floors. Remove all dirt and wax (paragraph 8d) from the shellacked floor before refinishing it. Apply one coat of shellac, using a wide brush. After the shellac is allowed to dry 2 or 3 hours, rub the surface with steel wool or fine sandpaper. Remove any dust from the floor by sweeping it. The floor may be walked on in about 3 hours after finishing but it should not be waxed for 8 hours following the application of shellac. Apply two coats of pastewax (paragraph 7d) to protect the shellac finish and polish each coat after it has been on the floor from 15 to 30 minutes. Do not use water emulsion wax as this may whiten the shellac finish.

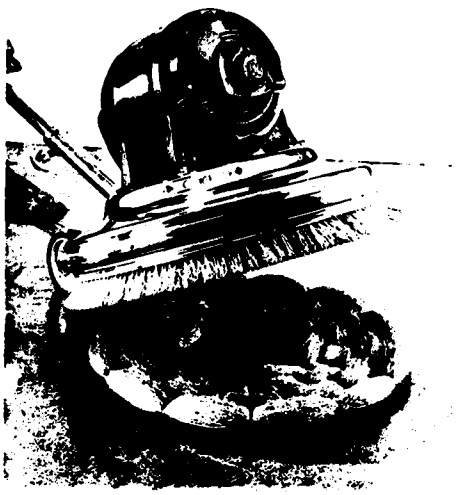
c. Sealed Floors

(1) What Sealer Is. Modern floor sealers are synthetic resin compounds which compare with varnish in appearance but are of a much thinner consistency. Sealers penetrate deeply into the pores of the wood, seal the cells and make a plastic bond between wood and seal.

(2) Application. Its application requires no special skill, but the floor should be clean and all dirt and wax removed (paragraph 8d). Apply sealer with a paint brush, a lamb's wool applicator, or a mop.

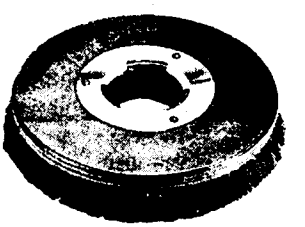
(Cont'd)

Depending on the type of grain, some boards will absorb more sealer than others. For refinishing over the old finish, use the sealer diluted with 50 percent of mineral spirits. After applying the first coat, spread out any excess amount with the applicator to other parts of the floor which will absorb it. Put on only as much sealer as the floor will absorb. Allow the floor to dry over night and apply a second coat of diluted sealer. Allow the floor to dry over night and apply two coats of wax as prescribed in paragraph 7d. When refinishing worn spots only, apply the sealer full strength. Do not apply floor sealer over a shellac finish. If shellac has been used previously, completely remove the film by sanding or by rubbing the surface with steel wool dampened with denatured alcohol (paragraph 8d).



Method of using steel wool pad for buffing or cleaning floor

d. Waxed Floors. Apply two thin coats of a solvent type paste or liquid floor wax, using a cloth applicator or machine. When applying paste wax with a cloth applicator, fold cheese cloth into a thick pad and place the wax between the folds. Pressure on the pad forces wax to the rubbing surface and assures an even coating on the floor. Let the wax remain on the floor from 20 to 30 minutes, then polish the surface with a polishing machine or by rubbing with a soft cloth or weighted floor brush.



Brush for polishing floors

8. Materials for Removing Old Finish and Stains. When removing old finishes and stains from wood floors, machine sanding, scraping and planing, paint and varnish remover, or denatured alcohol are used depending on the type of surface to be cleaned. If the floor has been stained, either of the first two methods, or oxalic acid, is necessary.

a. Varnish Remover. When varnish remover is used, care must be taken to avoid damaging the finish on baseboards and moldings. Apply varnish remover on the varnished floor with a paint brush and allow it to remain for several minutes. This will soften the varnish so that it can be scraped off with a putty knife or rubbed off with steel wool. A putty knife when used as a scraper is more effective if the end of the blade is

(Cont'd)

ground to a sharp edge. Hold the putty knife in a vertical position and scrape across the grain of the wood. If done in this manner, there is no danger of the putty knife splintering the floor. The commercial non-flammable, organic-solvent-type of paint and varnish removers are satisfactory for this purpose and are labeled with instructions for using. It is important, however, to provide good ventilation wherever varnish remover is used and to wash the floor with a cloth wrung out in warm, mild, soapy water to erase paraffin deposit left by most removers. Varnish finish is also removed by machine sanding.

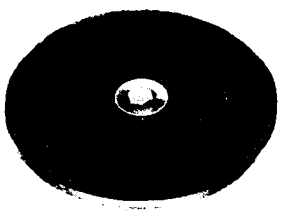
b. Denatured Alcohol. When removing shellac from a floor, flood only a small area of the floor at a time with denatured alcohol. Allow the alcohol to remain on the floor for a few minutes, then rub the surface with steel wool or a paint scraper to remove the old finish. Extreme care must be taken with the use of denatured alcohol as this liquid is poisonous, volatile, and flammable. Do not use near an open flame and keep it in tightly sealed containers as even the fumes from this liquid are quickly ignited. Shellac finish is also removed by machine sanding.

c. Bleaches. To remove stains from wood floors, bleach the surface with oxalic acid or a commercial bleach. Complete removal of stain may require the use of both sanding and bleaching. When stain is to be removed, clean all finish materials such as wax, varnish, or shellac from the floor. After cleaning, spread a hot solution of oxalic acid (about 4 ounces of oxalic crystals to 1 gallon of water) over the floor and allow it to remain until stain has disappeared. Remove excess solution with warm water and sponge, and let the floor dry. Sand lightly and brush clean. Any good commercial bleach may be used in place of the oxalic solution but make certain that the manufacturer's directions are followed. When using oxalic acid as a bleach, it is important that this solution be thoroughly removed by rinsing the floor with clear water after completing the bleaching process.

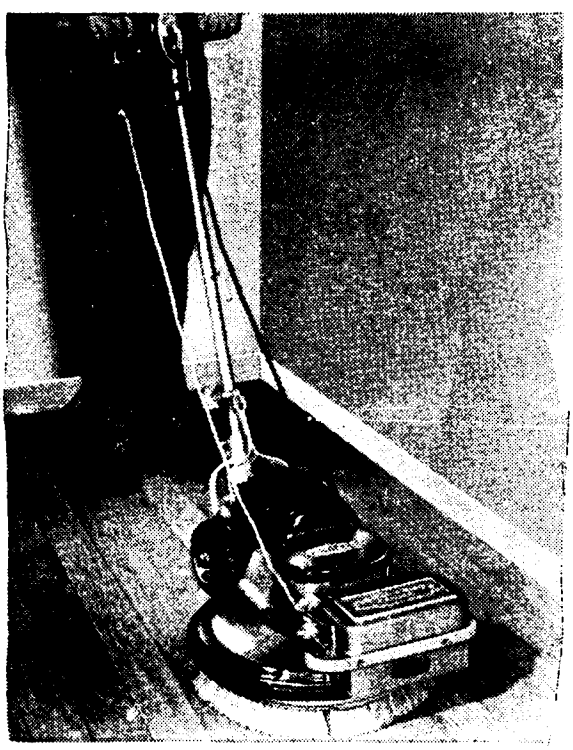
d. Wax Removal. To remove a wax coating of the volatile-solvent type and any dirt embedded in it, first rub the surface with 00 steel wool which has been dipped in a solvent such as turpentine, gasoline, or benzine (be careful of fire) and finish with a soft cloth. Remove solvent by washing the floor with a solution of mild soap and water. To remove a water-emulsion type wax from the floors, rub the surface with a solution of warm water and soap, using a cloth or soft bristle brush. Wax allowed to remain on a floor which is to be sealed, varnished, or shellacked, will prevent proper drying and proper adhesion of these coatings. Therefore, care must be taken that old wax is thoroughly removed from the surface before refinishing.

(Cont'd)

e. Machine Sanding. Varnish and shellac are also removed from floors by machine sanding. When removing varnish or shellac from floors which are otnerwise in good condition, use machine sanding with #1/2 or #1 grade of sandpaper. If the old finish has been worn and dirt is ground into the wood, or if boards are cupped by wear machine sand the floor with #1½ or #2 grade of sandpaper. Machine sanding is also the best means of refinishing floor boards which are deeply scored. For such floors and those which are splintered or cupped, sand across the floor at an angle of 45 degrees in order to bring the surface down to a smooth plane. After obtaining an even surface, sand the floor with the grain to produce a smooth finish, taking care not to cut so deeply as to remove the wood down to a point where the top of the groove on a tongue and grooved board will be broken. For sanding the floor next to the baseboard and other places where a large sander cannot be used, hand sand the surface or use an edging machine. When sanding is completed and all dust removed, refinish the floor as a new surface.



Disc for sanding floors



Operating floor machine

9. Complete Refinishing of Floors

a. Wood Fillers. Wood filler is a mixture of silex or ground quartz and quick-drying varnish used to fill the pores of open-grained wood, such as oak. Filler may be colorless or it may contain pigment if it is desired to bring out the grain in the wood more contrastingly. Filler is always used on sanded oak floors before applying varnish or shellac, but with sealer the practice varies depending on the recommendation of the sealer manufacturer. The paste filler is thinned to brushing consistency with turpentine or mineral spirits. In applying the filler, a thick coating should be rubbed into the wood with a stiff brush. Do not apply filler to too large an area as it must be wiped off before it becomes too hard. In about 15 minutes, or when the surface appears dull indicating that

(Cont'd)

the volatile portion has evaporated, wipe off the filler with a wad of excelsior, a cloth pad, or a floor-buffing machine. The wiping operation is very important and is done first across the grain and then lightly along the grain. Allow the floor 18 hours to dry before applying the finish.

b. Refinishing with Varnish. Where the surface is to be refinished as a new floor, complete removal of the old finish (paragraph 8), together with correcting scored and splintered boards, are necessary. Remove dust from floor after sanding, or, if varnish remover has been used (paragraph 8a), wash surface with warm, mild, soapy water. On open grain wood, such as oak, apply wood paste filler (paragraph 9a) to get a smooth even finish. Such woods as maple and birch are close grain and show a smooth finish without the application of filler. Finish with two coats of varnish in the same manner as directed in paragraph 7a revarnishing over the old finish. Allow 24 hours' drying time between application of coatings and buff each coat with 00 sandpaper or fine steel wool. Dust the surface clean and apply two thin coats of liquid or paste wax (paragraph 7d).

c. Refinishing with Shellac. Before applying shellac, clean and prepare the surface as directed in paragraph 9b. If floor is of oak or other open grain wood, apply wood paste filler according to paragraph 9a. Apply shellac with a wide brush using long, even strokes, taking care to join the laps smoothly. The first coat on bare wood dries in 15 or 20 minutes, after which the finish is rubbed lightly with steel wool or fine sandpaper and swept clean. A second coat should be applied and allowed to dry 2 or 3 hours. Go over the surface with steel wool or sandpaper as before and sweep it clean. Apply two coats of paste wax (paragraph 7d) and burnish each coat. Do not apply wax until 8 hours after shellac has dried. Do not use water emulsion wax.

d. Refinishing with Sealer. When sealing a wood floor from which the old finish has been completely removed by sanding, apply the sealer full strength. Apply the first coat against the grain for better penetration, then smooth it out with the grain. When dry, buff the surface with steel wool. The second coat should be applied with the grain and buffed as the first coat. Apply two coats of paste or liquid wax. Do not use water emulsion wax until the new sealer finish has had several coats of paste or liquid wax (paragraph 7d). After completing sealer applications, wash the applicator with naphtha or cleaner solvent, otherwise it cannot be reused.

Photographs by courtesy of Finnell System, Inc.

HHFA-PHA, Wash. D.C. (694)

BULLETIN NO. LR-22

BASIC SPECIFICATIONS FOR RURAL NONFARM HOUSING

P H A LOW-RENT HOUSING

BULLETIN

PUBLIC HOUSING ADMINISTRATION
HOUSING & HOME FINANCE AGENCY - WASHINGTON 25,D.C.

MARCH 1951

LIST OF BULLETINS

WHICH HAVE BEEN PUBLISHED

Bulletin No.	Title	
LR-1	ZONING AND REZONING	
LR-2	SUBSURFACE SOIL INVESTIGATION	
LR-3	SITE PLANNING	A series of eight Housing Design Notes
LR-4	SITE ENGINEERING	
LR-5	STRUCTURAL DESIGN, MATERIALS AND METHODS	
LR-6	ARCHITECTURAL PLANNING AND DESIGN	
LR-7	PLUMBING, HEATING AND VENTILATION	
LR-8	ELECTRICAL	
LR-9	LAWNS AND PLANTING	
LR-10	GENERAL DESIGN	
LR-11	SELECTION OF UTILITIES	
LR-12	CONSTRUCTION CONTRACT DOCUMENTS	
LR-13	GUIDE SPECIFICATIONS	
LR-14	EQUIPMENT CONTRACT DOCUMENTS	
LR-15	OPERATION AND REPAIR OF HEATING SYSTEMS (Care of Boilers Out of Service)	
LR-16	CORROSION OF UNDERGROUND PIPING	
LR-17	RULES FOR BOILER OPERATION	
LR-18	PREPARATION OF EXTERIOR SURFACES FOR REPAINTING	
LR-19	CONTROL OF CONDENSATION IN CRAWL SPACES	
LR-20	GLAZING	
LR-21	MAINTENANCE OF WOOD FLOORS	
LR-22	BASIC SPECIFICATIONS FOR RURAL NONFARM HOUSING	

NOTE: Some bulletins will be issued in parts, of which one or more will be contained in the initial release of each bulletin; other parts will be issued subsequently from time to time as they are completed.

BASIC SPECIFICATIONS FOR

RURAL NONFARM HOUSES

CONTENTS

SPECIFICATIONS FOR RURAL NONFARM HOUSES

DIVISION 22

RANGES, GAS

NOTES TO THE ARCHITECT:

THIS SHEET IS FOR THE INFORMATION OF THE ARCHITECT; DO NOT INCLUDE IN PROJECT SPECIFICATIONS.

THIS SPECIFICATION MAY BE USED AS A PART OF THE GENERAL CONTRACT SPECIFICATION, OR IN CONNECTION WITH A SEPARATE CONTRACT FOR THE PURCHASE OF GAS RANGES.

* IN SELECTING TYPES AND SIZES OF RANGES FOR THE PROJECT, THE FOLLOWING IS A SATISFACTORY GUIDE: FOR ONE AND TWO BEDROOM DWELLINGS USE THE "APARTMENT" SIZE RANGES HAVING FOUR TOP COOKING UNITS. FOR LARGER DWELLING UNITS USE 36", 37", 38" OR 40" WIDTH, WHICHEVER CAN BE ACCOMMODATED IN THE SPACE PROVIDED BY THE PLAN, BUT THIS SPACE SHOULD BE CAREFULLY CHECKED AND THE DRAWINGS AND SPECIFICATIONS PROPERLY COORDINATED. *

LATCHING TYPE VALVES SHOULD BE SPECIFIED FOR TOP BURNERS ONLY WHEN TOP BURNER LIGHTERS ARE OMITTED.

FILL IN BLANK SPACES DEFINING NUMBER OF EACH TYPE OF RANGE NEEDED FOR PROJECT, AND TYPE OF GAS TO BE AVAILABLE AT PROJECT.

NOTE: This revised Division 22 supersedes Division 22 dated 3-6-51.
NOTE Material * between asterisks * is new or revised.

SPECIFICATIONS FOR RURAL NONFARM HOUSES

DIVISION 22

RANGES, GAS

1. SCOPE

Include furnishing and delivering gas ranges as herein specified.

2. DESCRIPTION

a. Ranges shall be of current design, made by a manufacturer regularly engaged in this work. Side and back construction and insulation shall permit the range to be placed directly against kitchen cabinet, or walls, etc. Ranges shall be listed as approved equipment by the American Gas Association, be so labeled, and conform to the requirements of the American Standards Association's Publication No. Z 21.1 - 1948, and subsequent addenda. Ranges shall be fully insulated, concealed manifold type, with four top burners, open cooking top, with baking oven (below cooking surface) and with broiler located below the oven.

b. Fuel characteristics of ranges shall be for _____ gas _____Btu per cu. ft.

c. The type and quantity of gas ranges shall be as follows:

(1) In dwelling units with one (1) or two (2) bedrooms,_____ four top burner type with oven and broiler unit. The maximum overall dimensions shall be 22 inches wide, 25 inches deep (excluding handles and flue collar) and 36 inches high to cooking top. The minimum oven sizes, with the door closed, shall be 16 inches wide, from side to side; 12 inches high, from top to bottom; 18 inches deep, from front to back.

* (2) In dwelling units with three (3) or more bedrooms_____ four top burner type with oven and broiler unit and storage space. The maximum overall dimensions shall be _____ inches wide, 25 inches deep (excluding handles and flue collar) and 36 inches high to cooking top. The minimum oven sizes, with the door closed, shall be 16 inches wide, from side to side; 13 inches high, from top to bottom; 18 inches deep, from front to back. The distance between cooking top burner centers shall be 9 inches (minimum). The storage spaces shall be of the door or drawer opening type. *

3. CONSTRUCTION

a. Oven and broiler linings - sides, back, door, and bottom, broiler glides, pans and inserts shall be vitreous enameled steel, chromium or stainless steel. The top of oven interior shall have a rust resisting finish.

b. Oven and door insulation shall be white wool, fibreglass, rock wool, or white glass wool insulating materials.

c. Oven equipment shall be furnished as follows:

(1) One smokeless type broiler pan and grill of porcelain enameled steel, non-ferrous metal, or equivalent material.

(2) Two baking racks of porcelain enameled steel, non-ferrous metal, or equivalent material. The broiler and baking racks shall remain practically horizontal when pulled two-thirds out.

* d. Oven doors shall be drop type, broiler doors shall be drop or swing type. In full open position, the doors shall permit easy removal of the racks and broiler pans. The oven drop type door shall be fully counter-balanced. Swing type doors shall be rigidly hinged. Doors shall be reinforced for attachment of hinges. All doors when in closed position shall remain tightly closed. Hinges shall not be welded to the door or frame. *

e. A vent shall be provided for each oven to discharge flue gases away from the kitchen wall or partition.

f. Burner valves shall conform to the requirements of the American Standards Association's publication No. Z 21.15 - 1944 and subsequent addenda. Latching type burner valves shall be provided for oven burners. Top burner valves shall be of the latching or stop cock type. *

* g. Top burners shall be round, non-clog type, with minimum thermal efficiency of 45 per cent when tested by the American Gas Association method, ASA publication No. Z 21.1 - 1948, except that for liquefied petroleum gas the minimum thermal efficiency shall be 50 per cent. *

h. Manifold shields shall be separate from doors and easily removable.

i. Drip trays or combustion pans shall be removable, of enameling steel with finish ground coat of vitreous enamel.

j. Back splashers shall be not less than 4 inches high, and shall extend the full width of the range cooking top.

k. Aluminum tubing in passing through insulating material shall be adequately protected from contact with such insulation, by the use of steel or copper sleeves or equivalent protection to prevent alkaline reaction.

l. Exposed areas of the back splasher, manifold shield, front, door, and side panels shall be steel finished with vitreous enamel. The cooking top shall be steel finished with vitreous enamel, monel metal, or equivalent material. The back panel shall be steel finished with baked-on-enamel. Legs or bases shall be steel finished with vitreous enamel or synthetic baked-on-enamel.

m. Thermostats shall conform to the requirements of the American Standard Association's publication No. Z 21.23 - 1940 and subsequent addenda.

n. Top burner lighters shall conform to the requirement of the American Standards Association's publication No. Z 21.1 - 1948 and subsequent addenda.

4. PERFORMANCE

* a. The oven and its controls shall be designed for a minimum temperature of 250 degrees F. and shall heat to 400 degrees F. in a 70 degrees F. room temperature in not more than 10 minutes. *

* b. The broiler temperature shall reach 530 degrees F. above room temperature in 16 minutes; the minimum effective broiling area shall be equal to 70 per cent of the broiling grill area and not less than 0.7 of a square foot. *

5. DELIVERY

a. The gas ranges shall be delivered to the project, free from damage and blemishes. After connections are made as required under division PLUMBING, place range in operation and check for proper performance certifying to the Local Authority that the equipment has been tested in place and found satisfactory. Fuel required for testing shall be supplied at the Local Authority's expense.

6. INSTRUCTIONS

Furnish with each range, for tenant use, descriptive literature giving simple instructions for operation and maintenance.

7. GUARANTEES

The contractor shall guarantee the gas ranges to be free from defects in design, workmanship, and materials and agree to repair, replace and install free of charge any part, except vitreous enamel, becoming defective within one year from the day of acceptance by the Local Authority, THE NAME AND ADDRESS OF THE AGENT WHO WILL FURNISH SERVICE under the guarantee shall be submitted to the Local Authority.

8. AFFIDAVIT

An affidavit shall be submitted to the Local Authority, certifying that the ranges furnished under the contract conform to the requirements stated in this specification.

9. TESTS

a. The Local Authority reserves the right to conduct tests on two ranges, to check equipment supplied for compliance with the specification. Such tests shall be performed within 90 days from the date of delivery; tests will be performed by an impartial laboratory selected by the Local Authority, subject to approval of the contractor; and the expense will be borne by the Local Authority.

b. The contractor may have not more than two representatives present to witness the tests, and their expenses shall be borne by the contractor.

BULLETIN NO. LR-23

OPERATION AND REPAIR OF HEATING SYSTEMS

BOILERS (TYPES, USE, AND REPAIR)

ONE OF A SERIES OF
OPERATIONS ENGINEERING BULLETINS

P H A LOW-RENT HOUSING
BULLETIN

PUBLIC HOUSING ADMINISTRATION
HOUSING & HOME FINANCE AGENCY WASHINGTON 25,D.C.

APRIL 1951

LIST OF BULLETINS

WHICH HAVE BEEN PUBLISHED

Bulletin No.	Title	
LR-1	ZONING AND REZONING	
LR-2	SUBSURFACE SOIL INVESTIGATION	
LR-3	SITE PLANNING	A Series of eight Housing Design Notes
LR-4	SITE ENGINEERING	
LR-5	STRUCTURAL DESIGN, MATERIALS AND METHODS	
LR-6	ARCHITECTURAL PLANNING AND DESIGN	
LR-7	PLUMBING, HEATING AND VENTILATION	
LR-8	ELECTRICAL	
LR-9	LAWNS AND PLANTING	
LR-10	GENERAL DESIGN	
LR-11	SELECTION OF UTILITIES	
LR-12	CONSTRUCTION CONTRACT DOCUMENTS	
LR-13	GUIDE SPECIFICATIONS	
LR-14	EQUIPMENT CONTRACT DOCUMENTS	
LR-15	OPERATION AND REPAIR OF HEATING SYSTEMS Care of Boilers Out of Service	
LR-16	CORROSION OF UNDERGROUND PIPING	
LR-17	RULES FOR BOILER OPERATION	
LR-18	PREPARATION OF EXTERIOR SURFACES FOR REPAINTING	
LR-19	CONTROL OF CONDENSATION IN CRAWL SPACES	
LR-20	GLAZING	
LR-21	MAINTENANCE OF WOOD FLOORS	
LR-22	BASIC SPECIFICATIONS FOR RURAL NONFARM HOUSING	
LR-23	OPERATION AND REPAIR OF HEATING SYSTEMS Boilers (Types, Use and Repair)	

NOTE: Some bulletins will be issued in parts, of which one or more will be contained in the initial release of each bulletin; other parts will be issued subsequently from time to time as they are completed.

Boilers (Types, Use, and Repair)

1. Introduction. The primary purpose of the boiler plant in a low-rent housing project is to supply adequate heat for the project at the lowest cost. The boiler is the "heart" of such a plant and its success or failure will seriously affect the whole plant. This in turn affects the whole project because the health and welfare of all the tenants and the protection of all the plumbing in the project requires a dependable source of heat. On the other hand, the cost of supplying heat is one of the greatest single items of operating cost; it is essential, therefore, that heating costs be kept to the lowest possible level consistent with efficient operation, so that rents can be maintained within the reach of low-income families and, at the same time, subsidies kept to a minimum.

2. Function. The function of a steam boiler is to change and transfer the chemical energy in the fuel burned to heat energy in the steam. It is then available for use in heating systems. This is true no matter what kind of fuel is used.

3. Definition. A steam boiler is a closed vessel in which water is boiled by the application of heat and is thereby converted into steam. The steam is then available for power or heating.

4. Types of Boilers. Boilers are divided into two main types: firetube boilers and watertube boilers. Firetube boilers are built so that the flue gases pass through tubes or flues which are immersed in the boiler water. The water is contained in the boiler shell and the firetubes pass completely through the shell from one end to the other. Watertube boilers have water inside the tubes and hot gases surrounding the tubes.

   a. Firetube Boilers. Firetube boilers are almost universally used for low pressures when a simple installation is desired. There are several different types of firetube boilers, but only three of these types are found in low-rent housing projects. These three are the steel firebox, horizontal return tubular, and Scotch Marine boilers.

      (1) Steel Firebox Boilers. A typical steel firebox boiler is shown in Figure 1. Its name results from the fact that the firebox is enclosed on all sides with steel water legs extending down from the shell of the boiler. The gases of combustion travel from the firebox through the lower group of short tubes to a reversing chamber or smoke box. They return through a second set of tubes to the flue connection on the front of the boiler and are then discharged into the stack or breeching. Although front smoke outlet boilers are generally found on low-rent housing projects, rear smoke outlet boilers are used satisfactorily.

         (a) The firebox boiler is an internally fired boiler. This means that the furnace is a part of the boiler structure.

(Cont'd)

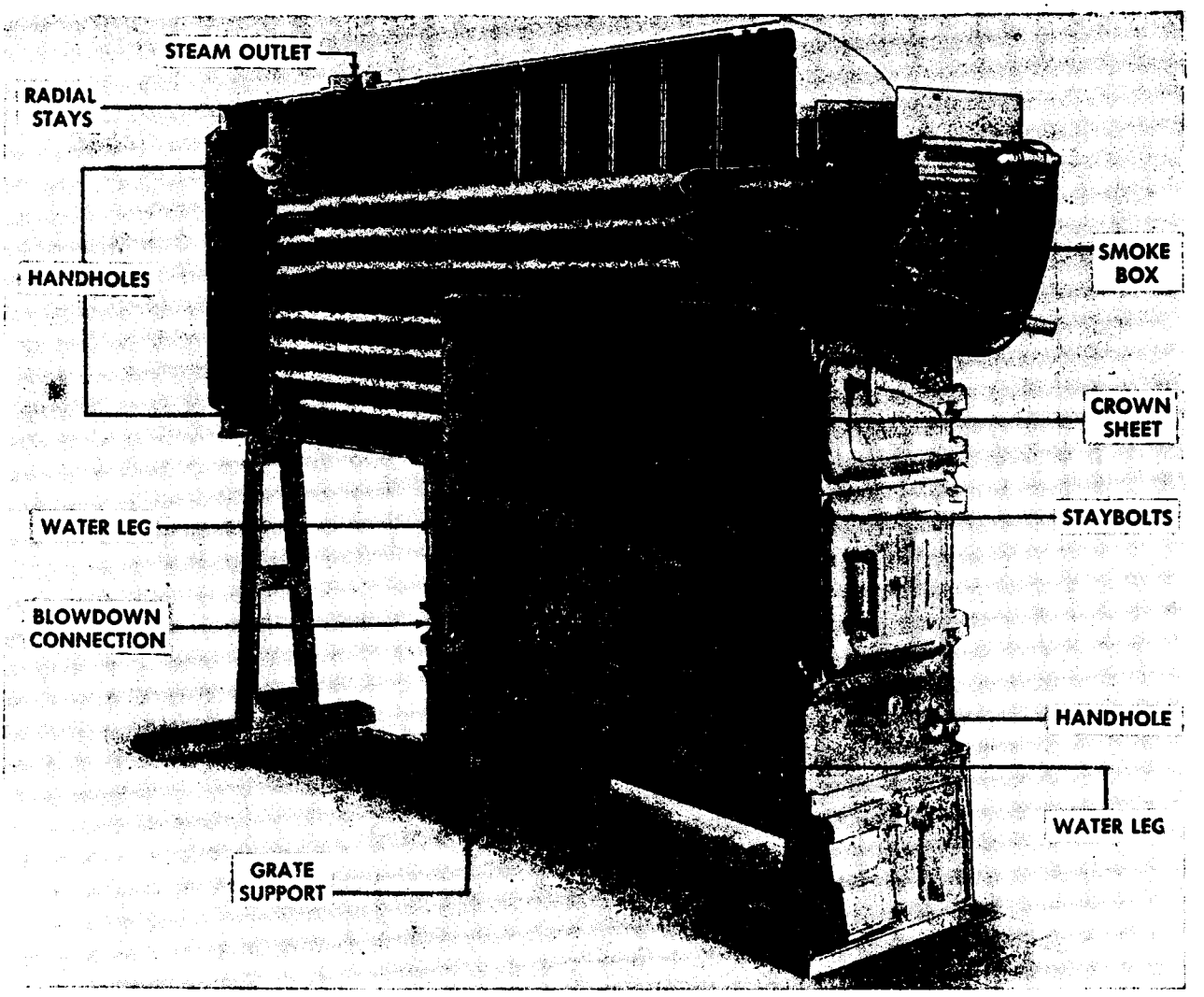


Fig. 1. Split Section of Small Firebox Boiler

Unlike some other internally fired boilers, such as the Scotch Marine, the firebox is not in the cylindrical portion of the shell but is included in the extension to the shell formed by the water legs. The firebox is usually shaped just like a box with flat side and end sheets. The crown sheet (see Figure 1) is slightly curved, but because these surfaces are nearly all flat, they must be held in shape by stays when the boiler is under pressure. Braces and stays are necessary because pressure inside a container that is shaped approximately like a cylinder always tries to force the shell into a truly cylindrical shape. The pressure also tends to bulge out the ends of a cylinder and make it take on a curved

(Cont'd)

shape. (See Figure 2.) This same situation occurs with any flat

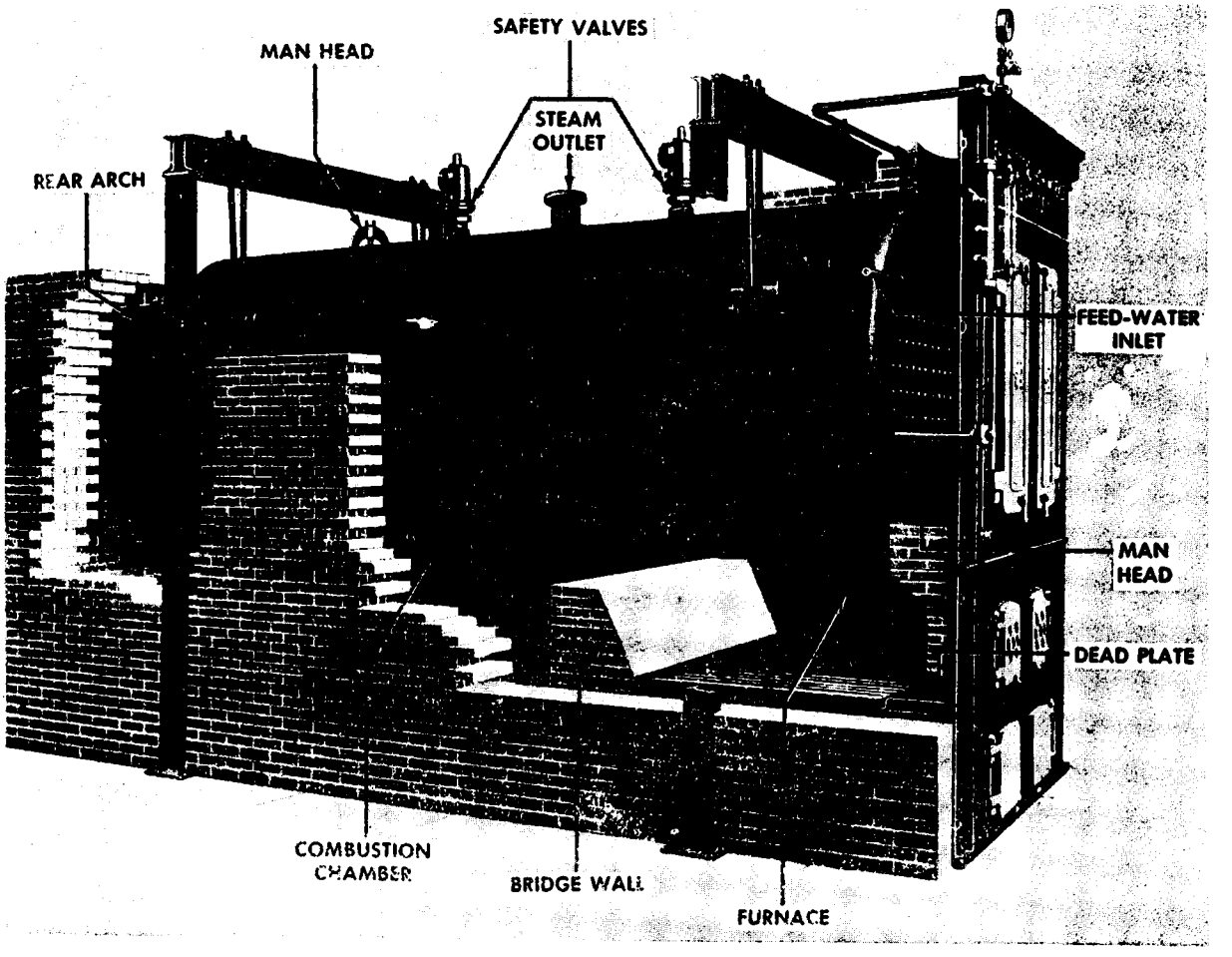


Fig. 2. All-Welded HRT Boiler and Setting

surface of relatively great area, so to prevent distortion and possible rupture, stays or braces must be used to strengthen and hold it in shape. Figure 1 also shows some of the types and location of stays in a steel firebox boiler.

(b) The principal advantages of the firebox boiler are: low initial cost, ease of installation, simplified operation, and the fact that it can be purchased and installed as a packaged unit. The objectionable factors are: the tendency to accumulate mud and sludge in the water legs, resulting in overheating; poor circulation; large amount of staying required by the flat surfaces of the water legs and crown sheets; and the difficulty of cleaning.

(Cont'd)

(2) Horizontal Return Tubular (HRT) Boilers. The HRT boiler is an externally fired boiler with combustion taking place in a brick setting built under the boiler.

(a) The boiler itself consists only of a cylindrical shell with one set of firetubes running the full length of the boiler. (See Figure 2.) The shell is directly exposed to the radiant heat of the fires in the brick setting, and furnace temperatures are much higher than in firebox boilers because there are no water legs to carry off the heat. Combustion gases leave the furnace, travel to the rear of the boiler, and then return through the tubes to the front of the boiler where they are discharged to the stack or breeching.

(b) Exposure of the shell to radiant heat is one of the disadvantages of this type of boiler and the shell tends to be weakened by constant exposure to high temperatures. However, the initial cost is low, it is fairly efficient, and it can be operated by relatively inexperienced personnel. Figure 2 illustrates a typical HRT boiler. The HRT boiler is considered to be a good steaming boiler because the large volume of water it contains keeps the pressure from dropping very much when sudden increases in load take place. This is also a disadvantage, however. In the event of a rupture in the shell, the damage from an explosion is much greater because the large volume of water immediately flashes into steam when it is released into the atmosphere. As a result, the construction of HRT boilers is very carefully covered by the ASME (American Society of Mechanical Engineers) Boiler Code. The firetubes act as stays for the parts of the heads in which they are located, but the rest of the heads need staying to prevent their distortion when the boiler is under pressure. The through stay is used below the tubes; either the diagonal or through stay above the tubes. See Figure 3 for location of stays in an HRT boiler.

(3) Scotch Marine Boilers

(a) This is an internally fired boiler that combines a boiler and a furnace in one self-contained unit that requires no setting. Figure 4 illustrates a typical boiler of this type. The combustion chamber is located in a large corrugated tube in the lower part of the boiler. Combustion gases pass through this tube into a smoke box at the back of the boiler and then return through the boiler tubes to the uptake chamber at the front. Since the furnace is entirely surrounded by water, it provides a very efficient radiant heat absorbing surface and assures a low furnace temperature. There is no infiltration of air into the combustion gas from leaks in the masonry.

(Cont'd)

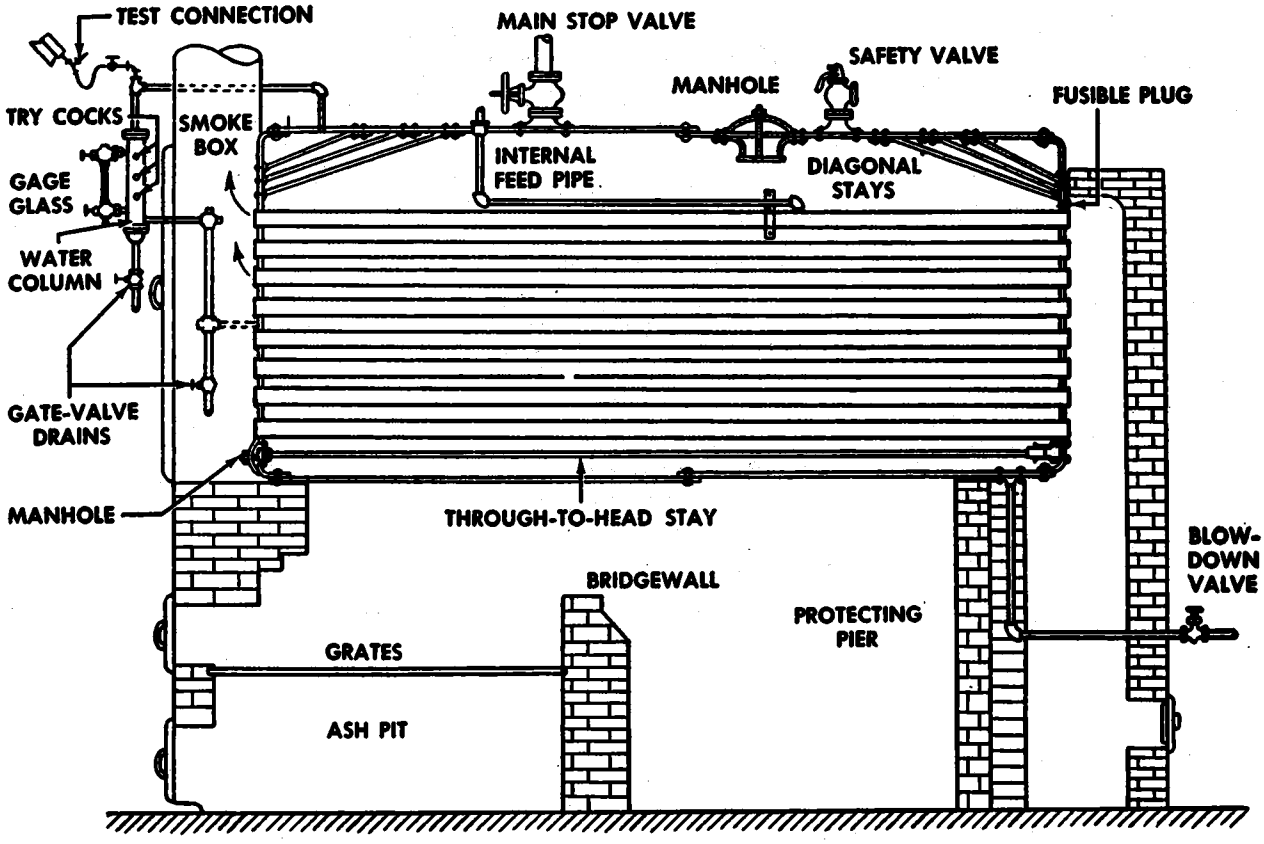


Fig. 3. Horizontal Return Tubular Boiler

(b) The most outstanding advantages of the Scotch boiler are that it occupies the least space compared with the power developed of any boiler suitable for general use; the large water capacity permits it to steam freely under a varying load; and it is bothered very little by high concentrations of dissolved solids in the boiler water. This is because these solids settle in the lowest part of the boiler and are easily removed as sludge. In addition, it can be shipped easily and installed at small expense. However, it does have some disadvantages since water circulation is rather sluggish in the region below the furnace flue. This results in uneven heating of the shell and strains due to unequal expansion are created.

b. Watertube Boilers. As the name implies, watertube boilers have water in the tubes and hot gases surrounding the tubes. The steam forms in the tubes and is released in the upper or steam drum and from there it passes into the steam header. There are many varieties of watertube boilers in use today

(Cont'd)

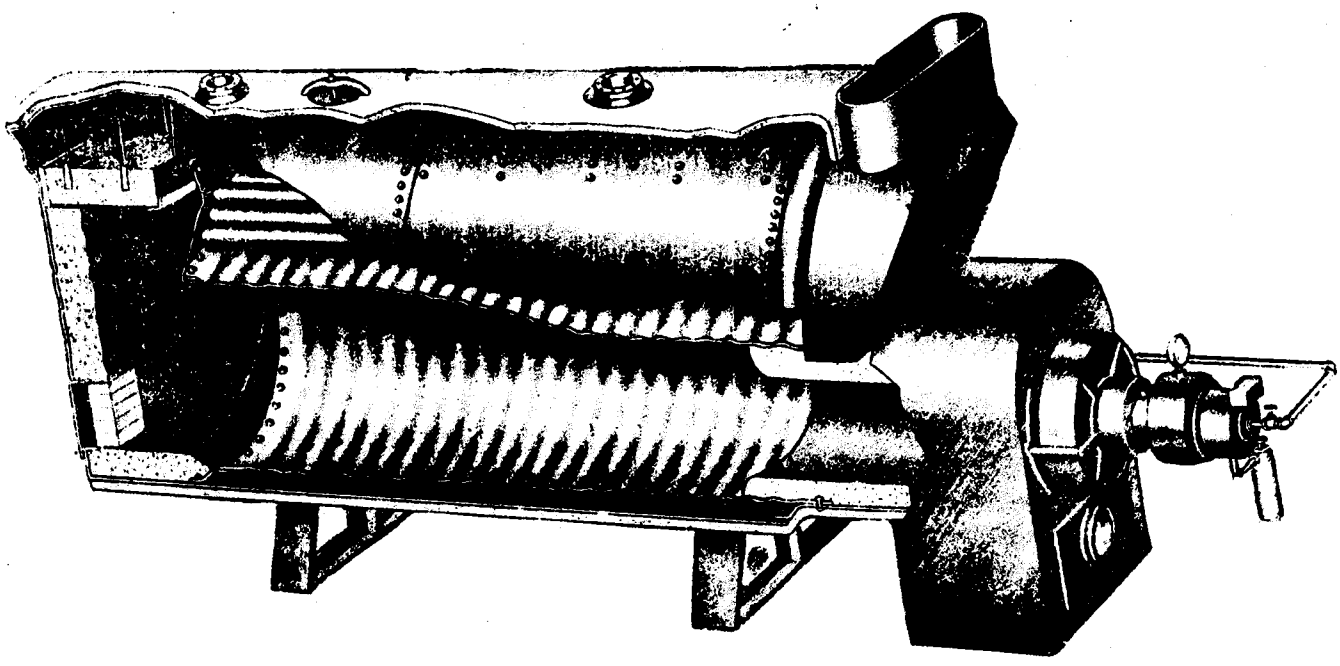


Fig. 4. Scotch Marine Boiler

but there are only two main types, the straight tube and the bent tube types. Of the straight tube type, sectional header and box header boilers are installed in some projects. Of the bent tube type, 4 drum Sterling, 2 drum parallel, and 3 drum low head type boilers will be found in other projects. Typical illustrations of all these boiler types are shown in Figures 5, 7, 8, 9, and 10. For plants requiring pressures above 125 lbs. per square inch and steaming capacities of more than 12,000 lbs. per hour, watertube boilers are used almost exclusively. Central heating plants of large projects are the only places where their use can be justified. They have the advantage of being safer and more flexible than firetube boilers. They can carry higher overloads and are easier to clean than firetube boilers and are usually more efficient.

(1) Sectional Header Boilers. The distinguishing features of these boilers are the headers. (See Figure 5.) They are usually forged steel and are connected to the drum with tubes. They can also be made of malleable or cast iron, but the header size and steaming pressure are limited when these materials are used. A handhole opposite the end of each tube permits inspection, cleaning, or installation. The handhole and its cap are oval shaped to make easy the removal and insertion of the cover. The cap seats on the inside surface of the header and is held tightly in place and prevented from leaking by a yoke and gasket. (See Figure 6.) Headers may be vertical as shown or at right angles to the tubes. The tubes are rolled and flared into the header but not beaded as in firetube boilers. (Cont'd)

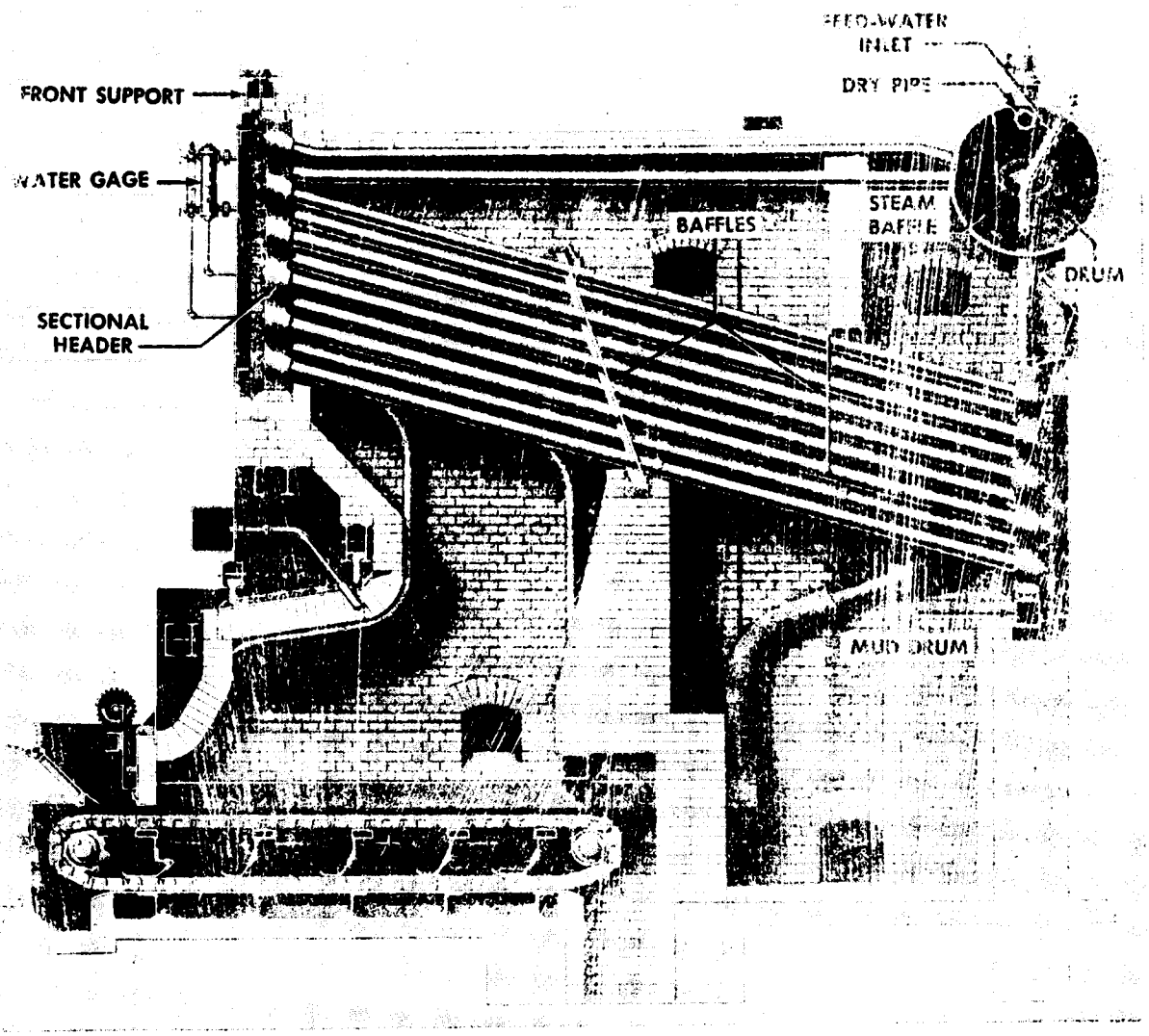


Fig. 5. Cross Section of Sectional Cross-Drum Boiler with Chain-Grate Stoker

(2) Box Header Boilers. These boilers are similar to sectional header boilers but the individual sectional headers are replaced by two headers shaped like large flat boxes. (See Figure 7.) These headers are made up from steel plate and all of the tubes are rolled into them. The lower header is connected to the drum or drums by a row of down comer tubes and the other one is connected to the drum or drums by steam circulating tubes. The headers are strengthened and stiffened by the use of staybolts which are purposely drilled out so that if one fails, a small steam or water leak will make this fact known. These boilers

(Cont'd)

occupy a minimum of space headroom. Tube inspection, cleaning, and removal are rather simple. However, space must be provided either at the front or rear for tube removal. Also, the lack of height limits the circulation of water in the boiler.

Fig. 6. Sectional Header with Handhole Cover

(3) Bent Tube Boilers. 4 drum Sterling type boilers were the first bent tube types extensively used. They consist of three upper steam and water drums and one lower water or mud drum. All these drums are interconnected by steam conductor or water circulator tubes. (See Figure 8.) These boilers have good water circulation because they are quite high and many of the tubes are nearly vertical but because of their height, boiler houses have to be fairly tall structures. Also, the extra drum adds to the cost of the original boiler. Boilers of this type are no longer being built in great quantities.

(a) The three drum low head boiler, shown in Figure 9, is now quite popular because of its low overall height and it has the added advantage of not requiring tube removal space at front or rear. In common with other bent tube boilers, it can operate at high capacities with a lower draft loss than in a straight tube boiler of similar size. This permits the use of a forced draft fan with a smaller motor and less power consumption. Also, it does not require the many handhole fittings that are found on straight tube boilers. However, it suffers from the same limitations on circulation that the straight tube boilers do because of the lack of height.

(b) The two drum bent tube parallel drum boiler is rapidly becoming the most popular of all the smaller watertube boilers. (See Figure 10.) It is simple in design and has a low draft loss at high ratings. Since the tubes run almost vertically from one drum to the other, except where they curve to enter each drum, circulation is accelerated. These boilers are of medium height and their simple layout makes it very easy to provide for a water cooled furnace. This is done by lining the furnace with watertubes connected at the bottom by headers. These headers circulate water

(Cont'd)

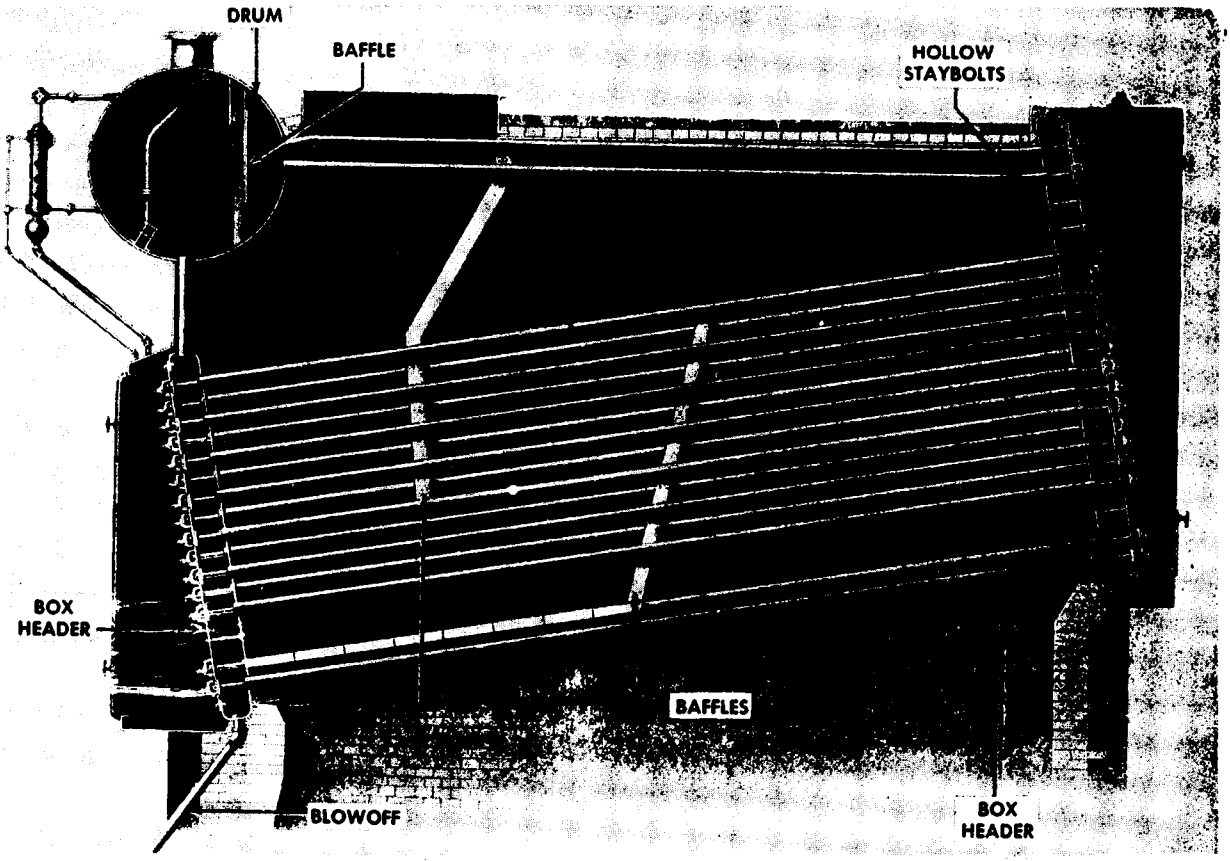


Fig. 7. Cross Section of a Box Header Cross-Drum Boiler

from the drums through the tubes surrounding the furnace and back to the upper drum.

5. Boiler Repairs and Maintenance

a. Boiler repairs can be generally classified as routine repairs and emergency repairs. Emergency repairs will be few and far between if a regular schedule for preventive maintenance and routine repairs is established and followed. Preventive maintenance is the systematic and periodic inspection and servicing which is required to keep equipment in proper operating condition. It means fixing things before they break, thus keeping equipment in continuous service or ready for service. The life of boiler plant equipment depends on its maintenance. The cost of operation in a well maintained plant is consistently lower on both manpower and materials than in a poorly maintained one. In addition, proper preventive maintenance results in improved working conditions.

(Cont'd)

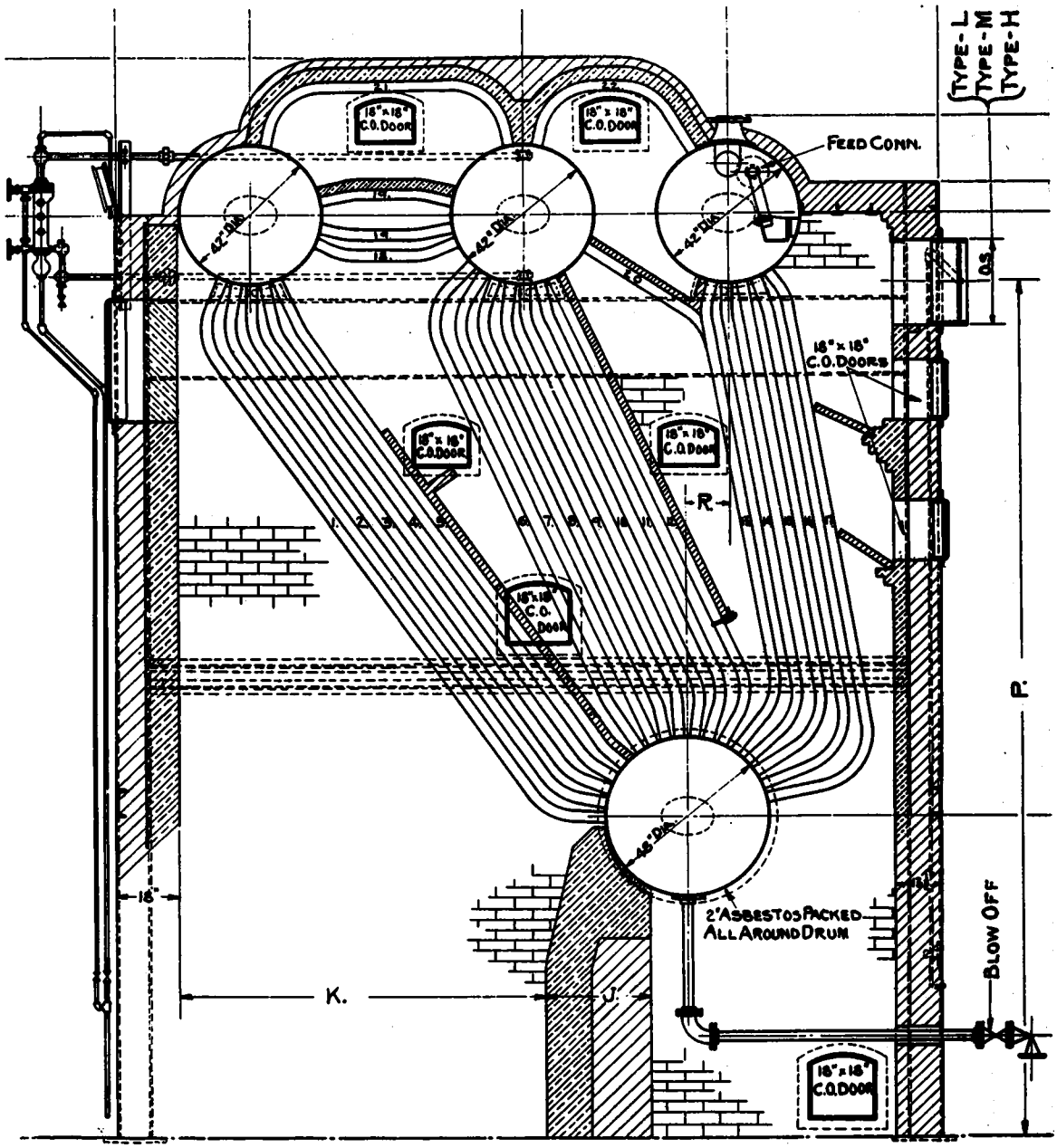


Fig. 8. Four Drum Sterling Type Boiler

b. Maintenance of all types of boilers requires certain basic steps. These steps, taken as a matter of routine, insure the quick detection of trouble or possible breakdown and can greatly prolong the life of the equipment. The more important of these steps are described below: (Cont'd)

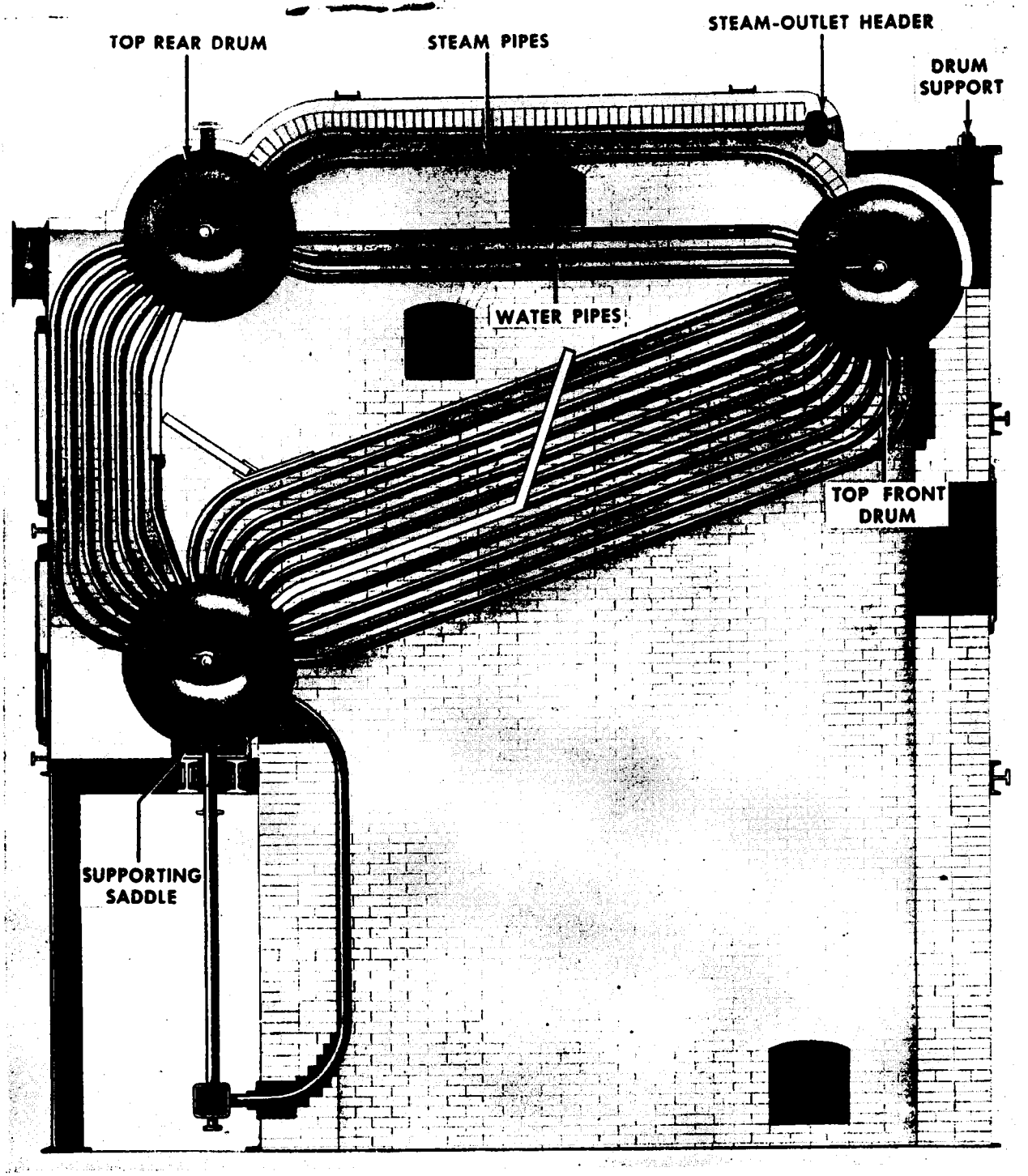


Fig. 9. Three-Drum Low-Head Boiler with Water-Cooled Back Wall

(Cont'd)

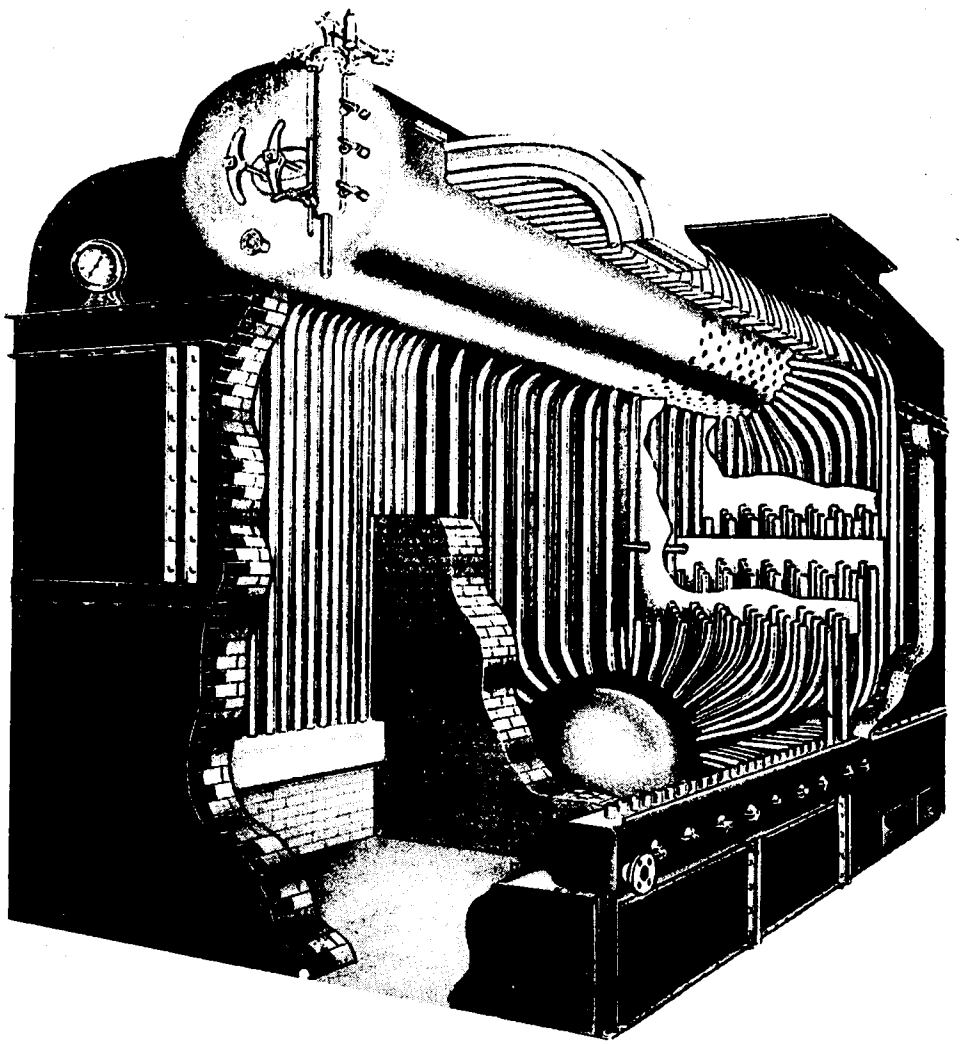


Fig. 10. Two-Drum Bent-Tube Parallel-Drum Boiler

(1) Observation of Normal Performance. Constant attention of plant personnel to the sound and appearance of each piece of equipment is required. Each machine has a normal operating sound or appearance. Change from this normal sound or appearance demands the immediate attention of the operator. For example, a dry bearing will often produce a whining or whistling noise.

(2) Testing. Testing for proper operation is a basic preventive maintenance step. Trouble is often discovered before complete failure, by use of tests which show improper operating conditions or indicate that the equipment is not able to give full capacity performance.

(Cont'd)

(3) Inspection and Adjustment. Inspection and adjustment are a requirement of every preventive maintenance schedule. Inspections often require complete dismantling of the equipment on a scheduled plan.

(4) Cleanliness. Equipment must be kept clean. Sometimes cleaning and painting are all that are required to keep equipment in trouble-free operation.

(5) Stopping Leaks. Stop every leak as soon as it occurs. Leaks of water, steam, gas, or air represent waste; unless repaired, may cause extensive damage to the equipment.

6. Routine Inspection

a. All Types of Boilers. At intervals of three to six months, shut the boiler down and clean and inspect it thoroughly, both inside and outside. These inspections should be timed so that one of them is done at the same time as the annual inspection by an authorized boiler inspector. The quarterly or semi-annual inspection should include the following:

(1) Shut off all valves leading to or from the boiler. This is necessary to safeguard persons inside the boiler during cleaning and inspection.

(2) Examine the interior of the boiler for corrosion. This may be found anywhere but will probably be noticed first near the normal waterline. Check all interior fittings in boiler such as feedwater pipe steam header connection and steam baffles in watertube boiler drums. Examine staybolts for corrosion and leaks. Examine shell and tubes for corrosion and scale. Remove scale from shell with cleaning tools, such as wire brushes, scrapers, or hammers. Remove scale from tubes with turbine or by other means. When using a turbine, be sure not to damage tube. Check tube ends for corrosion and leakage. If leaks are found, see if tubes can be rerolled or beaded as may be appropriate. Note: tubes in watertube boilers can be rerolled but not beaded. Firetubes may be rerolled and beaded. If tube has been rolled thin or tube end is bad, replace the tube.

(3) Check exterior of boiler for corrosion. This may be found anywhere but usually appears in areas where mositure is allowed to remain in contact with boiler metal. Moisture may reach the boiler from leaking roofs, valves, and pipes or from rain coming down around the stacks. Check boiler feed piping for weakness and examine all supports. Check safety valves and connections to the boiler. Check escape pipe to be sure that no strain is transmitted to safety valves. Carefully examine water column and feedwater regulator, paying particular attention to drains, high and low water alarm, and gauge glass. Check connecting piping between boiler and water column for corrosion and for strains

(Cont'd)

caused by inadequate support. Check pressure gauge. Check blow-off valves and connection to boiler. Check steam piping and boiler feedwater piping for strains due to settling. If necessary, disconnect pipe to see extent of strain. Check fusible plug, if used, for weakness. Replace plugs, if necessary, but always annually.

(4) Check the steel structure for unnecessary strain.

(5) Carefully check all soot blowers for warping or misalignment. Be sure nozzles are located properly to eliminate impingement on tubes. Never use soot blowers when boiler is cool.

(6) Clean all tube surfaces and remove all fly ash and soot. If boiler is to be out of service for some time, see Bulletin No. LR-15 for complete instructions in laying up an idle boiler.

b. Particular Types of Boilers. The steps listed above apply to all types of boilers. For the various individual types of boilers previously mentioned, the following special steps apply.

(1) Watertube Boilers: The mud drums are provided below the lowest headers. These drums should be checked for internal cleanliness.

(2) Firebox Boilers: Check the bottoms of waterlegs for cleanliness and examine the staybolts in the legs for signs of cracks, corrosion, or other evidence of weakness. Waterlegs are subjected to heat and are at the low part of the boiler where sediment usually collects.

(3) HRT Boilers and Scotch Marine Boilers: Carefully check the boiler drum directly above the combustion chamber for internal cleanliness. Scale at this point will cause serious trouble when the boiler is fired heavily. Check the buckstays and other metal supporting structures to be sure they are rigid.

(4) Scotch Marine Boilers: Check smoke box at rear end of boiler for leakage of air and for impingement of flame on dry sheets.

7. Cleaning, Replacing, and Repairing Boiler Tubes

a. Cleaning

(1) Watertube Boiler Tubes. Clean the tubes with a motor-driven (electric, pneumatic, or water-powered motor) flexible shaft with rotor, brush, or expanding cleaner. Several types of cleaners are shown in Figure 11. Move the cleaner through the tubes at a uniform rate and never operate in any one position for more than a few seconds, or the inner surface of the tube may be ground away. With a hose wash down the loosened deposits to the lower clean-out points of the boiler. Remove

(Cont'd)

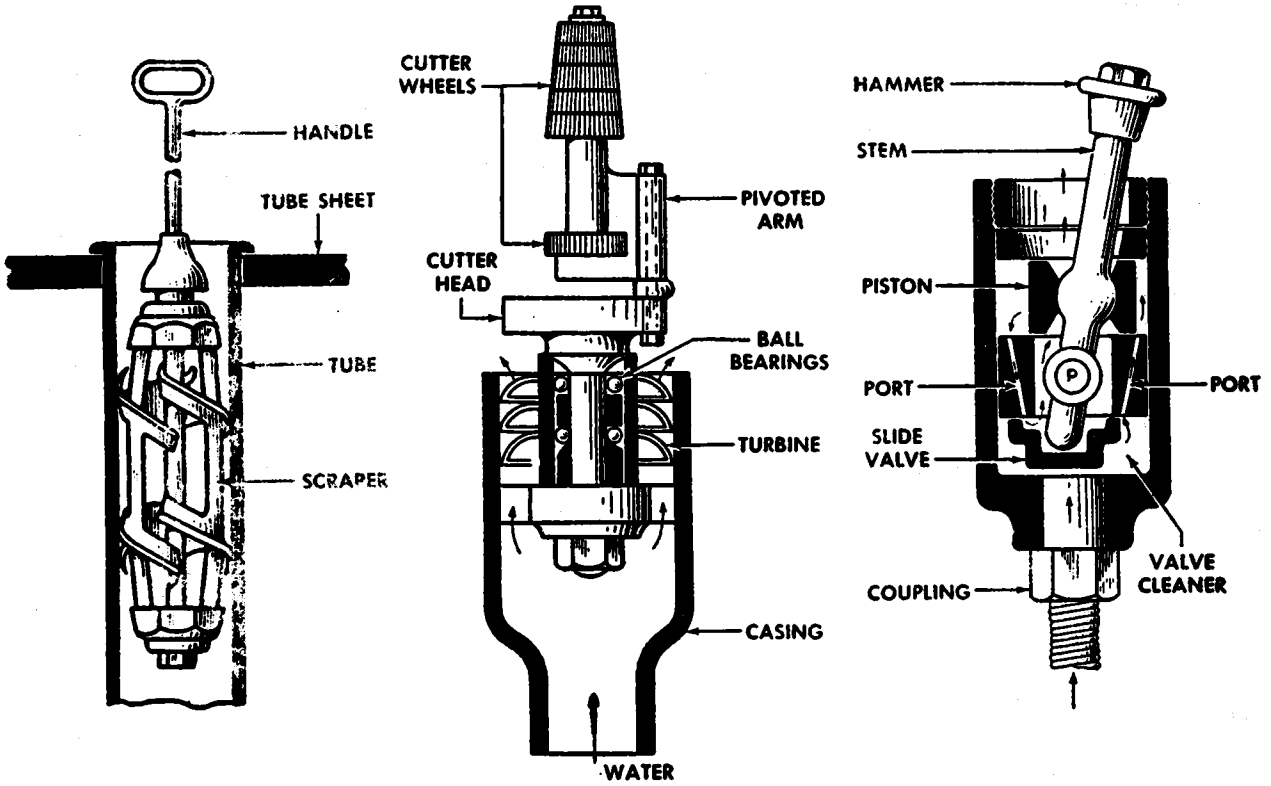


Fig. 11. Tube Cleaners

the deposits. Thoroughly clean the mud drums at the bottom of the boiler as part of the general cleaning process. Suitable eye and respiratory protection must be provided on this work, as well as for removal and replacement of all tubes and beading operations.

(2) Firetube Boiler Tubes. Brush or scrape the inner surfaces of the tubes as often as necessary to keep them free of deposits of soot and fly ash. Many types of hand-operated and power-driven brushes and scrapers are available for this purpose. Every boiler is supplied with a set by the manufacturer. In firetube type boilers, which are equipped with soot blowers, operate blowers daily and supplement with hand cleaning when necessary. To clean water-contact surfaces, pass a vibrating hammer (Figure 12) through the tubes. Vibrations cause the scale on the outside of the tube to crack and drop off. Then wash the loose scale out of the boiler from the top down. Clean the inner flat surfaces of tube sheets and waterlegs by scraping or chipping and wash out the loosened scale. (Cont'd)

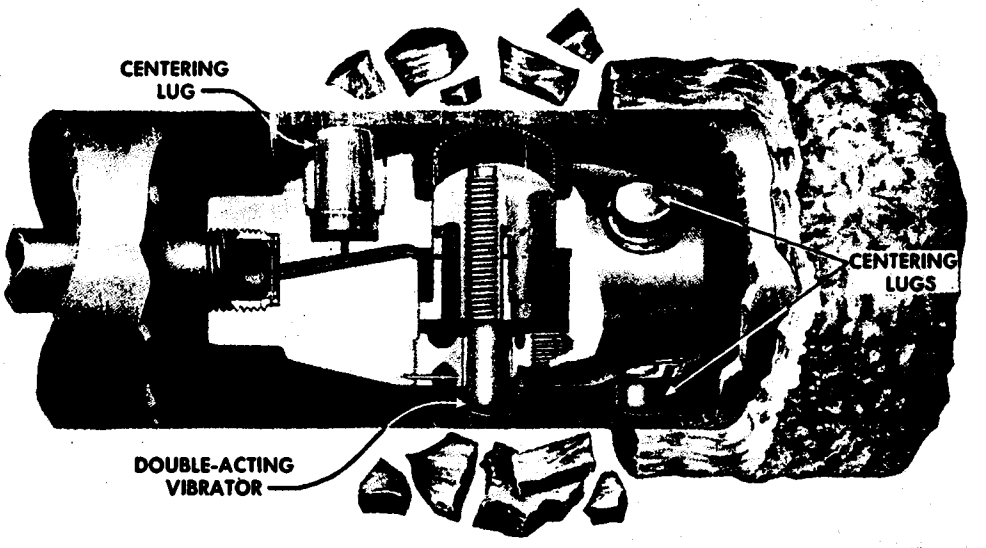


Fig. 12. Hammer Type Scale Remover

b. Tube Renewal (Watertube and Firetube Boilers). For removal and replacement of damaged tubes, use the following procedure.

(1) Removing Old Tube. Taking care not to injure the metal around the tube hole in the tube sheets, cut a lengthwise slot about 5/8 inch wide and 2 inches long in the tube with a cape chisel. (See Figure 13, Step 1.) Then insert a 1/2 by 1 inch flat bar into the slot and lever the burr at the end of the slot upward, increasing the slot length to about 4 inches (Figure 13, Step 2) with a blunt tool, drive the corners of the tube inward at the slot to swedge the end of the tube so that it will pass through the tube hole without injuring the tube sheet or header. (See Figure 13, Step 3.) At the opposite end of the tube from which the slot was cut, use a blunt tool to raise and bend inward all of the bead or bell so that the tube can be withdrawn without injury to the tube sheet.

(2) Installing a New Tube. Remove projections, burrs, scale, or foreign matter from the metal surfaces in the tube sheet around the tube hole. The surface should be smooth and free of grooves, scorings, or holes. Weld and re-machine, if necessary, to remove such surface faults. Make sure the ends of the tube, where they come in contact with the tube sheet or header, are clean and smooth before the tube is put in place. Examine the expander to see that it is equipped with the proper rollers. Rolling should be stopped when the rollers operate evenly all around the tube. Flare or bead the tube ends according to the practice recommended for each boiler. (See Figure 14.) Roll the tube ends lightly after belling or beading.

(Cont'd)

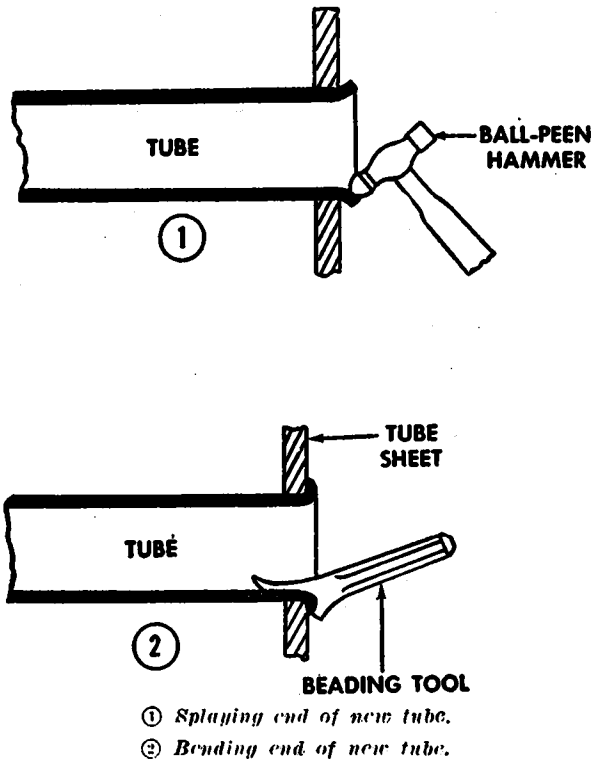


Fig. 14. Installing New Tube

c. Repairing Leaky Tubes. When a leak occurs at the joint between the tube and its tube sheet or header, the leak sometimes may be stopped by rerolling the tube. Often this operation cannot be repeated with success. Since the tube should be retested before the boiler is placed in service, rerolling may be a time-consuming operation.

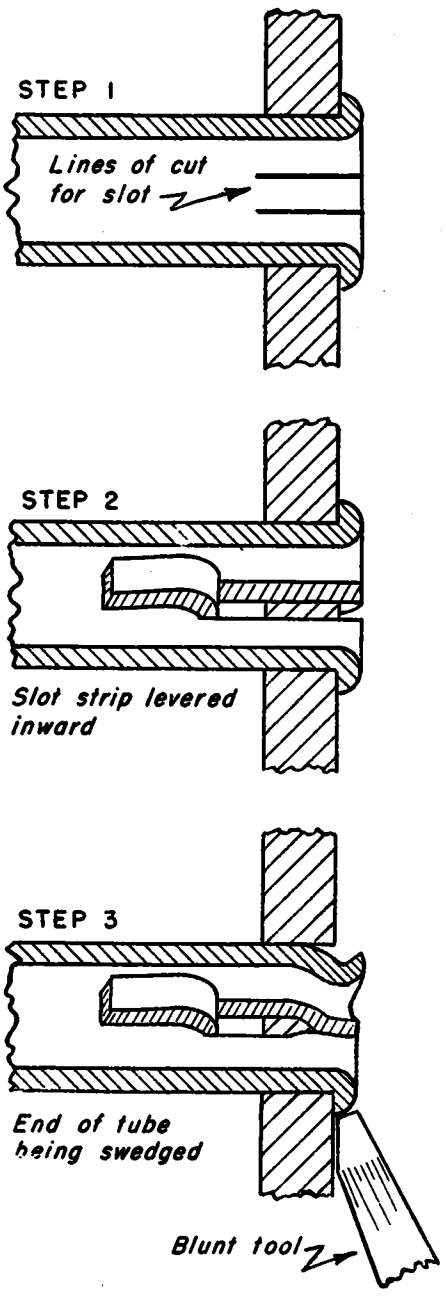


Fig. 13. Removing Old Tube

d. Plugging. A frequently used technique is to plug the ends of a leaky tube, taking it out of service. The steaming ability of the boiler is slightly reduced, but this measure is justified when spare parts are not available or when the boiler cannot be spared from service long enough to effect tube replacement. Plugged tubes should be replaced as soon as possible during periods of low load or idleness. (See Figure 15.)

(Cont'd)

9. Replacing Gaskets

a. Gaskets must frequently be replaced and, in many instances, much oftener than should be necessary if the proper precautions were taken in installation. Partly because of the relatively low cost of a gasket and partly through carelessness or ignorance, little attention is paid to the true cost of gaskets. It is no exaggeration that thousands of dollars or unnecessary shutdowns and installation labor could be saved each year if more care were used in the selection and installation of gasket material.

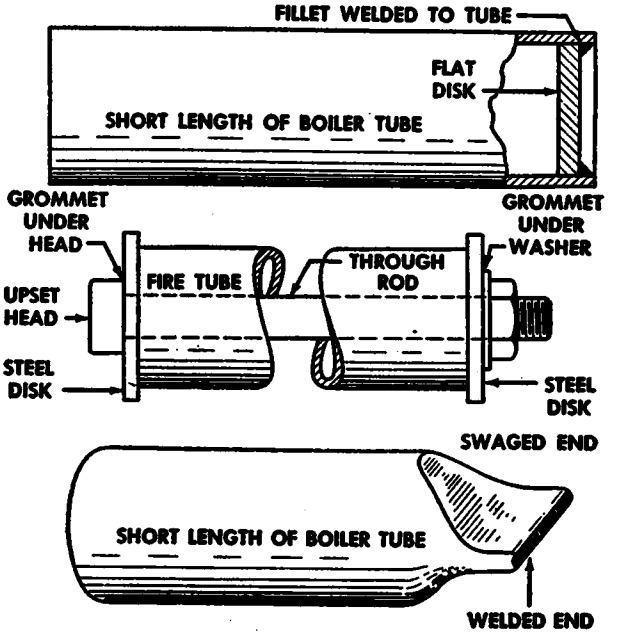


Fig. 15. Three Methods of Tube Plugging

b. The following steps should be taken when installing boiler gaskets.

(1) Both flange faces should be true and carefully cleaned of foreign substances, by scraping if necessary, before the gasket is installed.

(2) Use the thinnest gasket practical for flange fittings, particularly where the surfaces are perfectly smooth and/or flat.

(3) Be sure the gaskets are cut or formed to proper dimensions and properly centered between the flanges.

(4) Apply pressure equally over the entire flange by alternately tightening bolts on opposite sides.

(5) Check the bolts and studs shortly after the line is in service to be sure they are uniformly tight.

(6) Should it be desired to apply graphite to one or both sides of the gasket, never mix oil or any substances known to be detrimental to the rubber in the gasket with the graphite. Graphite may be mixed with water, or used dry. These recommendations apply particularly to all types of handhole and manhole gaskets.

(7) Boiler gaskets should fit snugly over the cover so as to make the gasket cup up slightly and not lie flat prior to application of the assembled plate and gasket to the foilers.

(Cont'd)

(8) The practice of stretching gaskets by hand to make the job of application easier should be done with considerable care, and, if possible, avoided entirely. Any stretching should be applied uniformly to the full perimeter of the gaskets and not to just one portion of the perimeter.

(9) Every effort possible should be made to avoid the possibility of pinching or causing a wrinkle in the gasket when the plate and the gasket are bolted into place. This is particularly true of small handhole or tube gaskets.

(10) Before tightening the header, place handhole header so that the cap is equally spaced on the gasketing portion around the entire periphery.

(11) For best performance, boiler gaskets should be purchased so that the convex surface of the fold is exposed to the pressure.

10. Boiler Accessories. A number of accessories and fittings are usually installed on boilers to insure safe operation and increased economy. The ASME Boiler Code requires that the following accessories be installed in a specified manner before the boiler can be operated: safety valves, water columns, pressure gauges, blow-off valves, steam outlet valves, feedwater valves, and fusible plugs. Feedwater valves are sometimes left off low pressure boilers that are fed singly through Hartford loops. In addition to those items, high-low water alarms, low water cutoffs and emergency feeders are also required by many State and municipal codes. Accessories usually installed to increase the economy and convenience of operation include soot blowers and feedwater regulators.

a. Safety Valves. A safety valve is installed to prevent excessive pressure in the boiler. Its construction, installation, and performance is rigidly described in the ASME Boiler Code. Each boiler has at least one safety value; if the boiler has more than 500 square feet of heating surface, two or more valves are installed. The capacity of the safety valve must be sufficient to discharge all the steam generated by the boiler without allowing the pressure to rise more than six per cent above the maximum allowable working pressure. A typical direct spring loaded safety or pop valve is shown in Figure 16. This valve is often called a pop valve because of the characteristic sound made when it opens. A safety valve opens rapidly because as soon as it lifts off its seat, additional surface is exposed for the boiler pressure to act upon. This additional surface exposed to the pressure causes the valve to "pop" wide open. Because of the large area subjected to the steam pressure and the "reactive" force of the flowing steam, the valve does not close until the pressure drops considerably below that which caused it to open. The difference between the set or popping pressure and the closing pressure is called the "blowdown."

(Cont'd)

(1) A safety valve normally requires two main adjustments. The popping pressure normally can be adjusted to 10 per cent above or below the pressure for which the valve spring is designed. This is done by tightening or loosening the spring. A new spring must be installed if the desired change is more than 10 per cent of the rated pressure. "Blowdown" can be increased by raising the adjusting ring. The code requires that the valve should be adjusted to close after blowing down not more than four per cent of the set pressure but not less than two lbs. Lifting levers are provided to lift the valve from its seat when boiler pressure is at least 75 per cent of that at which the valve is set to pop, to check the action and to blow away any dirt from the seat. This should be done quarterly.

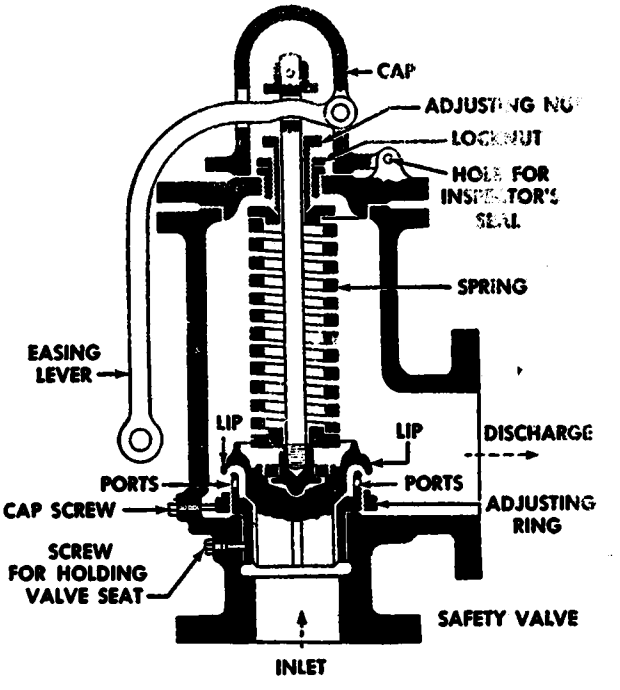


Fig. 16. Typical Safety Valve

(2) The setting and adjustment of safety valves should be performed only by authorized inspectors. All valves should be properly sealed. The valve should be tested annually and whenever the spring or blowback ring has been adjusted. When making a hydrostatic test of the boiler, be sure to remove the safety valve or clamp the valve disk to its seat. (This is commonly called "gagging" a safety valve.)

(3) In addition to the annual test of the safety valve, it should be inspected daily to be sure that dirt, scale, or other foreign matter does not collect between the coils of the safety valve spring. Whenever the valve pops normally, the popping pressure should be noted. If it does not pop within a pound or two of the set pressure, test the pressure gauge. If the gauge is correct, immediately have the valve reset by a boiler inspector or other authorized person.

b. Water Columns and Gauge Glasses

(1) A water column is a hollow cast iron, malleable iron, or steel vessel having two connections. The top connection enters the steam

(Cont'd)

space of the boiler through the tip of the shell or head and the water or bottom connection enters the shell or head at least six inches below the lowest permissible water level. The valves or cocks used in these connecting lines are of a type in which the open or closed condition is clearly indicated. They must also be of a "blow-through" construction which prevents stoppage by deposits of sediments. These cocks, often called try cocks or gauge cocks, are located above and below the normal water line on the water column to permit the operator to check up on the gauge glass reading. Boilers require only two cocks if they are not over 36 inches in diameter and the heating surface does not exceed 100 square feet. Figure 17 shows a typical water column for medium and low pressure work equipped with high-low alarm try cocks and gauge glass.

(2) "High-Low" alarms consist of two floats or weights which operate an alarm whistle in accordance with the water level.

(3) The gauge glass shows the operator the water level in the boiler. If no level can be detected in the glass, it is either high or low. By blowing the try cocks, the operator can determine which it is and take corrective measures.

(4) The water column and gauge glass should be blown down daily to see that the valves between the boiler and the glass are free and open. Note how quickly the water returns to normal level; then try the gauge cocks until sure of water level. Stop all leaks immediately. The high-low alarm, if installed, should be tested weekly by purposely raising and lowering the water level to insure that it is in perfect order. Annually, the entire water column should be completely dismantled and all parts inspected. This should be done at the time of the annual boiler inspection. All worn parts should be repaired or replaced to provide trouble-free operation.

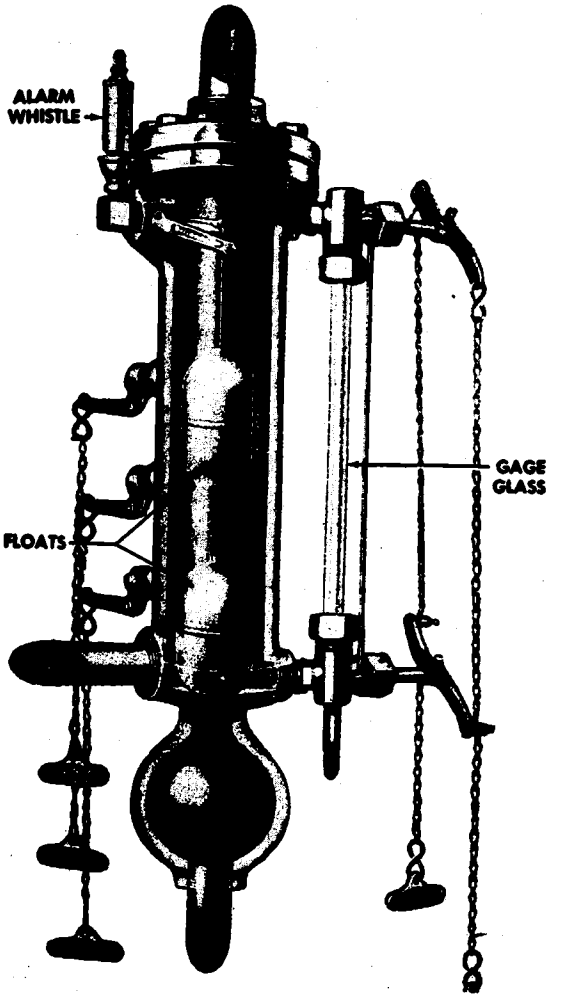


Fig. 17. Typical Water Column

(Cont'd)

c. Pressure Gauges

(1) Pressure gauges are instruments which measure or indicate pressure. They are essential to the safe operation of a boiler plant. Pressure acts inside a hollow, flattened, bent tube called a Bourdon spring tube. The pressure tries to straighten it, moving the lever system which turns the pointer. The gauge is calibrated by adjusting screws in the lever system mechanism. Figure 18 illustrates a typical pressure gauge.

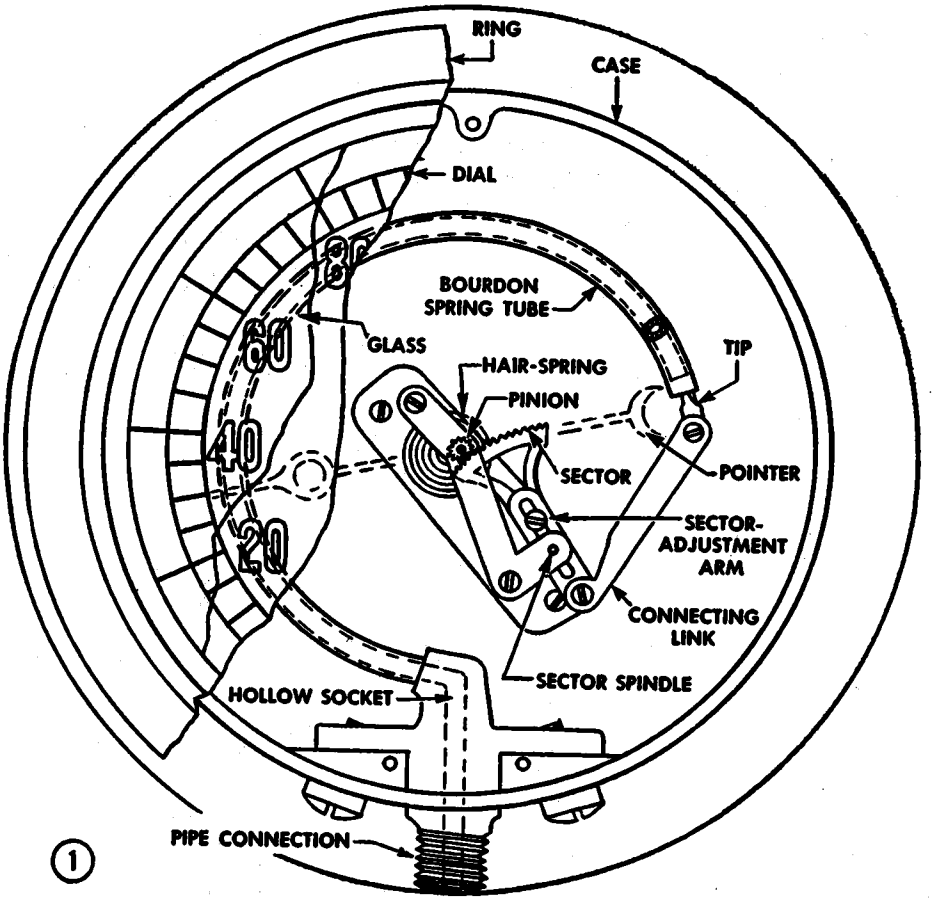


Fig. 18. Bourdon Tube Pressure Gauge

(2) The following steps should be taken to maintain gauges in good condition.

(a) Protect gauge from excessive pressure. This can be done best by installing gauges which are calibrated for at least one and a half times the expected working pressure.

(Cont'd)

(b) Keep cover tight. Replace broken glass promptly.

(c) Protect gauge from vibration.

(d) Do not oil the gauge mechanism.

(e) Protect the gauge from rapid fluctuations in pressure. Use a dampening device if necessary. A dampening device is usually an orifice with a very small opening installed in the pipe leading to the gauge. It prevents the rapid changes in pressure from hitting the Bourdon tube suddenly which might injure the levers and spring mechanism.

(f) At the annual boiler inspection, check the gauge against a dead-weight tester or against a standardized gauge.

d. Blow-Off Valves and Piping

(1) Each boiler must have at least one blow-off connection consisting of pipe (known as the blow-off line) and a slow opening valve. The pipe, installed at the lowest water space available, must be not less than one inch or over two inches. Extra strong pipe must be used for pressures over 100 psi. Because sediment collects in the blow-off line and since there is no circulation of the water, the pipe may become overheated and burn out. The pipe is, therefore, protected against direct furnace heat by brick work or other heat resisting material which is so constructed to allow for inspection of the pipe. For steam pressures up to 100 lbs., one slow-opening valve may be used. Two slow-opening valves or a slow-opening valve and cock are required for pressure above 100 lbs. The valves are installed in the pipe at convenient locations for ease of operation. A typical slow-opening valve is shown in Figure 19. A slow-opening valve is one which requires at least five complete turns of the operating mechanism to change from the completely closed positions and vice versa.

(2) Where several blow-off lines from more than one boiler are connected to a common header, a guard valve is provided to protect workers from being scalded in any boiler which is down for repairs.

(3) A typical arrangement provides a blow-off valve and a guard valve in tandem on each blow-off connection. (See Figure 20.) In order to protect the seating surfaces of the guard valve and insure its continued tightness, it is customary to open the guard valve wide before cracking the blow-off valve proper.

(4) Open the blow-off valves at least once each day. The frequency and amount of blowing down is generally determined from the chemical analysis of the boiler water. Whenever the boiler is washed out and

(Cont'd)

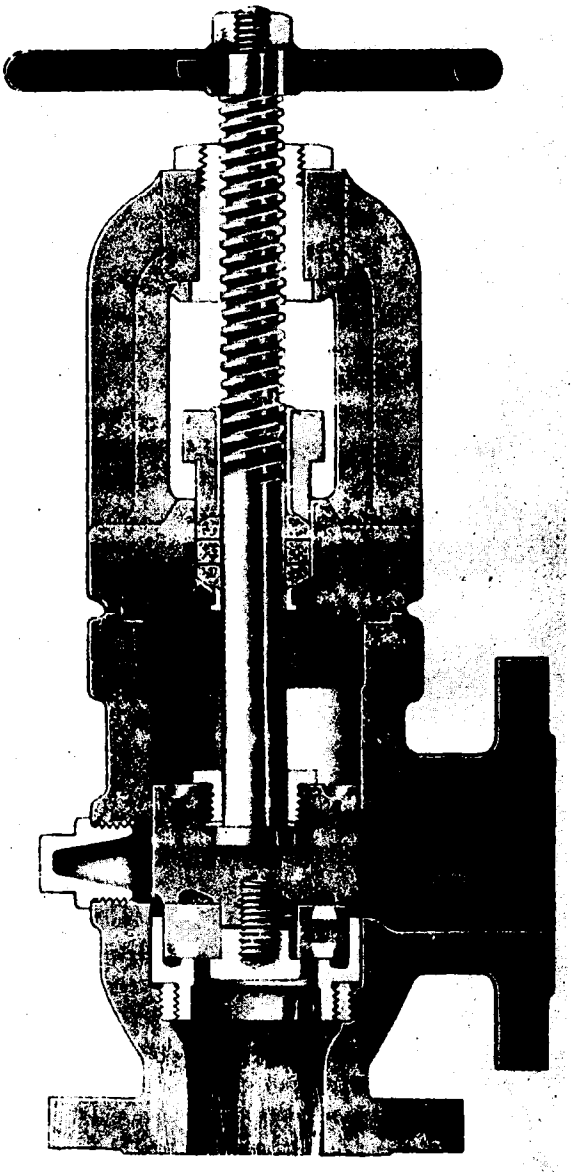


Fig. 19. Typical Angle Slow-Opening Blow-Off Valve

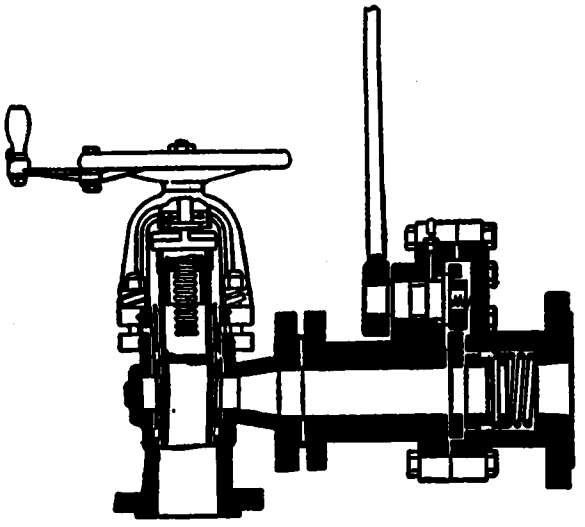


Fig. 20. Tandem Blow-Off Valves, Direct-Acting Valve in Series with Seatless Angle Valve

prepared for internal inspection, the blow-off line and blow-off valves should be repaired whenever practicable. Inspect the discharge line leading from the valves to insure that excessive rigid mounting will not interfere with normal expansion and contraction.

BULLETIN NO. LR-24

MAINTENANCE OF CONCRETE FLOORS

ONE OF A SERIES OF BULLETINS
ON FLOOR MAINTENANCE

PHA LOW-RENT HOUSING
BULLETIN

PUBLIC HOUSING ADMINISTRATION
HOUSING AND HOME FINANCE AGENCY WASHINGTON 25,D.C.

APRIL 1951

LIST OF BULLETINS
WHICH HAVE BEEN PUBLISHED

Bulletin No.	Title	
LR-1	Zoning and Rezoning	
LR-2	Subsurface Soil Investigation	
LR-3	Site Planning	)
LR-4	Site Engineering	) A series
LR-5	Structural Design, Materials and Methods	) of eight
LR-6	Architectural Planning and Design	) Housing
LR-7	Plumbing, Heating and Ventilation	) Design
LR-8	Electrical	) Notes
LR-9	Lawns and Planting	)
LR-10	General Design	)
LR-11	Selection of Utilities	
LR-12	Construction Contract Documents	
LR-13	Guide Specifications	
LR-14	Equipment Contract Documents	
LR-15	Operation and Repair of Heating Systems (Care of Boilers Out of Service)	
LR-16	Corrosion of Underground Piping	
LR-17	Rules for Boiler Operation	
LR-18	Preparation of Exterior Surfaces for Repainting	
LR-19	Control of Condensation in Crawl Spaces	
LR-20	Glazing	
LR-21	Maintenance of Wood Floors	
LR-22	Basic Specifications for Rural Nonfarm Housing	
LR-23	Operation and Repair of Heating Systems Boilers (Types, Use and Repair)	
LR-24	Maintenance of Concrete Floors	

NOTE: Some bulletins will be issued in parts, of which one or more will be contained in the initial release of each bulletin; other parts will be issued subsequently from time to time as they are completed.

HHFA
PHA
4-24-51

Bulletin No. LR-24

Maintenance of Concrete Floors

1. Introduction. For more than 2,000 years concrete floors have been installed in all types of buildings, and this fact offers testimony to the satisfactory performance of concrete as a flooring material. According to historians, the Romans knew about concrete floors as far back as 134 B.C.. In those days such floors were considered a luxury and were found only in the homes and tombs of the wealthy. Today, because of modern technical developments, concrete floors are available to everyone. Such floors, when properly prepared and installed, provide strong, durable surfaces that are fire-safe, decay-proof, and long-lasting. In addition, they are rat-proof and the best barriers against termites. If provided with regular maintenance, concrete floors will give good service and always present a satisfactory appearance. Even the early users of concrete floors realized that those surfaces needed care in order that they be preserved. It is not known what degree of protection was afforded by the earliest methods but the fact remains that the need and importance of concrete floor maintenance and care was recognized almost from the start.

2. Purpose. This bulletin describes methods for maintaining concrete floors and their finishes and for refinishing such floors when their condition requires it.

3. Concrete Floor Treatments. One of the advantages seldom thought of in connection with concrete floors in residences is the variety of finishes and coverings which may be used. Practically any kind of a surface desired can be applied to a concrete floor. The slab itself, troweled smooth in its neutral color, presents a very agreeable surface, and it may be sealed and waxed. The troweled slab may also be painted and for this treatment a wide choice of colors is available. To add a new appearance to an old concrete floor, the slab may be colored with an inorganic acid stain applied directly to the surface. Coverings such as carpeting, linoleum, asphalt tile, rubber tile, cork tile, and similar materials may also be used over concrete floors. This bulletin does not discuss the application of floor coverings but gives information concerning the preparation of the concrete floor when they are to be applied.

A Sealed And Waxed Concrete Floor

4. Maintenance of Concrete Floors. Properly constructed concrete floors require only regular maintenance such as cleaning and waxing. Periodic cleaning is essential to durability, as grit and dirt ground into the surface by foot traffic accelerates wearing away of the finish.

Remove Dust and Grit Frequently

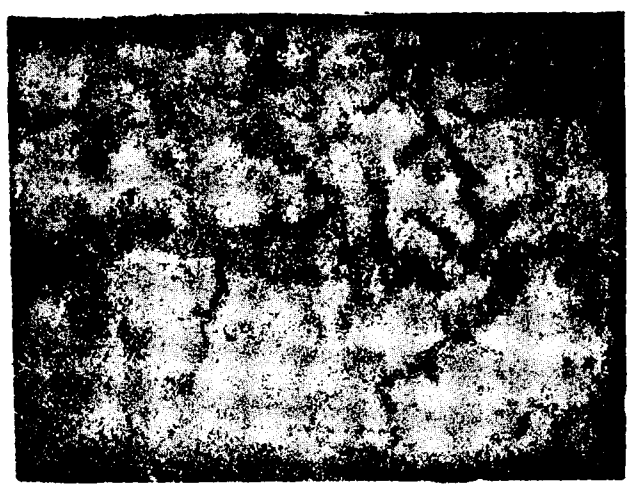
a. Daily Care. For daily care, concrete floors should be dusted with a soft brush to remove mild dirt, dust, and grit. Unwaxed floors which are painted or coated with a sealer may be rubbed with an oil-treated mop to brighten the finish after it has been dusted clean. Waxed floors, whether sealed or painted, should be rubbed with an oil-free mop, since oil softens the wax.

b. Periodic Care. Although dust and grit may be removed by daily brushing, the finish over certain areas of the floor, such as in traffic lanes, will in time become dirty, greasy, and spotted, and must be cleaned. Areas where milk, fruit juice, syrup, or fat has been spilled must also be washed before any of these have an opportunity to penetrate or etch the surface. Any floor surfaces to which the above conditions apply, whether they be waxed, painted, or sealed, should be thoroughly washed with warm, slightly soapy water, using a stiff bristled brush or mop, then rinsed with clear water. After drying the floor should be rewaxed to protect the finish and improve its appearance. The use of soap for regular cleaning of unpainted or untreated concrete floors is not recommended, as a scum of lime soap may be formed on the surface of the floor and this is difficult to remove. When washing bare concrete floors, the surface should be scrubbed with hot water and a scouring powder, or a trisodium phosphate solution made up of 3 oz. trisodium phosphate to a gallon of water. First wet the floor with clear water and sprinkle it uniformly with scouring powder. Rub the surface briskly with a stiff bristled brush to remove dirt, then rinse the floor with clear water. When the floor dries thoroughly, it may be waxed.

Washing a Concrete Floor

5. Concrete Floor Problems. If properly constructed and maintained, a concrete floor offers unlimited possibilities as an ideal surface from the standpoint of appearance and durability. But if it is lacking in either of these essentials, problems may arise. Dusting and pitting of a concrete floor may be associated with faulty construction or improper maintenance, or both. Dampness and surface cracks usually point to some violation of construction practices while a stained floor or one with a damaged finish can frequently be attributed to poor care and maintenance.

a. Dusting. Dusting of concrete floors indicates there has been some violation in the basic rules for making, placing, curing, or finishing the concrete. The life of a floor depends primarily on the observance of such rules. When disregarded, trouble results. When a concrete floor commences to dust, the dusting may be controlled by applying material to harden and bind the surface. A number of proprietary hardening materials are available. Such substances as magnesium fluosilicate, zinc fluosilicate and sodium silicate will also produce good results (see par. 7a(2)(a) and (b)). But use of any one of these materials cannot be considered as a cure-all for a poorly built floor, as inferior materials or careless workmanship cannot produce a perfect wearing surface. Improper protection from plaster, mortar and concrete droppings during construction may also cause new concrete floors to dust. This waste material is ground into the floor and is pulverized under traffic. To correct this, sweep the surface, then scrub it with warm water, scouring powder, and a scrubbing machine fitted with a wire bristled brush or pad of fine steel wool. Remove loose dirt by mopping, then scrub with clear, warm water and a fibre brush. This treatment also removes thin layers of soft material which results from over-troweling the concrete.

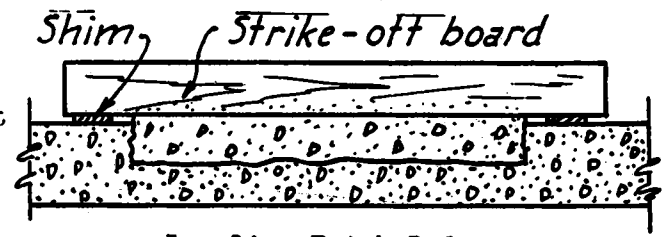


A Defective Concrete Surface Which Will Dust

b. Pitting of Floors. Improperly constructed floors frequently become pitted under heavy impacts. If not corrected, pitting will be expanded by other impacts to the point where patching is necessary.

(1) Preparing the Patch. When patching a concrete floor, chip away the surface to a depth of at least 1 inch. Make the edges of the chipped-out area perpendicular, as patches installed with feathered edges will soon break down. Clean the area of loose particles, and saturate it and the surrounding surface with water for several hours before placing the new concrete.

(2) Patching. After filling the patch with concrete, place wood strips 1/4-inch thick along the edge of the patch on each side to act as slides for the strike-off board and to permit leveling of patch slightly above the level of the floor. This practice is essential so that the concrete may attain initial shrinkage before being troweled down to its final plane. After striking-off, allow the patch to set from 1 to 2 hours before troweling.



Leveling Patch Before Final Troweling

c. Surface Dampness. Dampness of concrete floors placed directly on earth is due to condensation, leakage, or seepage, and remedies will depend upon which of these three causes prevail. Leakage through cracks is readily apparent, but there may be a question as to whether dampness is due to seepage or condensation. To determine which is the cause, place a thin flat sheet of bright tin about 6 inches square in direct contact with the damp area and let it remain undisturbed for about an hour. If the visible surface of the tin remains dry, the dampness is caused by seepage; but if it becomes moist, condensation is the cause, although seepage may still be a factor.

(1) Condensation. Condensation is caused by precipitation of moisture from humid air coming in contact with relatively cool surfaces. It may be prevented or minimized by the additional heating of the air, by dehumidifying it, or by ventilation. Ventilation is particularly effective in carrying off excessive amounts of water vapor from washing and drying clothes, shower baths, and cooking. If dampness persists despite these measures, the problem may be one of leakage or seepage.

(2) Leakage or Seepage. Dampness due to leakage or seepage is more difficult to correct and is frequently due to defective drainage, cracks or absence of a watertight joint at the junction of wall and floor. Before making extensive or expensive repairs, check the drainage system and, if necessary, relocate or repair downspouts and gutters; rebank earth around the house so that water drains away from the walls; and connect downspouts with leads that carry water away from the foundation. Cracks in the floors that have resulted from settlement of wall footings and failure of the joint between the wall and floor slab may be corrected by cutting the crack or joint out to a depth of 1½ or 2 inches and filling the space with hot tar or a mixture of tar and sand. A constantly damp surface may indicate the presence of a water head directly beneath the floor, in which case there is no recourse but to install membrane waterproofing. The term "membrane waterproofing" implies not merely a single ply of felt laid on the floor, it means the application of a membrane containing several plies of waterproof felts mopped down with hot asphalt and covered with 2 inches of concrete topping, steel-troweled to a smooth, even finish. Membrane waterproofing may be installed over the old floor. But if it is desired to maintain the existing floor level, the old surface must be cut away to a suitable depth to install both waterproofing and new topping.

Filling Joint Between Wall and Floor

Membrane Waterproofing Over Old Concrete Floor

d. Cracks. There are two types of cracks in concrete floors, namely, structural cracks which originate in the base and extend through the finish, and surface cracks which are confined to the wearing course. The latter may extend through the surface or be superficial, such as hair cracks or crazing.

(1) Structural Cracks. Shrinkage, temperature changes, or settlement can be the cause of structural cracks. If there is recurrent movement, little can be done other than to keep the cracks filled with mastic material.

(2) Surface Cracks. Cracks in the wearing course may be removed, if shallow, by grinding the surface or by installing a new surface. If the cracks are not too large, fill them with varnish or resin. They will remain visible but accumulations of dirt will be prevented. Artificial resins (sold at paint stores) are used. Powder the resin and dissolve it in a solvent such as xylol in the amounts of 6 pounds of resin per gallon of solvent. This produces a varnishlike material which is run into the cracks. To make a thicker solution for wider cracks, add cement.

6. Removing Old Finishes and Stains. Before a concrete floor is given its first finishing coat or before it is refinished, it must be properly prepared. Such preparation consists of removing dirt and grease (see par. 4b) and sometimes removal of the old finish if it is in bad condition or if another type of finish cannot be applied over it. For example, all old paint should be removed from a painted floor which is to be sealed or stained with organic stain. Likewise, all wax should be removed from the floor before refinishing with any other material. Floor hardening materials should also be removed before applying concrete floor sealer.


Removing Loose Paint

a. Paints. Dissolve 2 pounds of caustic soda (household lye) in 1 gallon of hot water. Wear rubber gloves. Mop the solution on the surface. After about 30 minutes, the paint will have softened and may then be scraped off with a wide steel scraper or an electric rotary machine equipped with a wire brush. Rinse the surface with clean water.

b. Concrete Floor Hardeners. The coating resulting from the application of floor hardeners generally makes a good base for applying a paint or wax finish. However, any chemical treatment should be given well in advance of the finish material to allow the concrete to dry thoroughly. Before applying sealer, floors treated with hardeners such as the fluosilicates and sodium silicate should be scrubbed thoroughly with hot water and scouring powder, and rinsed with clear hot water. If this treatment is not effective in removing the floor hardener, treat the surface with a 10 percent solution of sulphuric acid allowing it to remain there for several hours. Wash the floor with clear water and to assure complete removal of the acid, give the surface a final flushing with clear water.

c. Sealers. Any type of finish material may be applied over a sealed concrete floor. Therefore, there should be little need for removing the sealer except if it contained a stain to color the floor and a change of color is demanded. In such instances the only practicable method would be to grind off the surface with a floor grinding machine to a depth of about 1/4 inch. After grinding, the floor should be swept clean of dust and washed with hot water before applying another finish material.

d. Wax. To remove a wax finish from a concrete floor, scrub the surface with steel wool which has been dampened with turpentine or mineral spirits. Rinse the floor with clean warm water and allow it to dry thoroughly.

e. Removing Stains. Practically every type of stain can be removed from a concrete floor. But old, long-neglected ones require patience and often the cleaning process must be repeated several times.

Remove Stains Promptly

(1) Ink. The acid content of ordinary writing ink may etch concrete. To remove a stain of this type, use a strong solution of sodium perborate and whiting mixed with hot water until a thick paste is formed. Apply paste to the stain in a 1/4-inch layer and leave it until it is dry. If a blue stain remains after removing the poultice, repeat the process. But if a brown stain shows, mop with a solution made by mixing 1 pound of oxalic acid powder with 1 gallon of water.

(2) Tobacco and Urine. To remove tobacco and urine stains, dissolve 2 pounds of tri-sodium phosphate lime in 1 gallon of hot water. Mix 12 ounces chlorinated lime to a paste in a shallow enameled pan, adding water slowly and mashing the lumps. Pour this paste and the tri-sodium phosphate solution in a 2-gallon stoneware or glass jar and fill with water. Stir well and allow the lime to settle. To use, add some of the liquid to powdered talc until a thick paste is obtained and apply it with a trowel to form a 1/4-inch thick poultice. When dry, scrape off with a trowel and apply more if necessary. This mixture is a strong bleaching agent and is corrosive to metals.

(3) Coffee. To remove coffee stains, apply to the stain a cloth saturated in glycerin diluted with four times its volume of water. Javelle water is also effective.

7. Application of Coatings. Coatings may be applied to interior concrete floors for decoration or protection, or both. Coverings should cover the surface of the floor thoroughly and effectively, and produce a solid appearing finish. Four types of coatings recommended are concrete floor hardeners; concrete floor sealer; varnish-type concrete floor paint; and rubber-base concrete floor paint.

a. Concrete Floor Hardeners.

(1) Preparation of Floors.

(a) Untreated Floors. When preparing untreated floors, remove dust by brushing or sweeping. If very dirty, scrub floor with a trisodium phosphate solution (par. 4b), using a stiff bristled brush. Rinse with clear water and let dry.

(b) Treated Floors. Surfaces previously treated with floor hardener should be scrubbed with warm water and a scouring powder. Remove wax finish according to direction in par. 6d.

(2) Application to New and Old Floors.

(a) Fluosilicates. Either of the fluosilicates may be used separately as a hardener but a mixture of 20 parts zinc fluosilicate and 80 parts magnesium silicate is recommended. For the first application, dissolve 1/2 pound of the fluosilicate in 1 gallon of water and 2 pounds to each gallon for subsequent applications. Mop the solution on the floor, which must be dry and free of dust. Apply two or more coatings, but allow each to dry between applications. About 3 or 4 hours are required for absorption, reaction, and drying. After the last application has dried, mop the floor with clear water to remove incrusted scales, otherwise white stains may be formed.

Applying Floor Hardener

(b) Sodium Silicate. Commercial sodium silicate (waterglass), another hardening material, is about a 40 percent solution. It is a viscous material and each gallon requires thinning with 3 gallons of water before it will penetrate concrete. Apply 2 or 3 coats, drying each thoroughly before applying the next. To apply, pour the solution on the surface and and spread with a broom. After each coat hardens, scrub the surface with water, using a stiff fibre brush or scrubbing machine to assist the penetration.

b. Concrete Floor Sealer. The use of concrete floor sealer on a surface which has been treated with floor hardener is not recommended except if it has been at least 3 years since application of the hardener, or if it is removed as directed in par. 6b. Likewise, concrete surfaces which have been painted, cannot be coated with sealer until all paint has been removed (par. 6a). Sealing reinforces the cellular structure of the concrete against powdering or dusting; it protects it from abrasion; minimizes cleaning operation; and generally lengthens the life of the floor. If not protected by a good sealer, surface pores in the concrete break down from the abrasion of foot traffic and if allowed to continue, will develop into a serious dusting condition which is most difficult to correct.

Penetration of Paint

Penetration of Sealer

(1) Preparation of Floor.

(a) New Floors. Uncoated floors should be scrubbed thoroughly with a trisodium phosphate solution and hot water to remove all dirt, dust, or foreign matter. Rinse completely with clear water, and dry.

(b) Sealed Floors. Resealing is required about once every three years, and where traffic wear is not severe it can be extended to four or five years. Before resealing, clean the surface of all dust, hardeners, paint, or wax (see pars. 6a, b, and d). Floor hardeners must be removed before sealer is applied.

(2) Application of Sealer. Apply two coats of a good quality sealer, but allow the first coat to penetrate thoroughly and dry before putting on the second coat. Spread the sealer liberally on the floor with a mop and wipe off any excess amount remaining. Some sealers contain a concentrated color material having a high percentage of liquid and a low percentage of pigment which enables it to properly penetrate. Sealers are now available in beautiful shades and if applied according to the manufacturer's directions will withstand the hardest of traffic as well as resist grease, alkali, and many acids. A coating of paint or wax may be applied over the sealer, if desired, but it is not necessary. Sealed floors are easy to maintain as they can be swept frequently, dry mopped, waxed, or washed with warm soapy water or a mild cleaning compound without marring the finish.

Applying Floor Sealer

(3) Waxing. Apply wax immediately after the sealer has dried and buff the surface with a floor polishing machine or weighted brush. Colored waxes are available and may be obtained in shades matching the floor sealer.

c. Concrete Floor Paints. Painted concrete floors require more care than sealed or waxed floors. Paint wears rapidly, expecially in traffic lanes, consequently the surface must be renewed more frequently in order to retain a satisfactory appearance and avoid a major refinishing job. Unlike sealer, paint remains on the surface because there is lack of sufficient vehicle or liquid to permit deep penetration of the concrete. A wide variety of paints are available for concrete. A wide variety of paints are available for concrete floors. A concrete floor must be dry when paint is applied because moisture on the floor surface or coming from beneath the slab will cause paint to peel and chip off.

Paint floors only when the atmosphere is dry, as warm, moisture-laden air condensing on the slab before the paint is thoroughly dry will result in an unsatisfactory coating.

Renew Concrete Floor Paint Frequently to Prevent Worn Spots as Shown

(1) Varnish Type Concrete Floor Paint. This type of paint may be applied to floors which are not subject to dampness.

(a) Preparation of Surface, First Painting. Scrub the surface well, using a short, stiff bristled brush with hot water and mild soap. Rinse thoroughly with clear water and allow the floor to dry.

(b) Preparation of Surface, Repainting. If the surface has been waxed and is in good condition except for worn areas, scrub it with steel wool dampened in turpentine or mineral spirits. If the coating has failed and is loose, do not use paint remover, but remove paint as directed in par. 6a.

(c) Application of Paint, First Painting. To each gallon of varnish base paint, add 1 quart of a mixture of 2 parts spar varnish and 1 part turpentine. Apply this for the first coating, spreading out by vigorous brushing. Allow this coating to dry thoroughly and apply the straight varnish-base paint as a second coat. When dry, apply two coats of paste or liquid wax.

(d) Application of Paint, Repainting. (see par. 7c(1)(b). Over worn spots apply one coat of paint diluted according to directions for the first coat application in par. 7c(1)(c). When paint is dry, apply one coating, full strength, over the entire floor and when it has hardened, put on two coats of paste or liquid wax.

(2) Rubber-Base Concrete Floor Paint. Rubber-base concrete floor paint is especially adapted for use on concrete floors which are on or below the ground level and those which are subject to ground moisture.

(a) Preparation of Surface, First Painting. Clean off oil, wax, and grease by washing the floor with a solution of 1½ ounces of trisodium phosphate and 1½ ounces of soap chips in 1 gallon of water. Scrub the floor with this solution using a stiff bristled brush. Rinse the floor thoroughly with hot water.

(b) Etching the Surface. When a new or smoothly troweled surface is to be painted with rubber-base paint, it should first be etched with acid. This treatment permits the rubber-base paint to better penetrate the surface of the concrete, and provides adequate preparation for the floor regardless of dust, dirt, or previous coatings of wax. For etching the floor, use a 10 percent solution of hydrochloric (muriatic) acid. Apply the acid evenly with a long-handled brush and allow it to remain on the surface until it stops effervescing or foaming. Rinse the floor with clear water and let it dry thoroughly before applying paint. If the acid has worked properly, water sprinkled on the floor will sink in at once; if it remains on the surface, repeat the etching process.

(c) Preparation of Surface, Repainting. Where old rubber-base paint is in good condition except in traffic lanes, the cleaning of wax, grease, or other foreign matter from the floor will be sufficient preparation. (See par. 6.) If the old paint has failed generally, it must be removed (see par. 6a).

(d) Application of Paint, First Painting. Apply first coat of rubber-base paint thinned at least 25 percent with mineral spirits to reduce viscosity of the paint and allow thorough penetration. Apply second and third coats without thinning, at intervals of at least 24 hours. Paint dries to touch in about 1 hour and the surface is ready for use in 1 day.

(e) Application of Paint, Repainting. (See par. 7c(2)(c).) Apply worn spots with one coat of paint diluted according to directions for the first coat application in par. 7c(2)(d). When paint is dry, apply one coat without thinning over the entire floor. Wait one day for thorough drying and apply two coats of paste or liquid wax.

d. Waxing Floors. Wax may be applied to untreated concrete floors or to floors which have been sealed or painted. The waxes commonly used on wood floors can be applied to coated or bare concrete floors. As these waxes vary in color from yellow to brown, they should be used sparingly as any wax that may penetrate into the floor will tend to darken it or the finish. Solid wax, liquid wax, and water-emulsion

wax may be used on concrete floors. Where wax is to be applied, any chemical treatment for hardening the surface should be used well in advance of the waxing to allow the concrete to dry thoroughly.

8. Preparing for Floor Coverings. Remove old surface treatments such as wax, paint, and floor hardeners, before applying floor covering. To remove wax, floor hardeners, paint, and stains, see par. 6. Complete removal of some floor hardeners is difficult, therefore, as an alternate to the method described in par. 6, the floor hardener may be allowed to remain on the floor and a coating of cut-back asphalt primer applied over it. This material forms an ideal surface upon which to apply the adhesive when laying the floor covering. Small spots of remaining paint can be removed with a blow torch and scraper. Wash the floor with clear hot water, for if traces of preparations used for removing old finishes remain on the floor they will prevent proper adhesion of floor covering cement and eventually discolor and disintegrate the covering. As an extra precaution, after the floor has dried, treat it with a 10 percent solution of sulphuric acid; allow it to dry and flush it again with clear water. To remove linoleum cement or rubber tile cement, wash the surface with warm water and a wire brush. To remove asphalt tile cement, apply a solution of 75 percent carbon tetrachloride with 25 percent naptha or ethyl gasoline. Let the solvent soak in the floor, then remove the old cement with a scraping tool.

Applying Cut-Back Asphalt Primer

BULLETIN NO. LR-25

INDOOR TENANT ACTIVITY AREAS

PHA LOW-RENT HOUSING
BULLETIN

PUBLIC HOUSING ADMINISTRATION
HOUSING AND HOME FINANCE AGENCY WASHINGTON 25, D.C.

APRIL 1951

LIST OF BULLETINS WHICH HAVE BEEN PUBLISHED

Bulletin No.	Title	
LR-1	Zoning and Rezoning	
LR-2	Subsurface Soil Investigation	
LR-3	Site Planning	A series of eight Housing Design Notes
LR-4	Site Engineering	
LR-5	Structural Design, Materials and Methods	
LR-6	Architectural Planning and Design	
LR-7	Plumbing, Heating and Ventilation	
LR-8	Electrical	
LR-9	Lawns and Planting	
LR-10	General Design	
LR-11	Selection of Utilities	
LR-12	Construction Contract Documents	
LR-13	Guide Specifications	
LR-14	Equipment Contract Documents	
LR-15	Operation and Repair of Heating Systems (Care of Boilers Out of Service)	
LR-16	Corrosion of Underground Piping	
LR-17	Rules for Boiler Operation	
LR-18	Preparation of Exterior Surfaces for Repainting	
LR-19	Control of Condensation in Crawl Spaces	
LR-20	Glazing	
LR-21	Maintenance of Wood Floors	
LR-22	Basic Specifications for Rural Nonfarm Housing	
LR-23	Operation and Repair of Heating Systems Boilers (Types, Use and Repair)	
LR-24	Maintenance of Concrete Floors	
LR-25	Indoor Tenant Activity Areas	

NOTE: Some bulletins will be issued in parts, of which one or more will be contained in the initial release of each bulletin; other parts will be issued subsequently from time to time as they are completed.

INDOOR TENANT ACTIVITY AREAS

CONTENTS

- -

INDOOR TENANT ACTIVITY AREAS

The purpose of this Bulletin is to assist Local Authorities in planning indoor tenant activity areas, and to achieve maximum use and benefits of the space provided and ease and economy of operation and supervision.

1. STANDARDS AND POLICY, AND THEIR IMPLEMENTATION

PHA standards limit indoor tenant activity space to 10 sq. ft. gross per dwelling unit (see Section 207.1, Low-Rent Housing Manual). This section further states that such facilities may be provided "to the extent that they are consistent with the facilities normally provided or considered proper to be provided to the public in the municipality or location of the project, on condition that they do not constitute a duplication of such existing facilities conveniently located, available and adequate to the project as well as to other existing needs." (It will rarely be practical to provide such space in projects of less than 50 units.)

Local Authorities are responsible for planning and for developing and maintaining working relationships and agreements with local community service agencies for the provision of education, recreation, health, and welfare facilities and services to meet the needs of the residents of the project.

Such groups as councils of social agencies and municipal planning groups, where they exist, will be especially useful in advising Local Authorities concerning facilities and services existing and contemplated in the neighborhood of the project and in assisting in determining needs.

The Local Authority should plan the layout and equipment desired in cooperation with appropriate operating agencies during the initial stages of development.

2. PLANNING PRINCIPLES

The following principles should be observed in planning indoor tenant activity space:

a. Space should be in one unit; and should not be distributed in more than one building.

b. Space should be located as conveniently as possible to all dwelling units. It should be at the centralized play area and adjacent to the pre-school area, if one is provided.

c. If it is in the same building with management space, it should be arranged so as to avoid, as far as possible, disturbance to management.

d. If such space is in the same building with maintenance workshop space, noise from maintenance should be reduced to the extent practicable by soundproofing.

e. It is advisable that all tenant activity space be on or above the ground floor.

f. If pre-school space is to be provided, it should be located on the ground floor, not the basement or second floor.

g. There should be access to all rooms without passing through other rooms or going outside; this includes public use toilets, kitchen, and platform, if one is provided, and also sections of rooms divided by folding partitions. (If clinics and child care centers are included in community buildings, there should be direct access to these features by corridor, but not necessarily to all rooms of these centers.)

h. Buildings should be planned to provide a program of diversified activities for all age groups.

i. To the greatest extent possible, rooms should be planned for multiple use.

3. LOCATION OF SPACE

Except for projects of less than 100 dwelling units, it is desirable, where costs permit, that tenant activity space be in a separate building, closely related to administration space, with all use features on or above the ground floor. The building should be located at the principal recreation area and convenient to all dwelling units. Experience shows that when such space is in the same buildings with dwelling units, such as basements of apartments, or combined with management space, noise disturbs tenants or management staffs. In some projects where activity space has been located over management space or adjoining or too close to it, community activities have been curtailed or eliminated in that space. Where activity space must be combined with management space because of cost, the activity space should preferably be planned in a separate wing. If such features as clinics, libraries and adult clubrooms are included, they should be located nearest to management offices. Rooms for children's activities should be removed as far as possible from management.

Where space is distributed in several apartment buildings, the cost of operation is increased, more activity leaders are required, and serious problems of supervision arise. Community agencies seldom have sufficient workers to operate a program successfully under such conditions.

In multi-story buildings, supporting columns are sometimes used which break up room space and interfere with activities. This is especially true where rooms are required to accommodate large groups of tenants.

Activities are more successful at or above ground level, due to difficulties in providing adequate natural lighting and ventilation in basements and the possibility of dampness. Because of the above factors and because it is difficult for young children to climb stairs, pre-school children's activities should never be conducted below ground level or above the ground floor.

- -

4. CIRCULATION

Corridors should provide access to all use features of the building including the platform, public toilets, kitchen, and the sections of rooms divided by folding partitions, in order to avoid the disturbance of activities by "traffic" from other rooms.

Lobbies and corridors should not be over-emphasized and corridors should be only wide enough to meet fire regulations. If this subject is not covered in the local building code, standards prescribed in the 1949 edition of the National Building Code are adequate for circulation. Wider corridors than required are a waste of space and cause discipline problems since they invite children to use them as play space.

5. MULTIPLE USE

Since tenants have a wide range of interests and represent all age groups, the more varied the program, the greater the number who will be benefited. For this reason, the various features of the building should be planned so that they can be adapted to as many uses as possible. For instance, large buildings should include one sizable room for large gatherings and also provide rooms for smaller groups (see Plans 2, 3, 4, and 6, pp. 11, 13, 15, and 20). The smaller rooms should each be provided with one or more closets so that a number of groups can use them and have space to store their supplies and equipment between meetings.

Only such facilities as specially equipped clinics and child care centers should be specifically reserved for a particular use. The need for a particular specialized facility should be balanced against total needs. The minimum provision for a child care center for 30 children, for instance, requires a space of approximately 1300 sq. ft., which necessitates the reduction in size or elimination of other features in order to meet the maximum space allowance for the project.

In a project of less than 500 units, it will generally be inadvisable to assign any space for the exclusive use of a particular activity or service unless some off-site facilities are available.

6. THE VARIOUS ROOMS

a. Meeting Rooms. In projects of 50 to 1,000 units, a meeting room large enough to seat at least 15 per cent of the project tenants should be provided.

Where a platform is included, approximately 6.5 sq. ft. per person, including aisles and crossways, should be allowed for the seating area. This platform should be 12' to 15' deep, and should be 4' high if the length of the meeting room exceeds 35'; otherwise, a height of 3'6" is sufficient. If a platform is not included, an area 6' by the width of the room should be subtracted from the total room area in computing seating capacity, since this amount of space will be required for speakers and other presentations.

In very large projects, the maximum seating capacity of the meeting room should be 800 persons, since only in unusual instances will a larger room be needed and the additional space allowed can be used to better advantage in smaller rooms of various sizes suited to a diversity of activities.

The purpose of the meeting room is to provide space where management can meet with tenants to discuss problems in order to facilitate the operation of the project, and also for such activities as lectures, forums, educational motion pictures, flower and garden shows, and craft and hobby shows.

In projects of 100 dwelling units and under, where the building is not more than 1000 sq. ft., this may be the only room aside from the kitchen and toilets. In larger projects, where this room is 32' or more in length, it may be desirable to divide the room with folding partitions so that two groups may be accommodated. However, the cost of folding partitions for high ceilings is prohibitive and usually these partitions involve maintenance difficulties.

b. Special Activity Rooms. These will be used by such groups as Boy and Girl Scout troops, and youth and adult clubs which not only hold meetings but engage in a variety of activities. They may also be used by the tenant newspaper staff. A room approximately square is more efficient for club activities. It should not be less than 250 sq. ft.; 400 sq. ft. is desirable.

c. Crafts. A great variety of craft activities can be carried on without fixed equipment and can be conducted in a multiple use room. If necessary, the platform in the meeting room can be used for such activities. Only where supervision is definitely available for a considerable time each week should an entire room be equipped for crafts in such a way that it can not be used for other activities.

d. Health Activities. Well baby clinics can be conducted in multiple use rooms with no special provision other than storage for baby scales, records, and necessary supplies. An extensive health program, however, involving such activities as maternity and other clinics, will require about 220 sq. ft. of space including an examining room. 80 to 100 sq. ft., a toilet, dressing space, and a small office (see Plan 6,p.20). This space should preferably adjoin a multiple use room which can be used for health education activities and as a waiting room when other seating space is not adequate.

e. Kitchen. The kitchen will be used for home demonstration activities. A four-burner stove, a 7 to 8 cu. ft. refrigerator, and a double sink are required, with work counters and storage cabinets. Recommended kitchen areas are as follows:

Area of Building (Sq.Ft.)	Under 2000	2000 to 5000	5000 to 10,000	10,000 & Over
Area of Kitchen " "	120-135	135-160	160-180	180-200

The kitchen should be adjacent and have direct access to the largest meeting room. A counter 36" high and at least 7' long with a hinged section 2' long

for access should open into this room. In large buildings, the kitchen preferably should adjoin and have direct access to another multiple use room also. Folding doors or some other device that can be locked should be provided to enclose the space above the counter. The kitchen should have convenient access to the outside to expedite delivery of supplies and removal of trash and garbage. Provision of dishes and utensils should be based on the dining capacity of the largest room, which is figured at 10 sq. ft. per person. (For child care kitchens, see paragraph 7b.)

f. Toilets. The "Report of the Uniform Plumbing Code Committee" issued jointly by the U. S. Department of Commerce and the Housing and Home Finance Agency, July 1949, recommends the following minimum provision of plumbing fixtures for theaters, auditoriums and places of public assembly:

Water Closets			Urinals		Lavatories	
No. of Persons	No. of Fixtures		No. of Persons	No. of Fixtures	No. of Persons	No. of Fixtures
	Male	Female	Male			
1-100	1	1	1-200	1	1-200	1
101-200	2	2	201-400	2	201-400	2
201-400	3	3	401-600	3	401-750	3
Over 400	Add 1 fixture for each additional 500 males and 1 for each 300 females		Over 600	Add 1 for each additional 300 males.	Over 750	Add 1 for each additional 500 persons

A differential in the number of water closets for males and females is usually maintained in provisions for community buildings since urinals are provided in men's toilets. However, it is not necessary to follow this in small buildings, since one of each kind of fixture is sufficient. Total toilet provision for men and women is based on the seating capacity of the largest meeting room.

Toilets should have direct or convenient access from outdoor activity areas. Some operators of community buildings prefer direct access so that the toilets can be available without permitting access to the rest of the building. Others prefer as few entrances as possible in the interest of better control.

g. Storage

(1) Under Platform. Where a platform is provided, the space under it should be used for the storage of folding chairs, tables, and other bulky articles. Dollies with rubber-tired wheels should be provided to facilitate the storage operation, particularly for large meeting rooms.

(2) Chair Storage. If a platform is not provided with storage underneath, 20 sq. ft. of space will be required to store each 100 single folding chairs. One shelf 18" deep should be installed at a height of 5'9" for the

storage of other articles. In some jurisdictions, single chairs are not allowed for more than 10 per cent of the seating in large meeting rooms. Multiple seats are required for the remainder. Some chair manufacturers design dollies to move and store their chairs. There is great variation in the dimensions of these dollies depending on the type of chair, the number in multiples and the number of chairs to be stored. If they are used, the space provided should be based on the dimensions of the dollies.

(3) Table Storage. Dining tables, 8' x 30", are sometimes used. These tables are usually 2-1/4" thick when folded. Up to 20 such tables can be stored in a space 4' x 9'. Two 18" shelves at heights of 4'6" and 5'6" should be placed above for other articles.

Card tables of sturdy construction are needed for a variety of purposes and can also be used for dining. Their usual dimensions are 30" x 30" and when folded are 1-1/2" to 1-3/4" thick. Twenty card tables can be stored in a closet 4' long and 3' deep. A shelf, 24" deep, at a height of 3', can be provided to store 20 additional tables if necessary.

Where platforms are provided, space below may be used for such storage.

(4) General Storage. Items which need to be kept under lock, such as motion picture projectors, record players, microphones, films, records, and other articles for general use, will require storage space. In buildings with more than one activity room, this space should adjoin the corridor or office. (See Plans 2, 3, 4, and 6, pp. 11, 13, 15, and 20.) Three shelves should be provided at least 12" deep, beginning at a height of 4', placing the remainder at 1' intervals.

(5) Outdoor Storage. Storage space should be provided for playground supplies and movable equipment, such as hollow blocks, athletic equipment, craft supplies, and other articles. This space should have direct or convenient access to the outside. Shelves should be provided as recommended for general storage, except that as space permits, the shelves should be 15" to 18" wide. (See Plans 1, 2, 3, 4, and 6, pp. 9, 11, 13, 15 and 20.)

(6) Storage for Activity Groups. In an active program, many groups will use one activity room in the course of a week and most of these will have supplies and equipment to store. It is, therefore, necessary to provide one or more closets for this purpose in or near each multiple use room. (See Plans 2, 3, 4 and 6, pp. 11, 13, 15, and 20.) These closets should preferably be 18" to 2' deep, and 3' to 5' wide, and should be provided with at least 3 shelves, 12" apart, beginning at a height of 3' or 4'. In closets of such dimensions, the depth of the shelves should be 6" less than the depth of the closets to allow space for standing items.

h. Office. In buildings 5,000 sq. ft. and over, it is desirable to provide an office (100 to 140 sq. ft.) to conduct the business aspects of the program. This room may be used also for small committee meetings when not in use as an office. It should be near the entrance for control of the building and for convenience to outdoor areas.

i. Wraps. Due to the limited space available, a coat room is not recommended in projects of less than 1,000 units. Hat and coat racks will be needed in various rooms. For special occasions in the meeting room, a check room can be set up in a multiple use room by using these racks.

7. CHILD CARE CENTER

Some Local Authorities may wish to include a center for child care programs. This should be planned with a separate entrance but easily accessible to the main building. The playroom should open directly onto the play area.

a. Playroom. The playroom is used for eating and sleeping, play and informal educational activities. Twenty-five sq. ft. per child is minimum, and there should not be more than 30 children in one room. Principally for health reasons, most child care specialists recommend, and some jurisdictions require, 35 sq. ft. per child for this room. This should be followed where localities require it. Open shelves (85 to 95 lineal feet) for play materials, a closet for cots and blankets for each playroom, and a closet for supplies are necessary features. (See Plans 5 and 5A for areas.) In addition, 15 movable cabinets, 2' high, 2' wide, and 1' deep, with 2 shelves the dimensions of the cabinet, should be provided so that each child will have a place to store his craftwork and materials. These cabinets can be used to divide the playroom into activity centers.

Linoleum on wood is generally recognized as most satisfactory for floors. If the floor is a concrete slab directly on the ground, it will be necessary to use asphalt tile, since linoleum will deteriorate under such conditions. Concrete without linoleum or asphalt tile is not recommended.

b. Kitchen. A separate kitchen should be provided for the center or the kitchen used for other purposes should be located with easy access to it.

The kitchen should be equipped with a four-burner stove, a double-tray sink, a 9 cu. ft. refrigerator, storage cabinets, work counters, and a serving counter.

Where a separate kitchen is provided, there should be a separate service entrance.

c. Office. An office, 100 to 120 sq. ft., is needed, with a staff toilet convenient to it. This office may be used also as an isolation room, or a separate room for isolation may be provided. A partially glazed partition at one end of the office separating the isolation space is a desirable arrangement. Where the office adjoins the playroom, a partially glazed partition permits parents to observe activities without distracting the children, since one of the values of a nursery school is parent education.

d. Toilets. The generally accepted standard for provision of toilet fixtures is one flush bowl, 12-1/2" to 13" high, and one lavatory, 24" high, for each 10 children. Toilet seats should have apertures 5-1/2" x 6-1/2".

- -

e. Additional Playroom. Plans 5 and 5A (pp. 17 and 18) show the minimum area for 30 children. An additional playroom, and additional cot storage and toilets will be required for a second unit of 30 children.

8. DECORATION

Light, cheerful colors are desirable for walls in community buildings. Avoid depressing colors such as "institutional" brown and gray.

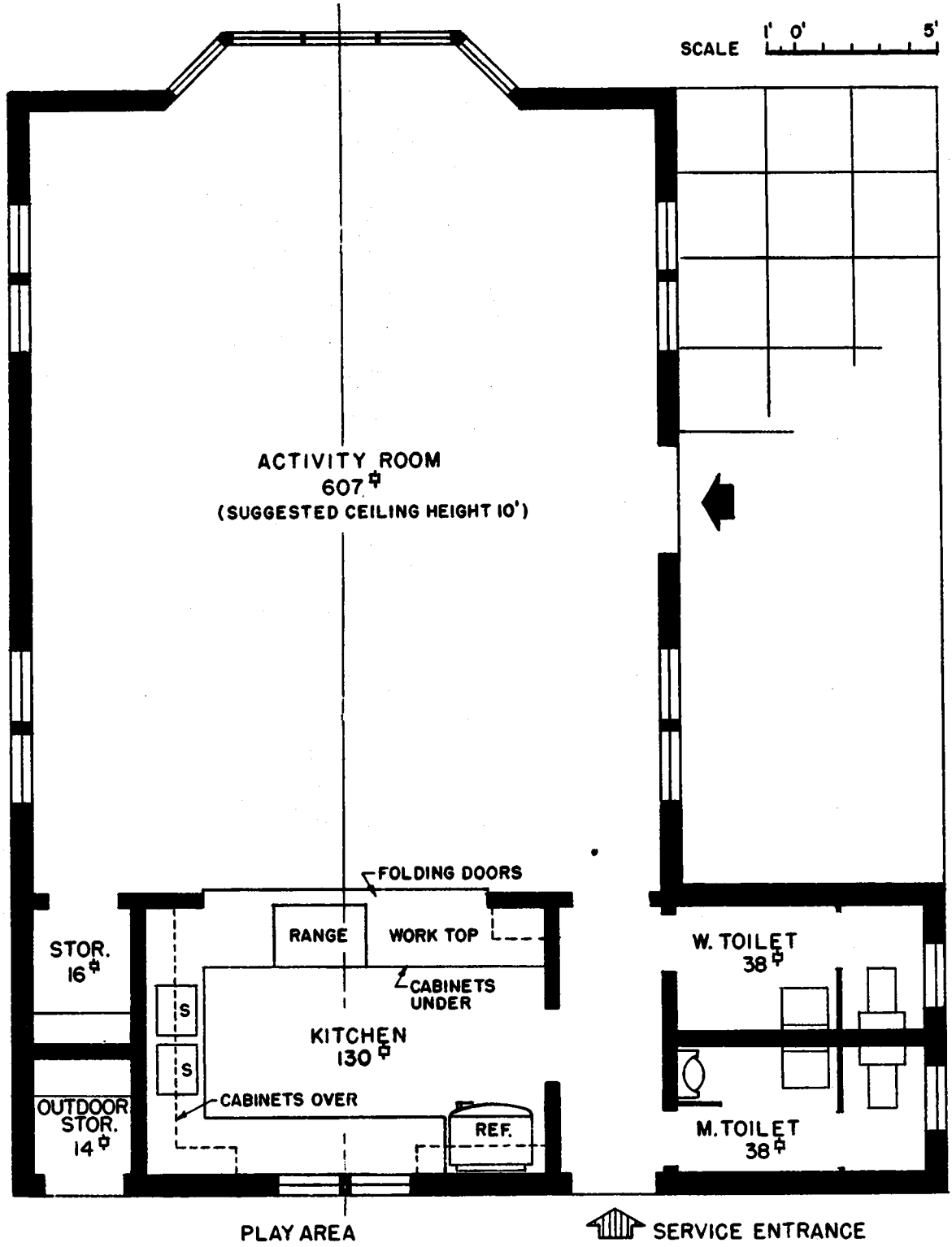
9. DISCUSSION OF PLANS

The plans in this bulletin are designed to show proper interrelation of various rooms and their desirable shapes and sizes. It is expected that the architect will rearrange these plans to fit the site and suit the architectural treatment and construction. Plans are not presented for total space less than 1,000 sq. ft., or a 100-unit project. In such space only one room should be provided with a strip kitchen, toilets, and storage. Neither are plans presented for space over 10,000 sq. ft., or 1,000 units, since few projects will be large enough to be allowed more than this amount of space. In these large projects, the seating area of the largest room should not exceed 5,200 sq. ft. This will provide a seating capacity of 800 for meetings, the maximum recommended.

a. Plan 1. Community Building, 1,000 Sq. Ft., for a 100-Unit Project. This plan provides one multiple use room, a kitchen, toilets, and storage space. The multiple use room seats approximately 75 persons for meetings, allowing free space of 6' by the width of the room for the speaker or other presentations.

The storage space adjacent to this room will store 25 chairs and 9 card tables, with shelves above for other items. The remainder of the chairs for a building of this size must necessarily be placed along the walls. A folding partition, or other device which can be locked, protects kitchen supplies. The kitchen counter provides for home demonstration activities and facilitates serving into the meeting room.

The outdoor storage is required for supplies and other items used on the outdoor area.



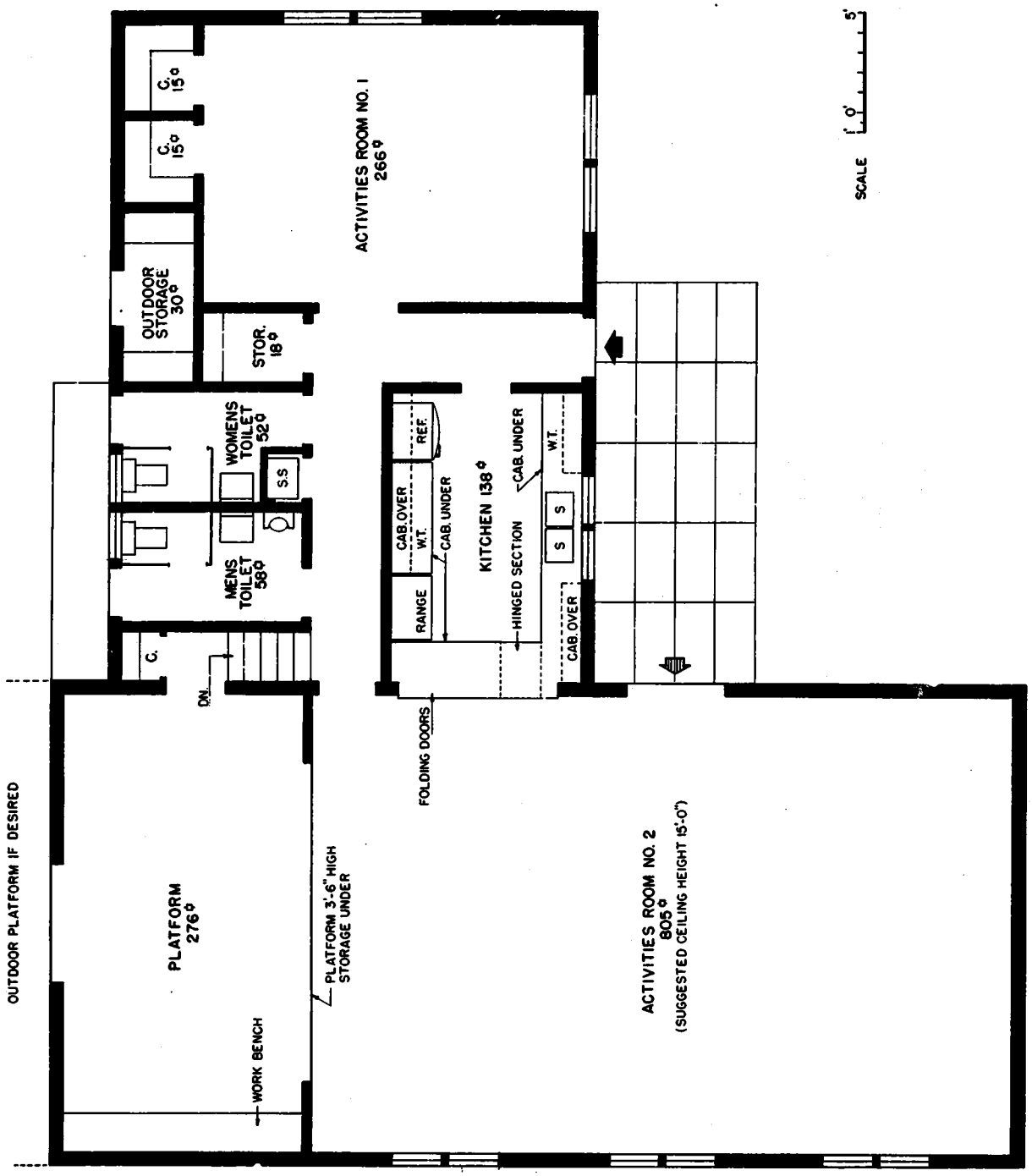
PLAN NO. 1 COMMUNITY BUILDING FOR 100 DWELLING UNITS (1000 □')

b. Plan 2. Community Building, 2,000 Sq. Ft., for a 200-Unit Project. This plan provides for two multiple use rooms, a platform, a kitchen, toilets, and storage space. Activities Room 2 seats approximately 125 persons for meetings. Ample storage space is provided under the platform for chairs, tables and other bulky articles. The platform can be used for craft activities and meetings for small groups as well as for a rostrum for meetings and for other activities. A closet on the platform provides storage space for craft materials, tools and supplies. A 6' opening at the rear of the platform will admit large articles and permit complementary use of the outside platform if one is provided. The outside platform should be the same height.

Two adjoining closets are provided for articles used for activities carried on in Activities Room 1. A closet off the corridor provides storage space for small articles and can also be used as a coat closet for playground leaders. Shelves, 12" wide, are provided at the back of this closet, and a hook strip can be placed on one side.

Outdoor storage space is provided for playground equipment.

The kitchen is arranged for home demonstration activities and for serving into the meeting room.



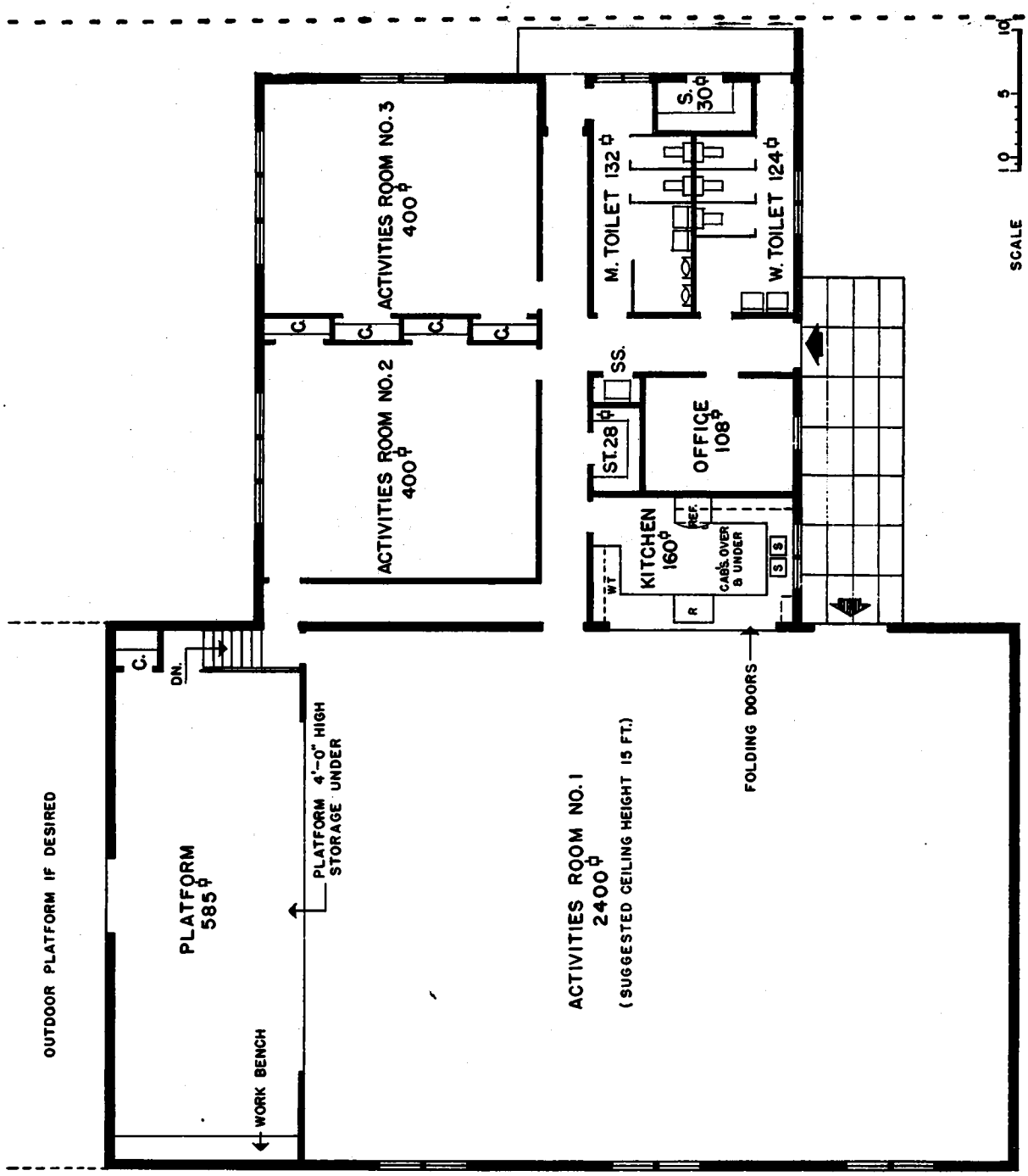
PLAN NO. 2 COMMUNITY BUILDING FOR 200 DWELLING UNITS (2000 ☐)

c. Plan 3. Community Building, 5,000 Sq. Ft., for a 500-Unit Project. This plan provides for three multiple use rooms, a platform, a kitchen, an office, toilets, and storage space. Since the meeting room exceeds 35' in length, a platform of a 4' height is required.

All rooms including the platform can be reached without passing through other rooms.

The office can be used for small committee meetings as well as a headquarters for arranging programs; the platform can be used for many purposes; thus, five groups can meet at one time.

Activities Room 1 has a seating capacity of approximately 370 persons. Ample storage space is available under the platform for bulky articles. A closet is provided off the corridor for smaller items, and a larger closet for outdoor storage. Two closets are adjacent to Activities Room 2 and Activities Room 3 to permit groups using this space to store their supplies and equipment.



PLAN NO. 3 COMMUNITY BUILDING FOR 500 DWELLING UNITS (5000 □')

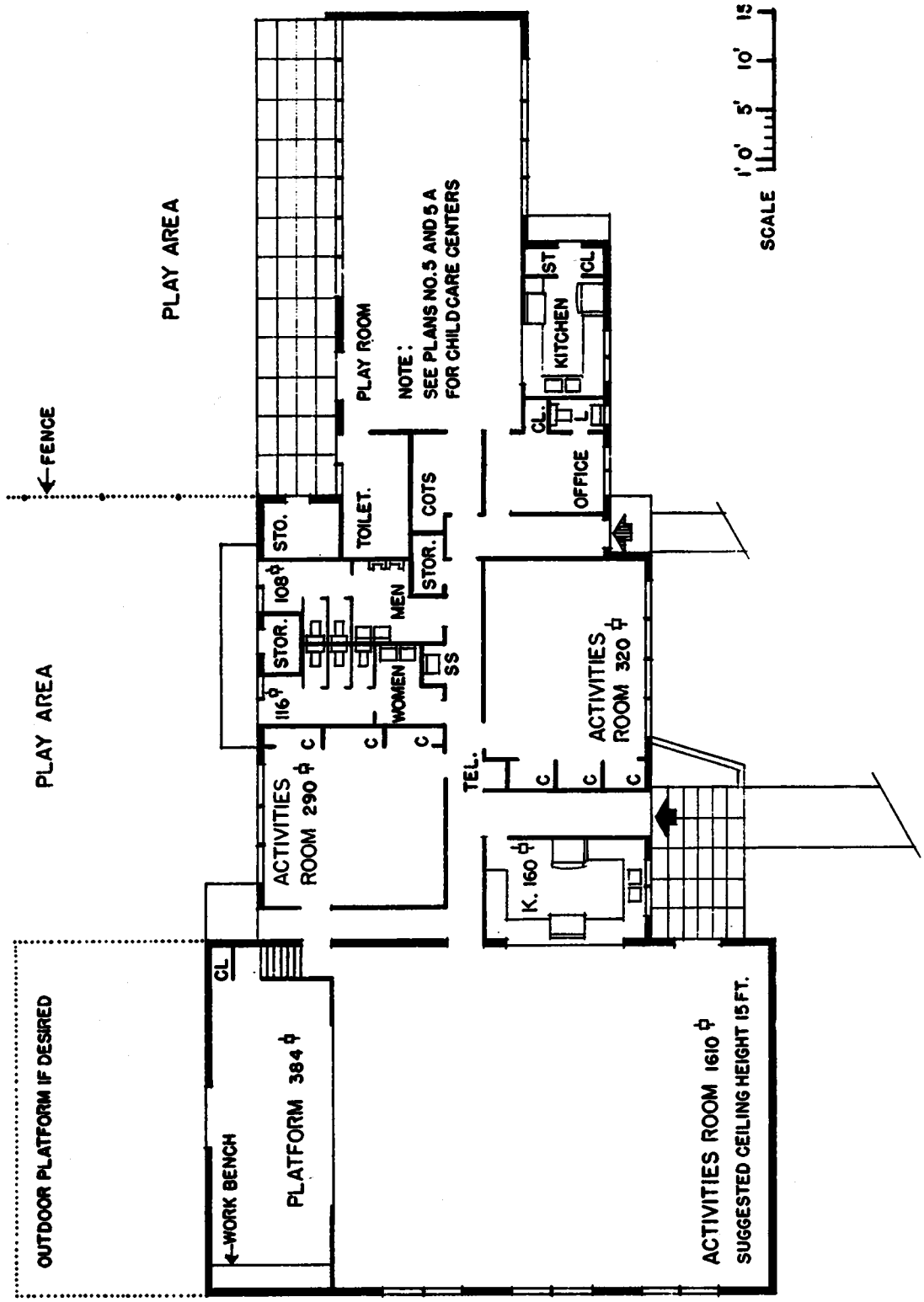
- -

d. Plan 4. Community Building including Child Care Center, 5,000 Sq. Ft., for a 500-Unit Project. This plan provides three activities rooms, a platform in the largest room, a kitchen, toilets, storage space, and a child care center.

In order to provide approximately 1,300 sq. ft. for the child care center, it has been necessary to reduce the size of the activities rooms which are shown in Plan 4.

The meeting room will seat approximately 250 persons.

Plans 5 and 5A show details for child care centers, either of which may be adapted to this building.



PLAN NO. 4 COMMUNITY BUILDING INCLUDING CHILD CARE CENTER FOR 500 D.U. (5000 ϕ)

e. Plans 5 and 5A. Child Care Center. Two plans are presented, each of which will serve 30 children. Each is part of a community building and the corridor connects with the main corridor of the building although a separate entrance is provided. (See Plan 4, p. 15.) This arrangement permits use of additional space for child care activities when necessary.

The plans provide for a playroom; 3 toilets and 3 lavatories, one of each for every 10 children; and 30 clothes cubicles, 1' x 1' x 4'6", for children's wraps, with a shelf 10" above the floor in each to provide space underneath for rubbers. A series of 3 shevles, 15" deep, at intervals of 1', is provided under the windows on the long outside wall for blocks, toys and other play materials. The top shelf is 2'4" above floor.

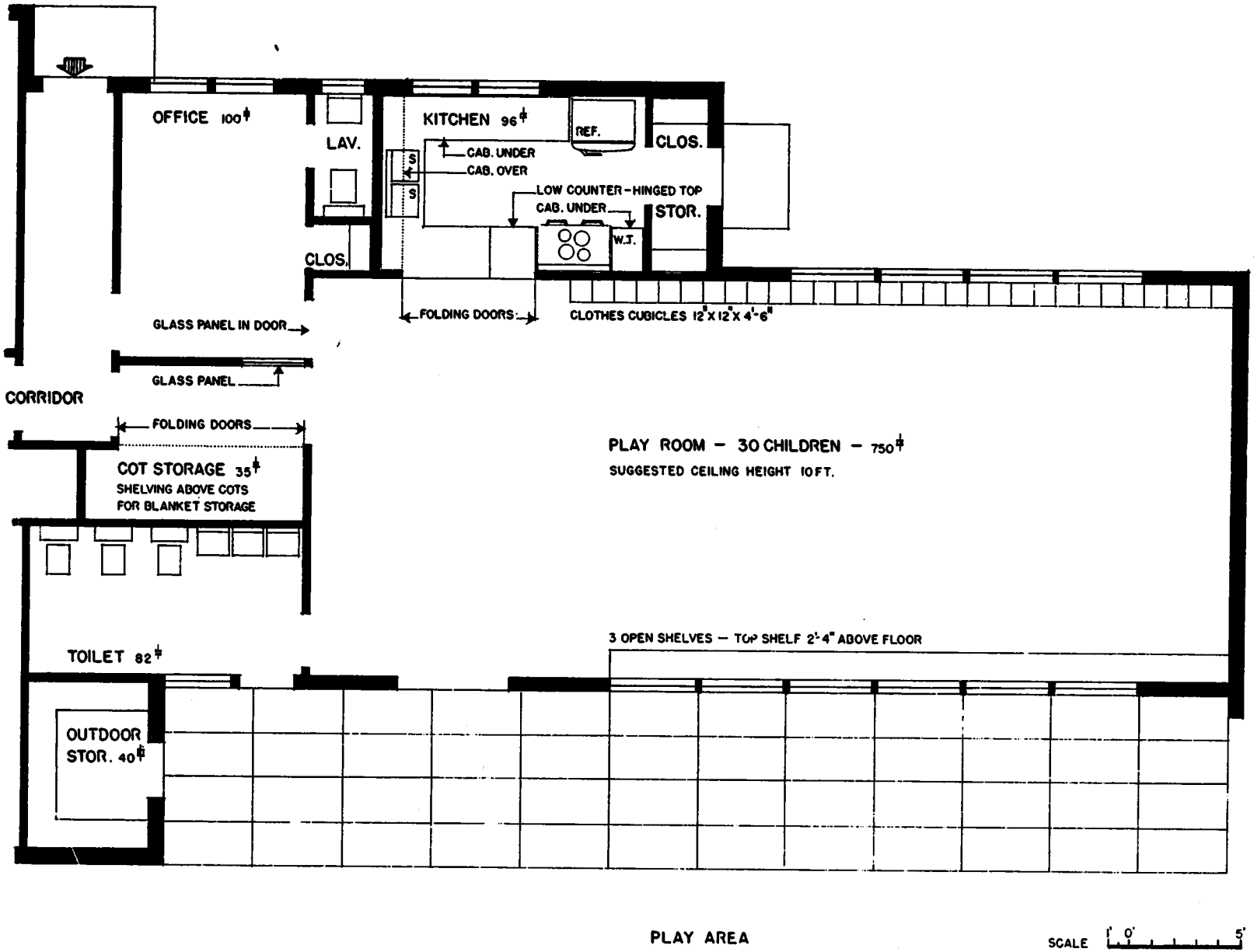
The office will also be used as an isolation room. A toilet for the staff adjoins it. A partially glazed partition between the office and the playroom permits parents to observe activities without distracting the children.

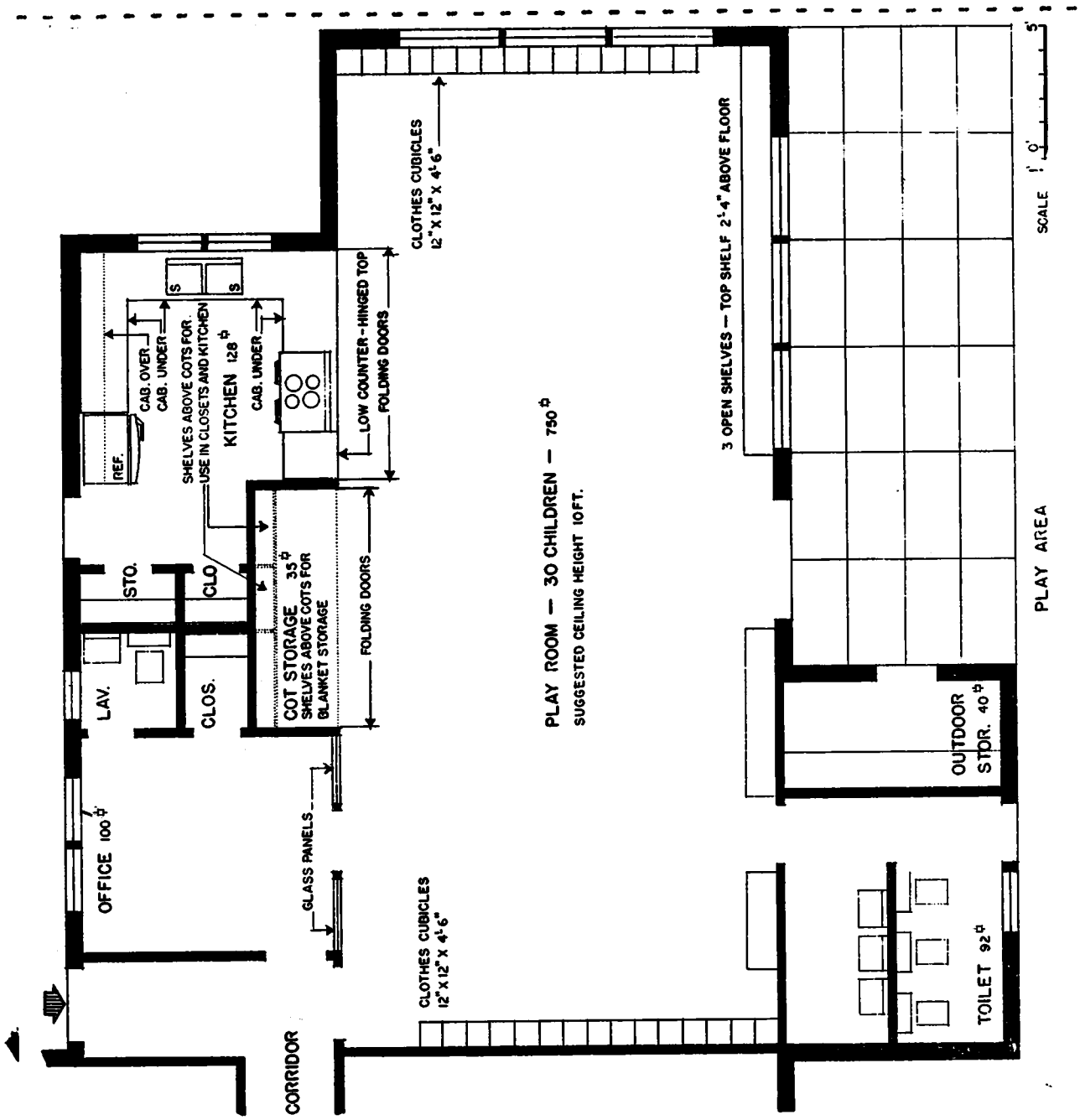
A serving counter with a hinged opening from the kitchen into the playroom is provided.

The closet for cots has shelves for blankets and other articles. A supply closet adjoining the office stores reserve supplies of play and craft materials and other items. Outdoor storage space is provided for wheel toys, hollow blocks, boards, and other items used on the playground.

The outdoor play area is located adjacent to the playroom. Toilets and outdoor storage are accessible from this area.

PLAN NO. 5 CHILD CARE CENTER (1315 ♯)





PLAN NO.5-A CHILD CARE CENTER (1295 ☐')

- -

f. Plan 6. Community Building, 10,000 Sq. Ft., for a 1,000-Unit Project. This plan provides for six activities rooms of varying sizes, a health clinic, an office, a platform, toilets, and storage.

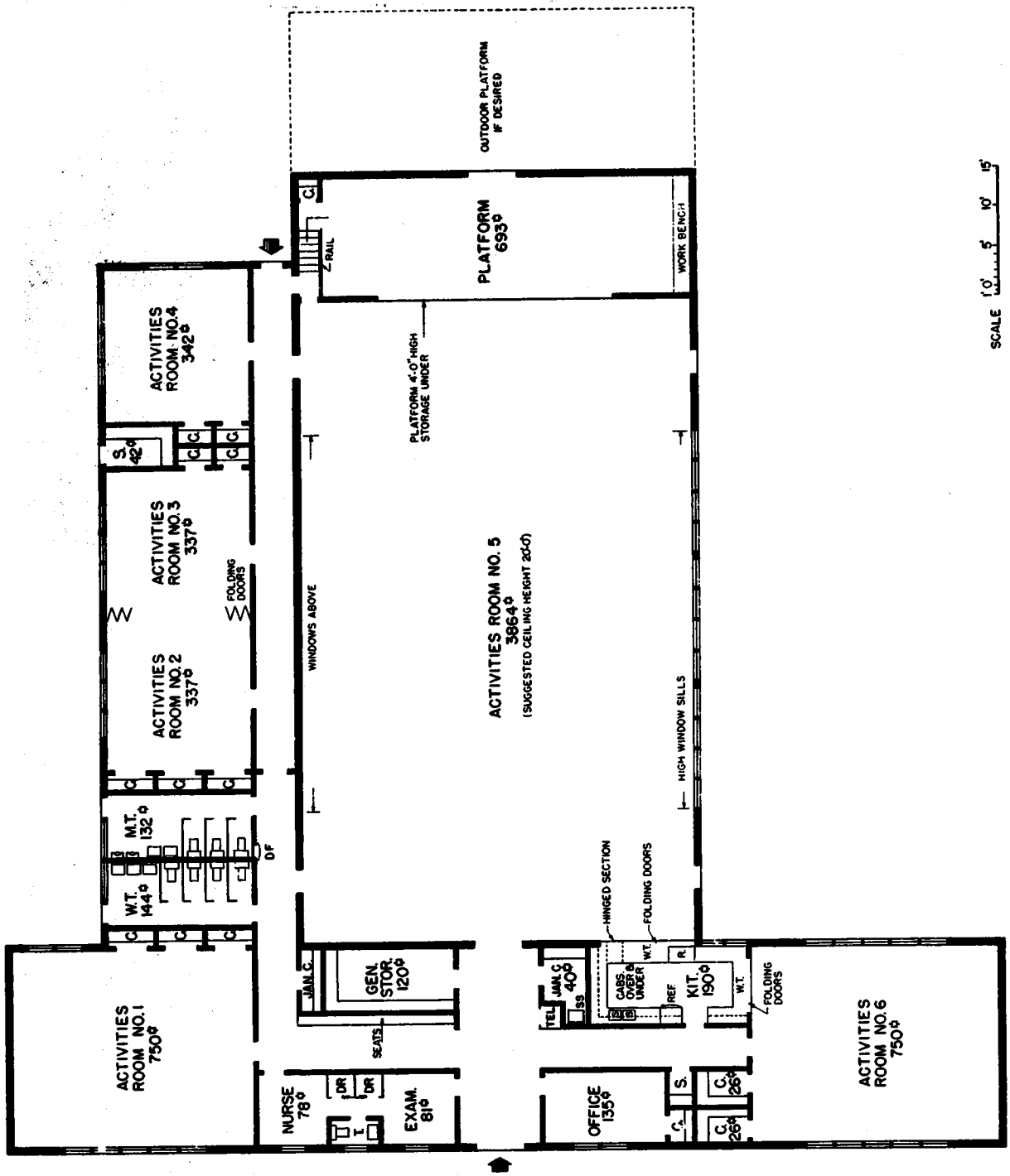
The clinic includes an examination room, a nurse's office, a toilet, and two dressing cubicles. Activities Room 1 may be used as a waiting room for the clinic as well as for other purposes.

Activities Rooms 2 and 3 may be combined and used as a library if such service is available.

The kitchen adjoins and has direct access to Activities Rooms 5 and 6.

All features, including the platform and clinic, have direct access to the corridor.

Activities Room 5 seats 595 persons and may be bisected by a folding partition to provide an additional activities room if desired.



PLAN NO. 6 COMMUNITY BUILDING FOR 1,000 DWELLING UNITS (10,000⁰)

BULLETIN NO. LR-26

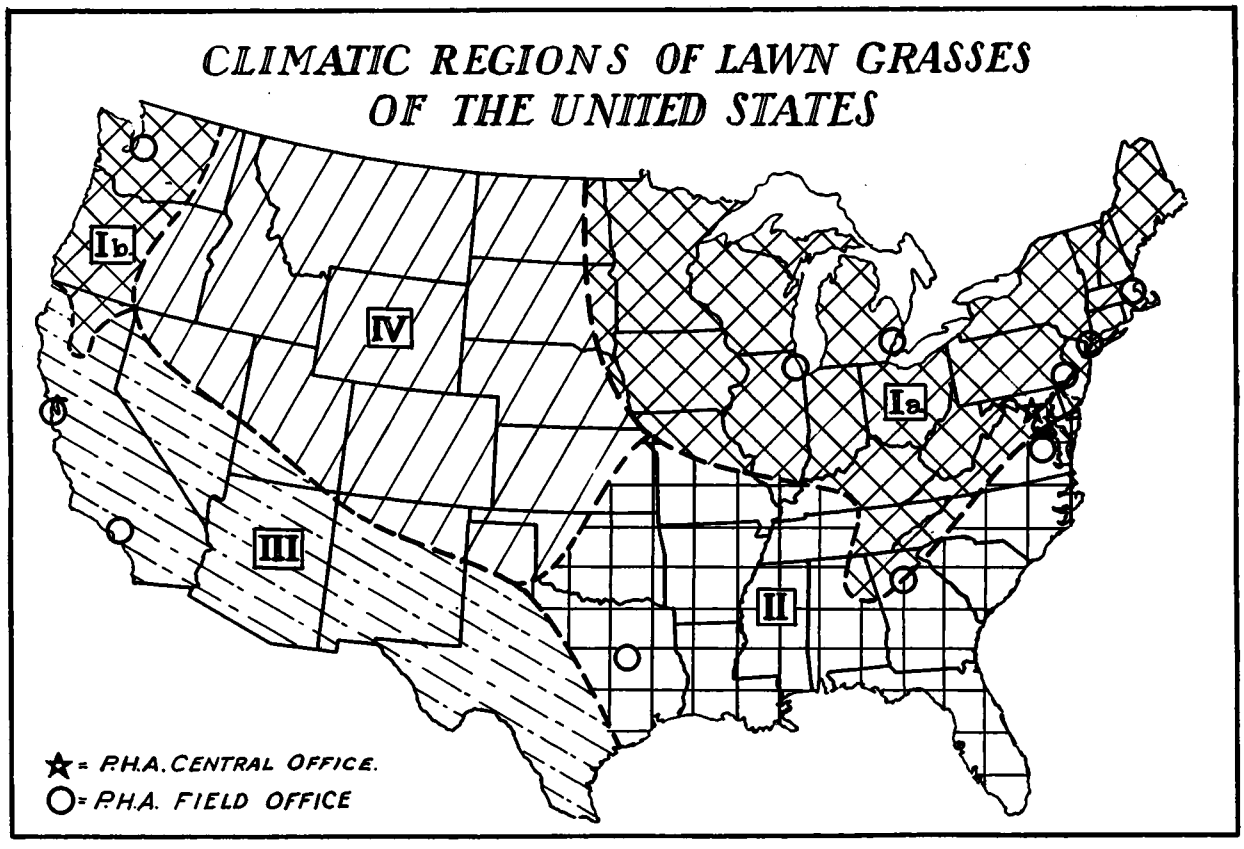
ROUTINE CARE OF LAWNS

ONE OF A SERIES OF BULLETINS
ON TURF MANAGEMENT

PHA LOW-RENT HOUSING
BULLETIN

PUBLIC HOUSING ADMINISTRATION
HOUSING AND HOME FINANCE AGENCY WASHINGTON 25, D.C.

APRIL 1951



Map Data adapted from "Turf Management" by H. Burton Musser published by McGraw-Hill Book Company.

I (a & b) Northern Cool Humid: Cool-season grasses which have maximum growth during the cool seasons and are dormant in the summer - Blue Grass, Fescues, and Bents.

II Southern Warm Humid: Warm-season grasses which have maximum growth in summer and are dormant during winter - Bermuda, Carpet, Centipede, St. Augustine, and the Zoysias.

III Southwest Irrigated: Same grasses as for Southern Humid when adequately irrigated.

IV West Central, Limited Rainfall: Same grasses as for Northern Humid when sufficient water is supplied.

The regional boundaries are not absolute. Some grasses can be used far beyond the normal regional limits of adaptation, for example, Bermuda U-3 and Zoysia japonica, although warm-season grasses, will thrive far into the Northern Humid Region. Temperature is the basic factor of adaptation. Sufficient moisture can be supplied through irrigation to maintain a satisfactory turf in the driest areas.

Routine Care of Lawns

1. Introduction

a. The purpose of this bulletin is generally to stimulate interest in a program of turf management and specifically to set forth the best recognized practices for routine care of lawns. Neat and well-kept lawns are an essential element of a decent living environment. In relation to their cost, no other factor outside of the buildings themselves proclaims the livable nature of a neighborhood and good housekeeping therein more prominently than attractive lawns. Good lawns protect the surface of the ground from being blown or washed away by wind or rain; they carpet the earth so that mud is not tracked into the dwellings in wet weather, nor dust sifted in during dry weather; they are one of nature's best air conditioners against the heat and humidity of summer; and they are very comforting and restful. The Public Housing Administration's standard of maintenance for the lawns of low-rent housing projects recognizes these features and stipulates that "maintenance shall be such as to provide adequate surface drainage, sufficient turf to prevent erosion, a serviceable ground cover and a good appearance."

b. A lawn can very well be defined as a plot of ground completely covered with a mixture of low-growing plants whose closely interwoven roots serve to hold together the particles of soil at the surface and form a mat of turf. The plants in the average lawn are of many types and varieties. Those that make the most satisfactory and serviceable turf are the permanent grasses which spread and thicken when mowed and retain their surface-protecting mat comprised of both roots and top growth even during their dormant season. These grasses, however, are continuously forced to compete with other species or plants, many of which thrive regardless of neglect, drought, and bad treatment. These other plants are not turf builders; rather they tend to crowd out the desirable grasses and destroy the turf mat. They are weeds. On the other hand, where a vigorous turf of the desirable grasses is maintained the weeds are crowded out and consequent problems minimized.

c. The desirable permanent grasses that go to make up a good turf, moreover, are living materials needing food, air, water, and light. Any area that warrants the expenditure of funds for the establishment of permanent grass in turf also warrants the expenditure of funds to provide the materials and labor necessary to keep that grass alive and thriving. A well-established lawn represents a sizable investment and, unless this investment is protected by timely maintenance operations, the turf soon deteriorates; dust, mud, and erosion problems appear; runs and gullies develop; weeds take over; and expensive renovation or rehabilitation becomes necessary. Any other type of surface covering to replace worn-out lawns, except for special purposes, would probably not satisfy the requirements of livability.

d. Good turf management is such as to provide the cultural methods and protection necessary to maintain the lawns as contemplated in the original

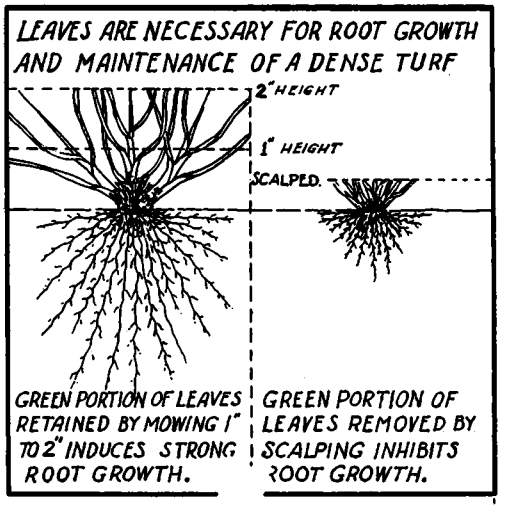
design and construction specifications. Generally, such specifications have provided for adequate surface drainage; seed of the permanent, desirable grasses has been designated; and methods of planting have been stipulated which are calculated to produce a turf satisfactory for erosion control and serviceability. Good appearance and the livability of the project have been the essence of the design and specifications for lawns.

e. The first consideration in the turf management program is the routine care which comprises those operations required to attain two principal objectives: first, to maintain the appearance and utility of the lawns and, second, to provide the cultural needs so that the desirable permanent grasses will flourish and become the predominant material of the turf. The second objective is naturally a prerequisite of the first, for without a good, luxuriantly growing turf, the outward aspect of the lawns as ground coverage is considerably lowered. Fortunately, there is no conflict between these objectives as the maintenance practices which have been found to give the best results in turf development are, for the most part, those that produce the most favorable appearance.

f. Routine maintenance operations are closely interwoven and mutually dependent one on the other to the extent that each affects the amount and timing of the other activities. However, for convenience these can be broken down and will be discussed separately under the following headings: mowing, feeding; aeration; watering; protection; and tenant cooperation.

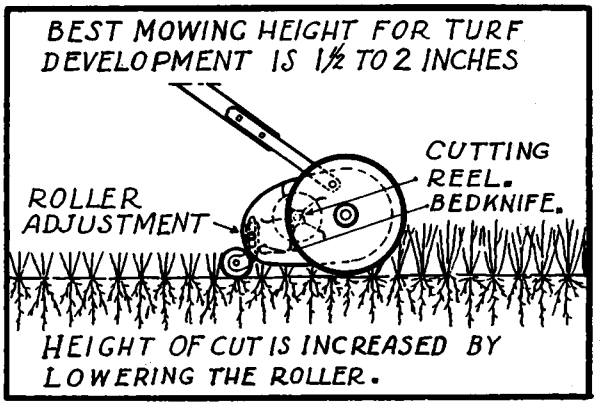
2. Mowing

a. Mowing is one of the most important items in the maintenance of turf. One of the principal effects of mowing is to cause the individual grass plants to spread out and thus create a dense, compact mat of turf. The root development of grass is directly related to its top growth. If the grass is permitted to make a long growth between mowings, or if it is cut extremely close, the turf thins out and the desirable development of the root system is prevented. Under such circumstances the lawns become vulnerable to damage from drought, erosion, and encroachment of weeds and consequently will have decreased resistance to wear.



b. Height of cut in mowing is of very great importance. For the best development of turf composed of most commonly used lawn grasses, to cut

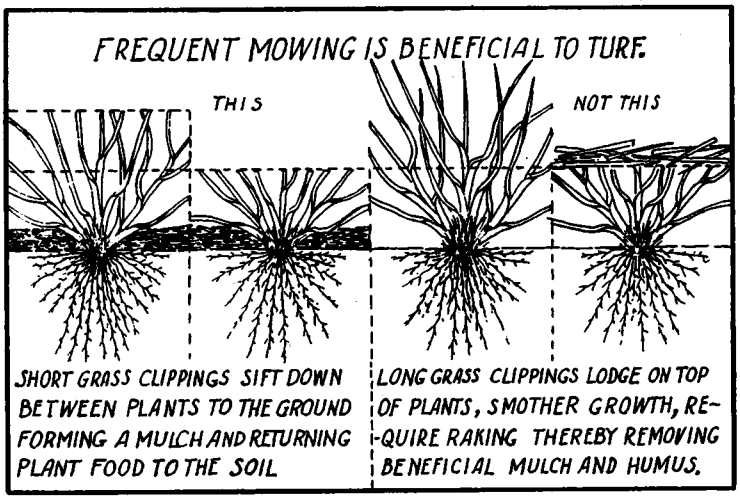
closer than 1 inch is extremely harmful; a height of 1½ to 2 inches, depending on the season, is more desirable. The popular belief that turf should be clipped short should be discouraged. It is damaging to any kind of grass to remove all of the green portion of the grass blades in mowing. Lawn mowers, built to satisfy popular demand, must usually be adjusted before use so that they do not cut too close.



c. In the northern part of the country, especially the cool, humid region of the North Eastern and North Central states and the Pacific Coast Northwest, Kentucky bluegrass has been the predominating turf grass. There have been introduced improved strains of this and other grasses which give promise of being tougher and more drought-resistant than varieties or strains previously used. Some of these, Alta Fescue, Kentucky 31, and Creeping Red Fescue, are now being tried out on housing project lawns in combination with the former well-known types. These are all so-called cool-season grasses, the growth of which takes place during the cooler seasons of the year. But whatever the grass species or combination of them, mowing should not be shorter than 1 inch to insure a dense, tough turf. During the summer months, when these grasses have practically stopped growing, two inches is better. The shade of the higher grass protects the roots from the hot summer sun and, in addition, assists materially in preventing the development of crab grass which will not grow in the shade.

d. In the South the predominant grasses at present are Bermuda, Centipede, Carpet, and St. Augustine. The newly introduced Zoysias, Zoysia matrella, (Manila Grass), and Zoysia japonica, (Japanese or Korean Lawn Grass), are gradually coming into use and may eventually predominate as lawn grasses. These are all summer-growing or warm-season grasses and even though the natural dormant season is brief for some of them, it does occur during the winter months. Then no cuttting is necessary. During the growing season, as in the North, best results in turf development are accomplished by not cutting too close. One to one-and-a-half inches is recommended in order to build up a strongly growing, healthy, dense turf which will protect the surface of the ground even during winter dormancy when the tops of the grass have stopped growing.

e. Frequency of mowing is also extremely important and can only be determined by rate of growth. This depends so much on amount of rainfall, natural fertility of the soil, added fertilizer, temperature, and other seasonal factors, as well as on the development cycle and growth characteristics of the various species of grasses, that no specific rule as to frequency can be established. Mowing should be done when the grass needs it, that is, when no higher than three inches, rather than at set dates. During seasons of drought or retarded growth, mowing should probably be withheld entirely.



f. Mowing should be done often enough so that the clippings can be left on the ground. Such practice is not only economical in labor, but is beneficial to the turf, returning plant food elements and humus to the soil and serving as mulch to the roots. Consequently, it is best for turf development to mow whenever the cuttings will be about an inch long. Longer cuttings tend to mat on top of the grass instead of dropping between the blades to the ground. This smothers the grass plants underneath. When dried, these longer cuttings become an unsightly litter.

g. Lawn mowers are of various types: The commonly known reel-type mowers are probably the best type for general use on housing projects. When motor-driven, such a mower of average size is capable of cutting 3 or 4 acres per day; the hand-operated reel-type can cut 3/4 to 1 acre per day. This type of mower, when received from the factory, is generally set to cut lower than is desirable for the best grass development, but can readily be adjusted to cut as high as 1½ inches by lowering the roller. The machine can be adjusted to cut higher, if desired, by enlarging the roller, enlarging the wheels with snap-on rubber tires, or by a combination of these devices. Hand mowers provided for use of tenants should be so set in the maintenance shop that the adjustment cannot be changed by anyone who wants to "shave" the lawn more closely.

h. The whirling knife or rotary disk type mower is well adapted to cutting to any height desired, but is most useful on flat surfaces or very easy slopes. Where terrace banks or steep slopes are prevalent this type is not too satisfactory. However, it has one advantage over the ordinary or reel-type mower in that the horizontally whirling blade creates a suction by which prostrate grass stems are lifted up and cut off. It will also cut wiry seed stems of weeds. Thus it helps to prevent the spread of weeds and to eliminate these gradually from the lawns. Most of the models of this type of machine are also capable of being used for close trimming work.

i. The sickel-bar type of mower is especially useful if there are any areas of unbuilt-on-land that need mowing only 3 or 4 times a year. It is also very handy for trimming around trees, buildings, and fences, or mowing steep banks.

j. Regardless of type, care in operating and maintaining the equipment is essential for its most economical performance. Well set, sharp blades not only do a faster job, but the clean cutting is more effective for turf development. Policing of the lawns before mowing, to eliminate stones, broken bottles, and other debris, and filling in holes or eroded places whenever discovered, will keep the blades from becoming nicked and avoid most of the serious breakdowns. When mowers are provided for tenants, careful instruction leading to an appreciation of the benefits to be gained by care in use of the equipment will be rewarded by better lawns and economies of equipment maintenance.

3. Feeding

a. Grass, like all living things, requires food. Probably no other single, controllable factor is more essential to the development of an adequate and serviceable stand of turf than is the addition of the necessary food elements in the form of fertilizer. Almost any soil will grow grass of a sort if its natural development is not prevented by other factors, such as the play of children, constant foot traffic, encroachment of noxious weeds, erosion, or drought. But for luxuriant growth, complete coverage, and retention of a thick turf of only the desirable grasses, the addition of a sufficient quantity of the right kind of fertilizer is necessary. The function of fertilizer is to supplement the nutrient supply of the soil so that an adequate quantity of each element required for plant growth is available to the grass when needed.

b. The mineral elements which are used by plants in the largest quantities are nitrogen phosphorus, and potash, and since these are the elements that are removed most rapidly from the soil, they need periodic replenishment. Some of the other elements essential to plant growth but required in minor quantities are calcium, magnesium, sulphur, iron, manganese, boron, zinc, and copper. As most soils naturally contain sufficient quantities of these so-called trace elements, it is not necessary to consider them in a fertilizer formula unless a soil analysis shows that a definite deficiency exists.

c. Nitrogen, phosphorus, and potash, therefore, are the elements generally added in fertilizer. Because of their importance they have been recognized in legislation regarding the manufacture of fertilizers. Such manufacture is now strictly governed by law as to minimum standards and labeling in most states.

d. The fertilizer requirements of turf are somewhat different from those for most field or garden crops. Ordinarily, for turf, the addition of nitrogen is the most essential, with phosphorus and potash following in that order, because nitrogen in its available form is highly soluble and, therefore, most readily leached away. Moreover, it is the essential element for the development of foliage. The amazing fact about a growing lawn is the enormous crop which it produces. The combined length of clippings removed from each blade of grass each year may add up to 30 to 40 inches. To grow this much grass, a vigorous and healthy turf will devour at least three pounds of nitrogen a year for each thousand square feet of lawn, or about 130 pounds per acre.

e. The other elements are normally needed to a lesser extent; ordinarily, therefore, a general feeding with phosphorus and potash included in the mixture probably need be made no oftener than once every three years. A feeding of nitrogen alone would ordinarily suffice for each of the intervening years. This may be applied in the form of sulphate of ammonia which has about 21% available nitrogen, nitrate of soda with about 16%, or other predominantly nitrogenous materials.

f. In any event, nitrogen is the basic element for calculating the quantity of fertilizer needed for proper turf feeding. For the general feeding every third year an excellent mixture is a complete fertilizer analyzing 10-6-4, that is, 10% nitrogen, 6% phosphorus, and 4% potash. To furnish the annual nitrogen requirement it will be necessary to apply this fertilizer at the rate of 30 pounds to 1,000 square feet. If sulphate of ammonia is used, when feeding with nitrogen alone, approximately 15 pounds per 1,000 square feet is required, whereas, with nitrate of soda 20 pounds is necessary to furnish the annual requirement of three pounds of available nitrogen.

g. A soil test may determine that the other elements are needed in greater or lesser proportion. In some parts of the country, for instance, the average soil may be high in phosphorus content, but potash, as well as nitrogen, is deficient or vice versa. In such cases, a fertilizer with an appropriate analysis should be used. Or some material readily available locally may be cheaper than a commercially prepared fertilizer. In such a case the test of value and comparative cost is the amount of such material required to supply the necessary nitrogen. Materials of an organic nature may be found desirable economically or because of the structure of the local soil, especially in areas where a light sandy condition prevails. Some such materials are activated sludge with approximately 4 to 6 percent available nitrogen, fish scrap with about 5 percent, or well-rotted cotton boll hulls, to mention a few. Any of these may be used to advantage keeping in mind the basic nitrogen requirements and applying the appropriate amount of fertilizer accordingly.

h. As the nitrogen, to be usable as food by the grass, must be in soluble form, it is very quickly exhausted by leaching, as well as by absorption by the plants; consequently, it is more useful if supplied at frequent intervals. Two or more applications a year are better than

one. This applies to the general fertilization every third year, as well as to the feeding with nitrogen alone.

i. Time of application varies with the growth characteristics of the grasses to be fertilized. In general, fertilizers should be applied just prior to the time of the accelerated growth of the species involved.

(1) In the northern areas where Kentucky Bluegrass and similar types of cool-season grasses predominate, the heaviest fertilizer applications should be made in late summer or early fall. This will encourage the growth of the permanent turf grasses at the time the weeds are passing out. A good routine feeding would be two-thirds of the annual need (20 pounds of10-6-4 every third year and 10 pounds of sulphate of ammonia in each of the intervening years) between August 15 and September 15. The balance (one-third of the total yearly requirement) could then be applied very early in the spring just before the spring growth starts between March 1 and April 15.

(2) In the southern areas, on the other hand, where Bermuda Grass or the other summer growing species predominate, the heaviest application should be in the spring, March 1 to May 1, to encourage spring and summer growth, with a lighter application during the summer.

(3) In the dry areas of the country it is important that there be an adequate supply of nitrogen available at the time of year that moisture is most plentiful, the time when growth is being stimulated.

j. Granted that adequate supplies of other essential food elements are available, the development of a good turf with a dense stand of grass will be in direct proportion to the availability of nitrogen and moisture in the soil around the grass roots when accelerated growth is about to commence.

k. Dry fertilizer can be spread by hand. To distribute evenly over a given area, the quantity to be applied should be divided, half to be broadcast when walking in one direction, the other half when walking at right angles to the first direction. However it is probably more economical of labor and more effective in uniformity of distribution to use a fertilizer spreader whenever there are large or many areas to cover. This is an implement, readily available in most communities, which is designed especially for the work and can be adjusted to spread evenly at any prescribed rate per thousand square feet.

l. Spreading of dry fertilizer on established turf should only be done when the blades of grass are dry. After spreading, the lawns should immediately be raked lightly, dragged, brushed, or sprinkled with water to work the fertilizer down to the grass roots and to avoid any possibility of burning the foliage.

m. Fertilizers which are entirely soluble in water, especially those that supply only nitrogen, such as Aommonium sulphate, Ammonium nitrate, Sodium nitrate, etc., may well be applied in solution. Several mechanical aids to spray fertilizer in solution are on the market. One of the simplest is an adaptation of a water jet pump called "Hozon" manufactured by the Hozon Company, Box 703, Cleveland 22, Ohio. This is fitted to the water faucet and sucks the concentrated solution from a container combining it with water through a length of hose. It can be applied at any predetermined strength and quantity to a given area just by spraying with the hose. Another type of equipment is the "Rollosprayer" manufactured by Walter S. Lapp,724 Derstine Avenue, Lansdale, Pennsylvania. This machine consists of a tank on wheels which can be pushed like a lawn mower and sprays an area about 5 feet wide as it rolls along with a predetermined quantity of fertilizer in solution.

n. Lime is used to modify soil acidity and other unfavorable soil conditions. It assists in making certain nutrient elements available for plant use. However, it is not ordinarily used as a fertilizer. Generally, the need for lime and the amount to be used can be determined only by a soil test.

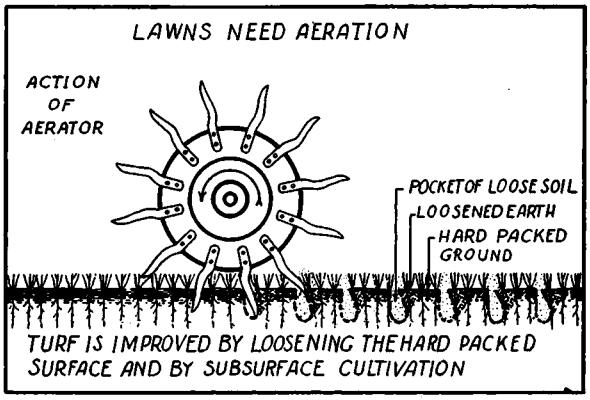
o. Most of the desirable turf grasses thrive in a soil which is only moderately acid. The chemists have designated the degree of acidity by a scale of concentration or intensity. The unit of measurement is known as pH. The neutral point on the scale is indicated by 7. Values lower than pH 7 indicate degrees of acidity and those higher indicate degrees of alkalinity. On the basis of this scale, although most grasses will fortunately tolerate and grow over a wide range of soil acidity or alkalinity, it has been found that moderately acid soils varying from pH 6.0 to 6.5 are the best. If a soil test indicates acidity more intense, that is, has a lower value than pH 6, lime will be needed.

p. Lime is available commercially in two forms: ground limestone (agricultural lime) and hydrated lime. The ground limestone is easier to apply and lasts longer in the ground. For average sandy loam soils approximately 46 pounds of ground limestone per 1,000 square feet is required to raise the pH value by one-half point. Thus, if a soil test showed pH 5.5, 46 pounds for 1,000 square feet should be supplied to raise the pH to 6 which is desirable for almost all of the grasses. It might be well to note here that Carpet Grass is more tolerant of acid soil conditions and will thrive best at pH 4. to 5. Hydrated lime has a higher calcium content more quickly available and, consequently, takes about two-thirds of the amount of ground limestone used, but should not be used at the same time as fertilizer containing ammonium salts. In the latter case, there should be an interval of at least 10 days between liming and fertilizing. As a general rule, once the acidity of the soil has been corrected, lime need not be applied again for several years.

q. It is quite possible that a test would show the soil too alkaline for grass, but this is rare except in the western areas of low rainfall. This can be corrected by applying Flowers of Sulphur (in the same manner as lime) at the rate of 25 pounds per 1,000 square feet to reduce the pH level by one point.

4. Aeration

a. Cultivation is as necessary to the development and continued growth of grass for a dense and durable turf as is provision for fertilization and water. Cultivation of farm and garden crops is a well-known practice and its benefits are equally understood.



b. A similar practice called "aeration" is beneficial to turf. By this practice the compacted surface of areas subjected to heavy play or constant foot traffic is loosened. The thatch condition eventually created on a lawn by the matting of roots and top growth of a dense turf is broken through so that air, fertilizer, and water will penetrate to the roots of the grass. Beneficial mixing of soil with dry surface material is accomplished. Rainfall is more readily absorbed; consequently, there will be less run-off and erosion. All in all, as the air, water, and plant food are forced more deeply into the soil, the grass roots are encouraged to grow more deeply and a more vigorous and drought-resistant turf will be produced.

c. Until recently, however, there had been developed no very efficient nor economical method of stirring up the soil of a lawn without seriously disturbing the turf. New methods have been developed and types of equipment are being manufactured that are both economical and efficient. As an item of turf management, therefore, a program of regular and frequent aeration of project lawns can now be economically instituted.

d. For the fertilizing program to be most effective, aeration can well be done just prior to application of the fertilizer. It will be possible then for some of the fertilizer to drop into the perforations. The area should immediately be dragged, raked, or brushed to smooth off any unevenness caused by the aeration process, and, at the same time, to work the fertilizer off of the grass blades and down to the roots. Combined with the feeding, aeration twice a year should suffice for ordinary lawns. In areas of heavy play or constant traffic, however, it may be found that more frequent aeration will prove beneficial. Aeration equipment is, therefore, as important to project turf management as a lawn mower.

e. Aerating equipment has developed extensively since the days of home-made tampers set with spikes or rollers with spikes welded on by the local blacksmiths. The differing characteristics of implements now on the market are evidence of that development showing progressive improvements to secure the maximum amount of loosening and aerifying the soil beneath the turf with a minimum of disturbance to the turf surface. Deeply cut spiked discs were first on the market and are

still available. Then followed improved spikers with swivel action that perforate as they roll over the ground with a straight in and out motion which avoids tearing the surface. In another type hollow tapering tines with sharp circular cutting edges have been installed. These cut out plugs of soil and throw them out onto the surface to be raked off or broken up as top-dressing. Still another improvement has spoon-shaped or trowel-like, half round tines that leave a loose-walled cavity effectively doing away with objectionable compaction of the sides of the perforations. This type is equipped with a spring attachment surrounding each blade that holds the surface firmly in place as the blades enter and are withdrawn from the ground so that the grass surrounding the perforation is not torn. These springs also assist in clearing the tines and break into small particles the cores of soil that are thrown out.

f. The development and gradual improvement of these implements came about through the needs of golf courses to maintain a healthy turf that would withstand hard and continuous use. They do, however, have a very definite usefulness in the case of project lawns and their cost may be gauged to fit any budget. For one or two small projects in a community one of the simple spike disc type implements, either hand-operated or drawn by available motor-driven equipment, will amply cover every need. On the other hand, in the case of a Local Authority with the responsibility of maintaining several large projects, motor-driven equipment of the most improved type will undoubtedly prove the most economical and effective for constant operation.

g. Typical of the equipment described above are the following listed with their manufacturers. There are undoubtedly others on the market concerning which information is probably available with local lawn or golf course implement dealers.

Spike Disc

Ohio Machine Products, Inc.
Columbus, Ohio
Factory Sales Agent:
John H. Graham & Co., Inc.
105 Duane Street, N.Y. 8, N.Y.

McClain Spiker and Perforator has solid tines swiveled for straight in and out action.

McClain Brothers Company
Canton, Ohio

Soil-Aire, motor-driven, has hollow tines, cultivates 18" strip, perforations 9" apart.

Soilaire Industries
1200 2nd Avenue - South
Minneapolis, Minnesota

Aerifier, motor-driven, has non-clogging spoon-like tines equipped with spring to prevent tearing of surfaces, cultivates 20" strip, perforations approximately 5" apart.

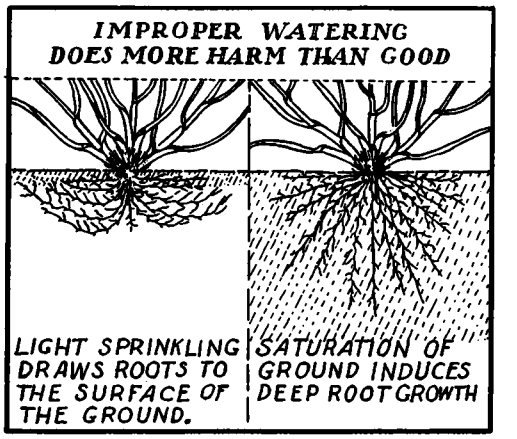
West Point Lawn Products
West Point, Pennsylvania

h. Important as a follow up to the operation of aerifying and fertilizing is raking, dragging, or brushing to break up the plugs of soil, and work in the fertilizer. An excellent time and labor-saving drag can be made up from a piece of chain link fencing 4 or 5 feet wide and 6 to 10 feet long with planks at each end to hold the drag flat. Such a drag will break up the soil clumps, smooth the loose soil into low spots, and work the fertilizer into the surfaces. Such a drag may be manipulated by hand or pulled by whatever power-operated equipment is available and will save a large amount of hand raking or other manual labor.

5. Watering

Watering is probably the maintenance practice that is most often done incorrectly. For an established lawn, mowed properly, well nourished, and aerated, watering will be found unnecessary except during a period of prolonged drought or in the arid regions. It should be done only if the grass appears to wilt. Then a few simple rules should be followed:

a. Water only often enough to keep the grass alive. In midsummer, during the dormant period of the cool-weather grasses of the northern region, if the plants are forced into growth they may actually be injured.



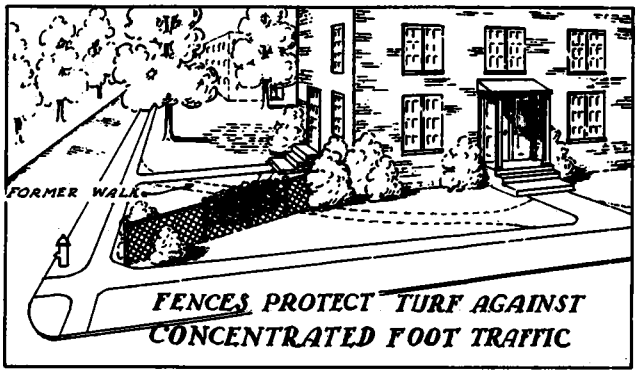
b. Do not sprinkle lightly every day. Light sprinkling that does not penetrate into the soil brings the roots to the surface. Shallow root growth weakens the grass to such an extent that it will not survive the heat of summer. It encourages the growth of crab grass more than it does that of the permanent grasses. It is wasteful of water and does more harm than good.

c. Soak the ground thoroughly so that the water penetrates into the soil several inches. If it is not known how long to let a sprinkler run in one place to get the desirable penetration, this time can be determined by examining the soil after watering for what is considered a sufficient time. This can be done by removing a core of soil with a trowel to a depth of about six inches. To save water do not apply it faster than the soil will absorb it. Rapid application of water causes runoff and in some cases increases compaction

6. Protection

a. The more vigorously turf is growing the better able it is to protect itself and maintain its growth and appearance even under severe use. However, the best of lawns will not stand up under abuse. Constant traffic over one spot will eventually wear a footpath. The continued scraping of children's feet, as under a swing, or in playing an active game such as handball against a blank wall, or in congregating alongside a porch, will wear off the sod until only bare ground is left. Under such circumstances if the turf is to serve its purpose, and its original establishment and upkeep is to be justified, it must be protected or the area must be paved.

b. Perhaps the most obvious need for protection is because of the tendency for short-cuts. Paths are worn to laundry drying yards, around corners of buildings, across corners of lawns at street or walk intersections, and in any place where traffic generally flows and the saving of a few steps seems important. In some cases it might be possible to divert such traffic and discourage its reoccurrence by temporary barricades. Convenient additional walkways or diagonal pavement at walk intersections may be desirable. However, in most cases, even when extra pavement is added, a substantial and permanent barrier is necessary to maintain such an area in good-appearing turf.



FENCES PROTECT TURF AGAINST CONCENTRATED FOOT TRAFFIC

c. Permanet barriers have the advantage of becoming part of the overall site scheme. To be effective they must be of sturdy but neat construction. Several types have been used successfully. Most satisfactory is probably a permanet fence of the chain link type with a top rail or tension wire for stability, 3½ or 4 feet high. Another type that has been used and has proved effective is a barricade of iron pipe posts 2½ to 3 inches outside diameter, or other metal posts such as of "H" or "I" section of equivalent strength, 2 to 4 feet high, set in concrete approximately 8 feet apart. These are connected with 1 or 2 lines of galvanized twisted wire cable, 7-strand, ¼ to 3/8 inch diameter, fastened securely by means of cable clamps or other types of permanent fastenings. Cable is preferable to single strand wire which is easily broken. If one line is used, the posts should be at least two feet high; if two are used, giving an appearance of more permanent construction, the posts should be 3 to 4 feet high.

d. The most effective location of either of these type barriers is diagonally from the corner of the building to the walk intersection where the crosscutting occurs. The same type barriers or fences may

also serve a very useful purpose to break the long series of front yards at a long building of row-houses, especially if the ground is sloping and the children have been using the area as a coasting place. In this event, the barriers could be erected at the dividing lines of the dwelling areas and extend perpendicularly from the building to the sidewalk. Planting of hedges, vines, or groups of shrubbery partially or entirely to mask these barriers will greatly enhance their appearance and effect of permanency.

e. Other places that may need permanent barricade protection are at sitting-out areas, tops or bottoms of unusable slopes, or alongside walks in the vicinity of bus stops, or similar places where groups of people may congregate. Such protection is especially needed where a high proportion of the damage has been done by persons who do not live in the project.

f. Fences around play areas, laundry drying areas, and similar utilitarian spaces have been more or less common practices and their utility in protecting adjacent lawns and planting is well known.

g. At parking areas or service drives, particularly at curves where automobile traffic is apt to overrun the edges of the lawns, a curb is probably the most permanent and effective protection. Frequently, posts of heavy timber or concrete, set close enough together to prevent a car or delivery truck from passing between, are used. Rails of various construction, preferably bumper height, have proved effective. Whatever type is developed, however, should be sturdy and of good appearance.

h. Other kinds of lawn protection, either temporary or permanent, may be devised to serve particular needs or purposes. It must be borne in mind, however, that a substantial, well-designated and well-built protective fence or barrier will involve less maintenance cost, do a better job, and demand more respect from those who have been abusing the lawns than will a poorly constructed, slipshod sort of barricade.

i. Whenever it becomes obvious that any area is given such continuous use that it is impossible for turf to be maintained, appropriate paving to do away with the inconvenience and unsightliness of bare ground may be considered. Great care should be exercised in designing such pavements, however, to meet the functional need but, at the same time, retain as much of the benefit of turf as possible. Paving should not cover terrace slopes unless specifically designed for the purpose. When abrupt changes of grade are involved, curbs or retaining walls will serve to support the paving of the comparatively level areas and may be the most permanent and economical solution to the problem.

7. Tenant Cooperation

a. The most carefully planned turf management program will accomplish little if the people who live on the project do not cooperate. This is true whether or not the tenants activity participate in the maintenance

of their yards. As shown in the previous paragraphs, there are many ways that thoughtless or careless tenant activity can ruin turf faster than it can be repaired or replaced. On that account, the building up of a spirit of cooperation in the tenants is an essential element of turf management.

b. In row-house projects or others where the grounds can be readily parceled out and made the responsibility of individual tenants, it is generally expected that each tenant will take care of his own yard. Such responsibility can be stipulated in the lease. Mowing, fertilizing, watering if necessary, weeding, and reseeding are all operations that can and should be done by the tenant. Timely leaflets in easy-to-read form and interestingly illustrated, giving complete instructional information, will help to arouse a willingness to cooperate and inculcate the principles of good lawn care.

c. Tenant cooperation goes much further, however, than just an active participation in the maintenance operations, as valuable as that may be in cutting down the cost of operations. In apartment type projects especially, it may be impracticable for tenants to perform actual maintenance operations. But cooperation there is just as important as in a row-house project. Real cooperation is evidenced by respect for the turf as an essential part of good living environment, care in personal walking habits so as not to create pathways, sufficient control of children's activities so as not to cause excessive wear in small constricted areas, help in supervision of playgrounds so that active play is concentrated in an appropriate place, avoidance of accumulations of rubbish or surplus materials in back yards, and in many other ways.

d. In order to secure such cooperation, there must be aroused in the tenants an appreciation of the value of the lawns on the project as part of their personal well-being. They must realize that the goal of Congress in passing the Housing Act of 1949, that is, "a decent home and a suitable living environment for every American family," cannot be attained unless each home dweller in the group keeps up his end of the deal. One badly kept yard, or worn-out turf at an apartment entrance way, can spoil the living environment of every other tenant in the project. The development of good turf consciousness, therefore, becomes a social problem for management.

e. This can be stimulated by the following means:

(1) Frequent issuance of leaflets depicting the value of lawns in the community,

(2) Giving seasonal instructions in all phases of lawn care: use and care of lawn mowers, sound watering practice, weed eradication, sowing of seed, and spreading of fertilizer,

(3) Meetings of groups of tenants or formation of garden clubs for discussion of common lawn problems.

(4) Alertness on the part of maintenance employees to report beginning of lawn deterioration,

(5) Warnings to tenants who fail to keep their portion of the lawns correctly, and

(6) A system of appropriate penalties for failure to live up to decent housekeeping and lawnkeeping standards.

f. The production and maintenance of good lawns is a continuous and conscious performance. The program will not succeed without complete and hearty cooperation on the part of the tenants. Turf management, therefore, must include a program for the tenants.

BULLETIN NO. LR-27

REPAINTING EXTERIOR SURFACES

ONE OF A SERIES OF

OPERATIONS ENGINEERING BULLETINS

P H A LOW-RENT HOUSING

BULLETIN

PUBLIC HOUSING ADMINISTRATION
HOUSING AND HOME FINANCE AGENCY WASHINGTON 25,D.C.

MAY 1951

LIST OF BULLETINS
WHICH HAVE BEEN PUBLISHED

Bulletin No.	Title
LR-1	Zoning and Rezoning
LR-2	Subsurface Soil Investigation
LR-3	Site Planning
LR-4	Site Engineering
LR-5	Structural Design, Materials and Methods
LR-6	Architectural Planning and Design
LR-7	Plumbing, Heating and Ventilation
LR-8	Electrical
LR-9	Lawns and Planting
LR-10	General Design
LR-11	Selection of Utilities
LR-12	Construction Contract Documents
LR-13	Guide Specifications
LR-14	Equipment Contract Documents
LR-15	Operation and Repair of Heating Systems (Care of Boilers Out of Service)
LR-16	Corrosion of Underground Piping
LR-17	Rules for Boiler Operation
LR-18	Preparation of Exterior Surfaces for Repainting
LR-19	Control of Condensation in Crawl Spaces
LR-20	Glazing
LR-21	Maintenance of Wood Floors
LR-22	Basic Specifications for Rural Nonfarm Housing
LR-23	Operation and Repair of Heating Systems -- Boilers (Types, Use and Repair)
LR-24	Maintenance of Concrete Floors
LR-25	Indoor Tenant Activity Areas
LR-26	Routine Care of Lawns
LR-27	Repainting Exterior Surfaces

NOTE: Some bulletins will be issued in parts, of which one or more will be contained in the initial release of each bulletin; other parts will be issued subsequently from time to time as they are completed.

Repainting Exterior Surfaces

1. Purpose. PHA Low-Rent Housing Bulletin No. 18, Preparation of Exterior Surfaces for Repainting, tells how to prepare exterior surfaces for repainting; this bulletin tells how to apply paint to such surfaces and what benefits will result.

2. Economy and the Painting Program. The repainting of exterior surfaces serves two purposes. These are to preserve and beautify the structure. Significant as these objectives are, they always should be considered from the standpoint of economy. This is most important insofar as public low-rent housing is concerned. Special regard for costs is not intended to mean a sacrifice of painting protection and appearance. Neither does it suggest that you neglect a structure which needs repainting or that you resort to the use of substandard labor and materials. It does mean that you should carefully plan your painting program. Don't repaint before it is necessary; but when it is necessary, don't delay. Make sure you receive the products specified and apply only the number of coats necessary. Plan painting work in advance so that it can proceed without delay, and know how much work to expect from your painting crew. By proper response to these conditions we provide the basic requirements for accomplishing a well-conducted, economical paint program. In addition, we avoid costly repairs and replacements resulting from delay; we guard against the unnecessary use of important materials; and we do our part in keeping up the appearance of the neighborhood.

A Well-Planned Painting Program is an Economical One

3. The Value of Quality Paint and Labor. Proper preparation of the surface is essential in achieving a successful paint job. Bulletin No. LR-18 discusses the preliminary work necessary when undertaking a repaint job and should be used in conjunction with this bulletin. But proper preparation is not all. It must be followed by quality paint and quality labor. When starting a paint job, it is wise to buy or specify the best quality paint; it is poor economy to buy cheap material and in this way endanger the success of the finished job, since only about 25 percent of the cost of the work goes for material. It cost just as much to apply cheap paint

(Cont'd)

having poor lasting qualities as it does to paint with a good paint having a prospect of long life. But the best paints placed in the hands of unskilled or careless workmen will usually be applied improperly and result in unsatisfactory service and appearance. Therefore, to avoid the risk of getting a shabby paint job, employ only a reputable paint contractor or a well-trained paint maintenance crew to do the work. In other words, the better the quality of paint and workmanship, the longer the intervals betwe repaintings and the lower the annual cost; the way to reduce painting costs is to spread the combined cost of material and labor over as long a period as possible.

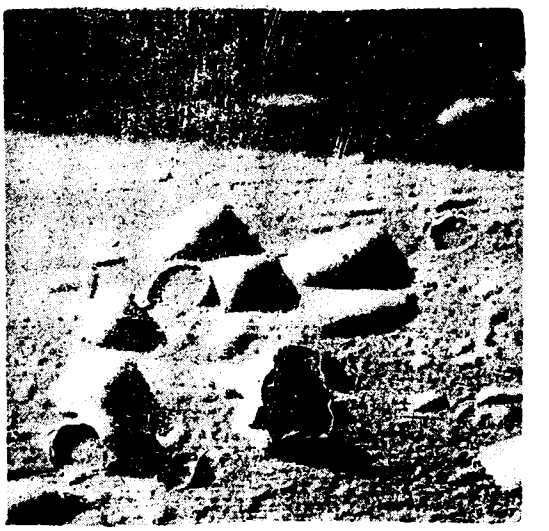
4. Determining When to Paint. In order to assure protection of exterior painted surfaces they should be regularly inspected for the signs of paint failure. When the gloss has gone from the paint or the colors begin to look washed out, it's a warning that it's time for repainting. The usual life of a good exterior paint coating is four to five years. Where evidence shows that paint is needed, attention should be given immediately. A coating of paint in time will often save the structure from further disintegration and avoid an expensive repair bill later on. The danger spots where paint failure usually shows up first are the sills, thresholds, porch floors and steps, joints of porch railings, bases of pillars, edges of eaves, flashings, roofs, gutters, downspouts, and fire escapes. When these danger spots require repainting, it is usually a sign that a new paint job is needed for the whole structure.

Where Danger Starts

One of the Danger Spots

(Cont'd)

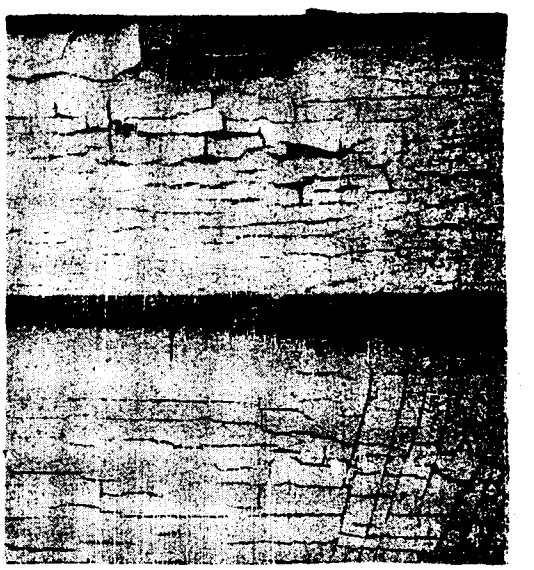
5. Painting Conditions. Exterior paint should never be applied when the outside temperature is below 40° F.; when surfaces are wet with dew, frost, rain, snow, or sleet; or when weather forecasts predict any form of precipitation or a marked drop in temperature. Ideal conditions for painting are reasonably dry air, a thoroughly dry surface, and a temperature which is not so extreme one way or the other as to hinder the painter.



Paint Blisters if Applied Over Damp Surfaces

6. The Finish Coat. To secure the best finish in all respects the final coat should not be made to do too much. It is first necessary that the surface be properly prepared (see Bulletin No. LR-18). Apply a priming coat, if required, in order to relieve the demands on the final coat and attain satisfactory results. The essential object of the final coat, whatever the particular finish may be, is to establish a good surface capable of resisting reasonable wear and tear and having a texture that meets artistic requirements.

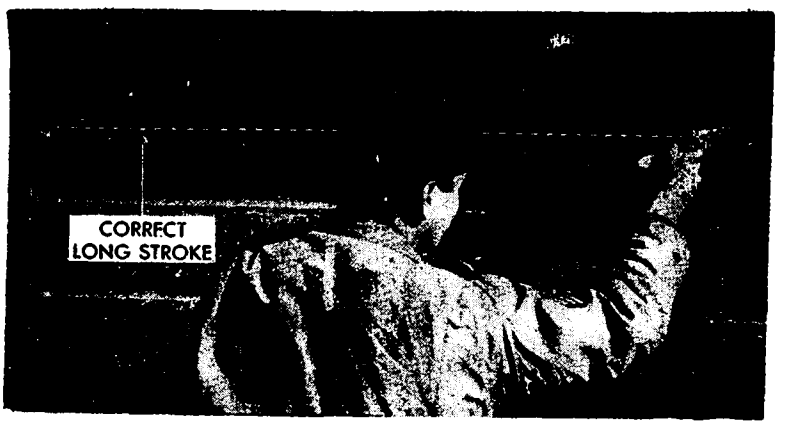
a. Application of Paint. Paint should be applied systematically. Method is not only the key to good craftsmanship; it is the dominating factor in the product of good durable painting. The thickness of a coat of paint, for example, has an important bearing on the drying rate and how it will act when dry. If the coat is so thick that it cannot dry through, the durability of the paint film will be reduced. If the coat is uneven in thickness, the final result will look patchy, and its appearance will become worse as time goes on. The quality of craftsmanship will determine the state of the film of paint and good craftsmanship will depend on proper methods.



Paint Cracks if Applied too Thick

(Cont'd)

b. Painting Wood. See Bulletin No. LR-18 for preparation of surfaces and application of priming coat. Apply one coat of high quality pigment in oil paint. Do not exceed a spreading rate of 550 feet per gallon for good coverage. When applying paint the first aim should be to obtain even distribution; therefore, pressure should be exerted on the brush and the work crossed once or twice; that is, brushed in opposite directions. When finishing an area, the pressure on the brush should be diminished gradually until the new painted surface is smooth and free of brush marks. The paint should be well brushed out in the first instance to a thin even film. If this is done, brush marks will scarcely show. Always use the proper brush, such as a large brush for flat work or a sash tool for windows and mouldings or generally narrow surfaces. When repainting over surfaces in good condition, one coat of finish paint is sufficient. Where the old coating has failed in patches, it should be spot primed and one coat of finish paint applied. Surfaces which have been stripped of old paint require a full priming coat and a finish coat of paint designed for one-coat work or two coats of regular exterior paint.



Painting a Wood Surface

c. Painting Masonry. Paints for exterior masonry wall surfaces may be divided into four classes: cement-water paint, resin-emulsion paint, oil paint, and synthetic-rubber paint.

(1) Cement-water Paint. Cement-water paint should be used for application to walls which are damp at the time of painting or those which may become damp after painting because of structural defects or open texture of masonry, or because the structure is new and normally contains water-soluble salts. When applying cement-water paint, first dampen the wall surface for more than one hour before painting. If the surface tends to dry rapidly, as in hot weather, redampen it just before painting.

(a) Preliminary Grout. Open-textured walls constructed of cinder block, rough finish concrete block, and porous brick require a coating of grout before applying cement-water paint. Surfaces such as hard brick, poured concrete, concrete block, sand plaster, and

(Cont'd)

cement plaster do not require the grout treatment. Grout is prepared by mixing 1 part Portland cement with 3 parts of clean, sharp sand, adding 15 percent hydrated lime, and thinning to a paste with water. Scrub the paste well into the surface and in about 6 hours, when it has set, wet the surface with water, using a fine spray from a garden hose. Repeat the spraying operation at regular intervals for the following 48 hours.

(b) Applying Cement-Water Paint. Do not apply paint on frozen masonry or when paint is exposed to temperatures below 40° F. Where waterproofing is a major factor, scrub the paint into the surface. Otherwise it may be applied with a calcimine brush. When repainting over old cement-water paint or resin-emulsion paint, one coat will be sufficient if the old coating is in good condition. If it is not, it should be removed by sandblasting or wire brushing and treated as a new surface. For new work, apply 2 coats and allow 24 hours between coats for drying. Lightly dampen the first coat before applying the second. After the final coat has dried, spray the surface with water 2 or 3 times a day for 2 days.

Applying Resin-Emulsion Paint to Exterior Masonry

(2) Resin-Emulsion Paint. On open-textured walls, apply a coating of grout as directed in par. 6c(1)(a) above. Paints made by different companies vary so that the manufacturer's directions on the package should be followed with regard to preparing the paint. For repainting, application of one coat will be sufficient if painting over a resin-emulsion finish which is not blistered or flaking excessively and is secure. If the old finish is in poor condition, it should be removed by scraping or sandblasting. Apply 2 coats of paint, allowing 10 to 12 hours for thorough drying of the first coat before applying the second. If the first coat of paint is difficult to apply and the brush pulls, dampen the wall rather than thin the paint.

(Cont'd)

(3) Oil Paint. Masonry being painted for the first time should receive 1 primer coat and 1 finish coat. Open-textured masonry must first be grouted. For repainting over old oil paint, application of one coat will be sufficient. Oil-painted surfaces which show moderate peeling or checking need only to be wire brushed to remove loose paint. Spot prime bare spots and apply 1 coat of finish paint. Where old paint has failed completely, it must be removed by sandblasting and refinished as a new surface. If this surface is of open-textured masonry, it should be regrouted (see par. 6c(1)(a), above) after the sandblasting, then primed and finished. Close-textured masonry does not require grouting in any case, although a priming coat should be applied to the surface before putting on the finish paint.

Applying Oil Paint to Exterior Masonry

(4) Synthetic-Rubber Paint. When first painting open-textured walls, a coating of grout should be applied before putting on synthetic rubber paint. (See par. 6c(1)(a), above). Paint may be applied directly to close-textured masonry. Synthetic rubber base paint may be used for wet or damp surfaces, but oil paint must be removed from the surface by sandblasting before applying synthetic rubber paint. Thin the paint for use as a priming coat, but use a thinner recommended by the manufacturer. When applying with a brush, flow the paint on the surface and do not back brush or work it over, as such treatment will cause rolling and pulling of the paint under the brush. This paint dries to touch in 3 hours, but allow at least 18 hours drying time between coats. Apply the second coat without thinning.

d. Painting Metal. The chief reason for painting metal surfaces is to prevent or control corrosion. To do this successfully, the first step, which is that of cleaning and preparing the surface, cannot be stressed too much. Unless the surface is properly cleaned so that all dirt, grease, and rust are removed and the priming paint comes in contact with the metal or a well-secured previous coat, early failure will undoubtedly occur regardless of the quality of paint and care in applying it.

(Cont'd)

(1) Cleaning Metal. Remove all loose paint and rust by scraping, wire brushing, sanding, or with a rotary wire brush. Clean the surface with a cloth dampened with mineral spirits, turpentine, or gasoline.

(2) Primers

(a) Types. Commercial linseed oil priming paints for steel may contain rust inhibitive pigments such as lead chromate, zinc chromate, blue lead, red lead, iron oxide, or a mixture of these pigments. A zinc dust-zinc oxide paint is best suited for priming galvanized metal or zinc surfaces. Red or brown iron oxide paint is an economical as well as a good primer for roofing tin. For copper surfaces such as gutters and flashings as well as copper or bronze screens, a good priming paint may be composed of 2 pounds of aluminum powder mixed with 1 gallon of aluminum mixing varnish. Other primers formulated to combat rust are also available under various trade names.

(b) Application. Spot prime surfaces which have partially failed and follow with a full priming coat. Allow 24 hours between applications. Where the old paint has been completely removed, apply a full priming coat.

(3) Finish Paint. The function of the final coat on metal is to protect the priming coat from the weather and to give the desired color. Finishing coats of regular oil base house paint may be applied or coatings designed especially for metal surfaces can be obtained. Apply 1 coat of finish paint on repaint work. On new work or surfaces which have been stripped of old paint, apply 2 finish coats.

(a) Iron and Steel. The final coat should be well brushed out and finished in the direction that allows the best drainage of moisture.

(b) Galvanized Metal. Brush the paint out well, as thick coatings hasten failure.

(c) Tin. Brush the paint out well, particularly on nearly flat surfaces, because thick coats crack quickly.

(d) Copper. Apply finish in the direction that allows the best drainage. Avoid thick coatings.

Painting on
Exterior Metal Surface

(Cont'd)

7. Paint Styling. The following data on paint styling or the use of color is included in this Bulletin only to provide general information on this subject. This material is not entirely applicable to public low-rent housing but may be adapted in cases which meet the following requirements: (1) the appearance and condition of buildings demands repainting, and (2) the cost of the repainting job will not be increased by following these suggestions.

a. What Paint Styling Means. Paint styling is a method of using colorful coatings in such a way that the good features of a building - or any object, in fact - are emphasized and the poor features are minimized.

b. When to Apply the Principles of Paint Styling. Economy is the first consideration where public low-rent housing is concerned. Therefore, under no condition should repainting be considered merely to employ the use of color in enhancing or obscuring some architectural feature, however desirable from an artistic viewpoint. When the old coating fails and repainting is necessary (see Bulletin No. LR-18, par. 2), for example, to protect materials from corrosion, to prevent water penetration of exterior walls, or to rejuvenate old roof coverings, then paint styling may be applied if it does not increase the cost of the work.

c. The Use of Color. When a building needs repainting, the question arises as to what color or combination of colors may be applied which will be most beneficial to its appearance. It may be that a building is well proportioned and application of one color or another to the walls, trim, or roof will do little to affect its harmony or appearance. On the other hand, the roof may appear too high or too low; the windows may be badly spaced; the chimney may be ill-shaped, too large or too small; or there may be other architectural defects which make the building appear unbalanced. When any of these conditions are present and the need for repainting arises, paint styling may be employed to deceive the eye and give the illusion of better arrangement.

d. How Paint Styling Works. Designers and decorators have long been aware of the value of paint styling. The subject itself is of considerable scope and cannot be completely covered in this article. But the basic features are given here and will demonstrate how the use of color is beneficial as a means of making a structure appear to better advantage. For example: To emphasize a good feature of a building, you surround it with different colors so that it stands out. To minimize a poor feature, you paint it to match and blend with the surrounding area. The areas painted the lighter colors always seem larger. This is because the brightness in color stimulates the nerves in the retina of the eye and produces an image that tends to swell in dimensions. As an example, a light-colored house will seem larger to you than a dark-colored one of exactly the same size if viewed from the same distance. The largest color in terms of appearance is yellow, followed in order of greatness by red, green, blue, brown, and finally black. Correct color

(Cont'd)

styling properly determines where the color interest should be stressed, and on what areas it should be modified. If treated properly from the standpoint of color, the best design lines are brought out, the building looks good, and has a personality of its own.

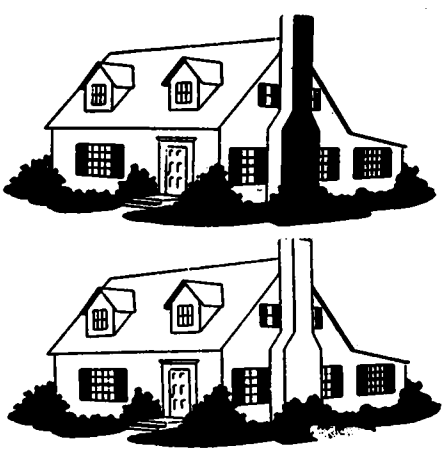
8. Applying Principles of Color Styling. Let's see how the principles of color styling may be applied in minimizing defects and in selecting a color scheme for the outside of a structure.

a. The Roof. Let's look at the roof of a frame of masonry building. This is a sloping roof which appears too high. If the roof needs redressing to extend the life of the roofing material, you can "lower" this roof simply by painting it a dark color. Dark roofs seem to be closer to the ground. If the building has shutters, paint the shutters of the upper story the same color or tone as the roof. This will seem to bring the roof line lower, as the eye will travel to the bottom line of the dark shutters. Then paint the remaining shutters a light color or the color of the body of the building. If the shutters on the lower floo were also painted dark, it would lend vertical lines to the building and add to its height in the same way that vertically striped wall paper makes a room seem higher.

A Dark Roof Appears to Reduce the Height of a Building

b. The Chimney. On outside chimneys, the base is usually the largest part. If a chimney is too large in proportion to the size of the building, painting it the same color as the building will make it blend with the background and its size will be less noticeable. A chimney that is too small and weak-looking will also benefit in appearance if painted the same color as the building.

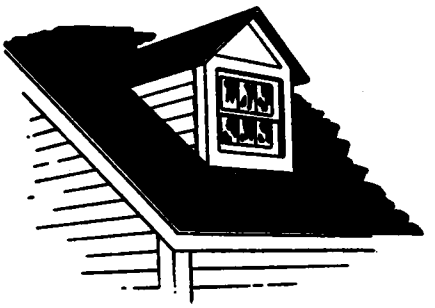
c. Gables and Dormers. If the roof line is cut up with a number of gables, make everything dark on the roof. The eye will be attracted to the roof with too many gables or dormers in color. Therefore, it is better to darken those areas and feature such points as the doors, shutters, or window trim on the lower floors with eye-holding colors. Dormers



An Oversized Chimney is Less Noticeable if Blended with Surrounding Construction

(Cont'd)

which are too prominent can be "lost" by painting them a dark color or one similar to the roof color. A building which looks too low can be given additional height by painting the dormer faces the color of the walls. This process carries the wall color up into the roof and reduces the flat appearance of the structure. The illusion of additional height can also be given a building if the roof is painted a color similar to or lighter than that of the side walls.



Dormers Painted the Color of Side Walls Give the Building Additional Height

BULLETIN NO. LR-28

CONSTRUCTION CONTRACT DOCUMENTS

FOR
SMALL PROJECTS

PHA LOW-RENT HOUSING
BULLETIN

PUBLIC HOUSING ADMINISTRATION
HOUSING AND HOME FINANCE AGENCY WASHINGTON 25, D.C.

NOVEMBER 1952

LIST OF BULLETINS

WHICH HAVE BEEN PUBLISHED

Bulletin No.	TITLE	
LR-1	Zoning and Rezoning	
LR-2	Subsurface Soil Investigation	
LR-3	Site Planning	)
LR-4	Site Engineering	)
LR-5	Structural Design, Materials and Methods	) A series
LR-6	Architectural Planning and Design	) of eight
LR-7	Plumbing, Heating and Ventilation	) Housing
LR-8	Electrical	) Design
LR-9	Lawns and Planting	) Notes
LR-10	General Design	)
LR-11	Selection of Utilities	
LR-12	Construction Contract Documents	
LR-13	Guide Specifications	
LR-14	Equipment Contract Documents	
LR-15	Operation and Repair of Heating Systems (Care of Boilers Out of Service)	
LR-16	Corrosion of Underground Piping	
LR-17	Rules for Boiler Operation	
LR-18	Preparation of Exterior Surfaces for Repainting	
LR-19	Control of Condensation in Crawl Spaces	
LR-20	Glazing	
LR-21	Maintenance of Wood Floors	
LR-22	Basic Specifications for Rural Nonfarm Housing	
LR-23	Operation and Repair of Heating Systems--Boilers (Types, Use and Repair)	
LR-24	Maintenance of Concrete Floors	
LR-25	Indoor Tenant Activity Areas	
LR-26	Routing Care of Lawns	
LR-27	Repainting Exterior Surfaces	
LR-28	Rural Nonfarm Construction Contract Documents	
LR-29	Occupancy Policy Determinations to be Made and Action to be Taken Previous to Opening of Application Office	
LR-30	Suggestions for Selecting and Training Occupancy Personnel	
LR-31	Publicizing Occupancy Policies	
LR-32	Suggested Operating Procedures for the Receipt and Processing of Applications	
LR-33	Do Community Services Programs Pay Dividends?	
LR-34	Refinishing Interior Surfaces	
LR-35	Suggested Procedures for Handling the Relocation of Site Occupants	
LR-36	Demolition Contract Documents	
LR-37	Termite Control	
LR-38	Local Authority Pre-Occupancy Check List	
LR-39	Suggested Procedures for Initially Selecting Tenants From Among Eligible Applicants	
LR-40	Financial Benefits Available to Veterans and Servicemen, and Their Families, Dependents, and Beneficiaries	
LR-41	Saws - Their Care, Use and Conditioning	
LR-42	Chisels - Their Use and Care	
LR-43	Planes - Their Care, Use, and Conditioning	
LR-44	Detection of Excessive Fuel Consumption in Project-Operated Heating Plants	

NOTE: Some Bulletins will be issued in parts, of which one or more will be contained in the initial release of each Bulletin; other parts will be issued subsequently from time to time as they are completed.

CONSTRUCTION CONTRACT DOCUMENTS FOR SMALL PROJECTS

TABLE OF CONTENTS

CONTENTS (Cont'd)

CONTENTS (Cont'd)

INTRODUCTION

These documents have been prepared for use in connection with small projects, whether rural nonfarm or urban. Many provisions included in Bulletin LR-12 have been intentionally omitted on the theory that the benefits to be derived from simplified documents outweigh the benefits from precise coverage of many points, particularly in that on small projects more bids will be received if simplified documents are used. However, in order to simplify Field Office operations, a selection of either Bulletin LR-12 or LR-28 should be made and in no event should an attempt be made to delete material from LR-12 or add substantial amounts of material to LR-28 from LR-12; that is, once the Local Authority has selected either bulletin, that bulletin should be followed. The Field Office should be consulted before selecting either form.

This Bulletin is designed to assist Local Authorities and their Architects to prepare the contract documents for Small Project construction. The treatment and text of the subjects considered essential for inclusion in such documents has been simplified as far as is consistent with security. Reference should be made to "Detailed Instructions Covering Preparation and Use" (page 51), for guidance and information.

Since it is not feasible to anticipate the different conditions and problems which arise on specific projects, this Bulletin has been prepared with no particular project or locality in mind. It is recognized that this material will frequently require modification to conform to State or local laws, codes, ordinances and regulations. It is, of course, the responsibility of the Local Authority to see that the contract documents, as issued for bidding and construction purposes, do so conform. Except for such essential modifications, the form and sequence of the subject matter in these documents should be maintained for the sake of uniformity, and to expedite the review and approval of contract documents by the PHA prior to issuance for bidding.

When it is necessary, because of State law, to let separate prime contracts for mechanical trades, or other specialty branches of the work, refer to "Changes Required for Separate Prime Contracts" (page 47).

The Contract Documents, for any contract as a whole, consist of the Specifications and Drawings. The Specifications include the Instructions and Forms, General Specifications (comprising General Conditions, Special Conditions, General Scope of Work, and Schedule of Drawings), and the Technical Specifications (which are published separately from this Bulletin), all of which are to be bound together with a "SPECIFICATIONS" cover. The Drawings, while physically separate from the Specifications, are incorporated therein by reference.

Close study, reference and use of this Bulletin should greatly facilitate the work of preparing the contract documents, obtaining responsible and satisfactory bids, and administering contracts and construction work under them.

INSTRUCTIONS AND FORMS

FORM OF INVITATION FOR BIDS

(Must be modified if law requires other form)

* * * *

INVITATION FOR BIDS

The (name of Local Authority) will receive bids for (brief description of contract and project) until (hour) M. (S.T.) (Daylight Saving Time) on the _____ day of _____, 19__, at (address of Local Authority), (City), (State), at which time and place all bids will be publicly opened.

Forms of contract documents are on file at the office of the (Local Authority) and at the office of (architect or building exchange), at (address). Copies may be obtained by depositing $_____ with the Local Authority for each set of documents. Such deposit will be refunded to each person who returns them in good condition within 10 days after bid opening.

A bid guaranty and performance and payment bonds will be required. Not less than the minimum salaries and wages as set forth in the Specifications must be paid on this work.

The (Local Authority) reserves the right to reject any or all bids or to waive any informalities in the bidding.

No bid shall be withdrawn for a period of thirty (30) days subsequent to the opening of bids.

(name of Local Authority)

Date _____, 19__. By_____

Title_____

- -

INSTRUCTIONS TO BIDDERS

1. BIDDING DOCUMENTS

Bidders will be furnished a complete set of Drawings, the Specifications, any addenda then in force, and two detached copies of the Form of Bid and Form of Statement of Bidder's Qualifications. The forms bound in the Specifications are not to be used.

2. INTERPRETATIONS

All interpretations will be in writing in the form of addenda and all bidders shall be bound by such addenda, whether or not received.

3. PROPOSALS

All bids must be submitted on forms furnished by the Local Authority. Only the original shall be submitted. Alternative proposals will not be considered.

4. BID GUARANTY

The bid must be accompanied by a bid guaranty which shall not be less than five percent (5%) of the amount of the bid, and may be a certified check or bank draft payable to the order of the Local Authority, negotiable U. S. Government bonds (at par value), or a bid bond secured by a guaranty or surety company in the form hereto attached. Cash guaranties will not be accepted.

5. STATEMENT OF BIDDER'S QUALIFICATIONS

Each bid must be accompanied by a notarized statement, on the form furnished for that purpose, a copy of which is bound in the Specifications, of the bidder's financial resources, his construction experience, and his organization and equipment available for the work contemplated.

6. UNIT PRICES

If requested, the Contractor shall submit unit prices.

7. TIME FOR RECEIVING BIDS

Bids received prior to the time of opening will be kept unopened. The officer whose duty it is to open them will decide when the specified time has arrived, and no bid received thereafter will be considered. No responsibility will attach to an officer for the premature opening of a bid not properly addressed and identified.

8. OPENING OF BIDS

At the time and place fixed for the opening of bids, every bid received within the time fixed will be publicly opened and read aloud, irrespective of any irregularities therein. Bidders and other persons properly interested may be present in person or represented.

INSTRUCTIONS TO BIDDERS

9. WITHDRAWAL OR MODIFICATION OF BIDS

Provided application is received by the Local Authority prior to the time set for bid opening, bids may be:

a. Withdrawn, in person or by mail or telegraph.

b. Modified, in person or by mail only.

10. AWARD OF CONTRACT(S); REJECTION OF BIDS

The Contract(s) will be awarded to the lowest responsible bidder(s). The successful bidder(s) will be notified promptly. The Local Authority reserves the right to reject the bid of any bidder who has previously failed to perform properly contracts of a similar nature, or has habitually disregarded his obligations to subcontractors, materialmen, or employees. The ability of a bidder to obtain a performance bond shall not be regarded as the sole test of such bidder's competency or responsibility.

11. ESTIMATES OF COST

The successful bidder may be required to cooperate with the Local Authority and the Architect in preparing a breakdown of his bid price, to determine the division of costs between dwelling facilities, nondwelling facilities, and site improvements.

12. PERFORMANCE AND PAYMENT BOND; EXECUTION OF CONTRACT

a. Subsequent to the award and within ten (10) days after the forms are presented to him for signature, the successful bidder shall execute and deliver to the Local Authority a contract in the form included in the Specifications in such number of counterparts as the Local Authority may require.

b. Having satisfied all conditions of award as set forth elsewhere in these documents, the successful bidder shall, within the period specified in 12a, above, furnish a performance and payment bond in a penal sum of at least _____% of the contract price as awarded. Such bond shall be in the form of bond included in the Specifications and shall bear a date the same as, or subsequent to, the date of the contract. The bonds of individual sureties are not acceptable, and neither are those issued by partnerships or corporations not in the surety business.

c. The failure of the successful bidder to execute such contract and to supply the required bonds within ten days after the prescribed forms are presented for signature, or within such extended period as the Local Authority may grant based upon reasons determined adequate by it, shall constitute a default, and the Local Authority may award the contract to the next responsible bidder or readvertise for bids, and may charge against the bidder the difference between the amount of the bid and the amount for which a contract for the work is subsequently executed, irrespective of whether the amount thus due exceeds the amount of the bid guaranty.

FORM OF BID

(Must be modified if law requires other form)

BID FOR _____

To the _____(Local Authority)_____
_____(Address)_____

Gentlemen:

1. Pursuant to and in compliance with your Invitation for Bids dated _____, 19__, the Instructions to Bidders and other documents related thereto, the undersigned, having familiarized (himself) (themselves) with said documents and with local conditions affecting the cost of the work, hereby proposed to furnish all labor, materials, equipment and services required to construct and complete _____(description of work, identify project)_____ in strict accordance with the Specifications, Drawings, and Addenda, if any thereto, as prepared by _____ and on file in the office of _____ for the sum or sums named below:

(Note: The bidder may bid upon any one or more of the following base proposals. No combination of base proposals will be considered except those shown on the Bid Form. On base proposals for which the bidder does not desire to submit a bid he is required to so indicate by the use of the term "No Bid" in the space provided for the amount of the proposal)

BASE PROPOSAL 1. The _____(definite description of work included)_____ for the following consideration $_____

Bid Guaranty required $_____
Amount of Performance and Payment Bond(s) required $_____

BASE PROPOSAL 2. The _____(definite description of work included)_____ for the following consideration $_____

Bid Guaranty required $_____
Amount of Performance and Payment Bond(s) required $_____

(continue as desired)

BASE PROPOSAL_____. All work covered by Base Proposals_____ and _____ for the following consideration $_____

Bid Guaranty required $_____
Amount of Performance and Payment Bond(s) required $_____

(continue as desired)

FORM OF BID

2. In submitting these bids, or any of them, it is understood that the right is reserved by the (Local Authority) to accept one or more of the foregoing bids, or to reject any or all bids, or to waive any informalities in the bidding. If written notice of the acceptance of any or all of these bids is mailed, telegraphed, or delivered to the undersigned within thirty (30) days after the opening thereof, or at any time thereafter before this bid is withdrawn, the undersigned agrees to execute and deliver a contract in the prescribed form and furnish the required bond(s) within ten (10) days after the contract is presented to him for signature. The bidder agrees to accept award of a contract for any single Base Proposal for which he has set forth a bid price, or for any combination of Base Proposals for which he has set forth bid prices; provided that the sum total of bid prices for each single Base Proposal or combination of Base Proposals which may be awarded to him does not exceed $_____.

(This amount to be filled in by any bidder who wishes to place a limit on the amount of work for which he will accept contract. If he is willing to accept an award for all work bid upon, he shall place in the blank space the words "No Limit." If a bidder fails to write in this space it will be understood that there is no limitation on the amount of the award for which he will accept contract.)

3. Security in an amount sufficient to equal or exceed the total of the amounts of Bid Guaranties required above for the Base Proposals or combinations thereof for which the undersigned will accept contract award, in the form of _____, is submitted herewith in accordance with the Specifications.

Date _____, 19___. _____
(name of bidder)

Official address: By_____

_____ Title _____

_____

(SUBMIT ORIGINAL ONLY)

FORM OF BID BOND

BID BOND

KNOW ALL MEN BY THESE PRESENTS, That we the undersigned,

_____(name of Principal)_____

as PRINCIPAL, and

_____, as SURETY

are held and firmly bound unto _____(corporate name of Local Authority)_____ hereinafter called the "Local Authority," in the penal sum of

_____Dollars,

lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal has submitted the accompanying bid, dated _____, 19___, for _____

_____

_____

NOW, THEREFORE, if the Principal shall not withdraw said bid within the period specified therein after the opening of the same, or, if no period be specified, within sixty (60) days after the said opening, and shall within the period specified therefor, or, if no period be specified within ten (10) days after the prescribed forms are presented to him for signature, enter into a written contract with the Local Authority in accordance with the bid as accepted, and give bond with good and sufficient surety or sureties, as may be required, for the faithful performance and proper fulfillment of such contract; or in the event of the withdrawal of said bid within the period specified, or the failure to enter into such contract and give such bond within the time specified, if the Principal shall pay the Local Authority the difference between the amount specified in said bid and the amount for which the Local Authority may procure the required work or supplies or both, if the latter amount be in excess of the former, then the above obligation shall be void and of no effect, otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above-mentioned parties have executed this instrument under their several seals this _____ day of _____, 19___, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

In presence of:

_____ _____(Individual Principal)_____ (SEAL)

_____ _____(Business address)_____

FORM OF BID BOND

_____ (Individual Principal) _____ (SEAL)

_____ (Business address) _____

Attest:

_____ (Corporate Principal) _____

(Business address) _____

By _____ Affix Corporate Seal

_____ (Corporate Surety) _____

_____

By _____ Affix Corporate Seal

_____ _____

(Power-of-Attorney for person signing for surety company must be attached to bond.)

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, _____, certify that I am the _____ Secretary of the corporation named as Principal in the within bond; that _____, who signed the said bond on behalf of the Principal was then _____ of said corporation; that I know his signature, and his signature thereto is genuine; and that said bond was duly signed, sealed, and attested to for and in behalf of said corporation by authority of its governing body.

_____ (Corporate Seal)

FORM OF STATEMENT OF BIDDER'S QUALIFICATIONS

STATEMENT OF BIDDER'S QUALIFICATIONS
(General Contractor)

All questions must be answered. The data given must be clear and comprehensive. This statement must be notarized.

1. Name of bidder_____
2. Business address_____
3. When organized_____, _____
4. Where incorporated_____
5. How many years have you been engaged in the contracting business under your present firm or trading name?_____
6. Financial statement: (ATTACH SEPARATE SHEET)
7. Credit available for this contract: $_____(ATTACH LETTER)
8. Contracts now on hand, gross amount $_____
9. Plan of organization_____
10. Personnel or organization_____
11. Have you ever refused to sign a contract at your original bid?_____
12. Have you ever defaulted on a contract?_____
13. Remarks:_____
14. Will you, upon request furnish any other information that the (Local Authority) may require?_____
15. The undersigned hereby authorizes and requests any person to furnish any information requested by the (Local Authority) in verification of the recitals comprising this Statement of Bidder's Qualifications.

Dated at_____ this _____ day of _____, 19__.

_____
(name of bidder)

By_____

Title_____

State of _____)
County of _____) ss.

_____, being duly sworn, deposes and says that he is _____ of _____ and that the answers to the foregoing questions and all statements therein contained are true and correct.

Sworn to before me this _____ day of _____, 19__

_____
Notary Public

My commission expires_____.

FORM OF CONTRACT

THIS AGREEMENT made this _____ day of _____, in the year of Nineteen Hundred and _____ by and between _____ a corporation organized and existing under the laws of the State of _____ _____ a partnership consisting of _____ an individual trading as _____ hereinafter called the "Contractor," and

_____

_____

hereinafter called the "Local Authority,"

WITNESSETH, That the Contractor and the Local Authority for the consideration stated herein mutually agree as follows:

ARTICLE 1. Statement of Work. The Contractor shall furnish all labor, material, equipment and services, and perform and complete all work required for the construction of _____ dwelling buildings containing _____ family dwelling units, and other improvements, for Project No. _____, located at _____, said work being described in the bid as Base Proposal No. ____, in strict accordance with the "Specifications for . . . . . _____, and Addenda thereto numbered _____ and (identify the Specifications) _____, dated _____, and _____, and the Drawings referred to therein, all as prepared by _____ _____, which said Specifications, Addenda and Drawings are incorporated herein by reference and made a part hereof.

ARTICLE 2. The Contract Price. The Local Authority shall pay the Contractor for the performance of the Contract, in current funds, subject to additions and deductions as provided in the Specifications, the sum of _____ Dollars ($_____).

ARTICLE 3. Contract Documents. The Contract shall consist of the following component parts:

a. This Instrument
b. General Conditions
c. Special Conditions
d. General Scope of Work
e. Technical Specifications
f. Drawings.

This Instrument, together with the other documents enumerated in this Article 3, which said other documents are as fully a part of the Contract as if hereto attached or herein repeated, form the Contract. In the event that any provision of any other component part of this Contract conflicts with any provision of any other component part, the provision of the component part first enumerated in this Article 3 shall govern, except as otherwise specifically stated. The various provisions in Addenda shall be construed in the order of preference of the component part of the Contract which each modifies.

FORM OF CONTRACT

IN WITNESS WHEREOF, the parties hereto have caused this Instrument to be executed in _____ original counterparts the day and year first above written.

Attest:

_____
(Contractor)

_____ By_____

_____ Title_____

_____
(Street)

_____
(City)

_____

_____
(Local Authority)

_____ By_____

Title_____

(Print or type the names underneath all signatures)

FORM OF CONTRACT

Certifications

I, _____, certify that I am the _____ of the corporation named as Contractor herein; that _____, who signed this Contract on behalf of the Contractor, was then _____ _____ of said corporation; that said Contract was duly signed for and behalf of said corporation by authority of its governing body, and is within the scope of its corporate powers.

:Corporate:
: Seal :

_____

_____

I HEREBY CERTIFY that, to the best of my knowledge and belief, based upon observation and inquiry, _____, who signed this Contract for the _____, had authority to execute the same, and is the individual who signs similar contracts on behalf of this corporation with the public generally.

_____

(This last certification must be made by the person who signed the Contract for the Local Authority)

(Print or type the names underneath all signatures)

FORM OF PERFORMANCE AND PAYMENT BOND (OR BONDS)

Notes to the Local Authority:

1. Insert here appropriate form of bond (or bonds) securing performance of the work and payment of laborers and materialmen. Certain bond forms are unacceptable because they modify the substance of the contract, as distinguished from merely securing the performance of that contract. For instance, AIA Form B1, which is a bond form issued by the American Institute of Architects, includes an arbitration clause conflicting with the provisions of Sec. 14 of the General Conditions of Bulletin LR-28 and is therefore unacceptable. There are also a number of other bond forms which include arbitration provisions, all of which are unacceptable.

   The PHA also regards as unacceptable any bond modifying the provisions of the contract or restricting the liability of a surety. A number of bonds - all regarded as unacceptable - limit the time within which laborers and materialmen must pursue their claims or require laborers and materialmen to bring suit only in a specified court. Laborers and materialmen should have full benefit of applicable law, and nothing should be included in a bond to circumvent those rights.

   On each form the following shall appear beneath the signature space for Corporate Surety and ahead of the space for Certificate As to Corporate Principal:

   "The rate of premium on this bond is $_____ per thousand.
   The total amount of premium charged is $_____.
   (The above is to be filled in by surety company)
   (Power-of-attorney of person signing for surety company must be attached)"

2. Following the Form of Bond(s) include in the Specifications the "Directions for Preparation of Performance and Payment Bonds."
(See next page)

DIRECTIONS FOR PREPARATION OF PERFORMANCE AND PAYMENT BOND

1. Individual sureties are not acceptable, neither are partnerships, or corporations not in the surety business.

2. The name of the Principal shall be shown exactly as it appears in the Contract.

3. The penal sum shall not be less than that required by the Specifications.

4. If the Principals are partners, or joint venturers, each member shall execute the bond as an individual, and state his place of residence.

5. If the Principal is a corporation, the bond shall be executed under its corporate seal. If the corporation has no corporate seal it shall so state and affix a scroll or adhesive seal following the corporate name.

6. The official character and authority of the person(s) executing the bond for the Principal, if a corporation, shall be certified by the secretary or assistant secretary thereof under the corporate seal, or copies attached of such records of the corporation as will evidence the official character and authority of the officer signing, duly certified by the secretary or assistant secretary, under the corporate seal, to be true copies.

7. The current power-of-attorney of the person signing for the surety company must be attached to the bond.

8. The date of the bond must not be prior to the date of the Contract.

9. The following information must be placed on the bond by the surety company:

   (a) The rate of premium in dollars per thousand; and

   (b) The total dollar amount of premium charged.

10. The signature of a witness shall appear in the appropriate place, attesting to the signature of each party to the bond.

11. Type or print the name underneath each signature appearing on the bond.

12. An executed copy of the bond must be attached to each copy of the Contract (original counterpart) intended for signing.

GENERAL SPECIFICATIONS

GENERAL CONDITIONS

1. DEFINITIONS

Wherever used in any of the Contract Documents, the following meanings shall be given to the terms defined:

a. The "Contract" means the contract executed by the Local Authority and the Contractor, of which these General Conditions form a part. The documents which comprise the contract are set forth in the contract form.

b. The terms "Local Authority" and "Contractor" mean the respective parties to the contract.

c. The term "PHA" means the Public Housing Administration, an agency and instrumentality of the United States of America created by the United States Housing Act of 1937 (Public No. 412, 75th Congress), as amended. The term "PHA Field Office" (or "Field Office") means the PHA Field Office which has jurisdiction over the geographical area in which the project is located. However, nothing contained in the Contract shall be construed to create any contractual relation between the Contractor and the PHA.

d. The "Architect" is the person, firm, or corporation under contract with the Local Authority for architectural and engineering services related to the work.

e. The term "Project Engineer" means the person designated by the PHA to perform certain functions in connection with the contract for financial aid between the PHA and the Local Authority.

f. The term "Project" means the housing project, the construction work for which is contemplated in whole or in part under this contract.

g. The term "Specifications" means the volume which includes, and the term shall include, the Instructions and Forms (consisting of the Form of Invitation for Bids, Instructions to Bidders, Form of Bid, Form of Bid Bond, Form of Statement of Bidder's Qualifications, Form of Contract and Form of Performance and Payment Bond or Bonds), the General Specifications (consisting of the General Conditions, the Special Conditions, the General Scope of Work and the Schedule of Drawings) and the Technical Specifications.

h. The term "Drawings" means the drawings enumerated in the Schedule of Drawings.

i. The term "Contracting Officer" means the person authorized by the Local Authority to administer construction contracts for and in the name of the Local Authority. It does not necessarily mean the person executing this Contract. The Local Authority shall inform the Contractor concerning the Contracting Officer.

GENERAL CONDITIONS

2. CONTRACTOR

Only one Contractor is recognized as a party to this Contract, and where the term "Contractor" is used the prime contractor who signed this Contract is referred to, notwithstanding references in the Technical Specifications to "Mason Contractor," "Carpentry Contractor," etc.

3. SUPERINTENDENCE BY CONTRACTOR

a. The Contractor shall personally supervise the work or have a competent superintendent, satisfactory to the Local Authority, on the work at all times during progress with full authority to act for him.

b. The Contractor shall lay out his work and be responsible for all necessary lines, levels, elevations and measurements. He must verify the figures shown on the drawings before laying out the work, and will be held responsible for any error resulting from his failure so to do.

4. SUBCONTRACTS

a. The Contractor shall not award any work to any subcontractor without prior written approval of the Local Authority, which approval will not be given until the Contractor submits a written statement containing such information as the Local Authority may require concerning the proposed subcontractor and the scope of the subcontract work. No proposed subcontractor will be disapproved except for cause.

b. The Contractor shall be fully responsible to the Local Authority for the acts and omissions of his subcontractors. He shall insert appropriate provisions in all subcontracts relative to the work to bind subcontractors to the Contractor by the terms of the Contract insofar as they are applicable to the work of subcontractors.

c. Nothing contained in the Contract shall create any contractual relation between any subcontractor and the Local Authority.

d. The Contractor shall insert in each of his subcontracts the provisions (appropriately modified) of Sections 33, 34b, 35, 36, 41, 42 and 43.

5. OTHER CONTRACTS

The Local Authority may award other contracts for additional work, and the Contractor shall cooperate fully with other contractors. He shall carefully fit his work to that performed by others as may be directed by the Local Authority.

6. MUTUAL RESPONSIBILITY OF CONTRACTORS

If any other contractor or subcontractor shall suffer loss or damage on the work for which the Contractor is legally responsible, the Contractor agrees to use his best efforts to settle with such other contractor or subcontractor. If such other contractor or subcontractor shall assert any claim against the Local

Authority on account of any damage alleged to have been so sustained, the Local Authority shall notify the Contractor, who shall defend at his own expense any suit based upon such claim, and if any judgment or claims against the Local Authority shall be allowed, the Contractor shall pay or satisfy such judgment or claim and pay all costs and expenses in connection therewith.

7. CONTRACTOR'S BREAKDOWN: PERIODICAL ESTIMATES

a. Immediately after execution of the Contract and before the first partial payment is made the Contractor shall furnish, on forms supplied by the Local Authority, a Breakdown of his Contract price, so arranged and itemized as to meet the approval of the Local Authority and the PHA. The values employed in this Breakdown are for the purpose of making partial payments, and shall not be taken as a basis for Contract price adjustments. If the Contract covers more than one project, a separate Breakdown shall be furnished for each project.

b. Not later than 10 days before the date set for payment, the Contractor shall submit, on forms supplied by the Local Authority, his Periodical Estimate for Partial Payment, showing the value of the work performed each month, based on the items of the approved Breakdown. Such estimates are subject to correction and revision as required, and approval by the Architect and the Local Authority, before payment may be made. If the Contract covers more than one project, a separate Periodical Estimate shall be submitted for each project.

8. PAYMENTS TO CONTRACTOR

a. Subject to submission by the Contractor of the written certifications required of him and his subcontractors by Section 33 of the General Conditions, partial payments of not to exceed 90% of the value of the work in progress will be made as the work progresses on not later than the fifteenth day of each calendar month for work done during the preceding calendar month on estimates certified to by both the Architect and Local Authority. In preparing estimates the material delivered to and properly stored on the site and preparatory work done may be taken into consideration. Estimates for monthly payments must be submitted at least ten (10) days in advance of the date set for payment. If the Contract covers more than one project, a separate estimate shall be furnished for each project.

b. All materials and work covered by partial payments made shall thereupon become the property of the Local Authority, but the Contractor shall remain solely responsible for their care and protection, for the restoration of any damaged work, and for fulfillment of all terms of the Contract.

c. The retained 10% and the final payment shall be paid to the Contractor upon final completion and acceptance of all work hereunder, upon certification by the Architect and approval by the Local Authority and the PHA and after the Contractor has furnished the Local Authority with a release in satisfactory form of all claims against the Local Authority arising under and by virtue of this Contract, other than claims if any, which are specifically excepted by the Contractor from the operation of the release; Provided, each such exception

embraces no more than one claim, the basis and scope of which is clearly defined and the amount stated, and the amounts of such excepted claims are not included in the voucher for final payment.

d. The Local Authority may, before making any payment, require the Contractor to furnish releases or receipts from all persons performing work and supplying material to him. However, any payment made without employing this requirement shall not release any surety on any bond or bonds furnished under the Contract.

e. The Local Authority may withhold such monies as may be necessary to protect it from any claim that may be urged against it and, if it elects, may withhold any amounts due from the Contractor to his subcontractors or materialmen, for labor or material furnished by them. This provision shall be construed solely for the benefit of the Local Authority.

9. CHANGES IN THE WORK

a. The Local Authority may at any time, by a written order, make changes in, additions to, or deletions from, the work of the Contractor without relieving or releasing him from any guaranty under the Contract, and without relieving or releasing the surety of any bond supplied pursuant to the Contract. If such action causes a change in the contract price or time, an equitable adjustment shall be made and the Contract modified in writing accordingly. Any claim for adjustment under this provision must be asserted in writing by the Contractor within 10 days from the date the change is ordered. If the parties fail to agree upon the adjustment to be made the dispute shall be determined as provided in Section 14 of the General Conditions, but nothing provided herein shall excuse the Contractor from proceeding with the prosecution of the work so changed.

b. Should the Contractor encounter, or the Local Authority discover, during the progress of the work, subsurface and/or latent conditions at the site materially differing from those shown on the Drawings or indicated in the Specifications, or unknown conditions of an unusual nature differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract, the attention of the Architect shall be called immediately to such conditions before they are disturbed. The Architect shall thereupon promptly investigate the conditions, and if he finds that they do materially differ, the Contract shall be modified to provide for any equitable change in the Contract price and/or time resulting from such conditions.

c. Except in an emergency endangering life or property, no change shall be made by the Contractor unless in pursuance of a written order from the Local Authority, countersigned by the Architect, authorizing the change, and no claim for an adjustment of the contract price or time shall be valid unless so ordered.

d. In an emergency affecting the safety of life or property, including adjoining property, the Contractor, without special authorization from the Local Authority, is authorized to act at his discretion to prevent threatened loss or injury, and he shall so act. Likewise, he shall so act if instructed

to do so by the Local Authority. Any compensation claimed by the Contractor on account of such emergency work shall be determined by the Local Authority, subject to PHA approval and as provided in the Contract.

e. The value of any change shall be determined in one or both of the following ways:

(1) By negotiation and agreement upon a fixed price.

(2) By unit prices named in the Contract, or subsequently agreed upon, applied to estimated or actual quantities involved, as agreed.

f. For extra work performed, the allowances for overhead and profit combined, included in the total cost to the Local Authority, shall not exceed the following:

(1) To the Contractor, for work performed with his own forces, 15% of his net extra cost.

(2) To a subcontractor, for work performed with his own forces, 15% of his net extra cost.

(3) To the Contractor, for work performed by his subcontractor, 7-1/2% of the amount due the subcontractor.

If the net cost value of a change results in a credit from the Contractor or subcontractor, the credit given shall be the net cost. The "net extra cost" or "net cost" as used herein shall mean the difference between all proper cost additions and deductions, overhead and profit excluded.

g. The "Cost" as used herein may include all items of labor and material, the use of power tools and equipment, and all such items of cost as public liability and workmen's compensation insurance, pro rata charges for formen, social security, old age and unemployment insurance. Among the items to be considered as overhead are: insurance other than as mentioned above, bond premiums, supervision, superintendents, timekeepers, clerks, watchmen, small tools, incidental job burdens and general office expense, and all other items not included in the cost as herein defined.

h. Every order issued by the Local Authority which effects an adjustment of the contract price shall be supported by an itemized, bona fide, written proposal from the Contractor, submitted prior to preparation of the order, in satisfactory and multiple-copy form as required. The Contractor will further be required to assist the Local Authority in a breakdown of his total price, for statistical purposes only and to satisfy Local Authority accounting requirements.

10. CLAIMS FOR EXTRA COST

a. If the Contractor claims that any instructions by drawings or otherwise involve extra cost or extension of time, he shall within 10 days after the receipt of such instructions and before proceeding to perform the work, submit his protest thereto in writing to the Local Authority, stating clearly and in detail the basis of his objections. No such claim shall be valid unless so made.

GENERAL CONDITIONS

b. By executing this Contract the Contractor warrants that he has visited the site of the proposed work and fully acquainted himself with the conditions there existing relating to construction and labor, and that he fully understands the facilities, difficulties and restrictions attending the execution of the work under the Contract. The Contractor further warrants that he has thoroughly examined and is familiar with the Drawings, Specifications, and all other documents comprising the Contract. The Contractor further warrants that by executing this Contract his failure, when he was bidding on this Contract to receive or examine any form, instrument or document, or to visit the site and acquaint himself with conditions there existing, does not relieve him from any obligation under the Contract and the Contractor agrees that the Local Authority shall be justified in rejecting any claim based on facts regarding which he should have been on notice as a result thereof.

11. RIGHT OF LOCAL AUTHORITY TO TERMINATE CONTRACT

If the Contractor should be adjudged a bankrupt, or if he should make a general assignment for the benefit of his creditors, or if a receiver should be appointed on account of his insolvency, or if he should persistently or repeatedly refuse or fail to supply enough properly skilled workmen or proper materials, or if he should fail to make prompt payment to his employees or to his subcontractors, or persistently disregard instructions by the Local Authority, or Architect, or fail to observe or perform the provisions of the Contract, or otherwise be guilty of a substantial violation of any provision of the Contract, then the Local Authority may, by at least five days prior written notice to the Contractor, without prejudice to any other rights or remedies of the Local Authority, terminate the Contractor's right to proceed with the work. In such event, the Local Authority may take over and prosecute the work to completion, by contract or otherwise, and the Contractor and his sureties shall be liable to the Local Authority for any excess cost occasioned the Local Authority thereby, and the Local Authority may take possession of and utilize in completing the work, such materials, appliances, and plant as may be on the site of the work and necessary therefor. The foregoing provisions are in addition to, and not in limitation of the rights of the Local Authority under any other provisions of the Contract.

12. DELAYS - DAMAGES

a. If the Contractor refuses or fails to prosecute the work, or any separable part thereof, with such diligence as will insure its completion within the time specified in the Special Conditions, or any extension thereof, or fails to complete said work within such time, the Local Authority may, by written notice to the Contractor, terminate his right to proceed with the work or such part of the work as to which there has been delay. In such event, the Local Authority may take over the work and prosecute the same to completion, by contract or otherwise, and the Contractor and his sureties shall be liable to the Local Authority for any excess cost occasioned the Local Authority thereby. If the Contractor's right to proceed is so terminated, the Local Authority may take possession of and utilize in completing the work such materials, appliances and plant as may be on the site of the work and necessary therefor. Until such time as the Local Authority terminates the right of the Contractor to proceed,

the Contractor shall continue the work, and the Contractor shall pay to the Local Authority as fixed, agreed, and liquidated damages (it being impossible to determine the actual damages occasioned by the delay) for each calendar day of delay, until the work is completed, or accepted, or until such time as the Contractor's right to proceed shall be terminated, the amount as set forth in the Special Conditions, and the Contractor and his sureties shall be liable for the amount thereof. If the Local Authority shall at any time subsequent to the date of completion, as established in the Contract or any amendment thereto, terminate the Contractor's right to proceed, such termination shall not relieve the Contractor of the payment of the liquidated damages which have accrued from the completion date as established in the contract, up to and including the date of termination of the Contractor's right to proceed; Provided, that the right of the Contractor to proceed shall not be terminated or the Contractor charged with liquidated damages because of any delays in the completion of the work due to unforeseeable causes beyond the control and without the fault or negligence of the Contractor, including but not restricted to acts of God, or of the public enemy, acts of the Government, acts of the Local Authority, acts of another contractor in the performance of a contract with the Local Authority, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and unusually severe weather, or delays of subcontractors due to such causes, if the Contractor shall within 10 days from the beginning of any such delay (unless the Local Authority, with the approval of the PHA, shall grant a further period of time prior to the date of final settlement of the Contract) notify the Contracting Officer in writing of the causes of delay, who shall ascertain the facts and the extent of delay, and the Local Authority shall, subject to prior approval of the PHA, extend the time for completing the work when in its judgment the findings of the Contracting Officer justify such an extension, and his findings of fact thereon shall be final and conclusive upon the parties hereto.

b. No payment or compensation of any kind shall be made to the Contractor for damages because of hindrance or delay from any cause in the progress of the work, whether such hindrances or delays be avoidable or unavoidable.

13. ASSIGNMENT OF CONTRACT

The Contractor's obligations and duties under this Contract shall not be assigned in whole or in part by the Contractor without the written approval of the Local Authority, but this restriction shall not prohibit the assignment of the proceeds due hereunder to a bank or financial institution or preclude the Contractor from subletting, as provided in this Contract, parts of the work in accordance with the general practice of the building industry. This Contract may be assigned by the Local Authority to any corporation, agency, or instrumentality authorized to accept such assignment.

14. DISPUTES

a. All disputes other than those required to be handled under Section 41 of the General Conditions, arising under this Contract or its interpretation, whether involving law or fact or both, or extra work, and all claims for alleged breach of contract shall, within ten days of commencement of the dispute, be presented to the Contracting Officer for decision. A copy of the notice of the

dispute shall be forwarded to the Field Office of the Public Housing Administration. Such notice need not detail the amount of the claim, but shall state the facts surrounding the claim in sufficient detail to identify the claim and its character and scope. In the meantime, the Contractor shall proceed with the work as directed. The parties agree that any claim not presented within the time limit specified within this subsection is waived, except that if the claim is of a continuing character, and notice of the claim is not given within ten days of its commencement, the claim will be considered only for a period commencing ten days prior to the receipt by the Local Authority of notice thereof.

b. The Contractor shall submit in detail his claim and his proof thereof. The decision of the Contracting Officer shall be approved in writing by the Public Housing Administration prior to its issuance, and any decision not so approved shall be a nullity. Each decision by the Contracting Officer shall be in writing, and shall be mailed to the Contractor by registered mail, return receipt requested. A copy shall be delivered to the PHA Field Office.

c. If the Contractor does not agree with any decision of the Contracting Officer, he may except from the final release the decision in question.

d. Provided the Contractor has:

(1) given notice of any dispute within the time limit stated in 14a. above;

(2) presented his dispute to the Contracting Officer;

(3) taken exception in his release from the Contracting Officer's decision; and

(4) brought suit within 120 days after receipt of final payment under this Contract or within six months of a written request by the Local Authority that he submit a final voucher and release, whichever time is the lesser;

The Contracting Officer's decision shall not be final and conclusive but the dispute shall be tried in court on its merits. If the above conditions have not been met, the Contractor hereby agrees that his non-compliance with the conditions constitutes a waiver of his right to assert said claim.

15. SPECIFICATIONS AND DRAWINGS

a. Anything mentioned in the Technical Specifications and not shown on the Drawings, or shown on the Drawings and not mentioned in the Technical Specifications, shall be of like effect as if shown on or mentioned in both. In case of conflict between Drawings and Technical Specifications, the Technical Specifications shall govern. In case of difference between small and large scale drawings, the larger scale drawings shall take preference. Where the word "similar" occurs on the Drawings, it shall be used in its general sense and not as meaning identical, and all details shall be worked out in relation to their location and connection to other parts of the work.

b. Where, on any Drawing, a portion of the work is drawn out and the remainder is indicated in outline, the parts drawn out shall apply to all other

like portions of the work. Where ornament or other detail is indicated by starting only, such detail shall be continued throughout the courses or parts in which it occurs and shall apply to all other similar parts of the work, unless otherwise indicated.

c. In case of any discrepancy other than those stated in Section 15a above, the matter shall be immediately submitted to the Local Authority, without whose decision said discrepancy shall not be adjusted by the Contractor, save only at his own risk and expense.

d. The general character of the detail work is shown on the Drawings but minor modifications may be made by the Architect in the full size drawings or models. The Contractor shall not attempt to execute any part of the work requiring such drawings until he has received the same.

e. Shop drawings of all fabricated work shall be submitted to the Architect for approval and no work shall be fabricated by the contractor, save at his own risk, until approval has been given. The Contractor will be advised as to the exact procedure to be followed with respect to the number of prints required, where submitted, letters of transmittal, making corrections, etc. No less than five (5) prints of finally approved shop drawings will be required.

f. The Contractor shall submit all shop drawings on dates sufficiently in advance of requirements to afford the Architect ample time for checking same, including time for correcting, resubmission, and recheck, if necessary, and no claim for extension of the contract time will be granted the Contractor by reason of his failure in this respect.

g. Where a shop drawing as submitted by the Contractor indicates a departure from the Contract which the Architect deems to be a minor adjustment in the interest of the Local Authority not involving a change in Contract price or extension of time, the Architect may approve the drawing but the approval will contain, in substance, the following:

> "The modification shown on the attached drawing is approved in the interest of the Local Authority to effect an improvement for the project and is ordered with the understanding that it does not involve any change in the Contract price or time; that it is subject generally to all Contract stipulations and covenants; and that it is without prejudice to any and all rights of the Local Authority under the Contract and bond or bonds."

h. The approval of shop drawings will be general and shall not relieve the Contractor from the responsibility for adherence to the Contract, nor shall it relieve him of the responsibility for any error which may exist.

16. OWNERSHIP OF DRAWINGS AND SPECIFICATIONS

Except the Contractor's executed set, all Drawings and Specifications are and remain the property of the Local Authority.

17. REQUESTS FOR SUPPLEMENTARY INFORMATION

It shall be the responsibility of the Contractor to avoid delay by making timely requests of the Architect through the Local Authority for such large

scale and full size drawings, color schemes, and other information, not already in his possession, as may, in the opinion of the Local Authority, be necessary in carrying out the work.

18. MATERIALS AND WORKMANSHIP

a. Unless otherwise specifically provided for in the Technical Specifications, all workmanship, equipment, materials and articles incorporated in the work shall be new and the best grade of the respective kinds for the purpose. Where equipment, materials, articles or workmanship are referred to in the Technical Specifications as "equal" to any particular standard, the Contracting Officer shall decide the question of equality.

b. The Contractor shall furnish to the Local Authority for approval the name of the manufacturer of machinery, mechanical and other equipment which he contemplates installing, together with full information as to type, performance characteristics, other pertinent information, and full information concerning the materials or articles which he proposes to incorporate in the work, as required by the Local Authority.

c. Materials specified by reference to the number of symbol of a specific standard (such as a Commercial Standard, a Federal Specification or other similar standard) shall comply with requirements in the latest revision thereof and any amendment or supplement thereto in effect on the date of the Invitation for Bids, except as limited to type, class or grade, or modified in such reference. The standards referred to, except as modified in the Technical Specifications, shall have full force and effect as though printed therein.

d. Specific reference in the Technical Specifications to any article, device, product, material, fixture, form, or type of construction, etc., by name, make or catalog number shall be interpreted as establishing a standard of quality and shall not be construed as limiting competition. The Contractor, in such cases, may at his option use any article, device, product or material, fixture, form or type of construction which, in the judgment of the Contracting Officer expressed in writing, is equal to that named.

e. The Local Authority may require the Contractor to dismiss from the work such employee or employees as the Local Authority or the Architect may deem incompetent, careless, insubordinate, or otherwise objectionable.

19. SAMPLES, CERTIFICATES AND TESTS

a. The Contractor shall furnish for approval, at no extra cost, all samples, certificates and manufacturer's affidavits required by the contract or requested by the Local Authority. Samples shall be delivered, with all transportation charged prepaid, to a location designated by the Local Authority, in ample time for proper consideration and action. Samples shall be carefully packed and clearly identified. No samples shall be submitted with the bid, and no material for which samples are required shall be used in the work until approved in writing by the Local Authority. The Contractor shall furnish promptly all materials reasonably necessary for any tests that may be required by the Local Authority.

b. Approval of any material shall be general only and shall not constitute a waiver of the Local Authority's right to demand full compliance with contract requirements. After deliveries, the Local Authority will make such check tests as it deems necessary in each instance and may reject materials and equipment and accessories for cause, even though such materials and articles have been given general approval. If materials, equipment or accessories which fail to meet check tests have been incorporated in the work, the Local Authority shall have the right to cause their removal and replacement by proper materials or to demand and secure such reparation by the Contractor as is equitable. The failure of samples to meet contract requirements will be sufficient cause for refusal to consider any further samples from manufacturers whose materials have failed.

c. Except as otherwise specifically stated in the Contract, the cost of sampling and testing will be divided as follows:

(1) The Contractor will furnish without extra cost, including packing and delivery charges, all samples required for testing purposes;

(2) The Contractor will assume all costs of retesting materials which fail to meet contract requirements;

(3) The Contractor will assume all costs of testing materials offered in substitution for those found deficient; and

(4) The Local Authority will pay all other expenses.

20. PERMITS AND CODES

a. The Contractor shall give all notices and comply with all applicable laws, ordinances, codes, rules and regulations. The intent of this Contract is that the Contractor shall base his bid upon the Drawings and the Specifications, but that all work installed shall comply with all applicable codes and regulations as amended by any waivers. Before installing the work, the Contractor shall examine the Drawings and Specifications for compliance with applicable codes and regulations bearing on the work, and shall immediately report any discrepancy to the Local Authority. Where the requirements of the Drawings and the Specifications fail to comply with the applicable code or regulations, the Local Authority shall adjust by change order the Contract to conform to the code or regulation (unless waivers in writing covering the differences have been granted by the governing authority) and shall make appropriate adjustment in the Contract price. Should the Contractor fail to observe the foregoing provisions and install work at variance with any applicable code or regulation as may be amended by waivers (notwithstanding the fact that such installation is in compliance with the Technical Specifications), the Contractor shall remove such work without cost to the Local Authority, but a change order shall be issued to cover only the excess cost the Contractor would have been entitled to receive if the change had been made before the Contractor commenced work on the items involved.

b. Where the cost might otherwise fall upon the Contractor, the Local Authority will arrange for the issuance, WITHOUT COST TO THE CONTRACTOR, by the appropriate local governmental agency, of all permits necessary under any rule or

NOTE: These pages 27-30 supersede pages 27-30 dated 11-3-52. Section 23a has been revised. A new Section 23b has been added. Former Section 23b is now Section 23c.

regulation of the local regulatory body or any of its agencies, and the Contractor shall not include in his bid price the cost of any such permits nor shall he include any inspection fees which might otherwise be charged against him therefor. The Contractor, however, shall make all necessary applications for securing any such required permits and shall obtain all such permits before commencing work. Notwithstanding the above, the Contractor may be reimbursed for fees, by the issuance of a change order, if (1) the Contractor finds that failure to pay such fees will delay construction of the project, (2) the Local Authority, after written notice from the Contractor, concurs in writing that substantial delay will result unless said fees are paid, and (3) the Contractor pays the fees under written protest.

21. DOMESTIC AND FOREIGN MATERIALS

Except for materials listed in this section, only such unmanufactured articles, materials, and supplies as have been mined or produced in the United States of America, and only such manufactured articles, materials, and supplies as have been manufactured in the United States of America substantially all from articles, materials, or supplies, mined, produced or manufactured, as the case may be, in the United States of America, shall be employed under this Contract in the construction of the project. The following materials have been exempted by the PHA from the foregoing provision:

Antimony	Hemp	Oil, China wood (tung oil)
Asbestos	Jute	Platinum
Asphalt--native	Kaurigum	Rubber, natural
Carnauba Wax	Lac	Silk
Chromium	Manganese Ore--35% and over	Sisal
Copper, natural--nickel alloy	Mercury	Tin
Cork	Mica	Titanium
Flax	Nickel	Tungsten

22. CONVICT-MADE MATERIALS

No materials manufactured or produced in a penal or correctional institution shall be incorporated in the project.

23. CARE OF THE WORK

a. The contractor shall adopt reasonable methods during the life of the contract to furnish continuous protection to the site and to the work, materials, and equipment thereon to the end that loss or damage may be prevented. He shall refuse entry to persons not having business on the site. He shall be responsible for all damages to persons or property that occur as a result of his fault or negligence in connection with the prosecution of the work and shall be responsible for the proper care and protection of all materials delivered and work performed until completion and final acceptance, whether or not the same has been covered by partial payments made by the Local Authority, and whether or not the damage to his work was caused by the Contractor or by other contractors or by others than the employees of the Local Authority in the course of their employment.

b. In the event of delay in completion of the contract work due to loss or damage caused by failure of the contractor to adopt reasonable and continuous protective methods, the contractor shall not be relieved from payment of liquidated damages because of such delay.

c. The Contractor shall avoid damage as a result of his operations to existing sidewalks, streets, curbs, pavements, utilities, adjoining property,

the work of other contractors, and the property of the Local Authority and others, and shall at his own expense completely repair any damage thereto caused by his operations. The Contractor shall be responsible for giving required notices to adjoining property owners.

d. The Contractor shall, from time to time, remove and properly dispose of dirt and debris resulting from his operations and keep the premises reasonably clear of hazardous obstructions. Burning trash on the site shall be subject to prior approval of the Local Authority and to existing local and State regulations. Upon completion of the work, the Contractor shall remove all temporary construction, facilities and unused materials, put the buildings and premises in a neat and clean condition, and do all cleaning and washing required by the Specifications.

24. TEMPORARY HEATING

a. The Contractor shall provide and pay for temporary heating, covering and enclosures, as directed by the Local Authority or necessary to protect properly all work and materials against damage and cold, to dry out and facilitate completion of the work. The fuel, equipment, materials and methods used shall be adequate for the purpose and satisfactory to the Local Authority. The Contractor shall maintain the critical installation temperatures called for in the Technical Specifications for various branches of the work in spaces where such work is being done. The maintenance of proper heat, ventilation, and adequate drying of the work are responsibilities of the Contractor, and any work damaged by dampness, insufficient or abnormal heat shall be replaced to the satisfaction of the Local Authority by and at the expense of the Contractor.

b. The Contractor may utilize the permanent heating equipment which he furnishes and installs under this Contract, and shall supply any additional equipment required. Any permanent equipment so used shall be turned over to the Local Authority in the condition and at the time required by the Specifications.

25. ACCIDENT PREVENTION

The Contractor shall observe the safety provisions of applicable law, building and construction codes, shall exercise proper precaution at all times for the protection of persons and property, and shall comply with the Safety provisions of the Manual of Accident Prevention in Construction, published by the Associated General Contractors of America, to the extent that such provisions are not in contravention of applicable law.

26. SANITARY FACILITIES

The Contractor shall furnish clean potable drinking water, and install and maintain ample sanitary facilities for the workmen.

27. USE OF PREMISES

a. The Contractor shall confine his apparatus, storage of materials, and construction operations within the limits prescribed by ordinances or permits,

or as directed by the Local Authority, and shall not unreasonably encumber the premises. He shall not overload any structure or part thereof to an extent which will endanger its safety.

b. The Contractor shall comply with and enforce any instructions of the Local Authority, or local laws regarding signs, advertising, fires, danger signals, barricades, and smoking.

28. INSPECTION

a. All material and workmanship shall be subject to inspection, examination, or test by the Local Authority and the Architect at all times during manufacture or construction and at all places where such manufacture or construction is done. The Local Authority shall have the right to reject defective material and workmanship or require its correction. Rejected workmanship shall be satisfactorily corrected. Rejected material shall be promptly segregated and removed from the premises and satisfactorily replaced with proper material without charge therefor. If the Contractor fails to proceed at once with the correction of rejected defective material or workmanship, the Local Authority may, by contract or otherwise, have the defects remedied or rejected materials removed from the site and charge the cost of the same against any moneys which may be due the Contractor, without prejudice to any other rights or remedies of the Local Authority.

b. If any work is covered up without approval or consent of the Local Authority, it must, if requested by the Local Authority be uncovered at the expense of the Contractor. Should it be considered necessary or advisable by the Local Authority at any time before final acceptance of the entire work to make an examination of completed work by removing same, the Contractor shall, on request, promptly furnish all necessary facilities, labor, and material. If such work is found to be defective in any material respect, due to fault of the Contractor or his subcontractors, he shall defray all the expenses of such examination and satisfactory reconstruction. If, however, such work is found to meet the Contract requirements, the actual cost of labor and material necessarily involved in the examination and replacement, plus 15 percent, shall be allowed the Contractor and he shall, in addition, if completion of the work of the entire Contract has been delayed thereby, be granted an equitable extension of time.

29. REVIEW BY LOCAL AUTHORITY AND PHA

The Local Authority, the PHA, and their authorized representatives and agents shall, at all times, have access to and be permitted to observe and review all work constructed hereunder and any relevant written records of the Contractor in respect thereto; Provided, that all instructions and approvals with respect to the work shall be given to the Contractor only by the Local Authority or its authorized representatives or agents.

30. FINAL INSPECTION

When the work is substantially completed, the Contractor shall notify the Local Authority in writing that it will be ready for final inspection on a definite

date which shall be stated in such notice. Such notice shall be given at least 10 days prior to the stated date.

31. DEDUCTION FOR UNCORRECTED WORK

If the Local Authority deems it inexpedient to require the Contractor to correct work injured or not done in accordance with the Contract, an equitable deduction from the Contract price shall be made by agreement between the Contractor and the Local Authority, subject to prior approval of the PHA, and subject to settlement, in case of dispute, as herein provided.

32. INSURANCE

a. Before commencing work, the Contractor and each of his subcontractors shall furnish the Local Authority with certificates showing that the following insurance is in force and will cover all operations under the Contract:

(1) Workmen's Compensation, in accordance with State or Territorial Workmen's Compensation laws;

(2) Manufacturers' and Contractors' Public Liability with limits of not less than $50,000/$100,000, to protect the Contractor or subcontractor against claims for injury to or death of one or more persons. This shall also cover the use of all equipment, hoists, and vehicles on the site or sites.

b. If the Contractor elects to carry Builder's Risk Insurance the policy shall be submitted to the Local Authority for its approval. Such Insurance shall, at all times, cover the full cash value of all completed construction as well as materials and equipment in place and/or stored at the site(s), whether or not partial payment has been made therefor, and may be terminated on buildings which are accepted for use by the Local Authority.

c. All insurance shall be carried by companies which are financially responsible and are satisfactory to the Local Authority. If any such insurance is due to expire during the construction period, the Contractor shall not permit the coverage to lapse, and new certificates shall be furnished to the Local Authority.

33. PREVAILING SALARIES OR WAGES

a. The Contractor shall pay to all architects, technical engineers, draftsmen, and technicians employed in connection with this contract not less than the salaries or wages prevailing in the locality of the Project, as determined or adopted (subsequent to a determination under applicable State or local law) by the PHA.

b. The Contractor shall pay to all laborers and mechanics employed in the development of the Project not less than the wages prevailing in the locality of the Project, as predetermined by the Secretary of Labor of the United States pursuant to the Davis-Bacon Act (Title 40, U.S.C., Secs. 276a - 276a-5).

GENERAL CONDITIONS

c. All laborers and mechanics employed in the development of the Project shall be paid unconditionally and not less often than once a week, and without subsequent deductions or rebate on any account (except such payroll deductions as are permitted by the Anti-Kickback Regulations (29 CFR part 3)), the full amounts due at time of payment computed at wage rates not less than those contained in the wage determination decision of the Secretary of Labor of the United States, the substance of which is included in the Special Conditions, regardless of any contractual relationship which may be alleged to exist between the Contractor or subcontractor and such laborers and mechanics; and the wage determination decision shall be posted by the contractor at the site of the work in a prominent place where it can be easily seen by the workers.

d. If the Contractor or any of his subcontractors finds it necessary or desirable to exceed the prevailing salary or wage rates specified in his contract, any expense incurred by the Contractor or subcontractors because of the payment of salaries or wages in excess of such amounts shall not be cause for any increase in the amount payable under his Contract. The Local Authority shall not consider or allow any claim for additional compensation made by the Contractor or subcontractors because of such payments.

e. The Local Authority will not make any payment under this Contract unless and until the Local Authority has received an affidavit from the Contractor that such Contractor and each of his subcontractors has made payment to each class of employees in compliance with the applicable provisions of a, b, and c of this Section.

f. Apprentices shall be employed in the development of the Project only under a bona fide apprenticeship program registered with a State Apprenticeship Council which is recognized by the Federal Committee on Apprenticeship, United States Department of Labor, or if no such recognized Council exists in a State, under a program registered with the Bureau of Apprenticeship, United States Department of Labor.

g. No Laborer or mechanic employed in the development of the Project shall be discharged or in any other manner discriminated against because such laborer or mechanic has filed any complaint or instituted or caused to be instituted any proceedings or has testified or is about to testify in any proceedings under or relating to the labor standards incorporated in this Construction Contract.

h. If, after the award of the Contract, it becomes necessary to employ any person in a trade or occupation not classified in the list contained in the Special Conditions, such person shall be paid at not less than such rate as shall be determined by the Secretary of Labor, or by applicable State law, whichever is the higher, and such approved minimum rate shall be retroactive to the time of the initial employment of such person in such trade or occupation. The Contractor shall notify the Local Authority of his intention to employ persons in trades or occupations not classified in sufficient time for the Local Authority to obtain approved rates for such trades or occupations.

GENERAL CONDITIONS

34. QUALIFICATIONS FOR EMPLOYMENT

a. No persons under the age of sixteen (16) years and no person undergoing sentence of imprisonment at hard labor shall be employed in the development of the Project. No person whose age or physical condition is such as to make his employment dangerous to his health or safety or to the health and safety of others shall be employed in the development of the Project; provided, that this shall not operate against the employment of physically handicapped persons, otherwise employable, where such persons may be safely assigned to work which they can ably perform.

b. There shall be no discrimination against any employee or applicant for employment because of race, creed, color, or national origin.

35. NONREBATE OF WAGES

The Contractor agrees to comply with the regulations, rulings, and interpretations of the Secretary of Labor of the United States pursuant to the Anti-Kickback Act (Title 18, U.S.C., Sec. 874 and Title 40, U.S.C., Sec. 276c) which makes it unlawful to induce any person employed in the construction or repair of public buildings or public works to give up any part of the compensation to which he is entitled under his contract of employment; and the contractor agrees to insert a like provision in all subcontracts hereunder.

36. SUBMISSION OF REPORTS

a. The Contractor shall, not later than the 7th day following the payment of wages, submit to the Local Authority two legible copies of his payroll and of payrolls of each of his subcontractors, each with the Payroll Summary completed and the Affidavit notarized on the back of the final sheet. All of these copies shall be prepared on forms which will be furnished to the Contractor by the Local Authority.

b. Payroll records shall be maintained during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics employed in the development of the Project. Such records shall contain the name and address of each such employee, his correct classification, rate of pay, daily and weekly number of hours worked, deductions made and actual wages paid. The Contractor shall submit weekly to the Local Authority such copies and summaries (on forms prescribed by the PHA and furnished by the Local Authority) of all his payrolls and those of each of his subcontractors, as the Local Authority or the PHA may require. Each payroll and summary shall be accompanied by an affidavit to the effect that (1) such payroll is correct and complete, (2) the wage rates contained therein are not less than those determined by the Secretary of Labor of the United States, and (3) the classifications set forth for each laborer or mechanic conform with the work performed. The Contractor shall make his employment records available for inspection by authorized representatives of the Local Authority, the PHA, and the United States Department of Labor, and shall permit such representatives to interview employees during working hours on the job.

c. The Contractor shall also furnish to the Local Authority any other information or certifications relating to employees in such form as the Local Authority may request.

37. WARRANTY OF TITLE

No material, supplies, or equipment for the work shall be purchased subject to any chattel mortgage or under a conditional sale or other agreement by which an interest therein or in any part thereof is retained by the seller or supplier. The Contractor warrants good title to all materials, supplies, and equipment installed or incorporated in the work and agrees, upon completion of all work, to deliver the premises together with all improvements and appurtenances constructed or placed thereon by him to the Local Authority free from any claims, liens, or charges, and further agrees that neither he nor any person, firm or corporation furnishing any material or labor for any work covered by this Contract shall have any right to a lien upon the premises or any improvement or appurtenance thereon, provided that this shall not preclude the Contractor from installing metering devices and other equipment of utility companies or of municipalities, title to which is commonly retained by the utility company or the city. In the event of the installation of any such metering device or equipment, the Contractor shall advise the Local Authority as to the owner thereof. Nothing contained in this paragraph however, shall defeat or impair the right of such persons furnishing materials or labor under any bond given by the Contractor for their protection or any rights under any law permitting such persons to look to funds due the Contractor in the hands of the Local Authority. The provisions of this paragraph shall be inserted in all subcontracts and material contracts, and notice of its provisions shall be given to all persons furnishing materials for the work when no formal contract is entered into for such materials.

38. GENERAL GUARANTY

Neither the final certificate of payment nor any provision in the contract nor partial or entire use or occupancy of the premises by the Local Authority shall constitute an acceptance of work not done in accordance with the Contract, or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship. The Contractor shall promptly remedy all defects in the work and pay for any damage to other work resulting therefrom which shall appear within a period of one year from the date of final acceptance of the work, unless a longer period is specified. The Local Authority will give notice of observed defects with reasonable promptness.

39. INTEREST OF MEMBER OF CONGRESS

No member of or delegate to the Congress of the United States of America or Resident Commissioner shall be admitted to any share or part of this Contract or to any benefit to arise therefrom; Provided that this provision shall not be construed to extend to this Contract if made with a corporation for its general benefit.

40. HOURS OF WORK

Architects, technical engineers, draftsmen, technicians, laborers, and mechanics shall not be permitted to work more than eight hours per day nor more than 40

hours per week, unless such employees are paid at least time and a half for hours of work in excess of the limits prescribed above. The said limits shall not apply to executive, supervisory, or administrative employees, as such. If there is a State or local law applicable to any or all of the foregoing classes of employees prescribing hours of work not in excess of the hours above prescribed, the Local Authority will require compliance with the State or local laws applicable to such class or classes, instead of compliance with the above requirements.

41. DISPUTES CONCERNING WAGE RATES AND CLASSIFICATION OF LABOR

a. All disputes concerning prevailing wage rates or classifications arising under this Contract involving (1) significant sums of money, (2) large groups of employees, or (3) novel or unusual situations shall be promptly reported by the Local Authority to the PHA for decision or, at the option of the PHA, referral to the Secretary or Labor of the United States. The decision of the PHA or the Secretary of Labor, as the case may be, shall be final.

b. All questions arising under this Contract relating to the application or interpretation of the Anti-Kickback Act or Sec. 16(a) of the Housing Act shall be referred to the Secretary of Labor of the United States for ruling or interpretation, and such ruling or interpretation shall be final.

42. WAGE CLAIMS AND ADJUSTMENTS

In cases of underpayment of salaries or wages to any architects, technical engineers, draftsmen, technicians, laborers, or mechanics by the Contractor or any of his subcontractors, the Local Authority may withhold from such Contractor out of payments due, an amount sufficient to pay persons employed on the work covered by the Contract the difference between the salaries or wages required to be paid under the Contract and the salaries or wages actually paid such employees for the total number of hours worked, and the amounts withheld may be disbursed by the Local Authority for and on account of the Contractor or the subcontractor to the respective employees to whom they are due. The Local Authority shall in cases of such underpayment withhold such monies: Provided, That the Local Authority shall not be considered in default under this sentence if it has in good faith made payments to the Contractor in reliance upon an affidavit of the Contractor that the salaries and wages required under his Contract have actually been paid.

43. TERMINATION BECAUSE OF VIOLATION OF WAGE PROVISION

This Contract may be terminated by the Local Authority upon default by the Contractor of any of the provisions of Sections 33, 35, 36, 41 and 42.

SPECIAL CONDITIONS

1. TIME FOR COMPLETION

a. The work shall be commenced at the time stipulated in the Notice to Proceed to the Contractor and shall be fully completed within _____ consecutive calendar days, exclusive of Lawns and Planting. An additional _____ consecutive calendar days will be allowed in which to complete the Lawns and Planting, exclusive of maintenance and replacement.

b. Groups of dwelling units, or buildings, shall be progressively completed, suitable for occupancy, conveniently accessible, and including utilities, exclusive of Lawns and Planting, within the number of consecutive calendar days from the established starting date as follows:

(1) Not less than ___ (units) (buildings) within _____ days;

(2) An accumulated total of _____ (units) (buildings) within _____ days;

(3) An accumulated total of _____ (units) (buildings) within _____ days;

(etc.)

and all the balance of the entire work shall be fully completed within the number of consecutive calendar days first set forth above.

Notes to the Local Authority and Architect:

1. Omit all reference to Lawns and Planting if not included in contract.

2. Omit subsection "b" if partial occupancy is not contemplated.

3. If a specific progressive order of completing dwelling units or buildings is desired, statements (1), (2), etc. under subsection "b" should be modified to state exactly what is desired, leaving the concluding phrase ("and all the balance . . .") unchanged.

4. In subsection "b" both numbers and days in each stated group should be counted from zero, since both are cumulative from the starting date.

SPECIAL CONDITIONS

2. LIQUIDATED DAMAGES

a. As actual damages for any delay in completion are impossible of determination the Contractor and his Sureties shall be liable for and shall pay to the Local Authority the sums hereinafter stipulated as fixed, agreed and liquidated damages for each calendar day of delay until the work is completed or accepted:

(1) $_____ per unit per calendar day applicable to dwelling units and related work as set forth in Section 1b. above;

(2) $_____ per calendar day applicable to all the balance of the contract work except Lawns and Planting; and

(3) $_____ per calendar day applicable to Lawns and Planting.

b. The Local Authority may accept any number of dwelling units if there has been such a degree of completion as will, in its opinion, make such units reasonably safe, fit and convenient for use and occupancy, in which event the liquidated damages applicable to units so accepted within the time for completion specified for such units shall not be charged against the Contractor, whether or not the work within or related to such accepted units is fully completed.

Notes to the Local Authority and Architect:

1. This Section must be carefully correlated with Section 1, "Time for Completion."

2. Delete all references to Lawns and Planting if this work is not included in the contract.

3. If partial occupancy is not contemplated, but Lawns and Planting is included, change the subsections of 2a. to:

"(1) $_____ per calendar day applicable to all work except Lawns and Planting; and

(2) $_____ per calendar day applicable to Lawns and Planting."

4. The liquidated damages of 2.a(1) above should be stated as so much per unit, regardless of whether the term "units" or "buildings" is used in the preceding Section 1, Time for Completion.

SPECIAL CONDITIONS

3. COMMUNICATIONS

a. All notices, demands, requests, instructions, approvals, proposals, and claims must be in writing.

b. Any notice given or demand made by either party to the Contract shall be sufficiently given if delivered at the office of the other party, or deposited in the United States mail in a sealed, postage-prepaid envelope, or delivered to any telegraph company for transmission with charges prepaid, in each case properly addressed.

c. Any such notice shall be deemed to have been given as of the time of actual delivery, or of actual receipt in the case of telegrams, or, in the case of mailing, when it should have been received in due course of post.

d. For communicating purposes, the office address of the Contractor shall be that stated on the signature page of the Contract; that of the Local Authority shall be as stated in the Invitation for Bids. Any subsequent change in address of either party shall be communicated to the other in writing.

4. SIGNS

Subject to prior approval of the Local Authority and the Architect as to size, design, type and location, and local regulations, the Contractor and his subcontractors may erect temporary signs for purposes of identification and controlling traffic. The Contractor shall furnish, erect and maintain such signs as may be required by Safety Regulations or as necessary to safeguard life and property.

5. PARTIAL OCCUPANCY

The Local Authority, at its election, may from time to time occupy any of the dwelling units, buildings, or other portions of the Project as the work is completed to such a degree as will, in the opinion of the Local Authority, permit their use for the purpose for which intended. The Local Authority will, prior to any such partial occupancy, give notice to the Contractor, and such occupancy shall be upon the following terms:

a. The one year guaranty period called for in the General Conditions shall not begin to run until the final acceptance of all work under the Contract.

b. The occupancy or use of any space in the Project shall not constitute an acceptance of work not performed in accordance with the Contract or relieve the Contractor of liability to perform any work required by the Contract but not completed at the time of occupancy.

SPECIAL CONDITIONS

c. The Contractor shall be relieved of all maintenance costs on the buildings occupied under this agreement.

d. The Contractor shall not be responsible for wear and tear or damage resulting from such occupancy.

e. The Local Authority shall assume risk of loss with respect to any building occupied by it under the terms of this agreement; Provided, the Contractor shall assume full responsibility for loss or damage traceable to his fault or negligence in the performance of his contract work.

f. The Contractor shall not be required to furnish heat, light, power and water used in the buildings so occupied without proper remuneration therefor.

6. DRAWINGS AND SPECIFICATIONS

The Local Authority will furnish the Contractor, without charge, all copies of the Drawings and Specifications reasonably necessary in the performance of the contract work.

7. MINIMUM RATES OF PAY

The following minimum rates have been determined and adopted in accordance with the provisions contained in the General Conditions and not less than the rates listed herein shall be paid to the following trades and occupations:*

Classification	Rate per hour
Air Compressor Operators	_____
Air Hammer Operators	_____
Asbestos Workers	_____
Asbestos Workers' Helpers	_____
Asbestos Workers' Improvers	_____
Asphalt Rakers	_____
Asphalt Tampers and Smoothers	_____
Blacksmiths	_____
Blacksmiths' Helper	_____
Boilermakers	_____
Boilermakers' Helper	_____
Bricklayers	_____
Bricklayers' Apprentices 1)	_____
2) year	_____
3)	_____

* This list must be amended to suit each particular contract.

SPECIAL CONDITIONS

Classification	Rate per hour
Brick Tenders	
Carpenters	
Carpenters' Apprentices 1)	
2) year	
3)	
Cement Finishers	
Electricians	
Electricians' Helpers (Apprentices)	
Elevator Constructors	
Elevator Constructors' Helpers	
Engineers	
Engineers' Apprentices	
Firemen	
Glaziers	
Granite Cutters	
Hod Carriers	
Ironworkers - Ornamental and Bronze	
Ironworkers - Structural	
Ironworkers - Reinforcing	
Ironworkers' Apprentices - Structural	
Laborers - Common	
Laborers - Building	
Lathers	
Linoleum Layers	
Marble Masons	
Marble Masons' Helpers	
Mosaic and Terrazzo Workers	
Mosaic and Terrazzo Workers' Helpers	
Oilers and Greasers	
Operators - Cement & Concrete Mixer (Under 21E)	
Operators - Cement & Concrete Mixer (21E & Over)	
Operators - Crane, Clamshell, Drag Line	
Operators - Derrick	
Operators - Trenching Machine	
Operators - Backfilling Machine	
Operators - Bulldozer	
Operators - Hoist - One Drum	
Operators - Hoist - Two Drum	
Operators - Machine Road Grader	
Operators - Power Shovel (Enginemen)	
Operators - Pile Drivers	
Operators - Road Roller	
Operators - Pumps	
Operators - Tractor 50 H.P. and under	
Operators - Tractor over 50 H.P.	

SPECIAL CONDITIONS

Classification	Rate per hour
Painters	
Painters - Steel Painting	
Plasterers	
Plasterers' Apprentice 1)	
2) year	
3)	
Plasterers' Laborers and Tenders	
Plumbers	
Plumbers' Apprentices	
Roofers - Composition	
Roofers - Composition - Kettlemen	
Roofers - Composition - Apprentices	
Roofers - Slate and Tile	
Sheet Metal Workers	
Sheet Metal Workers' Apprentices 1)	
2) years	
3)	
Sheet Metal Workers' Helpers	
Sprinkler Fitters	
Sprinkler Fitters' Helpers	
Steam Fitters	
Steam Fitters' Apprentices 1)	
2) years	
3)	
Steam Fitters' Helpers	
Stone Masons	
Stone Masons' Helpers	
Truck Drivers	
Tile Layers' Helpers	

Architectural and Engineering	Rate
Electrical Engineer	
Mechanical Engineer	
Asst. Engr. (Chief Draftsman)	
Junior Engineer	
Draftsman	

Land Surveying

Field Engineer	
Chief of Party	
Transitman	
Rodman	

GENERAL SCOPE OF WORK

1. APPLICATION

This "General Scope of Work" Division of the Specifications is applicable to all work contemplated.

2. PROJECT SITE

The Project site of Housing Project No. _____ consists of that area within the property limits bounded in general (on the) (by) _____ _____ within the _____(City)_____, _____(County)_____, _____(State)_____, all as shown on the _____ _____(title of drawing or drawings)_____ designated as Drawing(s) No(s). _____.

3. RESPONSIBILITIES OF CONTRACTOR

Except as otherwise specifically stated in the Contract, the Contractor shall provide and pay for all materials, labor, tools, equipment, water, light, heat, power, transportation, superintendence, temporary construction of every nature, taxes legally collectible because of the work and all other services and facilities of every nature whatsoever necessary to execute the work to be done under the Contract and deliver it complete in every respect within the specified time.

4. WORK BY OTHERS

The following work will be done by others:

a. At no expense to the Contractor:

(1) On site:

(a).....
(b).....
etc.

(2) Off site:

(a).....
(b).....
etc.

b. At the expense of the Contractor:

(1) On site:

(a).....
(b).....
etc.

GENERAL SCOPE OF WORK

(2) Off Site:

(a).....
(b).....
etc.

5. WORK NOT INCLUDED IN CONTRACT

a. Work noted on the Drawings or mentioned in the Specifications, or both, as not being a part of the Contract.

b. .....
.....

6. EQUIPMENT INCLUDED IN CONTRACT

Heating equipment, plumbing fixtures, electric lighting fixtures and bulbs, refrigerators, water heaters, and cooking ranges are included in this Contract. The Contractor shall furnish and install all such items in place, complete in every respect and ready for operation, including testing and final adjustment for proper performance.

SCHEDULE OF DRAWINGS

Drg. No.	Date	Title
		SITE
		ARCHITECTURAL
		STRUCTURAL
		PLUMBING
		HEATING
		ELECTRICAL
		(etc.)

NOTES TO THE LOCAL AUTHORITY AND ARCHITECT

CHANGES REQUIRED FOR

SEPARATE PRIME CONTRACTS

The purpose of this section is to assist the Local Authority and its Architect in revising the preceding documents to meet the conditions [illegible] in some States where law requires separate contracts to be let for general construction, plumbing, heating, electrical work and, in some cases, other trades. The following changes are necessary, but further revision may be required, especially in the Technical Specifications, to prevent duplication and overlap, all of which is the responsibility of the Local Authority and its Architect.

1. INVITATION FOR BIDS

Add a paragraph to read: "In addition to the general construction contract, separate prime contracts will be let for plumbing, heating, and electrical work."

2. INSTRUCTIONS TO BIDDERS

Sec. 11: Change the opening word from "The" to "Each."

Sec. 12: In subsections "a" and "b", change the words "the successful bidder" to "each successful bidder."

In subsection "c", first line, change "the successful bidder" to "any successful bidder." Also, near the end of this subsection change the words "charge against the bidder" to "charge against such defaulting bidder."

3. BID FORM

Prepare and include in the Specifications a separate "Form of Bid" for each of the separate contracts to be let. Fill out each heading appropriately: "Bid for General Construction," "Bid for Plumbing," "Bid for Heating," "Bid for Electrical Work," etc.

4. GENERAL CONDITIONS

Sec. 1: Add a new subsection "j" to read:

"j. The term 'General Contractor' means the person, firm or corporation who has contracted under a prime contract with the Local Authority to perform the work of general construction for the Project."

NOTES TO THE LOCAL AUTHORITY
AND ARCHITECT

Sec. 5: Add a new sentence: "The General Contractor shall be the agent of the Local Authority to establish proper working schedules, make arrangements with the other prime contractors, and coordinate the work of all so as to expedite completion of the Project, and each prime contractor shall cooperate fully in this respect."

Sec. 10b: Delete the first sentence, substituting the following:

"b. By execution of this Contract the Contractor warrants that he has visited the site of the proposed work and fully acquainted himself with conditions there existing relating to construction and labor, that he understands that other contracts will be let for other work, which other work will be performed in the same general area or contiguous thereto during part or all of the time he performs his Contract, and that he fully understands the facilities, difficulties and restrictions attending the execution of his Contract work, and that he will make no claim for extra compensation because of said conditions, restrictions, or difficulties, or because his work has been delayed or interfered with by reason of the fact that others are working in the same general area or contiguous thereto."

(Do not change or omit the remaining two sentences of this provision, commencing "The Contractor further warrants that he has thoroughly examined and is familiar. . .")

Sec. 24a: In the four places where the words occur in this subsection change "The Contractor" to "The General Contractor."

Sec. 24b: Change the first sentence to read:

"b. The prime Contractors for plumbing, for heating, and for electrical work hereby severally agree with the General Contractor to furnish to him, if and when requested, such labor, materials, equipment and services within their control as he may deem advantageous for them, or any of them, to furnish in connection with the providing of temporary heating, and the General Contractor agrees to be responsible for the adjustment and payment of all costs arising therefrom."

(The second sentence must not be changed or omitted.)

Sec. 26: Insert the word "General" before "Contractor."

NOTES TO THE LOCAL AUTHORITY
AND ARCHITECT

5. SPECIAL CONDITIONS

Sec. 1: Add a new subsection "c" to read:

"c. The Plumbing Contractor, the Heating Contractor, and the Electrical Contractor shall each coordinate his work with that of the General Contractor and perform it at such times, in such a manner, and at such speed that the General Contractor will not be delayed in meeting the above stated times for completion."

Sec. 2: Add a new subsection "c" to read:

"c. It is the obligation of the Plumbing, the Heating, and the Electrical Contractors each to coordinate their work with that of the General Contractor and with that of each other. If there is unexcused delay in completing the work of general construction the Local Authority shall determine to what extent such delay, or any portion thereof, is chargeable to each such contractor. Liquidated damages in the full amount stated herein shall be assessed against each such contractor to the extent he is responsible for such delay as determined by the Local Authority."

6. GENERAL SCOPE OF WORK

Sec. 4:)
Sec. 5:) These two sections must be carefully revised tc define precisely what work is to be done, and what work is not to be done, by each of the specialty contractors, as well as the General Contractor.

7. SCHEDULE OF DRAWINGS

This Schedule should list all of the drawings applicable to the work of the entire Project. The Schedule should be identical in form in the bidding documents issued to all classes of bidders so that, upon executing his contract, each successful prime bidder will be bound by all the drawings and not merely those pertaining to his specialty. Otherwise, the Local Authority may be inviting disputes and claims for extra cost which the claimants might be able to substantiate.

NOTES TO THE LOCAL AUTHORITY
AND ARCHITECT

DETAILED INSTRUCTIONS COVERING PREPARATION AND USE

1. INTRODUCTION

These instructions provide information necessary for preparation and use of the Construction Contract Documents.

Certain explanatory and advisory material relative to the underlying reasons for some of the provisions and methods of making them effective, have been included. Occasionally a word of caution will be found.

The various items of subject matter are treated in the order in which they appear in the first part of this Bulletin. Titles, section numbers and letters, as used herein, correspond.

2. INVITATION FOR BIDS

The completed "Invitation for Bids" is used for public advertising and for direct solicitation of individual contractors. The form and method of inviting bids must, in all cases, comply with applicable State or local laws. Consequently, the specimen form may require modification.

The Invitation should state clearly the type of work to be bid upon, the place where and time when bids will be received and opened, the address at which bidding documents may be obtained, and the deposit required.

The form contemplates that the documents will be taken from the office of the Local Authority. There is no objection to having bidders make their deposits at and obtaining sets from the Architect's office. This is a matter of convenience only, the object being to simplify to the greatest extent possible the means by which prospective bidders may obtain the bidding documents.

The A.I.A. and the A.G.C. jointly recommend that bids be not opened on a Monday or on any day following a holiday, but that they be opened on a Tuesday, Wednesday or Thursday, preferably in the afternoon. It is recommended that this practice be followed.

Although the prompt award of contracts is essential to expedite the construction of projects, more favorable bids can be anticipated if a reasonable time is allowed between the advertisement for bids and the bid opening date. Bidders should have ample time in which to visit and inspect the site, examine Contract Documents, receive and analyze subbids, and prepare their final estimates and bids. Generally, not less than 30 days should be allowed for these purposes. In no event should the time be less than that required by State or local law.

NOTES TO THE LOCAL AUTHORITY
AND ARCHITECT

3. INSTRUCTIONS TO BIDDERS

The "Instructions to Bidders" informs bidders as to the general requirements of the bidding, the obligations of the Local Authority and the bidder in connection therewith, and the conditions and considerations involved in the determination of the successful bidder. The clauses are applicable to all classes of bids to be taken.

Special requirements in the work, dictated by conditions surrounding the particular project involved in the bidding, do not belong in the "Instructions to Bidders," but should be placed in the "Special Conditions."

Sec. 4: This section deals with the type of bid guaranty required (Section 12c., following, states the conditions of forfeiture of that guaranty.)

Sec. 5: No prescribed form is outlined for the bidder's financial statement. If the data submitted under Question 6 is inadequate, the Local Authority may investigate independently under Question 15.

Sec. 6: Note that this applies only to the successful bidder.

Sec. 12: The bond may be in a combined form, unless State or local law requires a separate bond covering security for payment. The language of the bond(s) may be prescribed by law. It is the responsibility of the Local Authority to investigate, ascertain what type and form may be used, and inform the Architect, who is then to publish the applicable legal form(s) in the bidding documents, together with the "Directions for Preparation of Performance and Payment Bond." These "Directions" are for use by the successful bidder, and also furnish a guide to the Local Authority and the Architect in their review of the bond for acceptability when it is submitted by the successful bidder, attached to the Contract.

The surety must be a guarantee company or a surety company acceptable to the Local Authority. Individual sureties are not to be considered.

The penal sum named in the bond shall not be considered as sufficient protection if, in a combined bond, it is less than 100% of the contract price; or if, in separate bonds, it is less than 50% of the contract price in either of them.

The Local Authority must exercise care in the administration of its contracts (particularly in ordering changes) and avoid any act that might release the surety. In any doubtful case, the consent of the surety and the approval of the PHA Field Office should be obtained in advance. Subsection b. will require revision by the Architect as follows, if applicable State or local law requires separate bonds:

NOTES TO THE LOCAL AUTHORITY
AND ARCHITECT

"b. Having satisfied all conditions of award as set forth elsewhere in these documents, the successful bidder shall, within the period specified in a. above, furnish (1) a performance bond as security for the faithful performance of the contract and (2) a payment bond as security for the payment of all persons, firms or corporations to whom the Contractor may become legally indebted for labor, materials, tools, equipment, or services, of any nature, employed or used by him in performing the work. Each such bond shall be in the appropriate form of bond included in the Specifications and shall bear a date the same as or subsequent to the date of the contract. The penal sum in each bond shall be not less than ____*____% of the amount of the contract as awarded."

(* Either 50 or any greater percentage, as determined by the Local Authority, shall be inserted here by the Architect.)

4. STANDARD FORMS

It is the responsibility of the Local Authority to make a thorough investigation of State and local laws and regulations governing the method of bidding and the forms used in connection therewith, and to inform the Architect, so that no method or form will be adopted which will be contrary to those prescribed by such laws or regulations with respect to public work. The standard forms included in this Bulletin have been prepared with no particular State or locality in mind and may, therefore, require modification in some instances.

Form of Bid: This form must be coordinated with and correspond to the matters set forth in the "General Scope of Work" division of the Specifications. Care must be exercised in preparing the form, so that all bidders will fully understand it and the bids will be clear and unambiguous.

Regardless of the number of separate proposals, or combinations thereof, requested, the form should include a final Base Proposal for all work of the entire project, since such a combination may attract a low figure.

Form of Bid Bond: There is small probability that local law requires a modification of this form. When a bid bond is submitted, it should be checked in the same manner as set forth below for the Performance and Payment Bond.

Form of Contract: The Contract is prepared by the Local Authority, or by the Architect if the Local Authority so requests. The following directions will assist in the preparation of a legally sufficient document and provide reference material for the review of the document after the contractor signs, but before the Local Authority affixes its signature. Flaws in this important instrument must be carefully avoided.

- -

NOTES TO THE LOCAL AUTHORITY
AND ARCHITECT

The number of original counterparts actually executed must be stated in the Contract in the space provided. No fewer than four are required: one for the contractor, one for the Local Authority, and two for the PHA. If needed, additional counterparts may be prepared.

Conformed copies shall be proofread against an original counterpart, and shall be conformed by the signatures of the Local Authority and the Architect. The PHA will require two such conformed copies; the Local Authority and the Architect, as many as their needs indicate.

Note the opening clause of the contract form provides alternative phrases for either a corporation, a partnership, or any individual as contractor. Use only the applicable phrase.

Directions for Preparation of Contract (Do not publish in bidding documents)

(1) No change may be made in the phraseology of the form of Contract contained in the bidding documents upon which the bidder made his bid.

(2) All blank spaces must be filled in or ruled out.

(3) The contract must be dated.

(4) The contractor must be accurately identified according to the character of his organization, as follows:

(a) If a corporation, by its corporate name and State of incorporation.

(b) If a partnership, by the names of each and every partner, together with the name under which they do business.

(c) If joint ventures, by the name of each, together with the name under which they will perform the contract.

(d) If an individual, by his name and address, together with the name under which he trades.

(5) The Local Authority must be identified at the beginning of the contract by its official name, the designation of its corporate status, and the law under which it was created. For example:

"The Housing Authority of the City of _____,
a (public corporation - or body politic - or municipal corporation - etc.), created by the Housing Authorities Law of the State of _____."

NOTES TO THE LOCAL AUTHORITY AND ARCHITECT

(6) In Article 1 insert the applicable description of work and identification of the project in the following manner, for example:

(a) If for general construction: "for the construction of Will Rogers Homes, Project No. OKLA-3-1, Enid, Oklahoma."

(b) If for a mechanical (or other) branch of the work, as will be necessary in states which require the award of separate prime contracts: "for the (Plumbing*) for the Will Rogers Homes, Project No. OKLA-3-1, Enid, Oklahoma."

(*The insert here must correspond verbatim to the title of the branch of the work as it appears in the Technical Specifications for that branch.)

(7) In Article 1 identify the Specifications by repeating the exact wording which appears on the title page of the bound Specifications, together with the date of the Specifications.

(8) Fill out the space referring to Addenda in the following manner:

(a) If addenda were issued show, for each, its serial number and date.

(b) If no addendum was issued, insert the words "none issued."

(9) In Article 1 insert the name and address of the Architect who prepared the Drawings and Specifications, exactly as worded on the title page of the Specifications.

(10) In Article 2 insert the Contract price taken from the bid of the successful bidder.

(11) In the signature space the full name and address of the contractor must be repeated exactly as it appears at the head of the Contract, and the individual signing for the contractor must use his usual signature.

(12) An officer of a corporation, a member of a partnership, or an agent signing for the contractor shall place his signature and title after the word "By" under the name of the contractor. Each executed counterpart of a contract executed by an attorney or agent shall be accompanied by an authenticated current power-of-attorney or other evidence of this authority to so act on behalf of his principal. Unless power-of-attorney is given to one to sign for all, each member of a partnership, or each joint venturer, must sign the contract.

NOTES TO THE LOCAL AUTHORITY AND ARCHITECT

(13) The contractor's signature must be attested by two witnesses.

(14) Each copy of the Contract intended for signing must have attached the required performance and payment bond(s), properly prepared and executed, bearing a date the same as or subsequent to the date of the contract.

AT THIS POINT the contract and bond(s) should be passed to the Local Authority for review. Under no circumstances should the Local Authority execute the contract until it has assured itself that (1) the documents are without flaws and sufficient legally and otherwise; (2) the amount of the bond(s) is not less than that required by the Specifications; (3) the surety company is one acceptable to the Local Authority; and (4) the approval of the PHA Field Office, when required, has been obtained.

CAUTION: Extreme care must be taken in preparing the contract (or any other legal document), to make sure that a portion of the text of the body of the instrument appears on the same page as the signatures of the contracting parties, or the signatures may be placed on the reverse of a page containing text. In addition, the continuity from page to page must be clearly evident.

(15) The person signing for the Local Authority, under the corporate name thereof, must be the individual duly authorized by its governing body to sign such contracts, and his title must be inserted.

(16) The signature for the Local Authority must be attested by two witnesses.

(17) If the contractor is a corporation, one of the certificates following the signatures of the parties must be executed. If the signatory for the contractor is its secretary, the first certificate must be signed by some other officer of the corporation under its corporate seal, or the second certificate executed by the individual who signed for the Local Authority. In lieu of either of foregoing certificates there may be attached to the contract copies of so much of the records of the corporation as will evidence the official character and authority of the officer signing, duly certified by the secretary or assistant secretary, under the corporate seal, to be true copies.

(18) Type or print the name underneath each signature appearing on the contract.

NOTES TO THE LOCAL AUTHORITY AND ARCHITECT

For identification purposes only, the individual signing for the contracting parties shall initial the first and the last page of the bound Specifications; the first and the last sheet of the Drawings if they are securely bound together, otherwise initial each sheet; and the first and the last page of each addendum (if any). The number of sets so initialed shall correspond to the number of original counterparts of the Contract. Appropriate reproduction of this identification shall be made by the Architect on each conformed set of these documents.

Form of Performance and Payment Bond(s): No specimen form is shown - only the place where it should appear is indicated. Many States or local laws prescribe certain forms. It is the duty of the Architect to ascertain from the Local Authority what form must be used (The PHA Field Office will assist) and to insert the appropriate form(s) in this space, followed immediately by the directions for preparation (see page 16), for the benefit of the successful bidder(s).

5. GENERAL CONDITIONS

Those provisions which are applicable in general to all construction contracts have been placed in the "General Conditions," and grouped to bring related topics together. Careful study has been given to avoiding repetition and conflict. The language used is believed to express fairly the rights and obligations of the parties to the contract so that modification is not recommended.

Because they reflect Federal statutes, Executive Orders of the President, or established PHA policy, the following provisions are to be incorporated verbatim: Sections 21, 33, 34b, 35, 36, 39, 41, 42, and 43.

As explained below, two specific requirements should be carefully checked before final printing: subsections 14.d.(4) and 32.b.

Conditions peculiar to the project do not belong in the "General Conditions," but should be incorporated in the "Special Conditions."

Sec. 1: (subsection "i"). Since delays in making decisions, and ordering changes when they become necessary, often interfere with construction progress and may result in claims for damages by the contractor against the Local Authority, it is essential that the Local Authority designate as its representative an individual who will be readily available to the Contractor at all times. This should be done by formal action of its governing body; the representative to be known as the "Contracting Officer," and his powers and duties should be clearly defined. The contractor and the PHA should be advised of this appointment. If subsequently replaced by another individual, due notification should be given to the contractor and the PHA Field Office, including the date and hour of official replacement.

NOTES TO THE LOCAL AUTHORITY AND ARCHITECT

Sec. 7: Forms for use in submitting the Breakdown and the Periodical Estimates will be supplied by the PHA to the Local Authority, when needed.

Sec. 9: (subsection "e"). If unit prices are included in the agreement, they should be "cost-to-contractor" prices exclusive of overhead and profit. They will then fit into the provisions of subsection "f" without complication.

Sec. 10: Subsection "b" is a very important provision and effectively wards off types of claims many contractors are prone to assert.

Sec. 12: There is a sentence beginning "If the Local Authority. . .," which prevents a defaulting contractor from claiming that he does not have to pay accrued liquidated damages if his right to proceed is terminated.

Sec. 14: The Local Authority shall investigate local statutes, and if it finds that it is not legal to reduce the time within which suit may be brought, subsection d.(4) must be changed to:

"(4) submitted his final voucher and release within six months after a written request therefor by the Local Authority."

Sec. 17: Delays by parties other than the contractor in producing necessary drawings and information may give rise to expensive claims on the part of the contractor. Cause for such claims should be avoided.

Sec. 20: The agreement between the Local Authority and the City (or other local governing body) usually provides that permits will be issued without cost to the Local Authority and that there will be no inspection fees. Accordingly, this provision has been drafted to instruct the Contractor to exclude from his bid price the costs of such permits and inspection. Provision is made, however, to reimburse the Contractor should he be forced to pay. The Local Authority shall assure itself that its architect has so prepared the contract documents as to comply with all applicable laws, ordinances, codes, rules and regulations, or that approved amendments, modifications or waivers have been obtained.

Sec. 24: A project, perhaps because of moderate size coupled with the anticipated dates of starting and completion, may not appear to require temporary heating. Nevertheless, unanticipated delays in construction may carry the work into cold weather and, thus, temporary heating may be required. For this reason, and because this provision covers more than protection against freezing, it should not be changed or deleted.

NOTES TO THE LOCAL AUTHORITY AND ARCHITECT

Sec. 32: (subsection b.). If the Contractor elects to carry Builder's Risk, the policy should be carefully examined to see that losses are payable to the Contractor, his subcontractors, and the Local Authority as their interests may appear.

Some printed forms of builders' risk insurance do not become effective until windows and doors are permanently in place. Such coverage is worthless during construction. The policies offered should be carefully examined for coverage during all stages of construction.

In certain localities which are particularly susceptible to earthquake disturbances, it is essential that Builder's Risk Insurance against loss by earthquake be carried. This additional coverage may be included by adding the following statement to the end of the first sentence in subsection b. of Section 32: "The extended coverage insurance shall include coverage against loss by earthquake."

Sec. 33: The Housing Act of 1949 requires the PHA to obtain from a Local Authority a certification that wages and salaries prevailing in the locality have been paid on the project, before the PHA may make funds available for construction to the Local Authority. The Local Authority, in order to make such certification to the PHA, must have the underlying certifications from the contractor and subcontractors each month, or withold payment to the Contractor.

Sec. 37: The Local Authority shall investigate applicable local law to determine whether the project is subject to mechanics' lien claims. Since the Annual Contributions Contract requires a bond for the protection of those furnishing materials and labor, the Local Authority should, if possible under local law, prohibit the right of anyone to assert a mechanics' lien claim against the project. Some State laws require either actual or recorded notice of contractual provisions prohibiting liens being filed against property. In such States the law must be followed and, if necessary, the contract must be recorded in the proper office.

Sec. 38: The one year guarantee provided for in this section does not begin to run until the contract work is finally accepted, regardless of any units taken over for occupancy before all units are completed. (See Section 5a. of the Special Conditions.)

6. SPECIAL CONDITIONS

The Special Conditions provide a flexible division of the Specifications in which to place provisions which contain elements that vary from one project to another, and cover situations peculiar to the project involved. The six provisions included here are a minimum believed applicable to any Smaller Projects construction contract. It may be necessary to include additional

special provisions to round out the contract requirements. To avoid interfering with certain cross references, the serial numbering of the six shown should not be changed.

Sec. 1: The Local Authority should exercise good judgment in fixing a time (or times) of completion. It should bear a reasonable relationship to the amount of work to be performed, the difficulties attendant upon its performance, and the probable effect of seasonal weather upon certain stages of the work according to the time of the year in which the proposed schedule anticipates they will be performed.

An unreasonably curtailed construction period results in higher bid prices and tempts the contractor to rush the work and skimp in performance, while an unnecessarily extended period will delay completion and occupancy and the related income from rents. Opinions of local builders may be valuable.

In subsection b., numbers and days in the series should be counted from zero, and the series continued until the final accumulated total of numbers and days corresponds with the grand totals of units in the project and the number of days in which completion of all units is desired. This final number of days may be less than or the same as the number first stated in subsection a. above, depending upon the Local Authority's desires in the matter.

Sec. 2: The amount(s) of liquidated damages should be established in such sum(s) as will be in reasonable proportion to the actual loss that might be sustained by the Local Authority, through failure of the contractor to complete the work on time. Consideration should be given to the loss the Local Authority will sustain by virtue of a delay in receiving annual contributions. However, liquidated damages should not be fixed so high as to discourage bidding by responsible contractors nor to result in high prices, and unrealistic sums will be held to be penalities and unenforceable in court.

For partial occupancy, the range of from $1 to $2 per dwelling unit per day can usually be successfully defended. The method shown in subsection a.(1) provides flexibility for any number of units.

Sec. 5: A specimen form of Partial Occupancy Agreement will be published in the Low-Rent Housing Manual. One should be executed upon each partial occupancy turn-over by the contractor.

7. GENERAL SCOPE OF WORK

Sec. 3: Note the wording relative to taxes. The Local Authority shall ascertain whether local sales or business privilege taxes are legally applicable to the work to be performed by the contractor. If the

NOTES TO THE LOCAL AUTHORITY AND ARCHITECT

Sec. 32: (subsection b.). If the Contractor elects to carry Builder's Risk, the policy should be carefully examined to see that losses are payable to the Contractor, his subcontractors, and the Local Authority as their interests may appear.

Some printed forms of builders' risk insurance do not become effective until windows and doors are permanently in place. Such coverage is worthless during construction. The policies offered should be carefully examined for coverage during all stages of construction.

In certain localities which are particularly susceptible to earthquake disturbances, it is essential that Builder's Risk Insurance against loss by earthquake be carried. This additional coverage may be included by adding the following statement to the end of the first sentence in subsection b. of Section 32: "The extended coverage insurance shall include coverage against loss by earthquake."

Sec. 33: The Housing Act of 1949 requires the PHA to obtain from a Local Authority a certification that wages and salaries prevailing in the locality have been paid on the project, before the PHA may make funds available for construction to the Local Authority. The Local Authority, in order to make such certification to the PHA, must have the underlying certifications from the contractor and subcontractors each month, or withold payment to the Contractor.

Sec. 37: The Local Authority shall investigate applicable local law to determine whether the project is subject to mechanics' lien claims. Since the Annual Contributions Contract requires a bond for the protection of those furnishing materials and labor, the Local Authority should, if possible under local law, prohibit the right of anyone to assert a mechanics' lien claim against the project. Some State laws require either actual or recorded notice of contractual provisions prohibiting liens being filed against property. In such States the law must be followed and, if necessary, the contract must be recorded in the proper office.

Sec. 38: The one year guarantee provided for in this section does not begin to run until the contract work is finally accepted, regardless of any units taken over for occupancy before all units are completed. (See Section 5a. of the Special Conditions.)

6. SPECIAL CONDITIONS

The Special Conditions provide a flexible division of the Specifications in which to place provisions which contain elements that vary from one project to another, and cover situations peculiar to the project involved. The six provisions included here are a minimum believed applicable to any Smaller Projects construction contract. It may be necessary to include additional

special provisions to round out the contract requirements. To avoid interfering with certain cross references, the serial numbering of the six shown should not be changed.

Sec. 1: The Local Authority should exercise good judgment in fixing a time (or times) of completion. It should bear a reasonable relationship to the amount of work to be performed, the difficulties attendant upon its performance, and the probable effect of seasonal weather upon certain stages of the work according to the time of the year in which the proposed schedule anticipates they will be performed.

An unreasonably curtailed construction period results in higher bid prices and tempts the contractor to rush the work and skimp in performance, while an unnecessarily extended period will delay completion and occupancy and the related income from rents. Opinions of local builders may be valuable.

In subsection b., numbers and days in the series should be counted from zero, and the series continued until the final accumulated total of numbers and days corresponds with the grand totals of units in the project and the number of days in which completion of all units is desired. This final number of days may be less than or the same as the number first stated in subsection a. above, depending upon the Local Authority's desires in the matter.

Sec. 2: The amount(s) of liquidated damages should be established in such sum(s) as will be in reasonable proportion to the actual loss that might be sustained by the Local Authority, through failure of the contractor to complete the work on time. Consideration should be given to the loss the Local Authority will sustain by virtue of a delay in receiving annual contributions. However, liquidated damages should not be fixed so high as to discourage bidding by responsible contractors nor to result in high prices, and unrealistic sums will be held to be penalities and unenforceable in court.

For partial occupancy, the range of from $1 to $2 per dwelling unit per day can usually be successfully defended. The method shown in subsection a.(1) provides flexibility for any number of units.

Sec. 5: A specimen form of Partial Occupancy Agreement will be published in the Low-Rent Housing Manual. One should be executed upon each partial occupancy turn-over by the contractor.

7. GENERAL SCOPE OF WORK

Sec. 3: Note the wording relative to taxes. The Local Authority shall ascertain whether local sales or business privilege taxes are legally applicable to the work to be performed by the contractor. If the

NOTES TO THE LOCAL AUTHORITY
AND ARCHITECT

applicability of the law is not clear, every effort must be made by the Local Authority to obtain a ruling from the appropriate officer of the State or locality (i.e., the Attorney General of the State; the State Tax Commissioner; the Tax Collector; etc.). If it appears to the Local Authority that such sales or business privilege taxes are not applicable to the work, an appropriate clause should be inserted in the "Special Conditions" informing bidders of this fact and instructing them not to include the costs of such taxes in their bid prices. In any event, the wording of this Section 3 is not to be changed.

Sections 4 and 5: These are suggested as a general reminder of the ground to be covered. Any manner of stating clearly what is included, what is not included, what is to be done, what is not to be done, etc. will be satisfactory, but in no case should such statement(s) be omitted from this division.

Sec. 6: This section must not be omitted.

8. SCHEDULE OF DRAWINGS

Each applicable drawing should be listed in this schedule, by number, date, and title.

If any revised drawing, or portion thereof, is issued with an addendum, such addendum, in addition to its description of the change, must contain a separate paragraph making an appropriate revision in this schedule.

BULLETIN NO. LR-29

OCCUPANCY POLICY DETERMINATIONS TO BE MADE AND ACTION TO BE TAKEN PREVIOUS TO OPENING OF APPLICATION OFFICE

ONE OF A SERIES OF BULLETINS ON
SUGGESTED OCCUPANCY PROCEDURES

PHA LOW-RENT HOUSING
BULLETIN

PUBLIC HOUSING ADMINISTRATION
HOUSING AND HOME FINANCE AGENCY
WASHINGTON 25, D. C.

JULY 1951

LIST OF BULLETINS
WHICH HAVE BEEN PUBLISHED

Bulletin No.	Title	
LR-1	Zoning and Rezoning	
LR-2	Subsurface Soil Investigation	
LR-3	Site Planning	)
LR-4	Site Engineering	) A series
LR-5	Structural Design, Materials and Methods	) of eight
LR-6	Architectural Planning and Design	) Housing
LR-7	Plumbing, Heating and Ventilation	) Design
LR-8	Electrical	) Notes
LR-9	Lawns and Planting	)
LR-10	General Design	)
LR-11	Selection of Utilities	
LR-12	Construction Contract Documents	
LR-13	Guide Specifications	
LR-14	Equipment Contract Documents	
LR-15	Operation and Repair of Heating Systems (Care of Boilers Out of Service)	
LR-16	Corrosion of Underground Piping	
LR-17	Rules for Boiler Operation	
LR-18	Preparation of Exterior Surfaces for Repainting	
LR-19	Control of Condensation in Crawl Spaces	
LR-20	Glazing	
LR-21	Maintenance of Wood Floors	
LR-22	Basic Specifications for Rural Nonfarm Housing	
LR-23	Operation and Repair of Heating Systems--Boilers (Types, Use and Repair)	
LR-24	Maintenance of Concrete Floors	
LR-25	Indoor Tenant Activity Areas	
LR-26	Routine Care of Lawns	
LR-27	Repainting Exterior Surfaces	
LR-28	Rural Nonfarm Construction Documents	
LR-29	Occupancy Policy Determinations to be Made and Action to be Taken Previous to Opening of Application Office	

NOTE: Some bulletins will be issued in parts, of which one or more will be contained in the initial release of each bulletin; other parts will be issued subsequently from time to time as they are completed.

TABLE OF CONTENTS

- -

Attachments

Appendix A - Suggested Schedules of Local Authority Actions Incident to the Initial Selection of Tenants.

Appendix B - Suggested Outline of a Local Authority Occupancy Manual.

Exhibit 1 - Specimen Registration Form.

Exhibit 2 - Specimen Letter to Registrants, Site Occupants and Displaced Families.

Exhibit 3 - Statement of Policies Governing Admission to and Continued Occupancy of the PHA Aided Low-Rent Housing Projects Operated by a Local Authority.

Exhibit 4 - Specimen Score Sheet for Recording and Rating Findings From Physical Inspection of Applicant's Living Conditions.

OCCUPANCY POLICY DETERMINATIONS TO BE MADE AND ACTION TO BE TAKEN PREVIOUS TO OPENING APPLICATION OFFICE

1. Introduction

a. To insure occupancy in low-rent projects being restricted to only those families for which such projects are provided, there are set forth in the United States Housing Act of 1937, as amended by Public Law 171, 81st Congress, certain basic regulations to be observed in determining a family's eligibility for public low-rent projects and in selecting tenants for such projects. Conformance with these statutory requirements necessitates the use of techniques and the adherence to principals which are markedly different from those employed in tenanting private developments. Public housing legislation makes special provision for large families whereas many private landlords frown upon or even go so far as to forbid the admission of families with minor members. In public housing, the urgency of the family's housing need is the final determining factor in selecting tenants from among applicants in the same preference category who are otherwise equally eligible. In private housing, on the other hand, the financial stability of the family is more often than not the governing factor in the selection of tenants.

b. This Bulletin, the first of a series relating to occupancy procedures and supplementing Manual Sections 402.1, 403.1, 404.1, 405.1, 406.1, 407.1, 408.1, 409.1 and 410.1, deals primarily with the factors involved in determining and formalizing occupancy policies and procedures preparatory to taking formal applications for initial occupancy of a public low-rent project. Also covered are some of the occupancy activities which occur between the signing of the Annual Contributions Contract and the opening of the application office. The purpose of these bulletins is to suggest to Local Authorities, particularly those new to the field of low-rent public housing, procedures for meeting the statutory and contractual occupancy requirements in terms of the needs of their particular program and locality. The procedures suggested for carrying out the fundamental occupancy requirements will, in most instances, need some modification before they can be considered as being the most effective ones for the particular operation concerned. Also, there will be other ways found of accomplishing the desired objective which will be equally or more effective than the procedures or operating devices mentioned in these bulletins. Therefore, these Bulletins should be considered as guides to developing operating procedures rather than as operating manuals per se.

2. Planning for Initial Selection of Tenants. Planning for the initial selection of tenants involves action by the Local Authority with respect to establishing policies and procedures to govern the receipt and processing of applications, determination of eligibility and preference rating, rent to be charged, unit size requirements, application of preference factors, and related subjects. The need for specific determinations on these and other matters

(Cont'd)

incident to initial occupancy of the project will generally be felt as soon as it becomes known that a low-rent public housing project is under way. The release of such information to the public usually brings forth many inquiries from potential tenants and the public at large concerning admission requirements, where and when applications may be filed, and other matters of general concern. Experience has shown it to be to the advantage of the Local Authority for it to start formalizing its occupancy and selection policies and developing its plan of operation incident to the initial selection of tenants immediately subsequent to the signing of the Annual Contributions Contract. Early determinations with respect to eligibility policies are of particular importance in instances where site clearance precedes project development. By having its admission policies and procedures fairly well crystallized prior to beginning the relocation of site occupants, the Local Authority can start during the relocation process to familiarize potential applicants with its low-rent program.

a. Time Required to Prepare for Initial Selection of Tenants. The actual amount of time required to carry out an occupancy program which will assure every unit in a project being occupied as of the date it becomes available by a tenant who has been selected in accordance with statutory provisions (see Section 407.1) from among applicants found to meet the eligibility criteria of the Act (see Section 403.1) will vary to some extent. This will result from the size of the program, the quality of the personnel employed, estimated demand, reluctance of potential applicants to move from present neighborhood, and other conditions peculiar to the project or community concerned. These local variables will not affect the time involved in determining and establishing governing policies and implementing procedures but will have a bearing on determining when, in relation to the scheduled date of initial occupancy, the application office should be opened, when verification should be started, and when tenants should be selected.

(1) Application taking should be started far enough in advance of the scheduled date of initial occupancy to allow ample time for receiving applications from and determining the eligibility and preference status of all the potentially eligible applicants who may wish to apply.

(2) The process of verifying an applicant's representations, determining his eligibility, preference rating and need should be started far enough in advance of the date scheduled for actual selection to assure that families selected for admission to units of given sizes and at specified rents are not only eligible but are receiving the preference consideration to which they are entitled by the Act.

(3) The actual selection of tenants from among eligible applicants should be made sufficiently in advance of the scheduled date of initial occupancy to allow the Local Authority time to recheck its verified findings and to allow the selected applicant to cancel his existing

(Cont'd)

rental agreement, if any, and to make arrangements for moving to the project on the date of availability. Failure to allow ample time for these matters will cause a delay in tenanting units as they become available and will result in an unnecessary vacancy loss.

b. Scheduling Activities of the Local Authority Incident to the Initial Selection of Tenants. Perhaps one of the first steps to be taken in preparing for the initial occupancy of the project is the scheduling of actions to be taken by the Local Authority in preparation for the initial selection of tenants. Such a schedule should show the basic steps involved, the progressive order in which the steps are to be taken, and when, in relation to the scheduled date of initial occupancy, each step should be taken.

(1) Attached as Appendix A is a suggested schedule of occupancy activities setting forth the nature and extent of the work to be done in preparation for initially selecting tenants for the first low-rent project to be opened in a community. This specimen schedule shows the timing of the various functional steps in relation to the scheduled date of initial occupancy of a project consisting of 200 units. In event a Local Authority desires to set up a similar type of schedule, it will in all probability be necessary to change the chronology or timing of the various functional steps shown on the example to fit local conditions such as site location, size of project, estimated demand and other factors peculiar to the community concerned. In devising a schedule to meet local conditions it should be remembered that the size of the project to be opened and other local factors or project characteristics do not affect the functional steps involved.

(2) One of the objectives in timing occupancy activities is to assure units being tenanted in accordance with statutory and contractual requirements as soon as they become available for occupancy. Experience has shown that to accomplish this on projects consisting of 200 units, it is desirable to open the application office approximately three months before the first units are scheduled to be released for occupancy. An early start with a small permanent staff has been found to be preferable to the employment of a large staff of temporary employees just before initial occupancy. The longer period of employment facilitates securing more competent personnel and allows for more thorough training, both of which are essential to effectuating an efficient operation. Also, an extended period of application taking affords an opportunity to ascertain whether publicity concerning the project is effectively reaching all income levels of the low-rent market.

(3) No attempt is made in this Bulletin to schedule occupancy activities for subsequent projects of a Local Authority. The effectiveness and scope of the existing program, the adequacy of present personnel to handle the increased workload, the number of applications on file from eligible applicants and similar matters introduce too many variables to make the preparation of such a schedule feasible.

(Cont'd)

3. Handling of Potential Applicants Before Application Taking Begins

a. Need for Governing Policy. Generally, as soon as any publicity is given to a proposed low-rent public housing program in a community, the Local Authority begins to receive application requests from families desiring to be admitted to the proposed project. To refuse to accept applications at that time may result not only in bad public relations but also may affect the eligibility status or preference rating of an applicant. For instance, the requirement of citizenship as contained in the various appropriation acts is waived in favor of the family of any Serviceman, or family of any Veteran who has been discharged (other than dishonorably) from, or the family of any Serviceman who died in, the armed forces of the United States within four (4) years prior to date of application for admission 1/. Also, the U. S. Housing Act of 1937, as amended, accords a preference to families displaced by any low-rent housing project or by any public slum-clearance or redevelopment project initiated after January 1, 1947, provided such families apply for admission within (3) three years of their displacement. 2/ The Act also waives the requirement that families be living in substandard housing at the time of admission to the project in favor of the family of any Veteran or Serviceman (or of any deceased Veteran or Serviceman) where an application for admission is made not later than March 1, 1954. Therefore, applicants to whom any of these three conditions might be applicable should at all times be permitted to file some form of application and so preserve their rights. The acceptance of registrations from other families at this early date is also desirable for these will serve as a nucleus upon which to draw when the work of establishing a pool of applications from eligible applicants actually begins.

b. Suggested Type of Form. The form used during this preliminary stage of application taking should be very simple and should be so drawn as to make the applicant aware that further information to be submitted through the use of a more detailed application form will be required before the Authority can take any action in his case. To avoid confusion it is suggested that the form used during this period be designated as a registration rather than as an application. Attached as Exhibit 1 is a specimen registration form which the Local Authority may find to be of assistance in preparing a form for this purpose.

c. Use of Registration Form for Displaced Families. The Local Authority may, in event it is not taking formal applications at the time a site is being cleared of occupants find it advisable to leave a registration form

(Cont'd)

1/ For definition of Veteran, Serviceman and Family of Veteran or Serviceman, see Section 402.1.

2/ For displaced families entitled to preference, see paragraph 5, Section 407.1.

with each site occupant family rather than just to inform a family verbally that it will be notified when the application office is opened. The Local Authority may also wish to make these forms available to other public bodies handling other public slum-clearance or redevelopment projects.

d. Placing of Responsibility for Handling Registrations. As soon as the Annual Contributions Contract is signed the Local Authority should delegate to some member of its staff, preferably one skilled in contacting the public, the responsibility of accepting dwelling registrations until personnel is employed to carry out this and other occupancy functions.

e. Classification and Filing of Registrations. These forms may be filed alphabetically or may be filed in accordance with the preference rating (see Section 407.1) indicated by the information supplied. Filing by preference rating enables the Local Authority when it is ready to accept detailed applications to send out its first notices to the families with the highest preference rating (see Section 407.1). A form letter similar to that attached as Exhibit 2 will be found useful in notifying site occupants, other displaced families and registrants of the opening of the application office.

4. Admission and Continued Occupancy Policies Requiring Local Determinations. As the development of a project progresses the questions addressed to the Local Authority by potential applicants and the public at large concerning the use to be made of the project will become more and more specific. An answer to the effect that the project is being provided for low-income families will bring forth questions as to what is meant by a low-income family. Also a statement that rents will be within the financial reach of such families will require amplification. To be in a position to answer such inquiries the Local Authority will need to establish definitive policies with respect to eligibility, rents, and similar basic factors at the earliest practicable date and to incorporate these determinations into some type of formal statement 1/ as a matter of record and for the guidance of its personnel. Indicated below are policy matters requiring local determinations prior to their formal establishment and adoption.

a. Income Limits for Admission and Continued Occupancy. One of the first and most frequent questions asked a Local Authority pertains to the specific income group to be served by the project. Therefore, the early establishment of income limits for admission and continued occupancy is of prime importance. Criteria to be applied by the Local Authority in determining the income limits which it will submit to the PHA for approval prior to adoption are set forth in Section 404.1.

(Cont'd)

1/ See Exhibit 3 for specimen type of statement.

b. Rents and Other Charges. Next in order of importance after the establishment of income limits is a determination by the Local Authority of a rental policy which it will adopt subsequent to obtaining PHA approval. Points to be taken into consideration in making this policy determination are covered in Manual Section 405.1.

c. Definition of and Formulas for Determining Annual Net Family Income. Prerequisites to determining a family's eligibility with respect to its income are the establishment by the Local Authority of its definition of Net Family Income 1/ and the establishment of formulas to be applied in estimating the Net Family Income for the 12 months next succeeding the date of admission and subsequent income reviews.

(1) Definition of Net Family Income. Net Family Income is defined as Aggregate Family Income (see paragraph 12, Section 402.1) less such of those deductions set forth in paragraph 13 of Section 402.1 as the Local Authority may elect to allow. 2/ The only requirements with respect to deductions are that they be restricted to those specified in Section 402.1 unless otherwise approved by PHA and that such deductions as the Local Authority may authorize be applied uniformly to all families of like circumstances. The Local Authority, however, in establishing its definition of Net Family Income, will need to specify not only the deductions which are to be allowed but also the conditions which must obtain for a deduction to be deemed justifiable. The establishment of guides and criteria to be applied in determining reasonableness of, necessity for, and meritoroius nature of deductions requested will facilitate uniform treatment of applicants of like circumstances.

(2) Establishment of Formulas for Estimating Annual Net Family Income. Having established its definition of Net Family Income the Local Authority needs to determine the formulas to be used in converting the current income of various categories of workers into an estimate of anticipated annual net income. This requires ascertaining from authoritative source: for each major category of workers pay rates and the number of weeks which such workers can anticipate being gainfully occupied during a projected 12-month period. For example, laborers and other out-of-doors workers in the building trades and related fields generally do not work every week of the year due to weather conditions or other factors peculiar to their occupations. Labor unions, employers, the local Chamber of Commerce and similar sources can generally supply information

(Cont'd)

1/ Deviations from the definition of Net Family Income given in Section 402.1 require prior approval of PHA.

2/ Deductions for reasons other than those specified in Section 402.1 require prior approval by PHA

which the Local Authority will find helpful in determining the number of weeks to use in estimating the annual income of varous categories of workers. Also needed are criteria to be applied in estimating the annual income of taxi drivers, self-employed persons, commission salesmen, seasonal workers, persons receiving part of their compensation in the form of meals, concessionaires, operators of small businesses and regularly employed salaried workers. With respect to regularly employed salaried workers, the matter of whether the worker receives paid vacation and sick leave is the factor which determines the number of weeks to be used in estimating annual income. Another matter to be considered by the Local Authority in developing its formulas for estimating the annual income of various types of workers is that of determining the conditions which would require that a worker's income for the 12 months just preceding the date of computation be ascertained and utilized in estimating anticipated income.

(a) For the purpose of estimating anticipated income at time of admission little, if any, benefit will be derived from verifying the past earnings of regularly employed salaried persons receiving no overtime pay. In all other instances, however, factual data concerning income received in the past will greatly facilitate estimating the anticipated income for the ensuing 12 months. In some cases it will suffice to verify just the income received during the 12-month period immediately preceding the date of computation. In other instances it may be found desirable to verify past income over a longer period of time. This will be particularly tru for seasonal, part-time or irregularly employed persons.

(b) At the time of re-examination, (see Section 410.1) it is recommended that past income be ascertained and verified for all tenants regardless of how adequately the verified rate of current income may serve as a basis for estimating anticipated income for the ensuing 12 months. In event the Local Authority elects to adop a policy requiring tenants to report changes of income as they occu so that the appropriate relationship between income and rent may be maintained at all times, the verification of past income will be needed to determine whether the tenant has reported accurately and as required all changes of income occurring since his last income review.

d. Criteria for Determining and Evaluating Housing Conditions of Applicants and the Urgency of Their Housing Needs. The Act restricts admission, except for families of Veterans and Servicemen 1/ applying for admission before March 1, 1954, to families who at time of admission are living in unsafe, insanitary, or overcrowded dwellings, or are to be displaced by another low-rer

(Cont'd

1/ As defined in Section 402.1.

housing project or by a public slum-clearance or redevelopment project or who are actually without housing due to causes other than the fault of the tenant, or are about to be without housing as a result of a court order of eviction due to causes other than the fault of the tenant. The Act further provides that the Local Authority in initially selecting families for admission to dwellings of given sizes and at specified rents shall, subject to the preferences stated therein give preference to families having the most urgent housing needs and thereafter, in selecting families for admission to such dwellings shall give due consideration to the urgency of the families' housing needs (see Section 407.1). To comply with this statutory provision, the Local Authority needs (1) to establish criteria to be used in determining the nature of the applicant's housing conditions; (2) to devise a system for evaluating the relative seriousness of the existing condition; and (3) to designate the factors to be considered in determining urgency of need as among eligible applicants having the same preference rating.

(1) Development of a Local Definition of Unsafe, Insanitary, or Overcrowded Dwellings. One of the first steps to be taken in establishing criteria for determining the housing conditions of an applicant is to define what constitutes substandard housing conditions.

(a) Listed in Section 403.1 are the conditions generally considered as constituting an adequate basis for determining that a dwelling is unsafe, insanitary, or overcrowded. These conditions are general in nature and will need to be modified to reflect the characteristics of substandard housing in a given community. For instance, in localities where climatic conditions are such as to make the use of heating facilities unnecessary the lack of such facilities should not be recognized as being a characteristic of substandard housing.

(b) Many Local Authorities have found it helpful to have a group of local persons familiar with local housing conditions, building code regulations and violations, cooperate with them in establishing criteria to be applied in determining whether a dwelling is substandard. Such groups have consisted of representatives of family welfare agencies, various municipal departments, and other agencies such as private or public housing associations, concerned with formulating housing regulations and effecting their enforcement. The work of such a group organized for the purpose stated here should generally encompass (i) analysis of local housing conditions, including review of surveys and physical inspections, for the purpose of ascertaining the extent of substandard housing in the community, taking into account special conditions which are characteristic of slum areas in the locality; (ii) review of local housing ordinances and existing violations; and (iii) recommendation of factors to be used in determining that a dwelling is unsafe, insanitary, or overcrowded, and in evaluating the degree to which such conditions exist. Each factor recommended should represent a

(Cont'd)

definite characteristic of a substandard dwelling serious enough in itself to cause a dwelling to be classified as unsafe, insanitary, or over-crowded and should be clearly defined. In addition to listing factors which serve to connote the presence or seriousness of substandard conditions it has usually been found desirable to supplement this with a listing of other deficiencies which contribute to the undesirability of a dwelling unit but which are not serious enough, singly or collectively, to cause a dwelling to be characterized as substandard. 1/

(2) Establishment of Guides for Determining a Family to be Without Housing or About to be Without Housing Through No Fault of Its Own. Another step to take in establishing criteria to be applied in determining the nature of an applicant's housing conditions involves the defining of what is meant by "actually without housing" and specifying the conditions which would justify a finding that an applicant family was without housing or about to be without housing for "causes other than the fault of the tenant."

(a) In developing a definition of "actually without housing" care must be exercised not to confuse it with the definition of substandard housing. For instance, if make-shift living quarters such as tents, trailers, or tourist camps are to be classified as substandard housing accommodations then a family living under such conditions should not be considered as being "actually without housing." On the other hand, if a family is being temporarily sheltered through the benevolence of some interested agency or individual solely for the purpose of protecting it from the elements while seeking housing accommodations, then such family might be determined as being "actually without housing." Other situations which might fall into the category of "actually without housing" are that of family members involuntarily living apart from each other as separate entities without ready access to each other or to any facilities necessary to family life or that of a family whose place of abode is not within reasonable commuting distance of the family head's place of employment. "Not within reasonable commuting distance" as used here means that the family's residence is so located as to make it impossible for the family head to commute daily to his place of work or the cost of or time involved in commuting is substantially in excess of that which is considered as normal and usual.

(b) The term "causes other than the fault of the tenant" which is defined in general in Section 403.1 will need some amplification by the Local Authority before being incorporated in its operating procedure. Establishing of precepts for the occupancy personnel to

(Cont'd.)

1/ See Exhibit 4 for suggested system of scoring unsafe, insanitary, or overcrowded dwellings.

use in determining whether the applicant's failure to carry out the obligations of his lease were due to circumstances beyond his control is one feature of the type of amplification needed. Another matter of concern is that of inmigrant applicant families who have voluntarily given up their residence in some other community. Some of these will be families of workers who are seeking to improve their economic conditions or who have been brought into the area as the result of the recruiting program of a defense industry.

(3) Need for Evaluating Relative Seriousness of Existing Conditions. For eligibility purposes it is sufficient to determine that an otherwise eligible family is at the time of admission, living in substandard housing, or is actually without housing through no fault of its own or is about to be without housing due to displacement or a court order of eviction received through no fault of its own. 1/ However, for the purposes of selecting tenants it is necessary within each preference category to determine as among eligible applicants who are either living in substandard housing or are actually without housing or are about to be without housing which has the greatest most urgent housing need. Furthermore the establishment of criteria for measuring housing need calls for a determination by the Local Authority as to what factors are to be considered in evaluating an applicant's need and the relative weights to be assigned to these factors. The matters most usually taken into consideration are existing housing conditions including the absence of housing and the imminence of being without housing, chronic health conditions, physical impairment of one or more family members and number of minors.

(4) Determining Relative Seriousness of Existing Housing Condition. Two steps are involved in setting up a system for determining in an objective and uniform manner the relative seriousness of the existing housing condition of eligible applicants. One pertains to the establishment of a scoring system for determining as among eligible families found to be living in substandard housing the relative seriousness of each family's housing condition. The other calls for a determination by the Local Authority as to the relative seriousness of living in substandard housing, being without housing, and the imminence of being without housing.

(a) Suggestions for Determining the Degree to Which a Family's Housing Conditions are Unsafe, Insanitary, or Over Crowded. Determining the degree to which family's housing conditions are substandard can be facilitated by the use of an objective system of rating and scoring the existing substandard characteristics and other deficiencies. The use of a system which has as its base the assigning of numerical values to each recognized substandard condition or deficiency rather than evaluation through the use of individual judgment

(Cont'd)

1/ This eligibility factor is waived for families of Veterans and Servicemen under certain conditions (see Section 403.1).

assures uniform treatment of all families living under similar conditions. Also, such a system has been found extremely useful in combating charges of favoritism in the selection of individual families. Exhibit 4 is a suggested form for recording and scoring the findings made during a physical inspection of a dwelling occupied by an applicant. 1/ Also indicated is a suggested numerical scoring system. It will be noted that the questions are so phrased that the presence of a substandard factor evokes an affirmative answer. The first question in each box to be answered in the affirmative receives a score of 50 points and a score of 5 additional points is given for each other question in the same box which is answered with a "yes". In this way the degree to which such condition is aggravated receives recognition. For instance, if a family were living in a dwelling unit lacking potable running water a score of 50 points would be given. If however, both dwelling unit and structure (one comprised of more than one unit) were without potable running water an additional score of 5 points would be given, and if the premises as well as the structure and dwelling unit lacked this facility 5 more points would be given. In the first instance the total score for this item would be 50 points, in the second 55, and in the third 60. The advantage of this method of scoring is that, as among families living in unsafe, insanitary, or overcrowded housing, it automatically assures preference being given to the family whose physical housing conditions are the worst. This suggested form for reporting on the physical characteristics of dwellings occupied by applicants may at first glance appear overly detailed and cumbersome. In practice however, this type of form has proved to facilitate the work of the inspector and has been found to give the reviewer (Occupancy Supervisor, Housing Manager, Executive Director or Authority member) a more realistic concept of existing conditions than would be achieved through lengthy descriptions which tend all too frequently to reflect impressions rather than specific facts.

(b) Suggestions for Numerically Rating the Relative Seriousness of Being Without Housing, the Imminence of Being Without Housing, and Residing in Substandard Housing. To enable its staff to rate in an uniform and objective manner the relative seriousness of the housing condition of applicants it is suggested that the Local Authority determine the qualifying housing conditions which shall have precedence over others and to assign numerical scores reflecting the predetermined order. For example, assume that absence of housing is to be treated as the most serious housing condition, the imminence of being without housing, the next most serious, residence in substandard housing is to be in the third place of importance and that

(Cont'd)

1/ This form is also shown as constituting a part of the Verification Summary Form attached as Exhibit 8, to Bulletin No. LR-32.

- -

the system for rating substandard housing shown as Exhibit 4 which provides for a family living in a dwelling in which there is present one or more substandard characteristics to score between 50 1/ and 645 points had been adopted. Implementation of such a policy could result in a score of 700 points for families without housing, 650 points for families about to be without housing and a score of between 50 points and 645 points for families living in substandard housing. On the other hand should the Local Authority decide that a family living in housing conditions bad enough to receive the maximum score for substandardness should take precedence over all others, it might decide to score the absence of housing as 500 points and the imminence of being without housing as 400 points. This would result in substandardly housed families receiving a score greater than 500 points taking precedence over families without housing or those about to be without housing. Families scoring over 300 points but less than 400 points would take precedence over families about to be without housing but not over families who were actually without housing.

(5) Use of Factors Other than Housing Conditions in Determining Relative Need. As stated in paragraph 4d(3), above, chronic health conditions, physical impairment of one or more family members, the number of minors as well as housing conditions have in some instances been taken into consideration in determining the urgency of the family's need for housing. The assigning of weights to each of these possible consideration factors tends to complicate the selection process. However, it is felt that when it is found that some member of an eligible family suffers from a chronic health condition or physical impairment and that his suffering is aggravated by his present housing conditions but would be alleviated to some extent were he to be admitted to the project that such a situation merits a score.

(6) Suggested System for Rating Urgency of Housing Need. Having determined what factors should be scored or taken into consideration in determining the urgency of an applicant family's housing need the Local Authority should formalize its conclusions for the guidance of its staff in selecting tenants from among eligible applicants having the same preference rating somewhat along the following lines:

(a) Factors to be scored:

Existing Housing Condition -	Check	Score
Family is actually without housing due to no fault of its own.	☐	(700)

1 Any lower score would indicate a family to be living in a house found to be deficient in some respects but not substandard.

	Check	Score
Family is about to be without housing due to no fault of his own.	☐	(650)
Family is living in unsafe, insanitary, or overcrowded housing conditions 1/.	☐	(50 to 65)
Health Conditions -		
Chronic health condition or physical impairment present.	☐	(50)

(b) Factors to be Considered:

As among families equally eligible who are in the same preference group and have the same housing need score, first consideration is to be given to the family having the greatest number of minors which the available unit will accommodate.

e. Occupancy Limits. Effectuation of the occupancy standards set forth in Section 406.1 requires the establishment of specific occupancy limits for admission to and continued occupancy of each size unit in a project. In addition to establishing specific occupancy limits, the Local Authority will need to determine what action shall be taken where a unit becomes under or over occupied. Locally established occupancy limits should assure proper utilization of space without overcrowding. The lease form should embody the requirement that when the unit occupied is determined by the Local Authority as no longer being appropriate to the needs of the occupying family that the tenant will be required to move to one which is appropriate to his needs.

f. Other Eligibility Criteria. Eligibility criteria other than those discussed above may consist of the following:

(1) Net Assets. In connection with determining the need for establishing eligibility criteria in addition to those set forth in Section 403.1 it is suggested that the Local Authority give some consideration to net assets as an eligibility factor. The primary purpose of placing a limitation on net assets is to exclude from low-rent housing those families whose current income falls within the established income limits but, whose net assets, if used to supplement their current income, would enable them, without endangering their financial stability, to obtain adequate housing on the private market. In placing a limit on net assets, care must be exercised so as not to make the amount so low as to discourage low-income families from following a savings or investment program which is appropriate to their income. Also, any limitation placed on net assets should be flexible enough not to militate against

(Cont'd)

1/ See Suggested Scoring System on Exhibit 4.

any family whose only potential source of income is from such assets (the amount of which would normally be considered to be excessive) provided the liquidation or disposal of any portion of such assets would result in depriving the family of basic essentials. If net assets is established as a factor to be considered in determining a family's eligibility for admission and for continued occupancy, the Local Authority will need to define specifically what is meant by "net assets" and to set up guides for its staff to follow in evaluating the net assets of a family and in deciding whether the cash value of such assets is great enough to disqualify the family as a low-income family.

(2) Local Residence. The establishment of local residence as a factor of eligibility is not recommended for any locality and particularly for those where job opportunities for low-paid workers are greater than the local labor supply. The Act specifies that in initially selecting families for admission that, as among families having the same preference priority, preference shall be given to those having the most urgent need. Restricting admissions to families who are local residents may tend to contravene this statutory provision. For example, let us assume that applications are received from families of two disabled veterans and that the circumstances of these families are identical except that one is an inmigrant actually without housing and the other is a local resident who is living with in-laws. A family which is actually without housing definitely has a more urgent need than one which is housed adequately except for the fact that it is living with in-laws. A local residence requirement however, would result in the family with the more urgent need of the two being rejected and the family with the less urgent need being admitted. If a resident requirement is established, it should be used only in determining as among families with an equally urgent need which shall be accorded a priority in selection.

(3) Conformance with State Enabling Legislation. There may be instances where the State laws pertaining to low-rent public housing contain occupancy provisions different from or more restrictive than those contained in the Federal statute. Therefore, in setting up its eligibility criteria, the Local Authority will need to review the enabling legislation under which it operates to ascertain if such legislation contains provisions governing occupancy which would require the establishment of eligibility criteria in addition to those necessitated by the Act and Contract.

g. Re-examination of Eligibility and Redetermination of Net Family Income. Since the re-examination of eligibility and the redetermination of income entail obtaining from the tenant information concerning the income and composition of his family, it is necessary that the requirement for his supplying such data be incorporated in the tenant lease agreement as one of the conditions of occupancy. Therefore, before drawing up its lease form (see Section 409.1), the Local Authority should establish its policies with respect

(Cont'd)

to frequency of periodic re-examinations, requirements for reporting changes in family income between regularly scheduled periodic re-examinations, back-charges and rebates and the removal of ineligibles. Determinations as to other re-examination policies and procedures need not be made during this preoccupancy period. Requirements and suggestions on re-examination policies and procedures and covered in detail in Section 410.1 and another Bulletin of this series.

5. Development of Working Relationships with Community Groups

a. After policies governing the admission of tenants are formulated and before the publicity campaign for disseminating project information to low income families is initiated (see Bulletin LR-31) the person who is to be responsible for receiving and processing applications should establish working relationships with representatives of agencies which are in constant touch with low-income families in the community and also, with other organizations or individuals which are known to be somewhat closely associated with such families. The establishment of working relationships will be greatly facilitated if during the early development stages of the project the Local Authority has followed a policy of keeping the community at large and particularly groups or agencies dealing with low-income families informed concerning the local low-rent housing program. Early liaison between the Local Authority and other community groups will result in a mutual understanding of the functions and problems of each and will point up the ways in which they may mutually benefit by cooperating with each other. It is equally as important for the Local Authority and its management staff to understand the policies and functions of and the types of information obtainable from the relief and welfare agencies as it is for such agencies to understand the eligibility, selection, and rental policies of the Local Authority. Working relationships with public or quasi-public groups will not only be of assistance to the Local Authority in disseminating information concerning the project to low-income families and in furnishing it with information needed to determine an applicant's eligibility and preference rating but will also enable the Local Authority's management staff, after the project is in operation, to know the proper source to which to refer tenants needing health services, legal aid, financial or other type of public assistance.

b. Groups with which working relationships should be established include community and neighborhood centers, family welfare and child care agencies, public clinics and health centers, churches, schools and any other agencies or groups having contacts with or interest in the problems of low-income families. These groups include labor unions, fraternal organizations, Rotary Clubs, women's clubs, Parent-Teacher Associations and similar types of organizations. Also, in view of the preference to be given families of veterans and servicemen, the cooperation of and a working relationship with local veteran's organizations and agencies serving veterans or servicemen will be of prime importance. In communities where differing racial or nationality groups are

(Cont'd)

to be served by the project, cooperative working relationships should be developed with organizations serving or sponsoring the racial or nationality groups concerned. Perhaps the most important groups of all with which the Local Authority will need to establish cooperative working relationships are the personnel departments of the principal sources of employment in the community. This should be achieved not by telephone or letter but by personal contact. The objectives of the low-rent program should be carefully explained as well as the effect of income upon eligibility and rent. The necessity for securing valid income data should be stressed and procedures for obtaining the required information mutually agreeable to employers and the Local Authority should be developed.

c. Determining the principal sources with which working relationships should be developed involves an appraisal of the adequacy of each source to supply the information needed and the extent to which information thus obtained will need to be supplemented. For instance, an employer is able to furnish information as to the compensation of his employees but he is not usually able to advise the Local Authority as to any other income which may be received by an employee or his family. Some Local Authorities have found it desirable to utilize the services of the local Social Service Exchange (often a function of the local Council or Federation of Social Agencies) or a credit rating bureau as a means of getting any additional information needed which is not otherwise readily available. The conditions which will generally serve to warrant clearing with the Social Service Exchange or obtaining credit rating reports will have to be established by the Local Authority for the guidance of its staff. It is suggested that the services of credit bureaus be utilized only when they afford the only known means of securing requisite information. Verification of factors pertaining to an applicant's eligibility through direct contacts of the Local Authority's staff with the sources from which the required information may be obtained is usually more advantageous for it provides an important channel for interpreting eligibility requirements as well as the policies governing the selection of tenants.

6. Use of Unit for Demonstration Purposes

a. As soon as the construction of a low-rent project is far enough along to estimate completion dates the Local Authority will find it desirable to arrange to make available to some interested agency or other volunteer group one or more typical units to be used for demonstration purposes.

b. The opening of a demonstration home, furnished in keeping with the incomes of the families to be housed is recommended for every low-rent project and particularly for the first low-rent project to be made available in a community. It is suggested that wherever possible the demonstration unit be furnished with plain and sturdy used furniture and that it have no more furniture in it than is necessary for plain, comfortable living. Experience has shown that furnishing the demonstration unit with new furniture, even though

(Cont'd)

it may be inexpensive, and with unnecessary occasional pieces such as coffee tables, often tends to make potential tenants feel that they should follow suit. In this connection, it should be pointed out that demonstration units can be underfurnished as well as overfurnished. Also, the over-use of makeshift pieces - dressing tables made of orange crates, chairs made from barrels - is psychologically bad. The demonstration unit should, in essence, approximate a replica of the living quarers of the average applicant.

c. The dwelling to be used for this purpose should be structurally completed, furnished and ready for inspection as soon after the application office opens as possible. Since it is anticipated that the application office will open well in advance of the availability of any units for leasing, arrangements will have to be made with the construction contractor for completing his work on units selected for this purpose ahead of any others. If the application office is to be located on the project site, the demonstration unit should be easily accessible from that office. In any event, any unit selected for demonstration purposes should be located on the edge of the project and on the main traffic street.

d. The demonstration unit should be closed upon the completion of the initial selection of tenants.

7. Planning Publicity Campaign for Disseminating Information to Low-Income Families

a. Need for Campaign. The degree or success achieved in promptly tenanting the project with low-income families having the highest preference rating and the most urgent housing need will depend largely upon the efforts made and the means employed in interesting families in the lowest income group to apply for admission to the project. The lowest income families of the low-income group are usually less aggressive than families of higher income and apparently for that reason do not, on their own initiative, seek en masse to ascertain their eligibility for public low-rent housing. No matter how well formulated the occupancy policies may be, or how well developed the techniques and procedures for receiving and processing applications; and no matter how well qualified the personnel may be, satisfactory results in project occupancy cannot, in most instances, be accomplished without an adequate publicity campaign designed to inform low-income families concerning the low-rent program. Therefore, it behooves the Local Authority to determine and utilize such local media as will insure the lowest income families in the community being made aware of the opportunities which the project affords them to secure adequate housing within their financial reach. See Bulletin LR-31 for suggested media.

b. Timing of Publicity. Obviously, suitable and adequate information concerning eligibility and tenant selection cannot be released until policies governing these matters have been formulated and approved. Thus, the early setting of income limits and rents, including PHA's approval thereof; determination of eligibility criteria and method of selection, are prequisites to

(Cont'd)

designing a satisfactory publicity campaign for informing low-income families concerning the project. A publicity campaign aimed at potential applicants should be initiated as soon as policy determinations permit and should be stepped up with the opening of the application office.

8. Staffing for Receiving and Processing Applications

a. Need for Qualified Personnel. The responsibility for tenanting low-rent projects with those families for whom the projects are provided rests primarily with the personnel held responsible for determining eligibility and selecting tenants. Recognition of this fact together with a realization of the number and extent of public contacts involved and the effect which such contacts will have in creating either public support of or ill will toward the low-rent program point up the necessity for employing qualified persons. Application taking, home visiting, and many of the other steps of the verification process require a knowing and skillful application of interviewing techniques and a sympathetic but objective understanding of the social and economic problems common to most low-income families. Also, the assembling of data which will be pertinent to establishing an applicant's eligibility and preference rating requires a working knowledge of those agencies or individuals in the community who can be of assistance by supplying the necessary information. Therefore, the occupancy staff should be comprised of individuals possessing training and experience in fields of work which have brought them into direct contact with families of low-income and which have required the use of techniques similar to those which will be needed in determining a family's eligibility for low-rent housing. Set forth in Bulletin LR-30, in terms of job titles, is a brief description of the functional duties and responsibilities of persons to be engaged in occupancy work. Also indicated are educational and experiential backgrounds which have been found to be of value in relation to the job to be done.

b. Nature of Functions Provides Basis for Determining Personnel Qualifications. The functions of the occupancy section, defined herein in terms of job titles, require the employment of persons qualified to serve as supervisor, receptionist, interviewers, verifiers, home visitors, control clerk, file clerk, and typists. On small programs, functions would of necessity have to be combined. For instance, on a program, justifying an occupancy staff of only 3 persons, the supervisor would need to interview applicants and to handle some of the verification work as well as to supervise; the control clerk would be required to serve as receptionist, file clerk, typist, and to assist as necessary in conducting interviews; the interviewer would verify and make home visits in addition to taking applications. On projects so small as to require the services of only one person, that person would have to serve in all capacities. In those cases where occupancy functions of necessity must be combined, it will not be feasible to require a job applicant to meet the qualifications for each function he is to perform. In such instances, it is suggested that personnel selected be persons who have the basic

(Cont'd)

qualifications from training and experience to perform one function and who possess the personal attributes fitting them for the other work to be done. Among these general attributes are a genuine liking for people, adaptability, resourcefulness, and a demonstrated leadership and administrative ability.

c. Determining Size of Occupancy Staff Needed. The size of the occupancy staff will depend upon the size of the low-rent program concerned and whether occupancy functions are centralized. To determine the size of occupancy staff required, an estimate of the anticipated workload in terms of man hours required to receive and process an application and to select and certify an applicant for admission will be of assistance. A review of the registrations received may be of some help in anticipating the workload. The number on file will indicate to some extent what the application intake load will be. The income data may be useful in estimating the number of applications which will require processing. Veteran status will indicate the number of families for whom a home visit may not be necessary. The word "may" is used advisedly for if there are on file more applications from eligible Veterans and Servicemen than there are units available, a home visit will be required to determine as among such families otherwise equally eligible and with the same preference priority, for the purposes of selection, which has the most urgent housing need. Suggestions as to estimating the anticipated workload in terms of man hours are contained in Bulletin LR-30.

d. Placing of Responsibility for Handling Applications and Selecting Tenants. If, in planning for initial occupancy, it is estimated that the applications which will be received will be sufficiently great in number to require the full-time services of one or more persons to receive and process them, it is suggested that, rather than place the full responsibility for supervising this function with the executive director or housing manager who will have numerous other matters to handle, that a person be employed to serve in the capacity of an Occupancy Supervisor. On projects where it is estimated that the application and selection workload incident to initial occupancy will not be heavy enough to require the full-time services of at least one person the full responsibility for receiving applications, determining eligibility and selecting tenants will of necessity have to be vested in the executive director or housing manager. It may be necessary in some instances, even on comparatively small programs, to employ part-time help during the period just preceding initial occupancy to supplement the executive director or housing manager. Qualified part-time help can sometimes be secured from local social or welfare agencies on a reimbursable loan basis. On programs where it is anticipated that the occupancy workload, after initial occupancy, will be heavy enough to require the continuing full-time services of at least one person, it is suggested that the person with whom the responsibility for this phase of the work is to be placed be employed in a permanent capacity at the earliest practicable date, either on the project management staff or on the central office staff of the Local Authority, depending upon the number of projects involved and the local administrative set-up. Thus,

(Cont'd)

problems of tenant turnover, periodic review of the eligibility of tenants for continued occupancy, and related activities which are an integral part of project management will have the benefit of the continuing services of the staff member originally charged with the responsibility of determining eligibility and selecting tenants during the period of initial occupancy. In cases where it is estimated that the occupancy workload after initial occupancy will not require the full-time services of at least one person, the executive director or housing manager should participate in the occupancy functions to the fullest extent possible during the initial occupancy period so that he may acquire a working knowledge of the duties for which he will eventually be directly responsible.

9. Orientation and Training of Occupancy Personnel. In receiving and processing applications and in selecting tenants from among eligible applicants, the occupancy personnel will constantly be called upon to interpret the policies governing such matters. To make an adequate interpretation of a policy necessitates not only familiarity with the particular policy concerned, but also an understanding of the reasons for such policy having been established. In other words, the occupancy personnel will need to know not only what information is required and how to obtain it, but also why such information is required. Therefore, it is suggested that the Local Authority devise an orientation and training program which will equip its occupancy personnel with the necessary background for interpreting governing policies and train them in the specific functions which they are expected to perform. To accomplish this, the orientation and training program for the occupancy personnel should be comprehensive enough to acquaint them with the objectives and nature of the public low-rent housing program as well as to familiarize them with the procedures to be followed in receiving applications, determining eligibility, and selecting tenants. Set forth in Bulletin LR-30 is a brief outline of a suggested orientation and training program for occupancy personnel. A training program similar in scope to the one suggested should be followed not only in preparing for initial occupancy but whenever a new person is employed. Whenever possible a new employee should be given at least a week's training before he starts carrying out his assigned functions. In no instance should training be confined to just those phases of occupancy work for which the employee has been hired.

10. Forms and Form Letters. Forms and form letters should be devised to implement and expedite the various steps involved in receiving applications, determining eligibility and preference rating, selecting tenants, notifying applicants concerning their status, leasing of dwelling units, redetermining eligibility, removing ineligible tenants and carrying out the other occupancy functions. Each form should be so designed as to facilitate the obtaining and recording of required data in as clear and concise a manner as practicable. Detailed written instructions covering the use to be made of the forms and form letters and specifying the type of data to be entered thereon should be prepared for use by the operating personnel. A specimen copy of a number of the forms which will be needed are attached as exhibits to Bulletin LR-32.

(Cont'd)

- -

11. Operating Manual for Occupancy Personnel. An operating manual incorporatin the occupancy policies established by the Local Authority, including the specific steps to be taken in applying the policies, the forms to be used together with instructions concerning their use and other pertinent materia should be prepared well in advance of the date on which application taking is to begin. Such a manual has been found to be not only an invaluable aid in orienting and training the occupancy staff but also the best device for insuring uniform application of established policies. Attached as Appendix B is a suggested outline for a Local Authority Occupancy Manual.

12. Office Arrangements for Taking Applications

a. Location and Space. The application office should be located where it will be readily accessible to potential applicants and should be large enough to permit an arrangement which will afford privacy for the application interview. Generally, more space will be required for the period beginning with the taking of formal applications of a new project and ending with the end of the initial operating period for that project than will be needed later. This is due to the fact that usually the greatest volume of applications will be received during this period and therefore more space than normally required for carrying out of occupancy functions will be needed to accommodate the augmented staff of occupancy employees needed to handle the abnormal workload. In large cities, it may be impossible to set up an office in a location which will be convenient to families in all parts of the city. If it is found that a substantial number of potentially eligible applicants are concentrated in areas not readily accessible to the main application office, the Local Authority may find it desirable to supplement its main application office by setting up branch application offices in these remote neighborhoods. Branch application offices by virtue of their being located in areas where low-income families are concentrated have proved to be an effective means of disseminating information to potential, and in facilitating the filing of applications. Suitable space for taking applications has in some instances been made available to the Local Authority in neighborhood community centers maintained by social agencies, municipal departments or other public or civic groups. In any instance, where the main application office of the occupancy staff is not to be located on a project which is being readied for initial occupancy, a branch application office should be opened for the project site. Where possible, arrangements should be made with the contractor to make a dwelling unit available for this purpose. Such unit should be in close proximity to the unit or units being made available for demonstration purposes. The functions of the branc application offices should be restricted to taking applications, answering inquiries concerning the project or the admission policies of the Local Authority and the acceptance for transmittal to the main application office of any substantiating material submitted by the applicant. Application records should be maintained in the main application office; also, all processing of applications and the selection of tenants should be handled in that office.

(Cont'd)

b. Arrangement of Office. In setting up and equipping an application office, it is of the utmost importance that provision be made for the application interview to be conducted in private. Booths have been found to be desirable for this purpose. Provision should also be made for the applicants to be seated while waiting to be interviewed and a sufficient number of chairs should be placed in each interviewer's booth to accommodate a minimum of three persons.

c. Office Hours. The hours that the application office will be kept open should be set so that persons desiring to apply need not take time off from work to do so. This can be done by having the office open on somedays during the morning and afternoon and on others open during the afternoon and evening. It also may be found desirable to have the office open on Saturday and even on Sunday, perhaps in lieu of its being open on Monday.

- -

(Name and Address of LHA)

DWELLING REGISTRATION

It is requested that the ______(Name of LHA)______________ consider this as an application for admission to a unit in a public low-rent project under its jurisdiction and that when more details than set forth herein are required for the purpose of determining my eligibility, I be so advised.

Name______________________________ Race __________

Address___________________________ Phone No. __________

Family consists of: Adults, M______ F______; Minors, M______ F______

Estimated Annual Income of Family: $______________

Veteran or Serviceman Status:

Name____________________ Relationship to Family Head__________

Dates and Branch of Service ______________________________
____

Date and Type of Discharge ______________________________

Service-connected Disability: Yes____ No____ %______________

Description of present housing conditions: ______________________
____
____
____

I understand that the above information submitted in support of this application is an insufficient basis on which to determine my eligibility and preference rating and that I will have to execute a more detailed application form before any action can be taken by the ______(Name of LHA)______. To enable the Authority to advise me if and when it becomes ready for me to submit a detailed application for admission I shall inform it whenever my address changes.

Signed: ______________________

Date: ______________________

Interviewed by: ______________________

Form Letter to Registrants and Site Occupants

Letter Head
of
Local Authority

Date_____

_____
_____
_____

Date_____

On (date) we shall begin accepting formal applications for occupancy in (name of project) at our application office which will be located at (address of office). If you are interested in filing an application for admission to (name of project) it is suggested that you call at the application office as soon as you can after it is opened. Office hours will be from _____a.m. to _____p.m. from Monday through Saturday.

It will save you time and possibly other trips to the office if you will come prepared to give us the following type of information and will bring with you any papers or letters you may have concerning these matters.

Names and addresses of the employers of all members of your family and the amount of wages or salary each employed member receives.

If any member of your family receives income from any other source, the records which you have relating to it. This refers to relief payments, Social Security award letters, Veteran's benefits, pensions, alimony or any other kind of regular payments received.

If any member of your family, either living or deceased, served in the military or naval forces of our country, the discharge papers or other records which you have of such service.

If any member of your family is now in the armed forces, information regarding date of entry, grade or rank, serial number, pay and allowances and where stationed.

If the head of your family was born in a foreign country, his United States citizenship papers.

All information supplied by you will be kept confidential and any papers submitted by you will be returned to you if you wish.

Very truly yours,

Signed _____

Title _____

STATEMENT OF POLICIES GOVERNING ADMISSION TO AND CONTINUED OCCUPANCY OF THE PHA-AIDED LOW-RENT HOUSING PROJECTS OPERATED BY _____ HOUSING AUTHORITY

SECTION I. CONDITIONS GOVERNING ELIGIBILITY 1/

A. Eligibility for Admission. There are to be eligible for admission to PHA-aided low-rent housing projects operated by this Authority only those applicants

1. who qualify as a Family (see Section X.A.);

2. whose Net Family Income less

   a. an exemption of $_____ 2/ for each minor member of the family other than the head of the family and his spouse, and less

   b. an exemption of all amounts paid by the U.S. Government for disability or death occurring in connection with military service

   does not exceed the applicable income limits for admission set forth in Exhibit _____;

3. who, except for the Family of any Veteran or Serviceman or of any deceased Veteran or Serviceman (see Section X.C.D. and E.) applying for admission not later than five years after March 1, 1949, are

   a. living in dwellings determined to be unsafe, insanitary or overcrowded (see Section III.A.), or

   b. to be displaced by another low-rent housing project or by a public slum-clearance or redevelopment project, (see Section X.M.) or

   c. actually without housing due to causes other than the fault of the tenant (see Section III.C.), or

(Cont'd)

1/ If State laws impose eligibility requirements for admission different from or in addition to those listed in this Section or if the Local Authority elects to establish other requirements for eligibility such as length of residence in the locality, they should be added to the eligibility factors listed in this Section, except, that no requirements may be established by the Local Authority which will contravene the provisions of the Act or Annual Contributions Contract.

2/ The amount to be exempted per Minor is to be inserted here. Responsibility for fixing the amount to be exempted rests with the Local Authority except that such amount may not exceed $100 for each Minor.

- -

d. about to be without housing as a result of a court order of eviction due to causes other than the fault of the tenant (see Section III.C. and D.);

4. who are the family of a citizen of the United States (see Section III.E.) except that this requirement shall not be applicable in the case of the family of any Serviceman or the family of any Veteran who has been discharged (other than dishonorably) from, or the family of any Serviceman who died in, the armed forces of the United States within four years prior to the date of application for admission;

5. who conform to the occupancy limits for admission set forth in Section VI; and

6. whose Net Family Assets do not exceed $_____ unless such assets, together with the net income of the family, are insufficient for it to obtain and maintain adequate accommodations on the private market. 1/

B. Eligibility for Continued Occupancy. There are to be eligible for continued occupancy in the PHA-aided low-rent projects operated by this Authority only those occupants

1. who qualify as a Family (see Section X.A.), except that a person or persons remaining as the residuum of a family may be permitted to remain in occupancy;

2. whose Net Family Income less

a. an exemption of either $_____2/ for each minor member of the family other than the head of the family and his spouse, or an amount equal to _____3/ of the income of such Minor less any deductions which were taken into account in determining the Net Family Income, and less

b. an exemption of all amounts paid by the U. S. Government for disability or death occuring in connection with military service

does not exceed the appropriate income limits for continued occupancy as set forth in Exhibit _____;

(Cont'd)

1/ If the Local Authority does not elect to use Net Assets as an eligibility factor this item should be deleted. If however, it decides to do so (see Section 403.1) there should be indicated here the limit to be imposed on Net Assets or such other criteria with respect to Net Assets as the Local Authority chooses to establish.

2/ See footnote to paragraph A.2.a. of Section I.

3/ If the Local Authority elects to exempt all the income of Minors the word "all" should be inserted here. If however, the Local Authority elects to exempt only a part of the Minor's income the specific amount to be exempted should be indicated here.

3. who are the family of a citizen (see Section III.E.) except for the waiver for families of Veterans and Servicemen set forth in paragraph A.4. of this Section;

4. who conform to the occupancy limits for continued occupancy established in Section VI; and

5. whose Net Family Assets do not exceed $_____ unless such assets, together with the net income of the family are sufficient for it to obtain and maintain adequate accommodations on the private market. 1/

SECTION II. INCOME LIMITS

Maximum Income Limits for Admission and Continued Occupancy are set forth in Exhibit _____. No minimum income limits are established.

SECTION III. HOUSING CONDITIONS PRIOR TO ADMISSION 2/

A. Unsafe, Insanitary or Overcrowded Dwellings. Unsafe, Insanitary or Overcrowded Dwellings are those in which one or more of the following conditions are found to exist:

1. Location. The location of the unit is such that it creates a health, fire or safety hazard for the occupants of such dwelling unit.

2. Condition of Structure. The condition of the structure is such as to create serious safety or health hazards by reason of structural deficiencies or of continuous dampness or exposure, brought about by neglect or dilapidation.

3. Water Supply. Lack of potable running water within the dwelling unit.

4. Sewerage System. No connection between plumbing fixtures and adequate sewage disposal system.

5. Toilet Facilities. No flush toilet in the dwelling unit, or, if present, unfit for use.

6. Bath Facilities. No bathtub or shower in the dwelling unit, or, if present, unfit for use.

7. Kitchen Facilities. Lack of permanent, safe, and reasonably efficient kitchen facilities within the dwelling unit including sink with running water and provisions for a cooking stove.

(Cont'd)

1/ See footnote to paragraph A.6. of Section I.

2/ The Local Authority may establish additional criteria to be used in determining a dwelling to be unsafe, insanitary or overcrowded or may modify these criteria to meet local conditions (see Section 403.1).

8. Lighting Facilities. Dwelling not wired or inadequately wired for electric lighting.

9. Heating Facilities. Heating facilities inadequate or unsafe.

10. Light and Ventilation. Living room, bedroom or kitchen with no windows, or with windows opening on an airshaft; or toilet or bathroom without adequate ventilation.

11. Overcrowded. The number of persons occupying a dwelling unit exceeds the maximum occupancy limits established for continued occupancy, (see Section VI) or when two or more families are occupying a dwelling unit designed for single-family occupancy.

B. Attached as Exhibit _____ is a score sheet to be used by the staff of this Authority in evaluating the physical housing conditions of families found to be living in unsafe, insanitary or overcrowded dwellings. 1/

C. Causes Other Than the Fault of the Tenant. Being without housing for willful or deliberate failure to pay rent or to carry out other normal obligations of tenancy is not to be interpreted as due to causes other than the fault of the tenant and therefore does not qualify an applicant under the provision of Section I.A.3.c. However, if a substantial reduction in a family's income, or an increase in rent beyond its reasonable ability to pay have resulted in loss of accommodations, this Authority will consider these as causes other than the fault of the tenant. Further, families who do not have accommodations in the locality or within normal commuting distance will be considered as being without housing.

D. Eviction. The mere prospect of eviction is not sufficient to qualify a family for admission on the basis that it is about to be without housing. A court order of eviction must actually have been received by the family and it must have been issued for causes not construed to be the fault of the tenant.

E. Family of a Citizen. A family is considered to be the family of a citizen of the United States if the family member who signs the lease agreement is a citizen of the United States.

Other members of the family whose names are to appear on the lease as co-signers in order to assure payment of the rent need not necessarily be citizens of the United States. 2/

(Cont'd)

1/ See Exhibit 4 and paragraph 4d of this Bulletin for suggestions on devising a score sheet for objectively and uniformly evaluating the physical housing conditions of substandardly housed families.

2/ This paragraph should be omitted if the Local Authority does not require co-signers.

SECTION IV. SELECTION OF TENANTS

A. Governing Conditions. 1/ In selecting tenants from among eligible applicant families of the size and composition appropriate to available dwelling units, the order of preference set forth in paragraph B. below is to be applied within each of the following ranges of specified rents.

Ranges of Specified Rents and Allocation of Families to Rent Ranges. The number of ranges of specified rents and the number of families to be allocated to each such range are established as follows: 2/

Ranges of Specified Gross Rents	No. of Tenant Families Allocated to Each Range of Specified Gross Rents

B. Order of Preference

1. First Preference is to be given to families which are to be displaced (see Paragraph C.) by any low-rent housing project or by any public slum-clearance or redevelopment project initiated after January 1, 1947, or which were so displaced within three years prior to making application for admission. As among such families, first preference is to be given to families of disabled Veterans whose disability has been determined by the Veterans Administration to be service-connected; second preference is to be given to families of deceased Veterans and Servicemen whose death has been determined by the Veterans Administration to be service-connected; and third preference is to be given to families of other Veterans and Servicemen.

(Cont'd)

1/ When the Local Authority does not initially establish ranges of specified rent the following paragraph should be used in lieu of paragraph A. of the above text:

A. Governing Conditions. As among eligible applicant families of the size and composition appropriate to available dwelling units, the following order of preference in the selection of tenants shall be followed, unless through the application of such preferences it is found that a cross-section of low-income families having the most urgent need is not being served or that the solvency of the project is being jeopardized:

If however, it later becomes necessary to establish ranges of specified rent in order to serve a representative cross-section of the low-rent market or to preserve project solvency the resolution should be amended and the paragraph A. shown in the text should be substituted for this one. To determine the necessity for such revision, a constant check should be maintained to determine the effect of selection policies on serving a representative cross-section of low-income families and project solvency.

2/ The Local Authority should insert here its ranges of specified rent and the number of families to be allocated to each range (see Section 407.1).

- -

2. Second preference is to be given to families of Veterans and Servicemen not qualifying as displaced families, as in 1. above. As among such families, first preference is to be given to families of disabled Veterans whose disability has been determined by the Veterans Administration to be service-connected, and second preference is to be given to families of deceased Veterans and Servicemen whose death has been determined by the Veterans Administration to be service-connected.

3. Within each of the preference groups set forth in 1. and 2. above, and as among other eligible applicant families, in selecting families for admission until the end of the initial operating period, preference is to be given to families having the most urgent housing need, determined in accordance with the provisions of paragraph F. below. In selecting tenants for admission after the end of the initial operating period consideration is to be given to date of application as well as to the urgency of the family's housing need. 1/

C. Displaced Families Entitled to Preference. Occupants of sites selected for low-rent housing projects, including those acquired prior to January 1, 1947, or of sites selected for public slum-clearance or redevelopment projects initiated after January 1, 1947, who qualify for preferential consideration as displaced families are those families who reside on a parcel, title to which is vested in the Local Authority or the local public body, as of the date the notice to vacate is given to such a family.

D. No Discrimination Against Relief Families. In the selection of tenants, there is to be no discrimination against families, otherwise eligible for admission, because their incomes are derived in whole or in part from public assistance. No quotas or other devices, except as necessitated by allocation of units to ranges of specified rent, are to be established to limit the number of relief families.

E. Transfer of Tenants. Transfer of a family within a low-rent project aided by PHA or transfer to such a project from any other low-rent project operated by this Authority, when such family is eligible for continued occupancy in the dwelling to which it is transferred, is not for any purpose deemed to be an admission to the project and is not to be subject to the preferences enumerated in IV.B. above. 2/

(Cont'd)

1/ See Section 407.1.

2/ The Local Authority should indicate here its policy on transfers by specifying the extent to which internal transfers will take precedence over admissions from the waiting list of eligible applicants.

F. Determination of Urgency of Housing Need. 1/

SECTION V. RENTS

Tenants of this Authority are to be charged rents in accordance with the Schedule of Rents attached as Exhibit ______ 2/.

SECTION VI. OCCUPANCY STANDARDS

To avoid overcrowding and prevent waste of space, dwellings are to be leased in accordance with the occupancy standards set forth below. Where it is found that the size of the dwelling is no longer suitable for the family in accordance with these standards, the family is to be required to move as soon as a dwelling of appropriate size becomes available.

A.

Number of Bedrooms	Number of Persons 3/ Minimum	Maximum
1*		
2		
3		
4		

* One person - the residuum of a tenant family - is to be permitted to continue to occupy the smallest size unit.

(Cont'd)

1/ The Local Authority should indicate in this paragraph the specific criteria to be used in evaluating the relative urgency of housing need (within each preference group) as between families without housing through no fault of their own; families about to be without housing through no fault of their own; and families receiving a housing need score because they are living in unsafe, insanitary or overcrowded dwellings as well as any other factor to be considered in determining urgency of need. This statement should also indicate the weight to be given to each factor determined as being contributory to urgency of housing need. If desired this paragraph may be prepared along the lines suggested in paragraphs 4d(4)(b), (5) and (6) of this Bulletin.

2/ This exhibit consists of a Schedule of Rents established by the Local Authority pursuant to the provisions of Section 405.1 and approved by PHA. It is also suggested that this be supplemented with a schedule of Miscellaneous charges referred to in paragraph 5b of Section 405.1. Attached as Exhibit 1 to Section 405.2 is a specimen form of a Schedule of Rents.

3/ Insert here for each size of unit (expressed in terms of number of bedrooms) the minimum and maximum number of persons to be accommodated in such unit (see Section 406.1).

B. 1/

C. 2/

D. Every family member regardless of age is to be counted as a person.

SECTION VII. RECEIPT OF APPLICATIONS AND DETERMINATION OF ELIGIBILITY

This section sets forth the basic steps which are to be taken in obtaining and verifying information from applicant families for the purposes of (a) determining whether they meet the conditions of eligibility for admission set forth in Section I; (b) applying the preference requirements established in Section IV; (c) determining the rent to be charged in accordance with Section V; and (d) the size of dwelling required in accordance with Section VI.

A. Establishing an Application Pool

1. To assure compliance with the preference requirements of Section IV, applications are to be accepted from all families seeking admission to the project(s) until the end of the Initial Operating Period. This rule is to hold, regardless of the number of eligible applications on hand, unless the number and type of applications received is such as to indicate that tenants will be selected only from those groups having a preference priority (i.e., displaced families and families of Veterans and Servicemen). In this event, applications will not be accepted from families without a preference priority.

2. If, after the End of the Initial Operating Period, there are sufficient applications on file from families having a preference priority or from non-preference families having a substantial housing need, to fill vacancies as they occur, applications from families without any preference priority will not be taken.

B. Procedure Governing Receipt of Applications. The application constitutes the basic record of each family applying for admission. Each applicant, therefore, will be required to supply information as called for on Form No. 3/ and to sign the application, attesting to the accuracy of the

(Cont'd)

1/ Indicate here Local Authority determinations with respect to persons of opposite sex sharing the same bedroom and to an infant sharing a bedroom with its parents (see Section 406.1).

2/ Indicate here any regulations with respect to the use of the living room for sleeping purposes (see Section 406.1)

3/ Insert here the number of the form devised by the Local Authority for recording the information which as stated in Section 408.1 is to be obtained from each applicant for admission.

data provided. The application together with all other materials relating to the family's eligibility, preference rating, etc. are to be placed in a folder which is to be established and maintained for each applicant not classified as ineligible or withdrawn.

If, during the application interview, it appears that the applicant is definitely not eligible, the applicant is to be so informed and the application classified as ineligible. In such instances, sufficient information is to be entered on the application form to establish ineligibility and the applicant's signature is to be obtained.

All entries are to be made in ink, indelible pencil or typed in. Corrections or changes are to be made by lining through the original entry and entering the correct data. Such changes are to be dated and initialed by the person recording the change and the reason and authority for such changes noted in the record.

C. Verification and Documentation of Application Data. To assure that the data upon which determinations of eligibility, preference status, rent to be paid, and size of dwelling required are to be based are full, true and complete, the information submitted by each applicant is to be verified. Complete and accurate verification records consisting of, but not routinely limited to, the following are to be maintained:

1. letters or other statements from employers and other pertinent sources giving authoritative information concerning all items and amounts of income and deductions, together with other eligibility and preference determinations;

2. photostatic or carbon copies of documents in the applicant's possesstion which substantiate his statements, or a brief summary of the pertinent contents of such documents signed and dated by the staff member who viewed them;

3. statements from self-employed persons, and from persons whose earnings are irregular, as salesmen, taxi drivers, etc. sworn to before a notary, setting forth gross receipts, itemized expenses and net income (Expenses incurred for business expansion or amortization of capital indebtedness are to be included in net income);

4. memoranda of verification data obtained by personal interview, telephone or other means, with source, date received, and the person receiving the information clearly indicated;

5. a record of the physical inspection of the applicant's housing accommodations or other documentary evidence that the dwelling is unsafe, insanitary or overcrowded and that the applicant is actually living in

(Cont'd)

- -

the dwelling, if residence in unsafe, insanitary or overcrowded housing is a condition of eligibility for admission (see Section I.A.3. and Section X.C. and D., or is necessary to determine order of preference;

6. proof that an applicant is, if claimed, actually without housing through no fault of his own;

7. a court order of eviction if applicant claims that he is about to be without housing through no fault of his own; and

8. proof that an applicant is, if claimed, to be displaced by a low-rent housing project or by a public slum clearance or redevelopment project.

D. Summary of Verified Data. Verification data are to be reviewed and evaluated as received for completeness, accuracy and conclusiveness. Where the information received is not adequate in all respects, follow-ups or new efforts to obtain such information are to be made and carried through to conclusion. If during the verification process it becomes evident that for one or more reasons an applicant is ineligible, the investigation is to be discontinued and the applicant notified of his ineligibility and the reason therefor.

As verifications of all necessary items for each application are completed, a summary of the verified information is to be prepared on Form _____ 1/.

The summary is to cover the following determinations and the basis for such determinations:

1. Eligibility of the applicant group (a) as a family; and (b) as the family of a citizen or the family of a Serviceman or the family of a Veteran who was discharged (other than dishonorably) from, or the family of a Serviceman who died in, the armed forces of the United States within four years of the date of application;

2. Eligibility of the family with respect to income limits for admission;

3. Eligibility of the family (excluding Veterans and Servicemen who apply prior to March 1, 1954) with respect to housing need;

4. Eligibility of the family with respect to other conditions of eligibility which are _____; 2/

(Cont'd)

1/ There should be inserted here the number of the form which the Local Authority has devised for the purpose of recording and summarizing verified data (see Section 408.1).

2/ Insert here any locally established eligibility requirements such as local residence, net assets, etc. (see Section 403.1). If there are none, this item should be omitted.

5. Preference status, if any, of family;

6. Urgency of the family's need for housing;

7. Size of unit to which family is to be assigned; and

8. Rent which the family is to pay.

E. Rechecking Verified Findings Prior to Admission. If there is a time lag of more than _____ 1/ days between the date of determination of the family's eligibility and the date it is scheduled for admission, all eligibility factors are to be rechecked for change. Any indicated change is to be verified and a determination made of its effect upon the applicant's eligibility, preference status, rent to be charged, and size of dwelling required prior to admitting the family to the project.

F. Certification. As a part of the application record of each applicant determined to be eligible for admission _____ 2/ is to certify that an investigation has been made of such family and that on the basis of this investigation it has been determined that the applicant and his family meet all the conditions governing eligibility.

SECTION VIII. LEASING OF DWELLING UNITS

A lease agreement (see Exhibit _____) 3/ is to be entered into between this Authority and each of its tenant families. The lease agreement is to be kept current at all times and is to reflect the rent being charged and the conditions governing occupancy.

A. Execution of Lease Agreement

1. A responsible member of each family accepted as a tenant is to be required to execute a lease agreement prior to actual admission. (See Section I.A.4. as to citizenship requirement.) One copy of the lease is to be given to the lessee and one executed copy is to be filed in the permanent record folder established for the family.

2. If, through any cause, the signer of the lease ceases to be member of the tenant family, the lease is to be voided and a new lease agreement executed and signed by a responsible remaining member of the family provided the family is eligible for continued occupancy.

(Cont'd)

1/ Insert the number of days which may elapse before a recheck is required.

2/ Insert the name or title of the official authorized to make such certification.

3/ The Local Authority should have a tenant lease prepared by its attorney in accordance with the requirements of Section 409.1.

- -

3. If a tenant family transfers to a different dwelling in the same or another low-rent project operated by this Authority, the existing lease is to be cancelled and a new lease executed for the dwelling into which the family is to move by a member of the family who meets the requirements set forth in paragraph 1. above.

4. If, at any time during the life of the lease agreement, a change in the tenant's status results in the need of changing or amending any provision of the lease, or if this Authority desires to waive any provision with respect to the tenant, either (a) the existing lease is to be cancelled and a new lease agreement executed, or (b) an appropriate rider is to be prepared and made a part of the existing lease or (c) appropriate insertions are to be made within the instrument. All copies of such riders or insertions are to be dated and signed or initialed by the tenant and by _____ 1/.

B. Cancellation of the Lease Agreement. Cancellation of a Tenant's lease is to be in accordance with the provisions of the Tenant Lease form attached here as Exhibit _____.

SECTION IX. RE-EXAMINATION OF TENANT ELIGIBILITY AND REDETERMINATION OF NET FAMILY INCOME

A. Periodic Re-examination of Eligibility and Adjustment of Rent. To assure that tenancy in the project is restricted to families meeting the eligibility requirements for continued occupancy set forth in Section I and that such families are charged appropriate rents, the eligibility status and the Net Family Income of each tenant is to be periodically re-examined and redetermined once every 12 months. 2/ The periodic re-examination of eligibility and redetermination of Net Family Income is to cover all project tenants except those who have been in residence less than 6 months. 2/ After the tenant's eligibility status and Net Family Income have been determined such action as may be necessary (see paragraph D.) is to be taken.

B. Interim Redetermination of Net Family Income. 3/ In addition to submitting such information as may be required at time of periodic re-examination of eligibility and redetermination of Net Family Income, project tenants are to be required to report to the Management Office all substantial changes in family income. These reports are to be made on or before the first rent

(Cont'd)

1/ Insert here the name or title of the designated official.

2/ Lesser periods may be used if desired by the Local Authority.

3/ In event the Local Authority does not elect to have tenants report changes of income as they occur this paragraph should be deleted and the following used in lieu thereof:

"B. Adjustment of Rent Between Periodic Re-examinations. No adjustments of rent, either upward or downward no matter what the circumstances may be, are to be made except in connection with periodic re-examination

payment period subsequent to such change of income. Upon receipt of such report the Net Family Income is to be redetermined and the rent charged such family is to be adjusted as necessary to conform to the approved rent schedule.

1. Increases in rent are to be made effective the first of the month following that in which the change occurred. 1/ The accuracy of the information used as a basis for an interim rent increase need not be verified until the time of periodic re-examination.

2. Decreases in rent are to be made retractive to the first of the month following that in which the tenant reported the change in income, but no such decreases in rent are to be made until the reported change has been verified. 1/

C. Re-examination Procedures. Data assembled at the time of re-examination is to be filed in the folder set up for the family at the time of its application for admission (See Section VII.B.).

1. Receipt of Applications for Continued Occupancy. A responsible member of each tenant family is to be required, at the time of re-examination, to submit and sign an application for continued occupancy on form No. _____2/.

All entries on the form are to be made in ink, indelible pencil or typed in. Corrections or changes are to be made by lining through the original entry and entering the correct data. Such changes are to be dated and initialed by the person recording the changed data, and the reasons and authority for such changes are to be noted in the record.

2. Verification and Documentation of Re-examination Data. To assure that the data upon which determinations of eligibility for continued occupancy, rent to be paid, and size of dwelling required are to be based are full, true and complete, the information submitted by each applicant is to be verified. Verification of citizenship and Veteran or Serviceman status is to be made only if a change affecting such status of the family has occurred since the last determination of eligibility. Complete and accurate verification records as specified in Section VII.C. are to be maintained in the tenant's folder.

3. Summary of Verified Data. Verification data are to be reviewed and evaluated as they are received for completeness, adequacy and conclusiveness. Where the information received is not completely adequate in all respects, follow-ups or new efforts to obtain such information are to be made and carried through to conclusion.

(Cont'd)

1/ Effective date of rent increase or decrease to be established by Local Authority.

2/ Insert here the number of the form devised by the Local Authority for recording the information which as stated in Section 410.1 is to be obtained from each tenant at the time of periodic re-examination.

As verifications of all necessary items for each application are completed, a summary of the verified information is to be prepared on form No. _____1/.

The summary is to cover the following determinations and the bases for such determinations:

a. Eligibility of the tenant group (1) as a family or as the residuum of a family and (2) as the family of a citizen, or (3) the family of a Serviceman or the family or a Veteran who was discharged (other than dishonorably) from, or the family of a Serviceman who died in the armed forces of the United States within 4 years of the date of application for admission.

b. Eligibility of the family with respect to income limits for continued occupancy;

c. Eligibility of the family with respect to other conditions of eligibility for continued occupancy which are _____; 2/

d. Size of dwelling required; and

e. Rent which the family is to pay.

When the verified findings are at substantial variance from the data furnished by the tenant in his application for continued occupancy the tenant is to be re-interviewed and an opportunity is to be given him to explain the discrepancies.

4. Certification. As a part of the record of each family re-examined, _____ 3/ is to certify that an investigation has been made of such family and that on the basis of the investigation, it has been determined that the tenant and his family are eligible or are ineligible for continued occupancy.

D. Action Required Following Re-examination. Within _____ 4/ days after the tenant has submitted all the information required of him and called for on the application for continued occupancy he is to be informed in writing concerning:

(Cont'd)

1/ Insert here the number of the form devised by the Local Authority for recording verified information pertaining to the re-examination of the tenant's eligibility status.

2/ Add to this paragraph any other conditions of eligibility for continued occupancy established by the Local Authority such as net assets.

3/ Insert the name or title of the authorized official.

4/ Indicate here the number of days to be allowed for processing an application for continued occupancy.

1. Eligibility status and, if ineligible, the date by which the family must vacate;

2. Any change to be made in the rent or size of dwelling occupied; and

3. Any instances of misrepresentation or non-compliance with the terms of the lease revealed through re-examination and any corrective or punitive action which is to be taken.

The notice to ineligible tenants to vacate is to allow the tenant _____ 1/ months from the date of such determination, to move from the project.

Ineligible tenants who do not move voluntarily by the expiration date of their notices to vacate are to be evicted. To the extent possible the management staff is to assist ineligible tenants in locating other accommodations.

If the re-examination discloses that the tenant, at time of admission or at any previous re-examination made misrepresentations which resulted in his being classified as eligible when in fact he was ineligible, the tenant is to be required to vacate even though he may currently be eligible. Also, if at time of re-examination it is found that the tenant's misrepresentations have resulted in his paying a lower rent than he should have paid, he is to be required to pay the difference between the rent he has paid and what he should have paid. 2/

If it is found at time of re-examination or at some other time that the tenant has failed to report changes in family income as they occurred and such changes would have required him to pay a higher rent, the increased rent is to be made retroactive to the first rent payment period after date on which the change of income occurred. 2/ 3/

SECTION X. DEFINITION OF TERMS

A. Family. "Family" means a group of persons regularly living together, which consists of two or more persons related by blood, marriage or adoption. There may also be considered as part of a family other persons (including foster children) who will live regularly as part of the family group

(Cont'd)

1/ There should be inserted here the number of days or months which the ineligible tenant is to be allowed to locate other accommodations prior to his being subject to eviction (see paragraph 10b, Section 410.1).

2/ Any other action which the Local Authority plans to take in such instances should be indicated here.

3/ This paragraph should be deleted if the Local Authority does not require tenants to report substantial changes in income as they occur.

(including members of the family temporarily absent) and whose income and resources are available for use in meeting the living expenses of the group. A group of unrelated persons living together or a person living alone does not constitute a family, nor may lodgers be included in a family.

B. Head of a Family. The "head of a family" is that member of the group who is legally or morally responsible for the family.

C. Veteran. For the purpose of applying preference and waiving the citizenship and previous housing requirements, a "Veteran" means a person (man or woman) who has served in the active military or naval service of the United States at any time on or after September 16, 1940, and prior to July 26, 1947, or at any time on or after April 6, 1917, and prior to November 11, 1918, and who shall have been discharged or released therefrom under conditions other than dishonorable.

D. Serviceman. For the purpose of applying preferences and waiving the citizenship and previous housing requirements, a "Serviceman" means a person (man or woman) in the active military or naval service of the United States who has served therein on or after September 16, 1940, and prior to July 26, 1947 or at any time on or after April 6, 1917, and prior to November 11, 1918.

E. Family of a Veteran or Serviceman. A family is a "family of a Veteran or Serviceman" when:

1. The Veteran or Serviceman (a) is either the head of the family or related to the head of the family by blood, marriage or adoption and (b) is living with the family or is temporarily absent from home by reason of hospitalization, a duty assignment, employment or school attendance in another locality; or

2. The Veteran or Serviceman, formerly the head of the family, is deceased or absent from the family by reason of permanent hospitalization, separation or desertion. Divorce terminates the status of the family as that of a Veteran or Serviceman unless there remains one or more members of the family for whose support the Veteran or Serviceman is still legally or morally responsible. Remarriage of the spouse of such Veteran or Serviceman terminates the family's status as that of such Veteran or Serviceman, even though dependents of the Veteran or Serviceman, constitute a part of the newly formed family group.

3. The Veteran or Serviceman, not the head of the family is (a) deceased or absent from the family by reason of permanent hospitalization, (b) was a member of the family at the time of his death or hospitalization, and (c) was related to the head of the family by blood, marriage or adoption; provided that in order to qualify under this provision the family must contain two or more persons related to such Veteran or Serviceman by blood, marriage or adoption.

(Cont'd)

F. Military or Naval Service of the United States. "Military or naval service of the United States" means only the Army, Navy, Air Force, Marine Corps, Coast Guard and, since July 29, 1945, the commissioned corps of the United States Public Health Service. Such service does not include Merchant Marine, Red Cross, UNRRA, ECA, or any other organization not actually part of the military or naval service of the United States.

G. Minor. "Minor" means a person less than twenty-one years of age. (An unborn child may not be counted as a minor.)

H. Utilities. "Utilities" means water, electricity, gas, other heating and cooking fuels, and other utilities. Other utilities may include, but are not necessarily limited to, ice and any sewerage or garbage collection service for which a separate charge is made. Telephone service may not be included as a utility.

I. Contract Rent. "Contract Rent" means the rent charged a tenant for use of the dwelling accommodation, equipment, services, and utilities supplied by the project. Contract rent does not include charges for utilities which may be purchased by the project and sold to the tenant as a transaction separate from the payment of such rent, charges for excess utility consumption or miscellaneous charges.

J. Gross Rent. "Gross Rent" means contract rent plus the value or cost to the tenant for reasonable amounts of utilities not included in the Contract Rent.

K. Aggregate Family Income

1. "Aggregate Family Income" means all the income from any source whatsoever before deductions or exemptions, anticipated to be received during the twelve months following admission or redetermination of Net Family Income (as the case may be) by all persons including minors, actually occupying, or who are actually to occupy, the dwelling, and by a family head temporarily separated from the group. In determining Aggregate Family Income, due regard is to be given to both the current and prospective rate of income and the actual income received in the twelve months immediately preceding the date computation is made. 1/

2. Aggregate Family Income is to include: 2/

(Cont'd)

1/ Reference to past income should be deleted in event the Local Authority elects to disregard past income in determining anticipated income.

2/ If any types of receipts other than those listed here are to be included in Aggregate Family Income they should be listed in this definition of Aggregate Family Income.

a. The full amount, before any payroll deductions, of wages and salaries, including compensation from overtime and all other compensation for personal services (such as commissions, fees, tips and bonuses) including the cash value of any compensation in kind (such as meals).

b. Net income from the operation of a business or profession.

c. Interest, dividends, and net income of any kind from real or personal property.

d. The full amount received from annuities, periodic payments derived from insurance policies, retirement income, pensions, periodic benefits for disability or death and other similar types of periodic receipts.

e. Payments in lieu of earnings, such as unemployment and disability compensation, social security benefits, workmen's compensation and dismissal wages, excluding however, lump-sum payments under health and accident insurance and under workmen's compensation.

f. Cash relief receipts and the value of determinable relief allowances in kind, including rental allowances.

g. Periodic and determinable allowances, such as alimony and regular contributions or gifts, including amounts received from any persons not residing in the dwelling.

h. The full amount received for the care of foster children.

i. All regular pay, special payments and allowances (such as longevity, oversea duty, rental allowances, allowances for dependents, etc.) received by a member of the armed forces who is the head of the family, whether or not he is living in the dwelling, or by any other member of the armed forces who is living in the dwelling.

j. Subsistence allowances or receipts in connection with education or training received by a former member of the armed forces who is the head of the family whether or not he is living in the dwelling or by any other former member of the armed forces who is living in the dwelling.

3. The following are not to be considered as income and are not, therefore, to be included in Aggregate Family Income: 1/

a. Amounts which are specifically received for, or are a reimbursement of, the costs of illness or medical care.

(Cont'd)

1/ The Local Authority may elect to omit this section or any of the items.

b. Casual and irregular gifts.

c. Lump-sum additions to family assets, such as inheritances, insurance payments, capital gains, and settlements for personal or property losses. 1/

L. Net Family Income

1. "Net Family Income" means "Aggregate Family Income" less deductions specified below and anticipated during the twelve-month period for which Aggregate Family Income is estimated. Such deductions are to be applied uniformly to all families. 2/

a. Special occupational expenses necessary to employment and for which no reimbursement is made by the employer, but only to the extent by which such expenses exceed normal and usual expenses incident to employment, i.e., miners' explosives, special tools, and equipment transportation costs in excess of those normal to employment in the locality.

b. Deductions from wages, if required by law or required by the employer as a condition of employment, such as deductions for social security, pension, retirement funds or death benefits, or for health, accident or medical benefit plans except as provided in 2. below.

c. Amounts paid, if reasonable and necessary, for the support of a person or persons not residing with the family but for whose support one or more members of the family are legally or morally responsible; but not including expense incurred for the support of children away from home for purposes of normal and voluntary education.

d. Amounts paid, if reasonable, for the care of children or aged or incapacitated family members, in order to permit family members to engage in a gainful occupation outside the home, provided that (1) no other member of the family is available to provide the necessary care, and (2) in no event the amount deducted is greater than the amount of income produced by the family member thus released for such occupation.

1/ If the Local Authority has placed a limit on Net Assets as an eligibility factor a statement along the following lines should be inserted here: "Except that if such sums are substantial, the family may be ineligible in accordance with the net assets test for eligibility." (Cont'd)

2/ The Local Authority may elect to omit any or all of the items listed as being deductible but may not deduct any additional items in determining "Net Family Income" without approval of PHA.

e. Predictable medical expenses for a continuing illness, if determined to be proper and reasonable, in excess of 5% of the aggregate income of the family and where not specifically compensated for or covered by insurance.

f. In the case of a former member of the armed services who is the family head, who is absent from home and who is receiving allowances in connection with education or training, an amount equal to the allowance received by a former member of the armed services without dependents who is receiving the same education or training.

g. In the case of a member of the armed services who is the family head and who is stationed away from home, $_____1/ per month to cover necessary occupational expenses.

2. In no event are the following items to be allowed as deductions:

a. Payments of income tax, including payroll deductions therefor.

b. Payment for savings bonds, or the acquisition of other assets, including payroll deductions therefor.

c. Payroll deductions for pensions or other purposes not required by law or by the employer as a condition of employment.

d. Payments on or garnishments for installment purchases, repayment of loans, or interest and finance charges on such items.

e. Any other items not specifically enumerated in L.1. above.

M. Public Slum Clearance and Redevelopment Project. "Public slum clearance and redevelopment project" means any project undertaken by a public body for the primary purpose of slum clearance; or a redevelopment project undertaken by a public body pursuant to State or local legislation and which qualifies or is of a physical character which could qualify for financial assistance under Title I of the Housing Act of 1949.

1/ The Local Authority should determine and insert here the amount which it considers a reasonable allowance for occupational expenses. See Section 402.1 paragraph 13b(7).

SPECIMEN SCORE SHEET FOR RECORDING AND RATING FINDINGS FROM PHYSICAL INSPECTION OF APPLICANT'S LIVING CONDITIONS
(Face of Form)

Name_____
Address_____

SUBSTANDARD CHARACTERISTICS (Answer each question below)	Score 1/	ITEM	OTHER DEFICIENCIES (Answer each question below)	Score 2/
Does location of dwelling unit constitute a major hazard with respect to Fire,..... Yes__No__ Health,..... Yes__No__ Safety?..... Yes__No__		(1) LOCATION OF DWELLING UNIT	Does location of dwelling unit constitute a minor hazard with respect to fire, health, or safety?..... Yes__No__ Is play space inadequate?Yes__No__ Is environment detrimental?..... Yes__No__	
Are major repairs needed in Foundations,..... Yes__No__ Stairs,..... Yes__No__ Walls,..... Yes__No__ Roof?..... Yes__No__ Is structure constantly damp?..... Yes__No__		(2) CONDITION OF STRUCTURE	Are minor repairs needed?Yes__No__ Is structure seriously infested?..... Yes__No__ Is structure occasionally damp?..... Yes__No__	
Is dwelling unit without potable running water?..... Yes__No__ Are structure & unit without potable running water?. Yes__No__ Are entire premises without potable running water?. Yes__No__		(3) WATER SUPPLY	Does dwelling lack facilities for running hot water?..... Yes__No__ Is supply of running hot water inadequate?..... Yes__No__ Is pressure too low?.... Yes__No__	
Are connections lacking between plumbing fixtures and adequate sewage disposal system?.Yes__No__		(4) SEWERAGE SYSTEM	Are drains clogged?..... Yes__No__ Are sewer connections faulty?..... Yes__No__	
Is dwelling unit without usable flush toilet?... Yes__No__ Are structure & dwelling unit without usable flush toilet?Yes__No__ Are premises without any toilet facilities?..... Yes__No__		(5) TOILET FACILITIES	Is toilet in need of minor repairs?..... Yes__No__ Does toilet open off kitchen?..... Yes__No__ Is private inside flush toilet located apart from rest of dwelling unit?..... Yes__No__	
Is unit without usable tub or shower with running water?..... Yes__No__ Are structure & unit without usable tub or shower with running water?..... Yes__No__ Are premises without usable tub or shower with running water?Yes__No__		(6) BATH FACILITIES	Are bath facilities in need of minor repairs?. Yes__No__ Does bath have cold running water only?.... Yes__No__	
Is dwelling unit without adequate and safe connections for a cooking stove?..... Yes__No__ Is dwelling unit without sink with running water?..... Yes__No__		(7) KITCHEN FACILITIES	Are stove connections safe, but inadequate?..... Yes__No__ Does sink have defective plumbing?..... Yes__No__ Is storage space inadequate?..... Yes__No__ Is kitchen in bedroom?.. Yes__No__	

1/ Score 50 points for 1st question in each box answered with "Yes" and 5 points for each other question in same box answered with "Yes".

2/ Score 1 point for each question answered with "Yes".

(Cont'd)

(Back of Form)

SUBSTANDARD CHARACTERISTICS (Answer each question below)	Score 1/	ITEM	OTHER DEFICIENCIES (Answer each question below)	Score 2/
Is dwelling unit entirely without electric wiring?.... Yes__No__ Is any part of the dwelling unit not wired for electricity?..... Yes__No__ Is installed electrical wiring so makeshift as to be unsafe?..... Yes__No__		(8) ELECTRICITY	Is electric system safe but inadequate or inconvenient?..... Yes__No__	
Are heating facilities inadequate for healthful living?... Yes__No__ Are heating facilities unsafe?..... Yes__No__		(9) HEATING FACILITIES	Is heat inadequate for comfort?..... Yes__No__ Are heating costs excessive?..... Yes__No__	
Is there a windowless room in the dwelling unit?..... Yes__No__ Is there more than one room without windows?... Yes__No__		(10) LIGHT AND VENTILATION	Do bedrooms or toilet have windows opening only on airshaft or narrow areaway?..... Yes__No__ Do some rooms require artificial light all day?.... Yes__No__	
Is there more than one family using a single family accommodation?... Yes__No__ Do number of persons per square foot of sleeping area exceed approved standards?..... Yes__No__ Is family both overcrowded and doubled up?..... Yes__No__		(11) SPACE AND PRIVACY	Are sleeping rooms separated by makeshift partitions?..... Yes__No__ Is it necessary to pass thru sleeping rooms to get to toilet or to get outside?..... Yes__No__ Is closet space inadequate?..... Yes__No__	
(Specify)		BUILDING CODE VIOLATIONS NOT COVERED ABOVE		
Total			Total	

DESCRIPTION OF EXISTING SUBSTANDARD CHARACTERISTICS AND OTHER DEFICIENCIES:

1/ See footnote page 1.

2/ See footnote page 1.

Inspected by _____ Date _____

Rechecked by _____ Date _____

Suggested Schedule of Local Authority
Actions Incident to the Initial Selection of Tenants

Following is a suggested schedule of occupancy activities setting forth the nature and extent of the work to be done in connection with preparing for initial occupancy of the first low-rent projects to be opened in the community and indicating the timing of the various functional steps in relation to the scheduled date of initial occupancy of a project consisting of 200 units.

Time Periods	Functional Steps
(1) From the signing of the Annual Contributions Contract to a date approximately 9 months before the first units in the project are scheduled to be released for occupancy.	(a) Place responsibility with qualified staff member for answering inquiries and accepting registrations from potential applicants 1/;
	(b) Establish and obtain approval of Schedule of Income Limits for Admission and Continued Occupancy;
	(c) Determine rental policy, establish and obtain approval of Schedule of Rents and set up a Schedule of Other Charges;
	(d) Establish policies governing eligibility and the selection of tenants;
	(e) Plan publicity compaign for disseminating information to low-income families;
	(f) Determine personnel requirements for initial selection of tenants;
	(g) Employ Occupancy Supervisor or designate staff member to be responsible for work incident to the initial selection of tenants.
(2) From approximately 9 months to approximately 7 months before scheduled date of initial occupancy.	(a) Define and establish formulas, for computing Net Family Income;
	(b) Determine what characterizes substandard housing in locality and establish criteria for determining that a dwelling is unsafe, insanitary, or overcrowded;

1/ Suggested registration form - See Exhibit 1.

Time Periods	Functional Steps
	(c) Establish criteria for determining urgency of housing need.
(3) From approximately 7 months to 3 months before the scheduled date of initial occupancy.	(a) Establish working relationships with employers, social and welfare agencies, Veterans Administration, churches and other groups having contact with low-income families for the purposes of disseminating information to low-income families and verifying statements made by applicants;
	(b) Select and arrange for unit to be used for demonstration purposes;
	(c) Establish operating procedures and internal administrative controls including the setting up of application and related files;
	(d) Design all necessary forms and form letters, and prepare instructions for their use;
	(e) Study occupancy reporting requirements and develop reporting procedures;
	(f) Prepare Occupancy Operating Manual;
	(g) Prepare Resident Handbook or other type of informational material to be given tenants on the care and use of dwellings;
	(h) Select and equip application office;
	(i) Select, employ and train Occupancy staff;
	(j) Initiate publicity campaign for the purpose of informing potential applicants of eligibility criteria and related matters;
	(k) Announce opening of Application Office.
(4) Three months before the date scheduled for initial occupancy.	(a) Open Application Office and begin taking formal applications;

Time Periods	Functional Steps
	(b) Authorize opening of demonstration unit;
	(c) Review applications as received to determine classification to be assigned and factors to be verified;
	(d) Prepare and submit as required reports on applications;
	(e) Begin verification of applicants' eligibility status;
	(f) Make follow-up with applicants when additional information is required;
	(g) Begin to send notices to applicants as they are found to be ineligible;
	(h) Effectuate working relationships with the principal sources from which verifying data will be required.
(5) Two months before scheduled date of initial occupancy.	(a) Assign responsibility of renting and leasing of dwelling units;
	(b) Establish move-in schedules, key controls, tenant ledgers, and files;
	(c) Start selection of tenants;
	(d) Determine effect of selection policies and initiate such changes as may be necessary to serve better a representative cross section of eligible Families of Low Income or to maintain solvency;
	(e) Notify selected applicants;
	(f) Recheck verified findings of selected applicants.
(6) One month before scheduled date of initial occupancy.	(a) Begin the assignment of units to selected applicants;
	(b) Begin scheduling move-in dates;
	(c) Begin conducting leasing interviews and executing leases;

(Cont'd)

Time Periods	Functional Steps
	(d) Begin accepting rental payments;
	(e) Begin making assignments for the use of community laundry or other utility space shared by a group of tenants.
(7) Date of Initial Occupancy and thereafter.	(a) Assist Maintenance Department in supervising move-ins;
	(b) Advise new tenants on care and use of dwelling facilities and equipment;
	(c) Advise new tenants of project community facilities (indoor and outdoor) and services;
	(d) Advise new tenants of neighborhood educational, recreational, health, and welfare organizations and their facilities and services;
	(e) Submit required reports on move-ins, leasing and occupancy;
	(f) Process applications and select tenants at a rate commensurate with development progress;
	(g) Reduce Occupancy Staff as soon as intake and processing of applications permit;
	(h) Close demonstration unit;
	(i) Maintain file of eligible applications;
	(j) Thirty days after end of initial operating period and periodically thereafter, submit a statement to PHA concerning the eligibility status of all families residing in the project.

- -

Suggested Outline for Local Authority
Occupancy Manual on Tenant Selection Procedures

An Occupancy Manual encompassing in detail the material suggested below will serve as a useful tool in staff training and will be of great help in achieving uniform application of established policies.

Section I General Information 1/

A. Federal and State Legislation

B. Responsibilities of PHA

C. Responsibilities and Objectives of Local Authority

D. Organization of Local Authority's Staff and Functional Responsibility of Constituent Organizational Units

E. Local Program

1. Need for Low-Rent Public Housing Program

2. Existing Program

3. Proposed Program

Section II Definitions

A. Family also head of family and minor

B. Preference Terms

1. Displaced Family

2. Site Occupant

3. Veteran

4. Serviceman

5. Family of Veteran or Serviceman

6. Military or Naval Service of the U. S.

(Cont'd)

1/ The information called for in this section is of general interest and should constitute a part of every operating manual.

C. Rental Terms

1. Contract Rent

2. Gross Rent

3. Utilities

D. Income Terms

1. Net Income

a. Aggregate

b. Deductions

2. Exemptions

a. Minors

b. Disability or Death Benefits

E. Housing Conditions

1. Substandard Housing

2. Actually Without Housing

3. About to be Without Housing

4. Causes other than Fault of Tenant

Section III Income Limits

A. Basis for Determination

B. Schedule of Income Limits for Admission

C. Schedule of Income Limits for Continued Occupancy

Section IV Rental Policy

A. Rent-Income Ratio

B. Schedule of Rents

C. Schedule of Other Charges

(Cont'd)

Section V Occupancy Standards

A. Occupancy Limits for Admission

B. Occupancy Limits for Continued Occupancy

Section VI Eligibility Policies

A. Eligibility for Admission

B. Eligibility for Continued Occupancy

Section VII Mechanics Incident to Selection of Tenants

A. Internal Administrative Controls

1. Classification of Applications

2. Filing System

3. Forms and Instructions for Their Use

B. Handling of Registrants

C. Taking of Applications

D. Processing Applications - Order in which steps are to be taken and procedures to be followed in verifying or determining:

1. Family size and composition

2. Employment and aggregate income of:

a. Salaried workers

b. Seasonal workers

c. Per diem, hourly, or piece workers

d. Self-employed, commission workers, or other persons without a fixed rate of income

e. Domestics, waiters, or other persons receiving part of their compensation in form of meals, tips or some other form of gratuity

f. Relief allowances, social security benefits or other forms of public or private assistance

(Cont'd)

g. Military pay

h. Disability compensations or pensions

i. Potential but unemployed workers

j. Other types of income recipients

3. Deductions - Nature, amount and legitimacy

4. Citizenship

5. Preference Status

a. Displacement

b. Veteran or Serviceman

c. Disability or Death

6. Existing Housing Conditions including rating and scoring

7. Conformance to local eligibility criteria

8. Urgency of Housing Need

E. Documenting Verified Findings

F. Review of Verified Findings to determing eligibility status, preference rating, rent to be charged and unit size requirements

G. Notifying Applicants of their Status

Section VIII Selection of Tenants

A. Method of Selection

B. Notifying Selected Applicants

C. Interviewing Selected Applicants

D. Rechecking Verified Data

E. Referral of Selected Applicants to Rental Department

Section IX Reporting Procedure - (Required reports and instructions for their use.)

BULLETIN NO. LR-29

OCCUPANCY POLICY DETERMINATIONS TO BE MADE AND ACTION TO BE TAKEN PREVIOUS TO OPENING OF APPLICATION OFFICE

ONE OF A SERIES OF BULLETINS ON
SUGGESTED OCCUPANCY PROCEDURES

PHA LOW-RENT HOUSING
BULLETIN

PUBLIC HOUSING ADMINISTRATION
HOUSING AND HOME FINANCE AGENCY WASHINGTON 25, D. C.

JULY 1951

LIST OF BULLETINS
WHICH HAVE BEEN PUBLISHED

Bulletin No.	Title	
LR-1	Zoning and Rezoning	
LR-2	Subsurface Soil Investigation	
LR-3	Site Planning	)
LR-4	Site Engineering	) A series
LR-5	Structural Design, Materials and Methods	) of eight
LR-6	Architectural Planning and Design	) Housing
LR-7	Plumbing, Heating and Ventilation	) Design
LR-8	Electrical	) Notes
LR-9	Lawns and Planting	)
LR-10	General Design	)
LR-11	Selection of Utilities	
LR-12	Construction Contract Documents	
LR-13	Guide Specifications	
LR-14	Equipment Contract Documents	
LR-15	Operation and Repair of Heating Systems (Care of Boilers Out of Service)	
LR-16	Corrosion of Underground Piping	
LR-17	Rules for Boiler Operation	
LR-18	Preparation of Exterior Surfaces for Repainting	
LR-19	Control of Condensation in Crawl Spaces	
LR-20	Glazing	
LR-21	Maintenance of Wood Floors	
LR-22	Basic Specifications for Rural Nonfarm Housing	
LR-23	Operation and Repair of Heating Systems--Boilers (Types, Use and Repair)	
LR-24	Maintenance of Concrete Floors	
LR-25	Indoor Tenant Activity Areas	
LR-26	Routine Care of Lawns	
LR-27	Repainting Exterior Surfaces	
LR-28	Rural Nonfarm Construction Documents	
LR-29	Occupancy Policy Determinations to be Made and Action to be Taken Previous to Opening of Application Office	

NOTE: Some bulletins will be issued in parts, of which one or more will be contained in the initial release of each bulletin; other parts will be issued subsequently from time to time as they are completed.

TABLE OF CONTENTS

- -

Attachments

Appendix A - Suggested Schedules of Local Authority Actions Incident to the Initial Selection of Tenants.

Appendix B - Suggested Outline of a Local Authority Occupancy Manual.

Exhibit 1 - Specimen Registration Form.

Exhibit 2 - Specimen Letter to Registrants, Site Occupants and Displaced Families.

Exhibit 3 - Statement of Policies Governing Admission to and Continued Occupancy of the PHA Aided Low-Rent Housing Projects Operated by a Local Authority.

Exhibit 4 - Specimen Score Sheet for Recording and Rating Findings From Physical Inspection of Applicant's Living Conditions.

HHFA
PHA
7-19-51

Bulletin No. LR-29

OCCUPANCY POLICY DETERMINATIONS TO BE MADE AND ACTION TO BE TAKEN PREVIOUS TO OPENING APPLICATION OFFICE

1. Introduction

a. To insure occupancy in low-rent projects being restricted to only those families for which such projects are provided, there are set forth in the United States Housing Act of 1937, as amended by Public Law 171, 81st Congress, certain basic regulations to be observed in determining a family's eligibility for public low-rent projects and in selecting tenants for such projects. Conformance with these statutory requirements necessitates the use of techniques and the adherence to principals which are markedly different from those employed in tenanting private developments. Public housing legislation makes special provision for large families whereas many private landlords frown upon or even go so far as to forbid the admission of families with minor members. In public housing, the urgency of the family's housing need is the final determining factor in selecting tenants from among applicants in the same preference category who are otherwise equally eligible. In private housing, on the other hand, the financial stability of the family is more often than not the governing factor in the selection of tenants.

b. This Bulletin, the first of a series relating to occupancy procedures and supplementing Manual Sections 402.1, 403.1, 404.1, 405.1, 406.1, 407.1, 408.1, 409.1 and 410.1, deals primarily with the factors involved in determining and formalizing occupancy policies and procedures preparatory to taking formal applications for initial occupancy of a public low-rent project. Also covered are some of the occupancy activities which occur between the signing of the Annual Contributions Contract and the opening of the application office. The purpose of these bulletins is to suggest to Local Authorities, particularly those new to the field of low-rent public housing, procedures for meeting the statutory and contractual occupancy requirements in terms of the needs of their particular program and locality. The procedures suggested for carrying out the fundamental occupancy requirements will, in most instances, need some modification before they can be considered as being the most effective ones for the particular operation concerned. Also, there will be other ways found of accomplishing the desired objective which will be equally or more effective than the procedures or operating devices mentioned in these bulletins. Therefore, these Bulletins should be considered as guides to developing operating procedures rather than as operating manuals per se.

2. Planning for Initial Selection of Tenants. Planning for the initial selection of tenants involves action by the Local Authority with respect to establishing policies and procedures to govern the receipt and processing of applications, determination of eligibility and preference rating, rent to be charged, unit size requirements, application of preference factors, and related subjects. The need for specific determinations on these and other matters

(Cont'd)

incident to initial occupancy of the project will generally be felt as soon as it becomes known that a low-rent public housing project is under way. The release of such information to the public usually brings forth many inquiries from potential tenants and the public at large concerning admission requirements, where and when applications may be filed, and other matters of general concern. Experience has shown it to be to the advantage of the Local Authority for it to start formalizing its occupancy and selection policies and developing its plan of operation incident to the initial selection of tenants immediately subsequent to the signing of the Annual Contributions Contract. Early determinations with respect to eligibility policies are of particular importance in instances where site clearance precedes project development. By having its admission policies and procedures fairly well crystallized prior to beginning the relocation of site occupants, the Local Authority can start during the relocation process to familiarize potential applicants with its low-rent program.

a. Time Required to Prepare for Initial Selection of Tenants. The actual amount of time required to carry out an occupancy program which will assure every unit in a project being occupied as of the date it becomes available by a tenant who has been selected in accordance with statutory provisions (see Section 407.1) from among applicants found to meet the eligibility criteria of the Act (see Section 403.1) will vary to some extent. This will result from the size of the program, the quality of the personnel employed, estimated demand, reluctance of potential applicants to move from present neighborhood, and other conditions peculiar to the project or community concerned. These local variables will not affect the time involved in determining and establishing governing policies and implementing procedures but will have a bearing on determining when, in relation to the scheduled date of initial occupancy, the application office should be opened, when verification should be started, and when tenants should be selected.

(1) Application taking should be started far enough in advance of the scheduled date of initial occupancy to allow ample time for receiving applications from and determining the eligibility and preference status of all the potentially eligible applicants who may wish to apply.

(2) The process of verifying an applicant's representations, determining his eligibility, preference rating and need should be started far enough in advance of the date scheduled for actual selection to assure that families selected for admission to units of given sizes and at specified rents are not only eligible but are receiving the preference consideration to which they are entitled by the Act.

(3) The actual selection of tenants from among eligible applicants should be made sufficiently in advance of the scheduled date of initial occupancy to allow the Local Authority time to recheck its verified findings and to allow the selected applicant to cancel his existing

(Cont'd)

rental agreement, if any, and to make arrangements for moving to the project on the date of availability. Failure to allow ample time for these matters will cause a delay in tenanting units as they become available and will result in an unnecessary vacancy loss.

b. Scheduling Activities of the Local Authority Incident to the Initial Selection of Tenants. Perhaps one of the first steps to be taken in preparing for the initial occupancy of the project is the scheduling of actions to be taken by the Local Authority in preparation for the initial selection of tenants. Such a schedule should show the basic steps involved, the progressive order in which the steps are to be taken, and when, in relation to the scheduled date of initial occupancy, each step should be taken.

(1) Attached as Appendix A is a suggested schedule of occupancy activities setting forth the nature and extent of the work to be done in preparation for initially selecting tenants for the first low-rent project to be opened in a community. This specimen schedule shows the timing of the various functional steps in relation to the scheduled date of initial occupancy of a project consisting of 200 units. In event a Local Authority desires to set up a similar type of schedule, it will in all probability be necessary to change the chronology or timing of the various functional steps shown on the example to fit local conditions such as site location, size of project, estimated demand and other factors peculiar to the community concerned. In devising a schedule to meet local conditions it should be remembered that the size of the project to be opened and other local factors or project characteristics do not affect the functional steps involved.

(2) One of the objectives in timing occupancy activities is to assure units being tenanted in accordance with statutory and contractual requirements as soon as they become available for occupancy. Experience has shown that to accomplish this on projects consisting of 200 units, it is desirable to open the application office approximately three month before the first units are scheduled to be released for occupancy. An early start with a small permanent staff has been found to be preferable to the employment of a large staff of temporary employees just before initial occupancy. The longer period of employment facilitates securing more competent personnel and allows for more thorough training, both of which are essential to effectuating an efficient operation. Also, an extended period of application taking affords an opportunity to ascertain whether publicity concerning the project is effectively reaching all income levels of the low-rent market.

(3) No attempt is made in this Bulletin to schedule occupancy activities for subsequent projects of a Local Authority. The effectiveness and scope of the existing program, the adequacy of present personnel to handle the increased workload, the number of applications on file from eligible applicants and similar matters introduce too many variables to make the preparation of such a schedule feasible.

(Cont'd)

- -

3. Handling of Potential Applicants Before Application Taking Begins

a. Need for Governing Policy. Generally, as soon as any publicity is given to a proposed low-rent public housing program in a community, the Local Authority begins to receive application requests from families desiring to be admitted to the proposed project. To refuse to accept applications at that time may result not only in bad public relations but also may affect the eligibility status or preference rating of an applicant. For instance, the requirement of citizenship as contained in the various appropriation acts is waived in favor of the family of any Serviceman, or family of any Veteran who has been discharged (other than dishonorably) from, or the family of any Serviceman who died in, the armed forces of the United States within four (4) years prior to date of application for admission 1/. Also, the U. S. Housing Act of 1937, as amended, accords a preference to families displaced by any low-rent housing project or by any public slum-clearance or redevelopment project initiated after January 1, 1947, provided such families apply for admission within (3) three years of their displacement. 2/ The Act also waives the requirement that families be living in substandard housing at the time of admission to the project in favor of the family of any Veteran or Serviceman (or of any deceased Veteran or Serviceman) where an application for admission is made not later than March 1, 1954. Therefore, applicants to whom any of these three conditions might be applicable should at all times be permitted to file some form of application and so preserve their rights. The acceptance of registrations from other families at this early date is also desirable for these will serve as a nucleus upon which to draw when the work of establishing a pool of applications from eligible applicants actually begins.

b. Suggested Type of Form. The form used during this preliminary stage of application taking should be very simple and should be so drawn as to make the applicant aware that further information to be submitted through the use of a more detailed application form will be required before the Authority can take any action in his case. To avoid confusion it is suggested that the form used during this period be designated as a registration rather than as an application. Attached as Exhibit 1 is a specimen registration form which the Local Authority may find to be of assistance in preparing a form for this purpose.

c. Use of Registration Form for Displaced Families. The Local Authority may, in event it is not taking formal applications at the time a site is being cleared of occupants find it advisable to leave a registration form

(Cont'd)

1/ For definition of Veteran, Serviceman and Family of Veteran or Serviceman, see Section 402.1.

2/ For displaced families entitled to preference, see paragraph 5, Section 407.1.

with each site occupant family rather than just to inform a family verbally that it will be notified when the application office is opened. The Local Authority may also wish to make these forms available to other public bodies handling other public slum-clearance or redevelopment projects.

d. Placing of Responsibility for Handling Registrations. As soon as the Annual Contributions Contract is signed the Local Authority should delegate to some member of its staff, preferably one skilled in contacting the public, the responsibility of accepting dwelling registrations until personnel is employed to carry out this and other occupancy functions.

e. Classification and Filing of Registrations. These forms may be filed alphabetically or may be filed in accordance with the preference rating (see Section 407.1) indicated by the information supplied. Filing by preference rating enables the Local Authority when it is ready to accept detailed applications to send out its first notices to the families with the highest preference rating (see Section 407.1). A form letter similar to that attached as Exhibit 2 will be found useful in notifying site occupants, other displaced families and registrants of the opening of the application office.

4. Admission and Continued Occupancy Policies Requiring Local Determinations. As the development of a project progresses the questions addressed to the Local Authority by potential applicants and the public at large concerning the use to be made of the project will become more and more specific. An answer to the effect that the project is being provided for low-income families will bring forth questions as to what is meant by a low-income family. Also a statement that rents will be within the financial reach of such families will require amplification. To be in a position to answer such inquiries the Local Authority will need to establish definitive policies with respect to eligibility, rents, and similar basic factors at the earliest practicable date and to incorporate these determinations into some type of formal statement 1/ as a matter of record and for the guidance of its personnel. Indicated below are policy matters requiring local determinations prior to their formal establishment and adoption.

a. Income Limits for Admission and Continued Occupancy. One of the first and most frequent questions asked a Local Authority pertains to the specific income group to be served by the project. Therefore, the early establishment of income limits for admission and continued occupancy is of prime importance. Criteria to be applied by the Local Authority in determining the income limits which it will submit to the PHA for approval prior to adoption are set forth in Section 404.1.

(Cont'd)

1/ See Exhibit 3 for specimen type of statement.

b. Rents and Other Charges. Next in order of importance after the establishment of income limits is a determination by the Local Authority of a rental policy which it will adopt subsequent to obtaining PHA approval. Points to be taken into consideration in making this policy determination are covered in Manual Section 405.1.

c. Definition of and Formulas for Determining Annual Net Family Income. Prerequisites to determining a family's eligibility with respect to its income are the establishment by the Local Authority of its definition of Net Family Income 1/ and the establishment of formulas to be applied in estimating the Net Family Income for the 12 months next succeeding the date of admission and subsequent income reviews.

(1) Definition of Net Family Income. Net Family Income is defined as Aggregate Family Income (see paragraph 12, Section 402.1) less such of those deductions set forth in paragraph 13 of Section 402.1 as the Local Authority may elect to allow. 2/ The only requirements with respect to deductions are that they be restricted to those specified in Section 402.1 unless otherwise approved by PHA and that such deductions as the Local Authority may authorize be applied uniformly to all families of like circumstances. The Local Authority, however, in establishing its definition of Net Family Income, will need to specify not only the deductions which are to be allowed but also the conditions which must obtain for a deduction to be deemed justifiable. The establishment of guides and criteria to be applied in determining reasonableness of, necessity for, and meritoroius nature of deductions requested will facilitate uniform treatment of applicants of like circumstances.

(2) Establishment of Formulas for Estimating Annual Net Family Income. Having established its definition of Net Family Income the Local Authority needs to determine the formulas to be used in converting the current income of various categories of workers into an estimate of anticipated annual net income. This requires ascertaining from authoritative sources for each major category of workers pay rates and the number of weeks which such workers can anticipate being gainfully occupied during a projected 12-month period. For example, laborers and other out-of-doors workers in the building trades and related fields generally do not work every week of the year due to weather conditions or other factors peculiar to their occupations. Labor unions, employers, the local Chamber of Commerce and similar sources can generally supply information

(Cont'd)

1/ Deviations from the definition of Net Family Income given in Section 402.1 require prior approval of PHA.

2/ Deductions for reasons other than those specified in Section 402.1 require prior approval by PHA

which the Local Authority will find helpful in determining the number of weeks to use in estimating the annual income of varous categories of workers. Also needed are criteria to be applied in estimating the annual income of taxi drivers, self-employed persons, commission salesmen, seasonal workers, persons receiving part of their compensation in the form of meals, concessionaires, operators of small businesses and regularly employed salaried workers. With respect to regularly employed salaried workers, the matter of whether the worker receives paid vacation and sick leave is the factor which determines the number of weeks to be used in estimating annual income. Another matter to be considered by the Local Authority in developing its formulas for estimating the annual income of various types of workers is that of determining the conditions which would require that a worker's income for the 12 months just preceding the date of computation be ascertained and utilized in estimating anticipated income.

(a) For the purpose of estimating anticipated income at time of admission little, if any, benefit will be derived from verifying the past earnings of regularly employed salaried persons receiving no overtime pay. In all other instances, however, factual data concerning income received in the past will greatly facilitate estimating the anticipated income for the ensuing 12 months. In some cases it will suffice to verify just the income received during the 12-month period immediately preceding the date of computation. In other instances it may be found desirable to verify past income over a longer period of time. This will be particularly tru for seasonal, part-time or irregularly employed persons.

(b) At the time of re-examination, (see Section 410.1) it is recommended that past income be ascertained and verified for all tenants regardless of how adequately the verified rate of current income may serve as a basis for estimating anticipated income for the ensuing 12 months. In event the Local Authority elects to adop a policy requiring tenants to report changes of income as they occu so that the appropriate relationship between income and rent may be maintained at all times, the verification of past income will be needed to determine whether the tenant has reported accurately and as required all changes of income occurring since his last income review.

d. Criteria for Determining and Evaluating Housing Conditions of Applicants and the Urgency of Their Housing Needs. The Act restricts admission, except for families of Veterans and Servicemen 1/ applying for admission before March 1, 1954, to families who at time of admission are living in unsafe, insanitary, or overcrowded dwellings, or are to be displaced by another low-rer

1/ As defined in Section 402.1.

(Cont'd

housing project or by a public slum-clearance or redevelopment project or who are actually without housing due to causes other than the fault of the tenant, or are about to be without housing as a result of a court order of eviction due to causes other than the fault of the tenant. The Act further provides that the Local Authority in initially selecting families for admission to dwellings of given sizes and at specified rents shall, subject to the preferences stated therein give preference to families having the most urgent housing needs and thereafter, in selecting families for admission to such dwellings shall give due consideration to the urgency of the families' housing needs (see Section 407.1). To comply with this statutory provision, the Local Authority needs (1) to establish criteria to be used in determining the nature of the applicant's housing conditions; (2) to devise a system for evaluating the relative seriousness of the existing condition; and (3) to designate the factors to be considered in determining urgency of need as among eligible applicants having the same preference rating.

(1) Development of a Local Definition of Unsafe, Insanitary, or Overcrowded Dwellings. One of the first steps to be taken in establishing criteria for determining the housing conditions of an applicant is to define what constitutes substandard housing conditions.

(a) Listed in Section 403.1 are the conditions generally considered as constituting an adequate basis for determining that a dwelling is unsafe, insanitary, or overcrowded. These conditions are general in nature and will need to be modified to reflect the characteristics of substandard housing in a given community. For instance, in localities where climatic conditions are such as to make the use of heating facilities unnecessary the lack of such facilities should not be recognized as being a characteristic of substandard housing.

(b) Many Local Authorities have found it helpful to have a group of local persons familiar with local housing conditions, building code regulations and violations, cooperate with them in establishing criteria to be applied in determining whether a dwelling is substandard. Such groups have consisted of representatives of family welfare agencies, various municipal departments, and other agencies such as private or public housing associations, concerned with formulating housing regulations and effecting their enforcement. The work of such a group organized for the purpose stated here should generally encompass (i) analysis of local housing conditions, including review of surveys and physical inspections, for the purpose of ascertaining the extent of substandard housing in the community, taking into account special conditions which are characteristic of slum areas in the locality; (ii) review of local housing ordinances and existing violations; and (iii) recommendation of factors to be used in determining that a dwelling is unsafe, insanitary, or overcrowded, and in evaluating the degree to which such conditions exist. Each factor recommended should represent a

(Cont'd)

definite characteristic of a substandard dwelling serious enough in itself to cause a dwelling to be classified as unsafe, insanitary, or over-crowded and should be clearly defined. In addition to listing factors which serve to connote the presence or seriousness of substandard conditions it has usually been found desirable to supplement this with a listing of other deficiencies which contribute to the undesirability of a dwelling unit but which are not serious enough, singly or collectively, to cause a dwelling to be characterized as substandard. 1/

(2) Establishment of Guides for Determining a Family to be Without Housing or About to be Without Housing Through No Fault of Its Own. Another step to take in establishing criteria to be applied in determining the nature of an applicant's housing conditions involves the defining of what is meant by "actually without housing" and specifying the conditions which would justify a finding that an applicant family was without housing or about to be without housing for "causes other than the fault of the tenant."

(a) In developing a definition of "actually without housing" care must be exercised not to confuse it with the definition of substandard housing. For instance, if make-shift living quarters such as tents, trailers, or tourist camps are to be classified as substandard housing accommodations then a family living under such conditions should not be considered as being "actually without housing." On the other hand, if a family is being temporarily sheltered through the benevolence of some interested agency or individual solely for the purpose of protecting it from the elements while seeking housing accommodations, then such family might be determined as being "actually without housing." Other situations which might fall into the category of "actually without housing" are that of family members involuntarily living apart from each other as separate entities without ready access to each other or to any facilities necessary to family life or that of a family whose place of abode is not within reasonable commuting distance of the family head's place of employment. "Not within reasonable commuting distance" as used here means that the family's residence is so located as to make it impossible for the family head to commute daily to his place of work or the cost of or time involved in commuting is substantially in excess of that which is considered as normal and usual.

(b) The term "causes other than the fault of the tenant" which is defined in general in Section 403.1 will need some amplification by the Local Authority before being incorporated in its operating procedure. Establishing of precepts for the occupancy personnel to

(Cont'd)

1/ See Exhibit 4 for suggested system of scoring unsafe, insanitary, or overcrowded dwellings.

use in determining whether the applicant's failure to carry out the obligations of his lease were due to circumstances beyond his control is one feature of the type of amplification needed. Another matter of concern is that of inmigrant applicant families who have voluntarily given up their residence in some other community. Some of these will be families of workers who are seeking to improve their economic conditions or who have been brought into the area as the result of the recruiting program of a defense industry.

(3) Need for Evaluating Relative Seriousness of Existing Conditions. For eligibility purposes it is sufficient to determine that an otherwise eligible family is at the time of admission, living in substandard housing, or is actually without housing through no fault of its own or is about to be without housing due to displacement or a court order of eviction received through no fault of its own. 1/ However, for the purposes of selecting tenants it is necessary within each preference category to determine as among eligible applicants who are either living in substandard housing or are actually without housing or are about to be without housing which has the greatest most urgent housing need. Further more the establishment of criteria for measuring housing need calls for a determination by the Local Authority as to what factors are to be considered in evaluating an applicant's need and the relative weights to be assigned to these factors. The matters most usually taken into consideration are existing housing conditions including the absence of housing and the imminence of being without housing, chronic health conditions, physical impairment of one or more family members and number of minors.

(4) Determining Relative Seriousness of Existing Housing Condition. Two steps are involved in setting up a system for determining in an objective and uniform manner the relative seriousness of the existing housing condition of eligible applicants. One pertains to the establishment of a scoring system for determining as among eligible families found to be living in substandard housing the relative seriousness of each family's housing condition. The other calls for a determination by the Local Authority as to the relative seriousness of living in substandard housing, being without housing, and the imminence of being without housing.

(a) Suggestions for Determining the Degree to Which a Family's Housing Conditions are Unsafe, Insanitary, or Over Crowded. Determining the degree to which family's housing conditions are substandard can be facilitated by the use of an objective system of rating and scoring the existing substandard characteristics and other deficiencies. The use of a system which has as its base the assigning of numerical values to each recognized substandard condition or deficiency rather than evaluation through the use of individual judgment

(Cont'd)

1/ This eligibility factor is waived for families of Veterans and Servicemen under certain conditions (see Section 403.1).

assures uniform treatment of all families living under similar conditions. Also, such a system has been found extremely useful in combating charges of favoritism in the selection of individual families. Exhibit 4 is a suggested form for recording and scoring the findings made during a physical inspection of a dwelling occupied by an applicant. 1/ Also indicated is a suggested numerical scoring system. It will be noted that the questions are so phrased that the presence of a substandard factor evokes an affirmative answer. The first question in each box to be answered in the affirmative receives a score of 50 points and a score of 5 additional points is given for each other question in the same box which is answered with a "yes". In this way the degree to which such condition is aggravated receives recognition. For instance, if a family were living in a dwelling unit lacking potable running water a score of 50 points would be given. If however, both dwelling unit and structure (one comprised of more than one unit) were without potable running water an additional score of 5 points would be given, and if the premises as well as the structure and dwelling unit lacked this facility 5 more points would be given. In the first instance the total score for this item would be 50 points, in the second 55, and in the third 60. The advantage of this method of scoring is that, as among families living in unsafe, insanitary, or overcrowded housing, it automatically assures preference being given to the family whose physical housing conditions are the worst. This suggested form for reporting on the physical characteristics of dwellings occupied by applicants may at first glance appear overly detailed and cumbersome. In practice however, this type of form has proved to facilitate the work of the inspector and has been found to give the reviewer (Occupancy Supervisor, Housing Manager, Executive Director or Authority member) a more realistic concept of existing conditions than would be achieved through lengthy descriptions which tend all too frequently to reflect impressions rather than specific facts.

(b) Suggestions for Numerically Rating the Relative Seriousness of Being Without Housing, the Imminence of Being Without Housing, and Residing in Substandard Housing. To enable its staff to rate in an uniform and objective manner the relative seriousness of the housing condition of applicants it is suggested that the Local Authority determine the qualifying housing conditions which shall have precedence over others and to assign numerical scores reflecting the predetermined order. For example, assume that absence of housing is to be treated as the most serious housing condition, the imminence of being without housing, the next most serious, residence in substandard housing is to be in the third place of importance and that

(Cont'd)

1/ This form is also shown as constituting a part of the Verification Summary Form attached as Exhibit 8, to Bulletin No. LR-32.

the system for rating substandard housing shown as Exhibit 4 which provides for a family living in a dwelling in which there is present one or more substandard characteristics to score between 50 1/ and 645 points had been adopted. Implementation of such a policy could result in a score of 700 points for families without housing, 650 points for families about to be without housing and a score of between 50 points and 645 points for families living in substandard housing. On the other hand should the Local Authority decide that a family living in housing conditions bad enough to receive the maximum score for substandardness should take precedence over all others, it might decide to score the absence of housing as 500 points and the imminence of being without housing as 400 points. This would result in substandardly housed families receiving a score greater than 500 points taking precedence over families without housing or those about to be without housing. Families scoring over 300 points but less than 400 points would take precedence over families about to be without housing but not over families who were actually without housing.

(5) Use of Factors Other than Housing Conditions in Determining Relative Need. As stated in paragraph 4d(3), above, chronic health conditions, physical impairment of one or more family members, the number of minors as well as housing conditions have in some instances been taken into consideration in determining the urgency of the family's need for housing. The assigning of weights to each of these possible consideration factors tends to complicate the selection process. However, it is felt that when it is found that some member of an eligible family suffers from a chronic health condition or physical impairment and that his suffering is aggravated by his present housing conditions but would be alleviated to some extent were he to be admitted to the project that such a situation merits a score.

(6) Suggested System for Rating Urgency of Housing Need. Having determined what factors should be scored or taken into consideration in determining the urgency of an applicant family's housing need the Local Authority should formalize its conclusions for the guidance of its staff in selecting tenants from among eligible applicants having the same preference rating somewhat along the following lines:

(a) Factors to be scored:

Existing Housing Condition -	Check	Score
Family is actually without housing due to no fault of its own.	☐	(700)

1 Any lower score would indicate a family to be living in a house found to be deficient in some respects but not substandard.

	Check	Score
Family is about to be without housing due to no fault of his own.	☐	(650)
Family is living in unsafe, insanitary, or overcrowded housing conditions 1/.	☐	(30 to 645)
Health Conditions -		
Chronic health condition or physical impairment present.	☐	(50)

(b) Factors to be Considered:

As among families equally eligible who are in the same preference group and have the same housing need score, first consideration is to be given to the family having the greatest number of minors which the available unit will accommodate.

e. Occupancy Limits. Effectuation of the occupancy standards set forth in Section 406.1 requires the establishment of specific occupancy limits for admission to and continued occupancy of each size unit in a project. In addition to establishing specific occupancy limits, the Local Authority will need to determine what action shall be taken where a unit becomes under or over occupied. Locally established occupancy limits should assure proper utilization of space without overcrowding. The lease form should embody the requirement that when the unit occupied is determined by the Local Authority as no longer being appropriate to the needs of the occupying family that the tenant will be required to move to one which is appropriate to his needs.

f. Other Eligibility Criteria. Eligibility criteria other than those discussed above may consist of the following:

(1) Net Assets. In connection with determining the need for establishing eligibility criteria in addition to those set forth in Section 403.1 it is suggested that the Local Authority give some consideration to net assets as an eligibility factor. The primary purpose of placing a limitation on net assets is to exclude from low-rent housing those families whose current income falls within the established income limits but, whose net assets, if used to supplement their current income, would enable them, without endangering their financial stability, to obtain adequate housing on the private market. In placing a limit on net assets, care must be exercised so as not to make the amount so low as to discourage low-income families from following a savings or investment program which is appropriate to their income. Also, any limitation placed on net assets should be flexible enough not to militate against

(Cont'd)

1/ See Suggested Scoring System on Exhibit 4.

any family whose only potential source of income is from such assets (the amount of which would normally be considered to be excessive) provided the liquidation or disposal of any portion of such assets would result in depriving the family of basic essentials. If net assets is established as a factor to be considered in determining a family's eligibility for admission and for continued occupancy, the Local Authority will need to define specifically what is meant by "net assets" and to set up guides for its staff to follow in evaluating the net assets of a family and in deciding whether the cash value of such assets is great enough to disqualify the family as a low-income family.

(2) Local Residence. The establishment of local residence as a factor of eligibility is not recommended for any locality and particularly for those where job opportunities for low-paid workers are greater than the local labor supply. The Act specifies that in initially selecting families for admission that, as among families having the same preference priority, preference shall be given to those having the most urgent need. Restricting admissions to families who are local residents may tend to contravene this statutory provision. For example, let us assume that applications are received from families of two disabled veterans and that the circumstances of these families are identical except that one is an inmigrant actually without housing and the other is a local resident who is living with in-laws. A family which is actually without housing definitely has a more urgent need than one which is housed adequately except for the fact that it is living with in-laws. A local residence requirement however, would result in the family with the more urgent need of the two being rejected and the family with the less urgent need being admitted. If a resident requirement is established, it should be used only in determining as among families with an equally urgent need which shall be accorded a priority in selection.

(3) Conformance with State Enabling Legislation. There may be instances where the State laws pertaining to low-rent public housing contain occupancy provisions different from or more restrictive than those contained in the Federal statute. Therefore, in setting up its eligibility criteria, the Local Authority will need to review the enabling legislation under which it operates to ascertain if such legislation contains provisions governing occupancy which would require the establishment of eligibility criteria in addition to those necessitated by the Act and Contract.

g. Re-examination of Eligibility and Redetermination of Net Family Income. Since the re-examination of eligibility and the redetermination of income entail obtaining from the tenant information concerning the income and composition of his family, it is necessary that the requirement for his supplying such data be incorporated in the tenant lease agreement as one of the conditions of occupancy. Therefore, before drawing up its lease form (see Section 409.1), the Local Authority should establish its policies with respect

(Cont'd)

to frequency of periodic re-examinations, requirements for reporting changes in family income between regularly scheduled periodic re-examinations, back-charges and rebates and the removal of ineligibles. Determinations as to other re-examination policies and procedures need not be made during this preoccupancy period. Requirements and suggestions on re-examination policies and procedures and covered in detail in Section 410.1 and another Bulletin of this series.

5. Development of Working Relationships with Community Groups

a. After policies governing the admission of tenants are formulated and before the publicity campaign for disseminating project information to low income families is initiated (see Bulletin LR-31) the person who is to be responsible for receiving and processing applications should establish working relationships with representatives of agencies which are in constant touch with low-income families in the community and also, with other organizations or individuals which are known to be somewhat closely associated with such families. The establishment of working relationships will be greatly facilitated if during the early development stages of the project the Local Authority has followed a policy of keeping the community at large and particularly groups or agencies dealing with low-income families informed concerning the local low-rent housing program. Early liaison between the Local Authority and other community groups will result in a mutual understanding of the functions and problems of each and will point up the ways in which they may mutually benefit by cooperating with each other. It is equally as important for the Local Authority and its management staff to understand the policies and functions of and the types of information obtainable from the relief and welfare agencies as it is for such agencies to understand the eligibility, selection, and rental policies of the Local Authority. Working relationships with public or quasi-public groups will not only be of assistance to the Local Authority in disseminating information concerning the project to low-income families and in furnishing it with information needed to determine an applicant's eligibility and preference rating but will also enable the Local Authority's management staff, after the project is in operation, to know the proper source to which to refer tenants needing health services, legal aid, financial or other type of public assistance.

b. Groups with which working relationships should be established include community and neighborhood centers, family welfare and child care agencies, public clinics and health centers, churches, schools and any other agencies or groups having contacts with or interest in the problems of low-income families. These groups include labor unions, fraternal organizations, Rotary Clubs, women's clubs, Parent-Teacher Associations and similar types of organizations. Also, in view of the preference to be given families of veterans and servicemen, the cooperation of and a working relationship with local veteran's organizations and agencies serving veterans or servicemen will be of prime importance. In communities where differing racial or nationality groups are

(Cont'd)

to be served by the project, cooperative working relationships should be developed with organizations serving or sponsoring the racial or nationality groups concerned. Perhaps the most important groups of all with which the Local Authority will need to establish cooperative working relationships are the personnel departments of the principal sources of employment in the community. This should be achieved not by telephone or letter but by personal contact. The objectives of the low-rent program should be carefully explained as well as the effect of income upon eligibility and rent. The necessity for securing valid income data should be stressed and procedures for obtaining the required information mutually agreeable to employers and the Local Authority should be developed.

c. Determining the principal sources with which working relationships should be developed involves an appraisal of the adequacy of each source to supply the information needed and the extent to which information thus obtained will need to be supplemented. For instance, an employer is able to furnish information as to the compensation of his employees but he is not usually able to advise the Local Authority as to any other income which may be received by an employee or his family. Some Local Authorities have found it desirable to utilize the services of the local Social Service Exchange (often a function of the local Council or Federation of Social Agencies) or a credit rating bureau as a means of getting any additional information needed which is not otherwise readily available. The conditions which will generally serve to warrant clearing with the Social Service Exchange or obtaining credit rating reports will have to be established by the Local Authority for the guidance of its staff. It is suggested that the services of credit bureaus be utilized only when they afford the only known means of securing requisite information. Verification of factors pertaining to an applicant's eligibility through direct contacts of the Local Authority's staff with the sources from which the required information may be obtained is usually more advantageous for it provides an important channel for interpreting eligibility requirements as well as the policies governing the selection of tenants.

6. Use of Unit for Demonstration Purposes

a. As soon as the construction of a low-rent project is far enough along to estimate completion dates the Local Authority will find it desirable to arrange to make available to some interested agency or other volunteer group one or more typical units to be used for demonstration purposes.

b. The opening of a demonstration home, furnished in keeping with the incomes of the families to be housed is recommended for every low-rent project and particularly for the first low-rent project to be made available in a community. It is suggested that wherever possible the demonstration unit be furnished with plain and sturdy used furniture and that it have no more furniture in it than is necessary for plain, comfortable living. Experience has shown that furnishing the demonstration unit with new furniture, even though

(Cont'd)

it may be inexpensive, and with unnecessary occasional pieces such as coffee tables, often tends to make potential tenants feel that they should follow suit. In this connection, it should be pointed out that demonstration units can be underfurnished as well as overfurnished. Also, the over-use of makeshift pieces - dressing tables made of orange crates, chairs made from barrels - is psychologically bad. The demonstration unit should, in essence, approximate a replica of the living quarers of the average applicant.

c. The dwelling to be used for this purpose should be structurally completed, furnished and ready for inspection as soon after the application office opens as possible. Since it is anticipated that the application office will open well in advance of the availability of any units for leasing, arrangements will have to be made with the construction contractor for completing his work on units selected for this purpose ahead of any others. If the application office is to be located on the project site, the demonstration unit should be easily accessible from that office. In any event, any unit selected for demonstration purposes should be located on the edge of the project and on the main traffic street.

d. The demonstration unit should be closed upon the completion of the initial selection of tenants.

7. Planning Publicity Campaign for Disseminating Information to Low-Income Families

a. Need for Campaign. The degree or success achieved in promptly tenanting the project with low-income families having the highest preference rating and the most urgent housing need will depend largely upon the efforts made and the means employed in interesting families in the lowest income group to apply for admission to the project. The lowest income families of the low-income group are usually less aggressive than families of higher income and apparently for that reason do not, on their own initiative, seek en masse to ascertain their eligibility for public low-rent housing. No matter how well formulated the occupancy policies may be, or how well developed the techniques and procedures for receiving and processing applications; and no matter how well qualified the personnel may be, satisfactory results in project occupancy cannot, in most instances, be accomplished without an adequate publicity campaign designed to inform low-income families concerning the low-rent program. Therefore, it behooves the Local Authority to determine and utilize such local media as will insure the lowest income families in the community being made aware of the opportunities which the project affords them to secure adequate housing within their financial reach. See Bulletin LR-31 for suggested media.

b. Timing of Publicity. Obviously, suitable and adequate information concerning eligibility and tenant selection cannot be released until policies governing these matters have been formulated and approved. Thus, the early setting of income limits and rents, including PHA's approval thereof; determination of eligibility criteria and method of selection, are prequisites to

(Cont'd)

designing a satisfactory publicity campaign for informing low-income families concerning the project. A publicity campaign aimed at potential applicants should be initiated as soon as policy determinations permit and should be stepped up with the opening of the application office.

8. Staffing for Receiving and Processing Applications

a. Need for Qualified Personnel. The responsibility for tenanting low-rent projects with those families for whom the projects are provided rests primarily with the personnel held responsible for determining eligibility and selecting tenants. Recognition of this fact together with a realization of the number and extent of public contacts involved and the effect which such contacts will have in creating either public support of or ill will toward the low-rent program point up the necessity for employing qualified persons. Application taking, home visiting, and many of the other steps of the verification process require a knowing and skillful application of interviewing techniques and a sympathetic but objective understanding of the social and economic problems common to most low-income families. Also, the assembling of data which will be pertinent to establishing an applicant's eligibility and preference rating requires a working knowledge of those agencies or individuals in the community who can be of assistance by supplying the necessary information. Therefore, the occupancy staff should be comprised of individuals possessing training and experience in fields of work which have brought them into direct contact with families of low-income and which have required the use of techniques similar to those which will be needed in determining a family's eligibility for low-rent housing. Set forth in Bulletin LR-30, in terms of job titles, is a brief description of the functional duties and responsibilities of persons to be engaged in occupancy work. Also indicated are educational and experiential backgrounds which have been found to be of value in relation to the job to be done.

b. Nature of Functions Provides Basis for Determining Personnel Qualifications. The functions of the occupancy section, defined herein in terms of job titles, require the employment of persons qualified to serve as supervisor, receptionist, interviewers, verifiers, home visitors, control clerk, file clerk, and typists. On small programs, functions would of necessity have to be combined. For instance, on a program, justifying an occupancy staff of only 3 persons, the supervisor would need to interview applicants and to handle some of the verification work as well as to supervise; the control clerk would be required to serve as receptionist, file clerk, typist, and to assist as necessary in conducting interviews; the interviewer would verify and make home visits in addition to taking applications. On projects so small as to require the services of only one person, that person would have to serve in all capacities. In those cases where occupancy functions of necessity must be combined, it will not be feasible to require a job applicant to meet the qualifications for each function he is to perform. In such instances, it is suggested that personnel selected be persons who have the basic

(Cont'd)

qualifications from training and experience to perform one function and who possess the personal attributes fitting them for the other work to be done. Among these general attributes are a genuine liking for people, adaptability, resourcefulness, and a demonstrated leadership and administrative ability.

c. Determining Size of Occupancy Staff Needed. The size of the occupancy staff will depend upon the size of the low-rent program concerned and whether occupancy functions are centralized. To determine the size of occupancy staff required, an estimate of the anticipated workload in terms of man hours required to receive and process an application and to select and certify an applicant for admission will be of assistance. A review of the registrations received may be of some help in anticipating the workload. The number on file will indicate to some extent what the application intake load will be. The income data may be useful in estimating the number of applications which will require processing. Veteran status will indicate the number of families for whom a home visit may not be necessary. The word "may" is used advisedly for if there are on file more applications from eligible Veterans and Servicemen than there are units available, a home visit will be required to determine as among such families otherwise equally eligible and with the same preference priority, for the purposes of selection, which has the most urgent housing need. Suggestions as to estimating the anticipated workload in terms of man hours are contained in Bulletin LR-30.

d. Placing of Responsibility for Handling Applications and Selecting Tenants. If, in planning for initial occupancy, it is estimated that the applications which will be received will be sufficiently great in number to require the full-time services of one or more persons to receive and process them, it is suggested that, rather than place the full responsibility for supervising this function with the executive director or housing manager who will have numerous other matters to handle, that a person be employed to serve in the capacity of an Occupancy Supervisor. On projects where it is estimated that the application and selection workload incident to initial occupancy will not be heavy enough to require the full-time services of at least one person the full responsibility for receiving applications, determining eligibility and selecting tenants will of necessity have to be vested in the executive director or housing manager. It may be necessary in some instances, even on comparatively small programs, to employ part-time help during the period just preceding initial occupancy to supplement the executive director or housing manager. Qualified part-time help can sometimes be secured from local social or welfare agencies on a reimbursable loan basis. On programs where it is anticipated that the occupancy workload, after initial occupancy, will be heavy enough to require the continuing full-time services of at least one person, it is suggested that the person with whom the responsibility for this phase of the work is to be placed be employed in a permanent capacity at the earliest practicable date, either on the project management staff or on the central office staff of the Local Authority, depending upon the number of projects involved and the local administrative set-up. Thus,

(Cont'd)

problems of tenant turnover, periodic review of the eligibility of tenants for continued occupancy, and related activities which are an integral part of project management will have the benefit of the continuing services of the staff member originally charged with the responsibility of determining eligibility and selecting tenants during the period of initial occupancy. In cases where it is estimated that the occupancy workload after initial occupancy will not require the full-time services of at least one person, the executive director or housing manager should participate in the occupancy functions to the fullest extent possible during the initial occupancy period so that he may acquire a working knowledge of the duties for which he will eventually be directly responsible.

9. Orientation and Training of Occupancy Personnel. In receiving and processing applications and in selecting tenants from among eligible applicants, the occupancy personnel will constantly be called upon to interpret the policies governing such matters. To make an adequate interpretation of a policy necessitates not only familiarity with the particular policy concerned, but also an understanding of the reasons for such policy having been established. In other words, the occupancy personnel will need to know not only what information is required and how to obtain it, but also why such information is required. Therefore, it is suggested that the Local Authority devise an orientation and training program which will equip its occupancy personnel with the necessary background for interpreting governing policies and train them in the specific functions which they are expected to perform. To accomplish this, the orientation and training program for the occupancy personnel should be comprehensive enough to acquaint them with the objectives and nature of the public low-rent housing program as well as to familiarize them with the procedures to be followed in receiving applications, determining eligibility, and selecting tenants. Set forth in Bulletin LR-30 is a brief outline of a suggested orientation and training program for occupancy personnel. A training program similar in scope to the one suggested should be followed not only in preparing for initial occupancy but whenever a new person is employed. Whenever possible a new employee should be given at least a week's training before he starts carrying out his assigned functions. In no instance should training be confined to just those phases of occupancy work for which the employee has been hired.

10. Forms and Form Letters. Forms and form letters should be devised to implement and expedite the various steps involved in receiving applications, determining eligibility and preference rating, selecting tenants, notifying applicants concerning their status, leasing of dwelling units, redetermining eligibility, removing ineligible tenants and carrying out the other occupancy functions. Each form should be so designed as to facilitate the obtaining and recording of required data in as clear and concise a manner as practicable. Detailed written instructions covering the use to be made of the forms and form letters and specifying the type of data to be entered thereon should be prepared for use by the operating personnel. A specimen copy of a number of the forms which will be needed are attached as exhibits to Bulletin LR-32.

(Cont'd)

- -

11. Operating Manual for Occupancy Personnel. An operating manual incorporatin the occupancy policies established by the Local Authority, including the specific steps to be taken in applying the policies, the forms to be used together with instructions concerning their use and other pertinent materia should be prepared well in advance of the date on which application taking is to begin. Such a manual has been found to be not only an invaluable aid in orienting and training the occupancy staff but also the best device for insuring uniform application of established policies. Attached as Appendix B is a suggested outline for a Local Authority Occupancy Manual.

12. Office Arrangements for Taking Applications

a. Location and Space. The application office should be located where it will be readily accessible to potential applicants and should be large enough to permit an arrangement which will afford privacy for the application interview. Generally, more space will be required for the period beginning with the taking of formal applications of a new project and ending with the end of the initial operating period for that project than will be needed later. This is due to the fact that usually the greatest volume of applications will be received during this period and therefore more space than normally required for carrying out of occupancy functions will be needed to accommodate the augmented staff of occupancy employees needed to handle the abnormal workload. In large cities, it may be impossible to set up an office in a location which will be convenient to families in all parts of the city. If it is found that a substantial number of potentially eligible applicants are concentrated in areas not readily accessible to the main application office, the Local Authority may find it desirable to supplement its main application office by setting up branch application offices in these remote neighborhoods. Branch application offices by virtue of their being located in areas where low-income families are concentrated have proved to be an effective means of disseminating information to potential, and in facilitating the filing of applications. Suitable space for taking applications has in some instances been made available to the Local Authority in neighborhood community centers maintained by social agencies, municipal departments or other public or civic groups. In any instance, where the main application office of the occupancy staff is not to be located on a project which is being readied for initial occupancy, a branch application office should be opened for the project site. Where possible, arrangements should be made with the contractor to make a dwelling unit available for this purpose. Such unit should be in close proximity to the unit or units being made available for demonstration purposes. The functions of the branc application offices should be restricted to taking applications, answering inquiries concerning the project or the admission policies of the Local Authority and the acceptance for transmittal to the main application office of any substantiating material submitted by the applicant. Application records should be maintained in the main application office; also, all processing of applications and the selection of tenants should be handled in that office.

(Cont'd)

b. Arrangement of Office. In setting up and equipping an application office, it is of the utmost importance that provision be made for the application interview to be conducted in private. Booths have been found to be desirable for this purpose. Provision should also be made for the applicants to be seated while waiting to be interviewed and a sufficient number of chairs should be placed in each interviewer's booth to accommodate a minimum of three persons.

c. Office Hours. The hours that the application office will be kept open should be set so that persons desiring to apply need not take time off from work to do so. This can be done by having the office open on somedays during the morning and afternoon and on others open during the afternoon and evening. It also may be found desirable to have the office open on Saturday and even on Sunday, perhaps in lieu of its being open on Monday.

- -

(Name and Address of LHA)

DWELLING REGISTRATION

It is requested that the ______(Name of LHA)__________ consider this as an application for admission to a unit in a public low-rent project under its jurisdiction and that when more details than set forth herein are required for the purpose of determining my eligibility, I be so advised.

Name______________________________ Race __________

Address______________________________ Phone No. __________

Family consists of: Adults, M_____ F_____; Minors, M_____ F_____

Estimated Annual Income of Family: $_____________

Veteran or Serviceman Status:

Name____________________ Relationship to Family Head__________

Dates and Branch of Service ______________________________

____

Date and Type of Discharge ______________________________

Service-connected Disability: Yes____ No____ %______________

Description of present housing conditions: ____________________

____

____

____

I understand that the above information submitted in support of this application is an insufficient basis on which to determine my eligibility and preference rating and that I will have to execute a more detailed application form before any action can be taken by the _____(Name of LHA)_______. To enable the Authority to advise me if and when it becomes ready for me to submit a detailed application for admission I shall inform it whenever my address changes.

Signed: ______________________

Date: ______________________

Interviewed by: ____________________

Form Letter to Registrants and Site Occupants

Letter Head
of
Local Authority

Date_____

_____
_____
_____

Date_____

On (date) we shall begin accepting **formal applications** for occupancy in (name of project) at our application office which will be located at (address of office). If you are interested in filing an application for admission to (name of project) it is suggested that you call at the application office as soon as you can after it is opened. Office hours will be from _____a.m. to _____p.m. from Monday through Saturday.

It will save you time and possibly other trips to the office if you will come prepared to give us the following type of information and will bring with you any papers or letters you may have concerning these matters.

Names and addresses of the employers of all members of your family and the amount of wages or salary each employed member receives.

If any member of your family receives income from any other source, the records which you have relating to it. This refers to relief payments, Social Security award letters, Veteran's benefits, pensions, alimony or any other kind of regular payments received.

If any member of your family, either living or deceased, served in the military or naval forces of our country, the discharge papers or other records which you have of such service.

If any member of your family is now in the armed forces, information regarding date of entry, grade or rank, serial number, pay and allowances and where stationed.

If the head of your family was born in a foreign country, his United States citizenship papers.

All information supplied by you will be kept confidential and any papers submitted by you will be returned to you if you wish.

Very truly yours,

Signed _____

Title _____

BULLETIN NO. LR-30

SUGGESTIONS FOR SELECTING AND TRAINING OCCUPANCY PERSONNEL FOR INITIAL TENANT SELECTION

ONE OF A SERIES OF BULLETINS ON
SUGGESTED OCCUPANCY PROCEDURES

PHA LOW-RENT HOUSING
BULLETIN

PUBLIC HOUSING ADMINISTRATION
HOUSING AND HOME FINANCE AGENCY WASHINGTON 25, D. C.

JULY 1951

LIST OF BULLETINS
WHICH HAVE BEEN PUBLISHED

Bulletin No.	Title	
LR-1	Zoning and Rezoning	
LR-2	Subsurface Soil Investigation	
LR-3	Site Planning	A series of eight Housing Design Notes
LR-4	Site Engineering	
LR-5	Structural Design, Materials and Methods	
LR-6	Architectural Planning and Design	
LR-7	Plumbing, Heating and Ventilation	
LR-8	Electrical	
LR-9	Lawns and Planting	
LR-10	General Design	
LR-11	Selection of Utilities	
LR-12	Construction Contract Documents	
LR-13	Guide Specifications	
LR-14	Equipment Contract Documents	
LR-15	Operation and Repair of Heating Systems (Care of Boilers Out of Service)	
LR-16	Corrosion of Underground Piping	
LR-17	Rules for Boiler Operation	
LR-18	Preparation of Exterior Surfaces for Repainting	
LR-19	Control of Condensation in Crawl Spaces	
LR-20	Glazing	
LR-21	Maintenance of Wood Floors	
LR-22	Basic Specifications for Rural Nonfarm Housing	
LR-23	Operation and Repair of Heating Systems--Boilers (Types, Use and Repair)	
LR-24	Maintenance of Concrete Floors	
LR-25	Indoor Tenant Activity Areas	
LR-26	Routine Care of Lawns	
LR-27	Repainting Exterior Surfaces	
LR-28	Rural Nonfarm Construction Documents	
LR-29	Occupancy Policy Determinations to be Made and Action to be Taken Previous to Opening of Application Office	
LR-30	Suggestions for Selecting and Training Occupancy Personnel for Initial Tenant Selection	

NOTE: Some bulletins will be issued in parts, of which one or more will be contained in the initial release of each bulletin; other parts will be issued subsequently from time to time as they are completed.

HHFA
PHA
7-19-51

Bulletin No. LR-30

SUGGESTIONS FOR SELECTING AND TRAINING OCCUPANCY PERSONNEL FOR INITIAL TENANT SELECTION

1. Introduction

a. Achievement of the objective of having each unit in a project filled by a family whose eligibility has been unequivocally established and who has been selected for tenancy in such project in accordance with the preference provisions of the Act depends to a large extent upon the quality and ability of and training given the personnel charged with the responsibility of receiving and processing applications, determining eligibility and selecting tenants. Therefore, careful selection of personnel to carry out occupancy functions and thorough job training are of utmost importance. The number of persons to be employed will depend upon the anticipated workload. This in turn depends upon the size of the project, the estimated demand, the length of time allotted for the application and selection process, and other factors peculiar to the locality concerned.

b. Application taking, physical inspection of living conditions, estimating anticipated income and other steps necessary to determine an applicant's eligibility require skill in interviewing and assembling pertinent data. Determining eligibility and urgency of need necessitate a careful review and evaluation of the circumstances of each applicant family. Persons possessing a knowledge of the agencies or individuals in a community which will need to be contacted in connection with determining an applicant's status will not only bring about a more effective operation but will also accomplish the task at hand more expeditiously. Incidentally, the obtaining of information from social and family welfare agencies will be facilitated if at least one member of the occupancy staff is professionally qualified for welfare work. Another important qualification desired in personnel assigned to receive and process applications is the ability to analyze data objectively without bias, prejudice or emotional involvement.

2. Determining Size of Staff Needed

a. Estimating Anticipated Workload. The first step to take in determining the size of staff which will be required to receive and process applications, determine eligibility of applicants and select tenants, is to estimate the number of applications which will be received, the number which will require processing and the number of physical inspections which will need to be made.

(1) Use of Market Data. Market data assembled for the purpose of establishing the need for a low-rent project in the community and for determining the number of units to be built may be found useful in estimating the number of applications which will be received. However,

(Cont'd)

in using such information, it should be borne in mind that market data only represent need for better housing. These data do not indicate how many families, having incomes too low to enable them to obtain adequate housing on the private market, will take advantage of the opportunity offered them by low-rent public housing. Therefore, in anticipating what the application intake load will be, it is advisable to estimate the demand volume as being substantially lower than the volume of need shown by the market data. The degree to which low-income families manifest an interest in the project during its early development stages may be of some assistance in estimating the volume of demand. In the example given in paragraph b(1) below a demand of 5 to 1 has been assumed for a 200 unit project being built in a community where there are approximately 1500 low-income families - a need ratio of 7.5 to 1. It is better to underestimate the size of staff required than to overestimate it, for staff can always be increased if demand necessitates it. Overstaffing results in increased costs per unit of work.

(2) Review of Registrations. If the Local Authority maintains a record of pertinent data relating to families seeking to apply before formal applications are being accepted, such data may prove useful in estimating what percentage of the applications received will be from apparently eligible families and the percentage of these applications which will be from families without Veteran or Serviceman status. This will give some idea as to the number of applications which will require the assembling of verifying data and the number of physical inspections which will have to be made.

b. Determining Man Hours Required to Handle Anticipated Workload

(1) Measuring the overall anticipated workload in terms of man hours will be facilitated if the application and selection processes are broken down into the principal functional steps involved and an estimate made of the time which will be required to perform each step. For illustrative purposes, there is set forth below a listing of the principal steps comprising the application and selection processes, together with an indication of the amount of time generally required to perform one unit of work for each step, together with a hypothetical estimated workload per dwelling unit. The average amount of time required to take an application or to perform other steps in the application process has been found to be approximately the same whether the project is located in Maine or Florida, and the time estimates set forth below are considered as being realistic for the work unit involved. Therefore, a Local Authority will not be far amiss if, in estimating the number of man hours which will be required to handle the anticipated workload, it uses the time estimates shown in the example below. It will be noted, however, that the example makes no provision for the time to be spent

(Cont'd)

in supervising, handling problem cases, and maintaining proper outside relationships. The reason for this is that the time required to perform these functions cannot be estimated in terms of the number of dwelling units involved nor by any other fixed unit of measure. Therefore, staff requirements determined through the application of the factors in the following table may need some supplementation to cover this contingency. The estimated workload per dwelling unit, shown in the following example, is purely hypothetical and is not to be considered as being indicative of what may be expected in the way of a workload. The number of applications to be received in relation to the number of units to be made available will vary markedly between communities. Also, the percentage of applications received which will be from ineligible applicants and from families of Veterans or Servicemen will rarely, if ever, be the same in any two instances. For the purpose of this example, it was assumed that a review of market data and application requests received indicated that:

(a) Five applications would be received for each unit to be made available;

(b) Seventy per cent of the applications received would require processing;

(c) Forty per cent of the applications received would require home visits;

(d) All applications received would require review, classification, and filing;

(e) Eighty per cent of the applicants would receive a written notice as to their status (the other twenty per cent being notified during office interview); and

(f) Based on registration withdrawal rate, five applicants would need to be selected for each four units to become available.

(Cont'd)

Principal Functional Steps Involved	Average Time Required Per Unit of Work	Estimated Workload Per Dwelling Unit
Receipt of applications	0 hr. - 20 minutes	5
Verification (all factors except housing need) and computation of income	1 hr. - 30 minutes	3½
Physical inspection of present housing conditions (including preparation of report)	1 hr. - 0 minutes	2
Review, classification, recording and filing	0 hrs. - 15 minutes	5
Notification of applicant re status	0 hr. - 5 minutes	4
Selection of tenants (including notification)	0 hr. - 10 minutes	1¼
Recheck of data prior to admission	0 hr. - 20 minutes	1¼
Certification and assignment for leasing	0 hr. - 10 minutes	1

(2) Application of the above time and workload estimates to a 200-unit project indicates that a total of 2261 man hours will be utilized in carrying out the principal steps involved in the application and selection processes during initial occupancy of the project. This figure is obtained by multiplying the estimated workload per dwelling unit by the number of units in the project (200 in this example) and then multiplying that total by the time estimated for performing that specific unit of work. The hours thus estimated for each functional step are then added together to ascertain the total number of man hours which will be spent in receiving and processing applications and in selecting tenants for initial occupancy of the project.

c. Determining Size of Staff by Total Man Hours. The number of persons which will be required to handle an anticipated workload of a specified number of man hours will depend upon the amount of time between the date on which applications are first accepted and the date on which all units are to become available for occupancy. Assuming a forty hour work week, an anticipated workload of 2261 man hours, and that the application office

(Cont'd)

is opened 13 weeks before initial occupancy and 18 weeks before the date of full availability, a staff of 3 and a ninth persons would be needed to handle the workload estimated for the principal functional steps shown above. This is determined by multiplying the number weeks allowed for the application and selection processes by the number of work hours in a week and dividing that total into the total man hours comprising the anticipated workload. Having determined the minimum number of persons required, consideration should be given to what additional personnel will be needed for supervising, handling problem cases, maintaining liaison with outside groups and carrying out any other functions not listed above. Included in such considerations should also be the matter of absenteeism. In the example cited, provisions for such matters would probably result in a final determination of a staff of four persons for eighteen weeks (approximately 4 months). A 4-person staff for eighteen weeks is equivalent to 2880 man hours which means that an allowance of 619 man hours has been made to cover time to be spent in supervision, handling problem cases and other unmeasurable items. If a period of only thirteen weeks (3 months) is to be allowed for the application and selection processes, a staff of 5 persons would be needed. This represents a total of 2600 man hours. In this instance only 339 hours are provided for supervision and other unmeasurable functions because of the lesser number of weeks when such will be needed. On the other hand, if the application office were to be opened six months (26 weeks) before the scheduled date of full availability, a staff of only 3 persons would be needed. This equals a total of 3120 man hours. The increased number of man hours is necessitated by the extended period during which supervision will be needed. The suggested staffs for the periods indicated presuppose a more or less even flow of work. If, however, in connection with the first example cited (4 months), it were estimated that the bulk of the workload would have to be handled during the first three months after the occupancy office is opened, it will be found advisable to employ a staff of 4 persons for that period and to reduce it to 2 persons for the last month or 5 weeks. In other words, it may be necessary as applications are received and processed, to make adjustments in the size of the staff and the particular functions of the individual staff members to handle the actual workload as it develops. Unless this is done, backlogs will occur when the workload turns out to be greater than was anticipated or in instances where the workload is less than was anticipated, there will be insufficient work to keep the staff busy. After initial occupancy of a 200-unit project, the manager should be able to handle all the occupancy work including re-examination.

3. Establishing Specifications for Positions to be Filled. Having determined the size of staff required, the next step is to set up the specifications for each position to be filled. This involves determinations as to the functions for which the incumbent of each position will be held accountable and also the responsibilities entailed. Following is a listing of job titles generally used in connection with occupancy work and a brief description of the responsibilities and duties usually vested in positions so titled.

(Cont'd)

a. Occupancy Supervisor - Responsibilities and Duties

(1) Determines and recommends to the Board of Commissioners for adoption such policies as will be needed to assure the project being tenanted by only those families who meet the eligibility conditions set forth in the Act and in the contract between the Local Authority and PHA;

(2) Prepares Schedule of Rents and Other Charges;

(3) Devises operating policies, procedures, and forms to implement the adopted occupancy policies of the Local Authority;

(4) Establishes and maintains working relationship with employers, community agencies and organizations, and all other sources whose cooperation will assist in establishing a family's eligibility and preference rating;

(5) Prepares informational material for direct distribution to prospective tenants;

(6) Assists Executive Director in planning for and executing a publicity program designed to inform the general public concerning the program and to stimulate applications from low-income families;

(7) Assembles and organizes all requisite reference and training materials and prepares Operating Manual for occupancy staff;

(8) Advises Executive Director concerning occupancy staff requirements and pursuant to agreements reached, interviews and selects personnel needed;

(9) Sets up occupancy office and trains occupancy staff;

(10) Supervises and directs the work of the occupancy staff;

(11) Reviews applications and determines steps to be taken in processing;

(12) Reviews verified findings and recommends disposition to be made of each application;

(13) Interviews applicants presenting special problems;

(14) Directs selection of tenants and the assignment of units;

(15) Assists as needed in interviewing selected applicants, explaining terms of lease, management policies, tenant maintenance, etc.

(Cont'd)

(16) Attends and participates in staff meetings, conferences, etc., as the Local Authority's representative on matters pertaining to occupancy; and

(17) Performs special duties as required such as preparation or review of statements for the press, special reports, and similar matters pertaining to occupancy.

b. Receptionist, Interviewer, Verifier, Home Visitor - Duties and Responsibilities 1/

(1) Receives applicants and explains admission requirements;

(2) Conducts application interview;

(3) Advises applicant as to his status at close of application interview and explains reason if applicant is determined to be ineligible;

(4) Informs applicant concerning verifying data required;

(5) Outlines for Supervisor's approval steps to be taken in determining the applicant's eligibility and preference rating;

(6) Contacts employers, social agencies, Veterans Administration, and such other authoritative sources as may be necessary in assembling verifying material;

(7) Makes home visit and physical inspection of applicant's housing conditions;

(8) Submits regular reports showing progress of work;

(9) Schedules application interviews and home visits; and

(10) Performs such other duties as are assigned by the Occupancy Supervisor.

c. Control Clerk, File Clerk, Stenographer, Typist - Responsibilities and Duties 1/

(1) Sets up and maintains required records, controls and files;

(Cont'd)

1/ For purposes of staff flexibility it is suggested that the job descriptions for these four positions be the same and that the specific functions for which the incumbents will be held responsible be determined at the operating level. This permits the shifting of personnel to meet the needs arising out of a shift in workload.

(2) Handles routine requests for information and refers matters of controversial nature or problem cases to the appropriate professional staff member;

(3) Prepares required reports and compiles statistical data as needed;

(4) Receives, reviews, and makes appropriate disposition of incoming correspondence;

(5) Sends out routine requests for information;

(6) Handles other correspondence as directed, including taking dictation and preparing correspondence of more or less routine nature;

(7) Prepares assignment slips and other internal occupancy forms;

(8) Maintains liaison with maintenance staff with respect to availability of units for leasing;

(9) Keeps current a running record of rental income and makes a daily comparison with the lowest possible average contract rent; and

(10) Performs special duties such as assisting in interviewing applicants, verifying employment and income, and matters of similar nature as needed and as assigned by the Supervisor.

4. Establishing Personnel Qualifications. Following is a brief resume of the personal attributes or qualities and educational or experiential backgrounds which have been found to be an asset to a person employed to handle the occupancy functions of a Local Authority.

a. Occupancy Supervisor

(1) Personal Qualities or Attributes. The Occupancy Supervisor should be a person of proved administrative and analytical ability who can give sympathetic consideration to and make an impartial analysis of people. This worker should be alert, resourceful and imaginative, with ability to organize and direct the work of others, and to establish findings and make recommendations clearly and logically in either oral or written form. In addition, this worker should be capable of acquiring a broad knowledge of the public housing program and should possess the personality and tact to interpret successfully the principles and techniques of eligibility determinations and tenant selection to members of the Local Authority and to representatives of various agencies or lay groups unfamiliar with these functions.

(Cont'd)

(2) Background. It has been found that persons with administrative experience in a related field of public service or with the following type of educational and experiential background are generally those who best fulfill the responsibilities vested in an Occupancy Supervisor.

(a) Education. Graduation from a college of recognized standing with major training in economics, the social sciences and public or social work administration;

(b) Experience. Three years of experience in recognized public or private social agencies requiring a thorough knowledge of community organization and the requisite techniques of family welfare work, at least one year of which was spent in an administrative, supervisory or training capacity. 1/

b. Receptionist, Interviewer, Verifier, and Home Visitor 2/

(1) Personal Qualities or Attributes. To perform the functions of Receptionist, Interviewer, Verifier, or Home Visitor requires the employment of persons who are qualified to give sympathetic consideration to and to make an objective analysis of the varied problems of low-income families and who have demonstrated their ability to verify, analyze and evaluate facts and to make sound impartial recommendations based upon findings. Also, resourcefulness, tact, and a genuine interest in and understanding of people are essential qualifications.

(2) Background

(a) Education. Graduation from a college of recognized standing, with major training in the social sciences;

(Cont'd)

1/ In cases of slum clearance projects, it is highly desirable that the person engaged as Occupancy Supervisor should have been identified with or in close touch with relocation activities. If the supervisor appointed has had no previous experience in public low-rent housing, it will be advantageous to arrange for this staff member to secure special training and to observe, and if possible, actually to participate for a period in the occupancy activities of another PHA-aided project before assuming active responsibility for these duties.

2/ To enable the occupancy staff to meet the exigencies of a shifting workload the qualifications for these four positions should be fairly uniform. Generally when the application office opens the emphasis will be on conducting interviews and the services of persons employed principally as verifiers or home visitors will be needed to assist in this phase of the work. Later, when the emphasis shifts to verification and home visiting, the receptionist may be required to conduct complete application interviews and evaluate the validity of verifying material submitted by applicants while the regular interviewers assist with home visits.

(b) Experience. One year of experience with recognized public or private social agencies or in a related field requiring a thorough knowledge of community organization and the requisite techniques of family welfare work.

c. Clerical Personnel - Control Clerk, File Clerk, Typists

(1) Personal Qualities or Attributes. The clerical part of the occupancy staff should comprise individuals who are alert, adaptable, cooperative and quick to grasp new ideas and concepts. Of special importance is the employing of persons who possess a pleasant and tactful manner and who are experienced in handling work involving public contacts.

(2) Background

(a) Education. Graduation from high school, with completion of a special business course preferred;

(b) Experience. Three years of office experience, including typing, of which at least one year involving the responsibility for the installation and maintenance of office files and records. Also previous experience in assembling and presenting data obtained from various sources will be most helpful.

5. Need for Training of Occupancy Personnel. In many instances the personnel in the Occupancy office constitutes the only point of contact between the general public and the Local Authority. Therefore, the importance to the Local Authority of having its occupancy personnel well versed in the national and local aspects of the public housing program, as well as trained to carry out specific functions, cannot be overemphasized. Every day, occupancy personnel will be called upon to interpret the policies governing admission to and continued occupancy of low-rent projects administered by the Local Authority. However, before policies can be interpreted, they must be understood. This involves not only a understanding of the language of the policy, but also a comprehensive knowledge of the reasons and necessity for such policy as well as the interrelationship of the various governing policies and their significance in achieving the ultimate objectives of the public low-rent housing program. Experience has shown a comprehensive orientation and training program to be the most effective device for a Local Authority to use in supplying its personnel with the background and skill needed to understand, interpret, and apply its policies.

6. Outline Of Suggested Orientation And Training Program For Occupancy Personnel. Set forth below is a suggested outline of an orientation and training program for occupancy personnel which has been found to be broad enough in scope to acquaint them with the fundamentals and objectives of

(Cont'd)

the public low-rent housing program and to develop skill in carrying out the functions for which they are responsible.

a. Public Low-Rent Housing Program Generalities

(1) National Aspects. Extent of slums and blighted areas in the United States; economic and social effects of slums; development of public housing in the United States and Federal housing legislation, particularly the U. S. Housing Act of 1937, as amended; and functions of the various housing agencies.

(2) Local Aspects. Local housing conditions, building regulations, zoning laws, methods and extent of enforcement; state and local enabling legislation, activities of the local housing authority to date, including relocation of site occupants; current data on economic conditions, housing conditions and social factors in the community affecting the low-rent market and the establishment of income limits; maps and census analyses showing location of substandard areas in the locality.

b. Local Program

(1) Physical Aspects. Dwelling unit sizes, types and facilities, project facilities for community activities; and proximity of project to schools, churches, hospitals, clinics, community centers, playgrounds, parks, shopping areas and transportation facilities.

(2) Management Policies. Rental agreement or lease; methods of rent collections, etc.; management policies regarding tenant maintenance of property, use of lanndries, garbage and trash collections, etc.

c. Occupancy Policies and Procedures of the Local Authority. Eligibility criteria; income limits; rental charges in relation to income; preference priorities in selection of tenants, forms used and instructions for filling them out; classifying and filing applications; techniques for appraising and scoring substandard housing conditions; methods for estimating yearly income and verifying rate of income from various sources; the processing of an application from the initial interview through verification, selection from among eligible applicants to final review and leasing.

d. Policies and Functions of Related Local, State and Federal Agencies. The functions of related agencies and their governing policies should be discussed in detail preferably by a representative of the agency concerned. Acquainting the Occupancy Staff with the functions of and services available from such agencies or organizational units as the police department, health department, welfare and social agencies, legal aid society, hospital clinics, schools, Federal Security Agency, Veterans Administration and other public service groups will enable it to know the appropriate source from which needed information may be obtained and to which a family needing

(Cont'd)

a specific type of assistance may be referred. Also included in this phase of the training program, would be discussions on the federal and state laws pertaining to unemployment compensation, G.I. and Veterans benefits, workmen's compensation - wages and hours - employment of minors, and similar types of legislation or regulations.

7. Training Techniques. Reading assignments, lectures, round table discussions, supervised field assignments, and laboratory sessions devoted to the use and execution of basic forms, classification and filing of applications should all be utilized in conducting a training program and all of the occupancy staff, including typists, should actively participate in each training session. In preparing the staff for field work, it will be most helpful to have a municipal building inspector address the group concerning factors to note in determining the need for major structural repairs. This should be followed up with actual inspections of the physical conditions of structures - some substandard - some not. After such field trips the workers should be requested to record and score their findings independently of one another. These should be reviewed by the supervisor and any misunderstandings or misinterpretations noted should be cleared up both individually and collectively. Also, familiarity with and skill in the use of basic forms and application of fundamental procedures, including administrative controls, should be developed. This can be accomplished through the use of hypothetical cases with the various members of the staff serving first as applicant and then as interviewers. These sessions on the application of office procedures should, in addition to covering application interviews, include income computations, determinations with respect to eligibility, preference rating and rent to be paid; classification; filing and all other office functions of the occupancy staff. Discussions should follow each such session to clarify problems which will invariably arise. Time thus spent in acquiring a working knowledge of the various functions of the occupancy section will return worthwhile results for it will assure a greater uniformity in handling applications, and in interpreting policies to the public, and will also produce greater speed and more accurate performance.

GPO 83-15590

BULLETIN NO. LR-31

PUBLICIZING OCCUPANCY POLICIES

ONE OF A SERIES OF BULLETINS ON
SUGGESTED OCCUPANCY PROCEDURES

P H A LOW-RENT HOUSING
BULLETIN

PUBLIC HOUSING ADMINISTRATION
HOUSING AND HOME FINANCE AGENCY WASHINGTON 25, D. C.

JULY 1951

LIST OF BULLETINS
WHICH HAVE BEEN PUBLISHED

Bulletin No.	Title	
LR-1	Zoning and Rezoning	
LR-2	Subsurface Soil Investigation	
LR-3	Site Planning	)
LR-4	Site Engineering	) A series
LR-5	Structural Design, Materials and Methods	) of eight
LR-6	Architectural Planning and Design	) Housing
LR-7	Plumbing, Heating and Ventilation	) Design
LR-8	Electrical	) Notes
LR-9	Lawns and Planting	)
LR-10	General Design	)
LR-11	Selection of Utilities	
LR-12	Construction Contract Documents	
LR-13	Guide Specifications	
LR-14	Equipment Contract Documents	
LR-15	Operation and Repair of Heating Systems (Care of Boilers Out of Service)	
LR-16	Corrosion of Underground Piping	
LR-17	Rules for Boiler Operation	
LR-18	Preparation of Exterior Surfaces for Repainting	
LR-19	Control of Condensation in Crawl Spaces	
LR-20	Glazing	
LR-21	Maintenance of Wood Floors	
LR-22	Basic Specifications for Rural Nonfarm Housing	
LR-23	Operation and Repair of Heating Systems--Boilers (Types, Use and Repair)	
LR-24	Maintenance of Concrete Floors	
LR-25	Indoor Tenant Activity Areas	
LR-26	Routine Care of Lawns	
LR-27	Repainting Exterior Surfaces	
LR-28	Rural Nonfarm Construction Documents	
LR-29	Occupancy Policy Deteriminations to be Made and Action to be Taken Previous to Opening of Application Office	
LR-30	Suggestions for Selecting and Training Occupaney Personnel for Initial Tenant Selection	
LR-31	Publicizing Occupancy Policies	

NOTE: Some bulletins will be issued in parts, of which one or more will be contained in the initial release of each bulletin; other parts will be issued subsequently from time to time as they are completed.

PUBLICIZING OCCUPANCY POLICIES

1. Introduction. The period between the signing of a construction contract for the building of the first low-rent project in a community and the initial occupancy date of such project affords the Local Authority an excellent opportunity to inform the public at large concerning the need for and use to be made of the project. Experience has shown however, that a general educational and informational program will not always suffice to inform families in the lowest income group of the possibility of their obtaining dwellings in the project. Therefore, in communities where interest in the project as manifested by the volume of applications received from low-income families is not commensurate with the size of the market, it will be necessary, in addition to disseminating information of a general nature, for the Local Authority to plan and effectuate a publicity campaign which will not only reach low-income families but will give them some idea as to their eligibility. Releases stressing matters of primary importance to potentially eligible applicants should be issued as soon as policy determinations are made.

2. Emphasis in Publicity Directed to Potential Applicants

a. As distinguished from general educational and informational releases, talks, and discussions, concerning the local housing program as a whole, publicity directed to potential applicants should stress in all news releases, descriptive leaflets, and talks, factors which are of major concern to prospective tenants, such as:

(1) Specific eligibility requirements for admission, clearly and simply stated in terms that may be readily understood and giving particular emphasis to local income limits established to confine tenancy to families in the lowest income group.

(2) A clear statement of the rental policy showing how the family's rent is determined in relation to its income. This statement should be amplified by several examples so that prospective tenants may estimate what their rent may be in public housing and draw a comparison between it and their present housing costs. All statements concerning rents should definitely state what utilities are included. Publication of the minimum and maximum rents to be charged frequently lead to misunderstandings. Where this has been done, families have been known to apply for a $15.00 unit only to learn that their income would require them to pay a rent of $25.00. Emphasis should be placed on the fact that rents in public housing are not determined by the quality or size of the accommodations offered but by the tenant's family income.

(Cont'd)

(3) Occupancy limits for each size dwelling unit.

(4) Statutory requirements governing the order of selecting tenants among eligible applicants.

(5) Advantages offered by the project, i.e., wholesome neighborhood, community facilities, playgrounds, modern conveniences, and other features of interest to a potential tenant.

(6) Information to dispel adverse rumors.

(7) Address of the application office and office hours during which applications may be filed.

b. In preparing written material, and also in all contacts with prospective applicants, it is well to remember that too detailed information may tend to be confusing, but the facts presented should be specific enough to eliminate, without the necessity for personal interview at the application office, families that are definitely ineligible according to established policies. Publicity touched in clear, concise, and simple language, stressing admission policies will also tend to facilitate the entire process of receiving and processing applications, reduce the costs involved, and achieve sound public relations by preventing general misconceptions and misunderstandings with respect to occupancy policies.

c. All publicity should aim to encourage eligible families to apply for admission. Therefore, emphasis on the many applications already received should not be featured when a special effort is being made to reach families in the greatest need. Reference to "slums" or "slum dwellers" should also be avoided, as prospective applicants living in areas of substandard housing do not like to be identified with what these terms connote to them. By the same token it is likewise desirable to avoid reference to "investigators" and "investigations" to determine eligibility and substitute instead such terms as "verifying" or "establishing" eligibility, stressing the fact always that fair consideration will be given to each application received.

3. Suggested Media for and Methods of Reaching Potential Applicants. There follow a number of specific suggestions for reaching eligible applicant families. All of these may not prove equally effective in each community, and there may be many other media much better suited to disseminating information under particular local conditions that have not been included here, but which should not be overlooked locally. As a check on the effectiveness of the various media and methods utilized, it is suggested that a record of the steps taken locally and the results secured be maintained. This may be accomplished by having the receptionist in the

(Cont'd)

application office or interviewers who take applications obtain and tabulate for each applicant family its source of information concerning the project. Such a check will not only have definite value for continuous local use in planning publicity, but by this means experience gained in one community may be passed on to housing authorities in other localities undertaking similar work.

a. Leaflets. Simple and attractive printed leaflets with illustrations, or mimeographed sheets attratively designed, which clearly state the eligibility requirements and rental policy in terms that may be readily understood, are invaluable aids in informing potential applicants concerning the project. Such leaflets should be prepared in sufficient quantity to permit widespread distribution through schools, churches, union halls, veterans organizations, public buildings, stores, and other appropriate channels. In those instances where it is anticipated that the project will serve low-income citizens not too conversant with the English language, it may be found desirable to have the leaflet printed in the native tongue of these potential applicants as well as in English.

b. Posters. Attractive posters may prove an effective means of publicizing the project, but their limitations should be recognized in that it is not usually possible to give full information with respect to occupancy policies and regulations on a poster. For this reason, unless used in conjunction with leaflets, posters may tend to defeat their purpose by encouraging families who are definitely ineligible to apply for admission, thus adding to the workload of the occupancy staff and at the same time raising a question of possible misunderstanding of occupancy policies on the part of the public.

c. Newspaper Releases. The establishment of a close working relationship with the local press will serve the twofold purpose of creating an informed and sympathetic knowledge of the local housing program and of providing means for distributing specific information concerning eligibility requirements. Experience has shown, however, that many low-income families, especially certain racial or nationality groups, may not necessarily read such newspapers regularly and may miss these releases. It is therefore of utmost importance to issue news releases to such organs as foreign-language papers, labor publications, veterans organizations' papers and various neighborhood publications, such as those of church groups, fraternal and other organizations, employee publications of industrial plants in the vicinity and the local shopping news

d. Radio and Television Broadcasts. Radio broadcasts have proved to be a valuable and popular medium for reaching prospective tenants. It is desirable to arrange special 15-minute broadcasts wherever practicable. In addition, it may be possible to secure 5-minute special spots, donated by the sponsor of some popular local program, this time to be devoted to

(Cont'd)

dialogues or interviews, presented in popular informal style. In localities where it has been established, television provides a new medium with unexplored possibilities for disseminating information on housing. Its value in dispensing information to very low-income families may, however, be somewhat limited as this medium may not be easily accessible to the majority of such families. If telecasts are used, a program comparing the present living conditions and costs involved of a typical family with those offered by the project should be of interest. Radio and television programs, when arranged, should be publicized through the local press and by posters and special announcements in neighborhood churches, stores, community centers, and other places frequented by potential applicants. Announcement by special speakers who are prominent in the community should likewise be publicized in advance through similar channels.

e. Talks to Various Groups. This is an important phase of publicity which should be given early attention and may well require the major portion of one staff member's time if adequate and qualified volunteer service cannot be secured. Short talks should be given to groups of persons having contact with or interest in the problems of low-income families and also to places where low-income families customarily congregate in connection with employment, recreational or other purposes. When talks are made the information given should be clearly and simply presented, and ample time should be allowed for questions and discussion.

f. Movie Announcements. The cooperation of managers of local moving picture houses located in or near areas of substandard housing should be enlisted to permit brief talks or perhaps short announcements on the screen.

g. Letters to Site Occupants and Other Interested Families. At least two weeks before formal application taking is to begin, letters should be sent to families forced to move from the site of public slum-clearance or redevelopment projects as well as to all families who, before the period of formal application taking began, indicated an interest in applying for admission. This letter should inform them as to where and when they may apply and what information they should bring with them to support their application. A form letter similar to that shown as Exhibit 2 to Bulletin LR-29 may be useful for this purpose. With such a letter it is usually found desirable to enclose a descriptive leaflet prepared along the lines suggested above. This has been found to be an effective means of encouraging applications from families who may be eligible and of discouraging applications from those who are definitely ineligible.

h. Special Information Services. A member of the occupancy staff or well-trained volunteer assistants may be stationed at various places frequented by low-income families, to give information concerning

(Cont'd)

eligibility requirements to families wishing to make inquiries. A special information service for the same purpose may also be developed in conjunction with demonstrations of furnished dwellings open for inspection at the project.

4. Liaison with other Public Bodies, Quasi-Public, and Private Groups. There are within most communities many organized groups which, like the Local Authority, are functioning in such a way as to bring them into direct contact with the low-income families. This group encompasses such agencies or organizations as Veterans Administration, Red Cross, public and private welfare agencies, American Legion and other veteran organizations, labor unions and many others. At the very inception of its program, the Local Authority should ascertain which other groups in the community have contacts with or are seriously interested in low-income families and immediately establish liaison with them. Such groups are concerned with low-income families should be kept currently informed as to progress made in developing the project and policy determinations reached with respect to occupancy matters. If this is handled properly the Local Authority will be able to use these groups as an effective medium for disseminating information to low-income families pertaining to the project and eligibility requirements for admission. Organizational groups such as Parent-Teacher Associations, Business and Professional Women's Clubs, League of Women Voters, Visiting Nurse Associations, as well as administering authorities of schools, colleges and hospitals, and church groups are usually eager to participate in any activity which tends to improve life in the community or to benefit the citizenry.

GPO 83-1559:

SUGGESTED STANDARDS FOR COMPUTATION OF INCOME AT TIME OF ADMISSION AND REEXAMINATION

In all cases when determining rents and eligibility, all incomes of the following shall be counted:

1. Household members, including minors.
2. Absent members, if head of a family.

Persons who are unemployed at the time of income computation, but who have worked more or less regularly during the preceding year shall have earnings included in the anticipated total family income in an amount (1) no less than was earned during the preceding 12 months, or (2) equal to his most recent wage rate computed on an annual basis, whichever is greater.

Before determining eligibility and/or establishing a rental an employer's verification statement shall be obtained for each worker. Such a statement shall be signed by the employer or by a qualified official of the firm and in all cases the statement shall include the total amount earned during the preceding 12-month period or any lesser period specified by the employer. All other income shall also be verified at its source.

In addition to the employer's verification statement we recommend that a W-2 form or forms covering all employment of each worker during the last calendar year be submitted by the tenant in all cases where employers are required by law to execute such document. (The LHA must of course have assurance that the submitted W-2 forms are valid since it is now possible to obtain blank W-2 forms). While W-2 forms alone cannot be used as the basis of income determination, especially if the computation is being made more than 4 months after the end of the period covered by the W-2, nevertheless it is of value as a basis of comparison with the employer's statement of past year's earnings as reported in the employer's verification letter and will serve as a means of recognizing whether overtime was made.

Standard methods for computing income are listed below:

1. Except in the case of out-of-door workers (see 2 below) and workers on varying overtime (see 3 below) earnings shall be anticipated on a 52-week or 12-month basis. Earnings shall be computed on a lesser number of weeks only if employer verifies that the worker receives less than 52 weeks pay. In no event shall an income be anticipated that is less than previous year's earnings, if the employment is the same.

2. Anticipated annual earnings of out-of-door workers whose employment is subject to weather conditions shall be established at (1) the amount based on previous year's average for time employed adjusted to present rate of pay including overtime, or (2) present wage for 40 hours times 46 weeks, whichever is greater.

3. Anticipated annual earnings of workers who during the past year were on fluctuating overtime shall be established at an amount not less than that actually earned during the past 12 months or not less than an annual amount based on the average actually earned for a lesser period. However, if this amount is less than the present wage on an annual basis, then the present wage shall be used.

4. In those cases where all or any portion of the family income is received from self-employment, documentary evidence to the satisfaction of the local authority must be submitted as to the amount of earnings from such business or self-employment. Such documentary evidence shall include notarized statements setting forth gross receipts, itemized expenses and net income (expenses incurred for business expansion, or amortization of capital indebtedness shall be included in net profits). However, if all of the submitted evidence does not appear to be reasonable in view of a comparison with earnings of employees in similar lines of work, a consideration of local opportunities and standard of living of the family, the affidavit should not be accepted as the sole basis upon which rent is determined. If no other written evidence is obtainable the local authority should estimate additional income in a reasonable amount.

5. Earnings of workers reported as part-time, especially day workers such as domestics and yardmen, present a particular problem to all local authorities. No such worker shall be considered at less than full time unless there is reasonable and satisfactory evidence to the contrary.

6. A figure representing minimum net earnings for each of the following shall be established to include wages as well as tips and meals. This figure shall be used when computing family income unless a statement of past year's earnings indicates a greater amount, in which case the latter shall be used:

Taxi drivers	Waitresses
Bell boys	Red caps
Waiters	Porters
Negro beauticians	

7. A very thorough and continuous investigation shall be made of all potential wage earners reported as not working. If at the time ofincome computation no verifiable employment has been ascertained for persons who are believed to be working, an estimate based on local work opportunities and the earning capacity of the potential worker should be made and included in family income as a temporary measure until true income can be verified.

(Failure to report earnings of an employed person often will result in the family's not paying the proper rent which not only causes a violation of the minimum rent-income ratio required by the law and your contract but also could create a bad problem in relations between tenants and management and among tenants who are being charged rents based upon their true incomes. Moreover, it is consistent with the principles of the low-rent housing program to house only families whose incomes are within the limits established for eligibility. It can readily be seen that this basic objective will not be accomplished unless constant check is made on incomes of unreported potential workers.)

8. Incomes of servicemen, both resident and absent, shall be computed in accordance with Section 4[illegible]:11 of Manual of Policy and Procedure dated September [illegible], 1950. In no case is the rent to be based upon the allotment or quarters allowance only.

Bulletin # 40

BULLETIN NO. LR-33

DO COMMUNITY SERVICES PROGRAMS PAY DIVIDENDS?

ONE OF A SERIES OF BULLETINS ON
SUGGESTED OCCUPANCY PROCEDURES

PHA LOW-RENT HOUSING
BULLETIN

PUBLIC HOUSING ADMINISTRATION
HOUSING AND HOME FINANCE AGENCY WASHINGTON 25, D. C.

JULY 1951

LIST OF BULLETINS WHICH HAVE BEEN PUBLISHED

Bulletin No.	Title	
LR-1	Zoning and Rezoning	
LR-2	Subsurface Soil Investigation	
LR-3	Site Planning	A series of eight Housing Design Notes
LR-4	Site Engineering	
LR-5	Structural Design, Materials and Methods	
LR-6	Architectural Planning and Design	
LR-7	Plumbing, Heating and Ventilation	
LR-8	Electrical	
LR-9	Lawns and Planting	
LR-10	General Design	
LR-11	Selection of Utilities	
LR-12	Construction Contract Documents	
LR-13	Guide Specifications	
LR-14	Equipment Contract Documents	
LR-15	Operation and Repair of Heating Systems (Care of Boilers out of Service)	
LR-16	Corrosion of Underground Piping	
LR-17	Rules for Boiler Operation	
LR-18	Preparation of Exterior Surfaces for Repainting	
LR-19	Control of Condensation in Crawl Spaces	
LR-20	Glazing	
LR-21	Maintenance of Wood Floors	
LR-22	Basic Specifications for Rural Nonfarm Housing	
LR-23	Operation and Repair of Heating Systems--Boilers (Types, Use and Repair)	
LR-24	Maintenance of Concrete Floors	
LR-25	Indoor Tenant Activity Areas	
LR-26	Routine Care of Lawns	
LR-27	Repainting Exterior Surfaces	
LR-28	Rural Nonfarm Construction Documents	
LR-29	Occupancy Policy Determinations to be Made and Action to be Taken Previous to Opening of Application Office	
LR-30	Suggestions for Selecting and Training Occupancy Personnel for Initial Tenant Selection	
LR-31	Publicizing Occupancy Policies	
LR-32	Suggested Operating Procedures for the Receipt and Processing of Applications	
LR-33	Do Community Services Programs Pay Dividends	

NOTE: Some bulletins will be issued in parts, of which one or more will be contained in the initial release of each bulletin; other parts will be issued subsequently from time to time as they are completed.

- -

DO COMMUNITY SERVICES PROGRAMS PAY DIVIDENDS?

"What'll we do next?" said the 10-year old boy to the gang leader after the last garbage can in the housing project had been overturned. This was 1940.

On an autumn day in 1950 at the same project, a 10-year old addressed the chairman of the Junior Patrol: "What'll we do next?" Largely due to the efforts of these boys, the project had just won the annual award offered by the city for the most attractive neighborhood. The boys were justifiably proud and eager to start another assignment.

In another room of the community building a group of mothers was meeting with the County Home Demonstration Agent to plan the winter club program. Their children were safely playing on the adjacent playground, participating with other project children in activities supervised by a City Recreation Department leader.

A look into the building on other days--during daylight hours as well as evenings--would reveal tenants of all ages engaged in a variety of programs under leadership provided by community service agencies or tenant volunteers. Health clinics, youth programs, arts and crafts classes, and drama group rehearsals are but a few of the activities which keep the building scheduled to capacity.

For many families, life in the project during these past ten years has opened new horizons and provided the first opportunity for experiences in group living and for family and individual development. The programs and activities in which they participate foster cooperation and mutual assistance. The families, responding to an environment which emphasizes the dignity of the individual, take a deeper pride in their citizenship. They learn the meaning of freedom and gain an understanding of and devotion to the American way of life.

This project is typical of many throughout the country in which a well-developed community services program has proved of value not only to tenants, but also to management and to the community. All of the activities are carried on under the sponsorship and leadership of local community service agencies or private groups. No subsidy is paid by the Federal Government and there is no cost to the Local Authority except for the original provision of space and basic equipment.

What Do Families Need?

In its Declaration of National Policy, the Congress declared that "the general welfare and security of the Nation and the health and living standards of its people require...the elimination of substandard and other inadequate housing through the clearance of slums and blighted areas, and the realization as soon as feasible of the goal of a decent home and a suitable living environment for every American family."

(Cont'd)

- -

What, then, are some of the things the Local Authority will consider when a new project is being planned for a community? Site selection, financing, type of construction, minimum standards for livability, will be paramount factors, but what about the families who will occupy the homes? Where will the children play? Where will they go to school? Will facilities and services be available in the neighborhood to meet the needs of the new residents in health, education, recreation, and welfare? These are among the basic requirements for wholesome family and community living, and they cannot be left to chance if these planned buildings are to be transformed into a truly "living" community. The Local Authority recognizes what experts of community planning have long agreed on and what Congress has confirmed--that a community of "suitable living environment," composed of healthy,happy, and responsible citizens, includes more than decent and safe housing.

The program which many Local Authorities and community service agencies have developed over the past decade to meet these needs is two-sided. The development of group interests and activities contributes to the good community life; also, opportunity is provided for health, educational, recreational, and other activities essential to the development and growth of each individual.

The programs and services needed by project families are the same as those which are needed by many other residents of the community and which are acknowledged to be the responsibility of public and private community service agencies. Since the project is but a segment of the larger community, such services for tenants are, obviously, also the responsibility of these same agencies. No project funds are spent, therefore, for direct leadership of programs, although the duties of project staff personnel may include the coordination of these programs.

Management Reviews the Benefits

During the past ten years of public housing, many Local Authorities have demonstrated that an effective community services program has been invaluable in the administration of their projects. They list the benefits in terms of more economical management in both time and cost, fewer problems of rent collection, less property damage, improved tenant home care, and lowered maintenance costs.

Experience has proved to them that providing opportunities for tenants to work and play together, to confer with management on mutual problems, and to assume civic responsibility in community living has created a better mutual understanding and relationship among management, tenants, and the community.

Management's job has become easier as families have gained an understanding of operating problems and have developed the desire to cooperate. Rules and regulations are, of course, necessary for the efficient and economical operation of a project, but as tenants learn to understand the reasons, they begin to assist management in enforcing these rules, and may even suggest the formulation of new ones.

(Cont'd)

Some of the values to management can almost be measured in dollars and cents. Every Local Authority strives to keep down management costs. Tenants can be partners in this effort. Much of the time and cost of maintenance is taken up with keeping the grounds clean and in order, planting and caring for grass, repair and replacement of household equipment, etc. Any part tenants take in such maintenance, any additional care given to equipment, lessens the work and cost of maintenance. Classes in care of equipment and conservation of utilities are examples of programs that have paid big dividends in this respect. Spring clean-up drives sponsored by tenant councils and beautification campaigns coordinated with community contests are other instances.

Those programs which enlist the cooperation of young people have proved of much value also. There have been numerous reports from projects of such organizations as "Junior Patrols," which take a deep pride in the appearance and care of project property, and "Health Patrols," which have made themselves responsible, among other duties, for the orderliness of garbage racks. Local police and fire department personnel have been glad to sponsor youth groups of this type. "Junior Police" take seriously their duties which include the protection of people from accidents and from dangers to health and safety, protecting public meetings from interruption by youngsters, encouraging respect for laws, and helping to bring information to the public. "Junior Fire Fighters" keep on the alert for fire hazards on project property, and, in one project, the members always have with them a nickel given to them by the local fire department for the purpose of telephoning an alarm if necessary. A tenant newspaper quotes the remark of a member of the youth patrol: "You feel more pride in a place when you help to keep it clean. This patrol idea really is something."

One of management's chief concerns, vandalism, has been virtually eliminated in many projects, due largely to the community services program. Children able to play ball in areas provided for such activities no longer have to fulfill the "throwing" urge by hurling rocks at windows and street lights. Energy and interest directed toward crafts, hobbies, and sports have decreased writing on walls and sidewalks, jumping over shrubs and trampling them, knocking over garbage cans, and other escapades which aggravate management's problems. Competition in sports and games has replaced rivalry in mischief, and the team has supplanted the "gang" as a basis for loyalty.

The benefits to management are not limited to clean-up and protection programs. At one project the residents, dissatisfied with the existing play area, obtained equipment necessary for scraping and leveling the area. Twenty-five men worked several evenings, and as a result the residents have a fine ball field at no cost to management. Numerous instances have been reported where tenant groups have provided indoor and outdoor equipment with money obtained through fund-raising activities for this purpose.

Managers have observed that as project families work together and play together, they develop a more cooperative and friendly attitude toward each other. Quarrels and disputes which formerly required so much of management's time to arbitrate

(Cont'd)

now occur much less frequently on these projects and are generally settled by the tenants themselves. Events scheduled in the community building and open to all tenants discourage late home parties which are so often disturbing to adjacent families. Children playing games in a play area do not run through their neighbors' yards or congregate in basement areas, and thus there is less need for "policing" as part of management's task.

Reports from projects tell of the fine leadership which has been provided by community service agencies. Because project funds may not be used for the employment of personnel to conduct community services programs, such leadership must come from public or private groups or from tenant volunteers. The trained leaders not only conduct their own programs on the project site, but have also been very successful in discovering and developing leadership qualities in many tenants.

Through the planning and operation of the community services program, management has received invaluable assistance from community agencies. These agencies have specialists on their staffs, well-trained and experienced in various fields such as health, education, welfare, and recreation. Local Authorities could not possibly employ specialists in all of these fields, but through the program assistance, such service becomes available to them without cost. The local health department constantly studies health problems in the community and consequently knows what health services are needed in these housing areas. Welfare agencies are aware of the economic and social needs of low-income families. Many private agencies and club groups have made studies of health, educational, and recreational resources in the community and can offer valuable information as to where such services are available for project families.

With reference to these same community service agencies, there is still another advantage, and a very important one, which management has gained from the community services program. The necessary contacts and coopration during both the development and management of the project have provided a splendid opportunity for improving public relations. Community agency personnel who plan for or conduct on-site programs become valuable supporters and interpreters of the whole public housing program as they understand it. Since each of the agencies represents an influential group in the community, a more complete knowledge of public housing and what it accomplishes results from these working relationships. Reports from Local Authorities as widely separated as New York City and Savannah, Georgia, testify to such effectiveness, with 65 public and private agencies participating in the project programs in New York and 24 agencies in Savannah. One project manager has written, "We feel that our Community House and our Project Services Activities have done more toward creating good will /for public housing/ than any other single factor."

The Tenants' Story

Typical of the attitude of tenants who are participating in the community services program is the expression of a member of a women's club in a public housing project: "Folks didn't get together much where we used to stay. About

(Cont'd)

- -

all they did was fuss over the young 'uns, the dogs, or who left the spigot in the yard running. Over here it's different. Now we're living, not just existing."

For some people, the move to a housing project has provided the first favorable opportunity for participation in community life. Many, through lack of experience, are unable to avail themselves of existing programs and are even hesitant to try. The community services program, under skilled and understanding leadership from local agencies, has proved of vital importance in meeting the needs of these tenants. It has been invaluable in making families familiar with the services the community can offer, and aware of the value of these services.

Health and clinic facilites, public libraries, and day care of children are but a few of the services a family may need. Economic condition and family life have been stabilized for many families through the financial and counseling assistance of welfare agencies. This has helped families to avoid rental delinquency and has often reduced behaviour problems.

Through educational programs, families have learned to manage their households and incomes to better advantage, to properly care for their units, and to make their homes more attractive. They have learned to read and write and have attended citizenship classes. Instruction has been been given in radio, photography, electronics, and other sciences. A report fron one project tells of three project boys who were trained as apprentices by the operator of a movie projector machine; two of these boys later became professional operators.

One of the most popular programs has been recreation, probably because it has offered enjoyment and pleasure for all age groups. This program has provided new cultural experiences in music, art, and drama; it has developed new interests and hobbies through crafts and other activities. It has taught better sportsmanship through an active athletic program and has reduced vandalism by providing wholesome leisure-time activities for children and adults.

Sports and athletics have proved an effective and pleasurable form of physical activity for many of the residents. Many project teams have competed successfully in city tournaments, and all the tenants have shared the pride in trophies awarded and other forms of recognition.

Many projects have made special efforts to reach those age groups which, in the past, were too frequently not included in community services programs. The needs of pre-school-age children have been studied and plans made to meet these needs--through full-time or part-time child care centers, play centers, etc. At the other extreme have been activities for the older tenants of the project. "Golden Age" clubs and other similar groups have recognized the increased leisure time and resulting program needs of these residents.

(Cont'd)

Still another aspect of the program which has been of much value to many tenants has been leadership training. One teen-age girl who had no previous experience in community leadership but who took an active part in the youth organizations on the project was chosen as the president of her class and also a member of the Student Council in the city intermediate school in which she was enrolled. So outstanding did she become that she was sent from one school to another to assist in the organization of Student Councils. In another large city, a Negro volunteer recreation leader, a man with much potential ability but little experience, became so efficient in his work and made so many influential contacts that he was able to secure a position as Boys' Secretary at a high salary in the Negro YMCA of the city.

The many types of services and programs offered to families in housing projects have been especially helpful in bringing about effective integration of tenants with other residents of the locality. Project boys and girls have joined with other young people in the community in Scout troops, YMCA and YWCA, and other youth organizations; project housewives and those in adjacent areas have participated jointly in activities such as home demonstration clubs, nutrition classes, first aid and home nursing courses, and adult education; project families and families of the surrounding neighborhood have benefitted together from the clinics and health programs conducted by the community health unit on or near the project site; tenants have joined with other community groups in clean-up and beautification campaigns, safety drives, and other programs. Thus, where public antagonism previously existed, it has often been eliminated when tenants and non-project residents have met on common grounds of educational, recreational, and civic interests, and have learned to know and understand each other.

The Community Has Also Gained

Communities throughout the country have spent and are continuing to spend millions of dollars for health, education, recreation, and welfare services for their residents. With the urgent need for funds for so many municipal requirements, such expenditures could not be justified unless there were quite obvious returns in decreased incidence of health, safety, and social problems. Many community surveys have proved the benefits of these services.

The tenant activities program has a direct relationship to these benefits, as well as offering others which are peculiar to that program alone. When the health of project families is improved through an active educational and clinic program, this is reflected in the health of the entire community. The possibility of the spread of infectious diseases, for example, is considerably diminished. As tenants become more interested and concerned about better care of property through home care programs, safety hazards affecting the community are reduced.

When public housing projects reflect tenants' pride by attractive and orderly grounds and buildings, it improves the general appearance of the community. This has also often stimulated surrounding areas to improve the appearance of

(Cont'd)

- -

their neighborhoods, to the extent that even private housing developments have joined with public housing projects in flower shows and beautification and clean-up campaigns.

As a result of acute tenant needs, the community has often been stimulated into action which ultimately benefitted the entire community. In some cities, family welfare counseling service, originally developed to meet the problems of project families, has been expanded to serve the needs of all residents and has become a permanent service. Recreation departments have extended their programs as a result of services originally provided for housing projects. Library branches to serve entire neighborhoods have grown from small reading rooms in community buildings.

Individual tenants, too, have made their contributions to the welfare of the larger community. Project women and girls trained as nurses aides in programs conducted on the project have given service in the hospitals of the city. Much of the leadership in neighborhood P-TA, church, and other activities has been reported as coming from project tenants. The youth of the projects have frequently distinguished themselves in school activities, club work, and other ways as a result of the experience they have derived from project programs.

Some Recent Programs of Interest

Included in recent reports from projects in all parts of the country are several programs which have proved exceptionally successful. A detailed description of some of these programs follows, as other Local Authorities may wish to encourage community agencies or tenant groups to initiate similar events.

1. A Health Carnival

A large project on the West Coast carried on a very successful health program which was an excellent example of how tenants, management and the community can work together. This Health Carnival was sponsored by the Health Committee of the Tenant Council, and had the active support of the County Health Department and of the project management. A remarkable volume of publicity preceded the event, including press notices and radio broadcasts. An interview with Health Committee members was televised. Printed and handmade posters were well distributed around town.

It was reported that close to 20,000 persons came during the 12 hours of the Carnival to see exhibits and demonstrations by 33 government and civic organizations, including the county dental society, city tuberculosis association, city park and recreation department, city fire and police departments, Girl and Boy Scouts, Community Chest, Red Cross, American Cancer Society and other groups. Free chest X-ray pictures were taken and free blood tests given. Children clustered around safety demonstrations by the fire and police departments, and were also so interested in a Red Cross baby bath demonstration that adult spectators remained in the background.

(Cont'd)

- -

In addition to presenting such demonstrations for the first time in the community and providing information on the availability of various city health services, the Carnival attracted attention to what is being done in the project to make it more attractive and livable. For several months preceding the event the tenants, with the aid of management and city groups, conducted a clean-up and safety campaign throughout the project. Special attention was given to garbage and trash cans, and unsightly fences were removed. Through management, lawns were re-seeded and arrangements made for semi-annual unit inspections. As a result of a series of meetings, traffic hazards were reduced by the provision of speed limit and boulevard stop signs and dozens of painted red curbs at corners. When the Carnival opened, the project could proudly display to the visitors a neat and safe section of homes within the area.

In the report of this program, the following results were specifically cited:

a. The Carnival educated project tenants in health, sanitation, and fire and safety measures.

b. Through outside attendance, it helped to further integrate the project with the rest of the community.

c. It made a number of local officials, who attended in an official capacity, better acquainted with the project and its problems and activities.

d. It drew a number of community welfare agencies into closer contact with the project.

e. It improved tenant morale through the volume of favorable publicity received.

2. Homemaking Classes

A Local Authority in the South reports a well-organized program in homemaking activities, which have been popular and effective in several projects. There has been basic information and training in the simple home arts--cooking, sewing, selecting and making practical home furnishings, use and care of equipment, etc. All classes and programs of this type have been sponsored by organized tenant groups with leadership and special assistance from the Board of Education, Vocational School, Extension Service, and public utility companies.

For the past two summers, the Mothers Club has sponsored a homemaking program with the cooperation of the city Vocational School. For an 8-week period each summer, the Vocational School paid a full-time instructor, who conducted daily classes in sewing for beginners and for more advanced students, a special teen-age class in sewing, and also a class in renovation and repair of furniture, including slip covers, draperies, etc.

(Cont'd)

Other staff members of the school acted as consultants in planning the total program, giving a series of food demonstrations which included buying, budgeting, planning, preparing, and serving wholesome meals attractively and economically.

The Mothers Club, through committees, handled publicity for the program, registration for classes, and details necessary for making the program effective.

At the close of the program for the first summer, the Mothers Club and the members of all the classes held "Open House" for the community with an exhibit of all work done during the period, a specially planned program for the occasion, refreshments, etc. At the end of the program for the second summer, a demonstration luncheon was given in which all members of the different classes and representatives of the assisting agencies participated.

3. Citizenship Program

A program which would be particularly helpful in projects with a large concentration of foreign-born American citizens is reported by a Local Authority in the Southwest. The League of Women Voters in the city sponsors a citizenship program in the Latin-American project with the purpose of assisting tenants to adjust to American customs. It conducts classes in English and in American history and helps the tenants to understand better the privileges and duties of an American citizen.

4. University Cooperation

From another project in the Southwest comes a report on university assistance which is typical of many similar programs throughout the country. A workshop was sponsored jointly by the State University and the City Junior College. With no charge except for those who wanted college credit, the course was open to all who wished to attend. Leaders from various organizations and agencies and other interested persons discussed ways and means of meeting local problems, such as city-wide recreation for youth, health problems, training leaders and volunteer workers, etc. Some of the outstanding instructors from the University worked with the group.

This Bulletin has presented but a few of the dividends which have resulted from active community services programs. Many Local Authorities can undoubtedly point out still others. All that is needed is an interest in the welfare of tenants, an understanding of their needs, and the ability to work with community service agencies and to obtain their assistance in meeting these needs.

BULLETIN NO. LR-34

REFINISHING INTERIOR SURFACES

ONE OF A SERIES OF
OPERATIONS ENGINEERING BULLETINS

PHA LOW-RENT HOUSING
BULLETIN

PUBLIC HOUSING ADMINISTRATION
HOUSING AND HOME FINANCE AGENCY WASHINGTON 25, D. C.

JULY 1951

LIST OF BULLETINS WHICH HAVE BEEN PUBLISHED

Bulletin No.	Title	
LR-1	Zoning and Rezoning	
LR-2	Subsurface Soil Investigation	
LR-3	Site Planning	A series of eight Housing Design Notes
LR-4	Site Engineering	
LR-5	Structural Design, Materials and Methods	
LR-6	Architectural Planning and Design	
LR-7	Plumbing, Heating and Ventilation	
LR-8	Electrical	
LR-9	Lawns and Planting	
LR-10	General Design	
LR-11	Selection of Utilities	
LR-12	Construction Contract Documents	
LR-13	Guide Specifications	
LR-14	Equipment Contract Documents	
LR-15	Operation and Repair of Heating Systems (Care of Boilers out of Service)	
LR-16	Corrosion of Underground Piping	
LR-17	Rules for Boiler Operation	
LR-18	Preparation of Exterior Surfaces for Repainting	
LR-19	Control of Condensation in Crawl Spaces	
LR-20	Glazing	
LR-21	Maintenance of Wood Floors	
LR-22	Basic Specifications for Rural Nonfarm Housing	
LR-23	Operation and Repair of Heating Systems--Boilers (Types, Use and Repair)	
LR-24	Maintenance of Concrete Floors	
LR-25	Indoor Tenant Activity Areas	
LR-26	Routine Care of Lawns	
LR-27	Repainting Exterior Surfaces	
LR-28	Rural Nonfarm Construction Documents	
LR-29	Occupancy Policy Determinations to be Made and Action to be Taken Previous to Opening of Application Office	
LR-30	Suggestions for Selecting and Training Occupancy Personnel for Initial Tenant Selection	
LR-31	Publicizing Occupancy Policies	
LR-32	Suggested Operating Procedures for the Receipt and Processing of Applications	
LR-33	Do Community Services Programs Pay Dividends?	
LR-34	Refinishing Interior Surfaces	

NOTE: Some bulletins will be issued in parts, of which one or more will be contained in the initial release of each bulletin; other parts will be issued subsequently from time to time as they are completed.

Refinishing Interior Surfaces

1. Purpose. The purpose of this Bulletin is to provide a source of information which will serve as a guide and reference work in the refinishing of interior plaster, wood, and metal surfaces.

2. Reasons for Repainting. There are several reasons of major importance for repainting interiors. The first reason we think of is to improve their appearance. Others requiring consideration are light reflection and health. Let us consider these reasons and see what each one offers in support of repainting.

   a. Appearance. The appearance of the interior of a home has a definite influence on its occupants. A well-maintained appearance suggests a feeling of comfortable living. It gives the lift that comes subconsciously when we are aware of pleasant surroundings. A good appearance on the interior of a dwelling denotes our interest in our position in the community, our achievements and possessions. A shabby appearance suggests the opposite of all these features and certainly reflects poor housekeeping.

   b. Light Reflection. Light reflection calls for careful consideration in choosing the color and finish for every type of room in a dwelling. This subject has not been given much consideration until recent years, when it was discovered that it had a considerable effect upon our home life. Although flat paints and semi-gloss paints are used because they present less glare and are more prone to minimize wall defects or hide irregularities of surface, they also are in demand because they are more efficient from a light reflection angle. The proper choice of pastel shades in flat or semi-gloss paint can increase the available light tremendously in a dwelling without introducing undesirable glare. The difference in light reflection between a dirty wall and a repainted one can easily reach 15 to 20 per cent.

   c. Health. Repainting of the interior of dwellings also contributes to the health of their occupants. Wall areas are considered by some health authorities to be possible sources of infection and danger. The minute features of interior dwelling surfaces are not apparent to the layman but they sometimes are a harbor or hatching place for disease germs. Painted surfaces are comparatively smooth and provide no lodgement for them. Therefore, when we repaint we contribute to the sanitation of a dwelling and aid in better care of our own health and the health of the community.

3. Surface Preparation for Paint Coatings. Interior surface should be carefully prepared before refinishing. Plaster patches, cracks, and other imperfections require skilled treatment. In addition, greasy

(Cont'd)

surfaces must be washed. All wax and dirt should be removed from doors, windows, trim, baseboards, and moldings. Metal surfaces which are rusting must be properly treated. Most imperfections can be removed if the painter takes the time to do this part of the job. If he doesn't, no amount of labor or effort will produce satisfactory work.

a. Preparing Painted Wood Surfaces. The normal preparation that is required for most interior wood surfaces before recoating consists of removing dirt, smears, grease, and wax. More serious trouble in the form of blistering or peeling paint may be present, in which case removal of part or all of the old coating will be necessary.

(1) Surfaces in Good Condition. Where the old surface is generally in good condition except for dirt, or grease, the best preparation is to wipe it clean with a cloth dampened with mineral spirits. Sandpaper all glossy surfaces and wipe them clean with mineral spirits before recoating. Wood trim that has previously been stained with an oil stain should receive a coating of aluminum paint or shellac to seal in the stain if it is intended to apply a paint coating to such surfaces. Where the type of stain is unknown, coat a small portion of the wood trim with the new finish paint and wait over night for a reaction. If an oil trim was previously applied, it will have bled through the new finish during that period.

(2) Coatings Showing Failure. Where the old coating has started to peel or blister, it should be partly or entirely removed depending on the extent of the failure. An application of paint and varnish remover will soften the old coating which can then be removed with a paint scraper. Paint and varnish remover frequently leaves a coating of paraffin, so after using it wipe the surface with a cloth wet with mineral spirits. To minimize the depressions where paint has been removed, sand off the edges of paint remaining around the bare spots. Old coatings of paint can also be removed by sanding either by hand or by powerdriven machine. Wipe off dust after sanding.

b. Preparing Painted Plaster Surfaces. Whenever possible, painted plaster surfaces should be washed instead of painted, as a number of coats of paint built up on the wall leads to early failure of the paint. When repainting a plaster surface having several coats, better results will be obtained if the thickness of coats is reduced before repainting by scrubbing the wall with an alkaline cleanser, such as a solution of 3 lbs. of sal soda, trisodium phosphate, or sodium silicate to a gallon of water.

(1) Surfaces in Good Condition. When the old coating is of resin emulsion paint, flat oil paint, semigloss or gloss paint, or synthetic rubber-emulsion base paint, and is not chipping off or peeling

(Cont'd)

excessively, the only treatment necessary, if the new coating is to be similar to the old one, is to clean the surface of dust, dirt, and grease. If the existing coating differs in type from the new paint, it may have to be removed (see par. 3b(3)). To remove dust, dirt or grease, rub the surface with a cloth saturated with mineral spirits or turpentine. A high gloss that might interfere with the adhesion of a new coat should be removed by rubbing with a solution prepared of 3 lbs. of sal soda, trisodium phosphate or sodium silicate dissolved in a gallon of water. Repair plaster, if necessary, before repainting (see par. 3d).

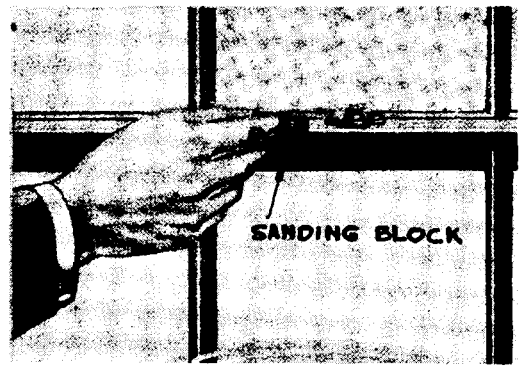
Clean plaster surfaces before repainting.

(2) Coatings Showing Failure. Remove all loose paint by scraping and wire brushing. Sandpaper the edges of paint remaining around bare spots. Clean the entire surface with a cloth saturated with mineral spirits to remove dirt or grease. Remove high gloss of old coating in accordance with directions in the previous paragraph. Repair plaster, if necessary, before repainting (see par. 3d.)

(3) Removing Old Finishes. Calcimine paint must be removed from a surface before any other type of paint can be applied. A solution of soap and water applied to calcimine will remove it from a wall surface. If oil paint is to be applied over a surface containing more than two coats of resin-emulsion or casein paint, these paints must first be removed. Resin-emulsion paint, flat oil paint, and semi-gloss or gloss paint are removed by applying paint and varnish remover. Apply the remover with a paint brush, allow it to remain for about 15 minutes, then scrape off the softened paint. Wash the surface with mineral spirits to dissolve paraffin left by the remover. Casein paint is removed by scrubbing the wall with a solution made by mixing 3 lbs. of trisodium phosphate to a gallon of hot water, using a stiff bristled brush. Rinse the surface thoroughly with clear water and allow it to dry before repainting. Any other type of paint may be placed over synthetic rubber-emulsion base paint so that there is no need to remove this type of coating when repainting.

(Cont'd)

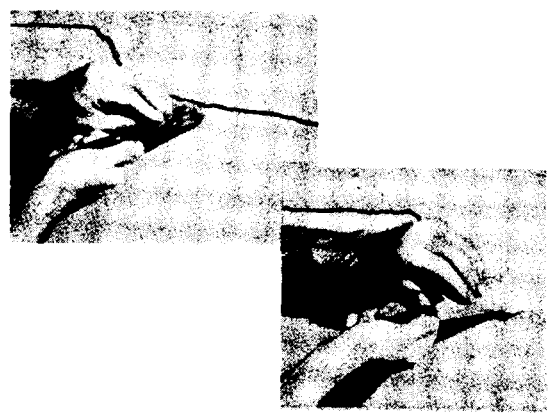
c. Preparing Painted Metal Surfaces. Rust contains moisture, and moisture behind the paint film causes early failure of the finish. Therefore, all rust should be removed from metal before it is repainted. The room side of metal sash in particular becomes rusted because of moisture condensing on the window-panes. Sanding is the best method of removing rust. Machine sanding does the best job but hand sanding will be satisfactory as long as the rust is removed. After sanding, clean the surface with a cloth dampened with mineral spirits. Old paint which is blistering or flaking on the metal should be removed by wire brushing, either hand or power-driven.



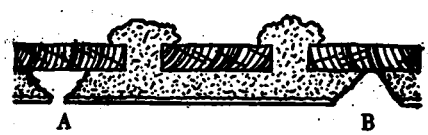
Clean all rust from metal surfaces before repainting.

d. Repairs

(1) Repairing Plaster. After the plaster has been cleaned, all cracks or holes therein should be repaired. Very fine hair-cracks need not be cut out but may be given a touch-up coat of heavy priming paint which should hide them to subsequent coats. In repairing larger cracks and holes in plaster, care should be taken to see that such breaks are cut slanting in toward the lath or in the shape of an inverted "V" so that edges converge toward the surface and dovetail the new material into the old. When repairing small cracks and holes, patching plaster or spackling compound should be used. Soak the edges of the crack or hole with water to bind the patching material with the existing plaster and fill the opening to within 1/4 inch of the surface. Allow the plaster to set partially, then add sufficient plaster to fill the opening and level off at the surface. After the plaster has set and presents a firm finish, smooth off rough or uneven spots with fine sandpaper. The average painter should be competent to make small plaster repairs as mentioned above but replastering of large areas should be attempted



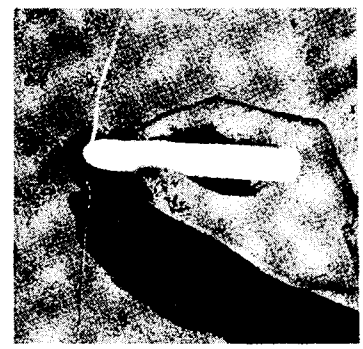
Patching Plaster.



A. Cutout plaster cracks with wide part of "V" next to lath.
B. Incorrect method.

(Cont'd)

only by workmen skilled in that trade. To patch small areas use hydrated lime and gaging plaster. If grease has deeply penetrated a plaster surface, it cannot be removed by cleaning and if painted over will result in unsatisfactory appearance of the finish. Therefore, when plaster is in such condition, the area affected should be cut out and patched. If an old paint is to be applied following plaster repairs, the surface should be allowed at least 72 hours for thorough drying after which the repaired plaster is spot primed. Small holes and cracks may be repaired with a plaster filler prepared in pencil form which is available at paint stores.



Filling hair cracks in plaster.

(2) Miscellaneous Repairs. Wood which is decayed or split and metal weakened by corrosion which cannot be suitably repaired for repainting should be removed and replaced. Loose boards should be securely fastened. Holes left by countersunk nails and empty nail holes should be reputtied and any existing gaps as around door or window casings should be filled with plastic wood.

4. Priming Paints

a. Wood, Plaster and Metal Surfaces. The building up of too many coats of paint over a period of time is frequently the cause of early failure of the finish. Therefore, before applying a priming coat, make certain whether it is required. For example: If we assume that removal of the old finish is not necessary and the color and type of the new paint is similar to the existing finish, it may not be necessary to apply a primer. But if the new finish differs from the existing paint, better results will be obtained by first applying a primer coat. Where a primer coat is considered necessary, it is also possible to obtain a one-coat type oil paint possessing the quality of priming, sealing, and finishing in one operation. Each repainting job presents a different problem and every paint manufacturer prescribes specific directions regarding the application of his paints. Therefore, each painting operation should be given individual consideration and paints applied in accordance with the manufacturer's directions shown on the label of the paint can.

b. Application. In the absence of specific directions by the manufacturer regarding the application of primer paint, the following instructions should be followed:

(Cont'd)

(1) Priming Wood and Plaster Surfaces

(a) Priming for Flat Oil Paint Finish. Where the existing finish on wood and plaster surfaces is in reasonably good condition and is to be recoated with paint of similar type and color, a complete primer coat is not necessary. Places where the paint has been removed because of blisters or flaking should be spot primed and allowed 24 hours to dry before the finish paint is applied. If the old coating has been removed down to the bare plaster or wood with paint remover, by frequent washing, or wear application of a full primer coat is recommended, otherwise the finish coat will "flash" and present an uneven spotty appearance. Old semi-gloss and gloss enamel surfaces in good condition and of the same color as the new flat finish need not be primed with flat oil primer but they should first be sanded or washed with a strong trisodium phosphate solution (see par. 3b.). If more than two coats of resinemulsion or casein paint exist on a surface, they should be removed and the surface primed with flat oil primer before applying a flat finish. It is not necessary to prime over old synthetic rubber-emulsion base paints when refinishing with flat oil paint.

(b) Priming for Semi-Gloss and Gloss Paint Finish

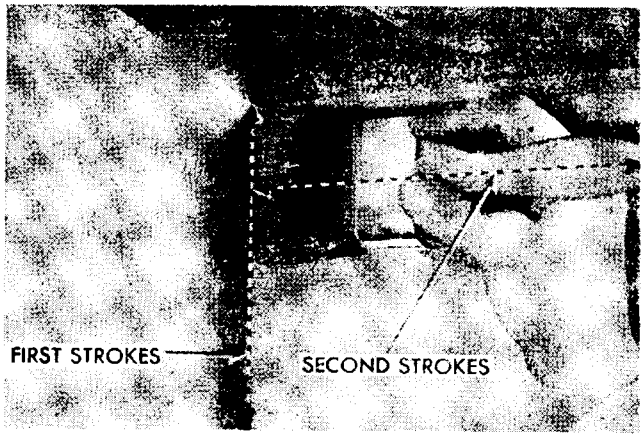
Old semi-gloss and gloss surfaces should first be lightly sanded or washed with a trisodium phosphate solution before refinishing. By removing the gloss this treatment assists adherence of the new coating to the old. Over old semi-gloss and gloss paint the primer should consist of one coat of enamel undercoater and should be applied where durability and appearance are the main factors. If these features are not important, if the old surface is in reasonably good condition, and if the color is similar, the undercoater may be omitted and the finish paint applied directly to the surface after the old gloss has been removed. When refinishing with semi-gloss or gloss enamel over flat oil, resin-emulsion, or casein paint, a coat of enamel undercoater should be applied in order to obtain the best results. However, the undercoater may be omitted here as in the above case if economy is necessary, except if the new finish is a lighter color than the old one. Enamel undercoater may be applied to wood, or plaster interior surfaces and should be allowed 24 hours for thorough drying before covering with the finish paint. Application of the enamel undercoat to surfaces formerly painted with synthetic rubber-emulsion base paint is not necessary before refinishing, unless the old finish is a darker color than the new finish.

(Cont')

(c) Priming for Resin-Emulsion Finish. Where resin-emulsion painted surfaces are in good condition and cleaned, application of a primer coat is not required when repainting with similar paints. If difficulty is experienced in hiding the former paint, or if spots of a different texture or appearance are found on the new finish after it dries, a second coat of finish paint should be applied. Where two finish coats are necessary, allow 24 hours for the first coat to dry thoroughly before applying the second. Old semi-gloss and gloss surfaces in reasonably good condition do not have to be primed before applying resin-emulsion paints, providing the gloss of old coatings is removed by sanding or washing with a strong trisodium phosphate solution (see par. 3b.). Application of primer is not necessary when applying resin-emulsion paint over synthetic rubber-emulsion base paint providing the color of existing paint is not deeper than the color of the new finish.

Proper method of painting a ceiling.

(d) Priming for Synthetic Rubber-Emulsion Base Paint. Priming of the surface before applying synthetic rubber-emulsion base paint is not required providing the condition of the existing coating is not failing excessively. Semi-gloss and gloss enamel surfaces should be sanded or washed with a strong trisodium phosphate solution (see par. 3b) to remove gloss before applying this paint. Synthetic rubber-emulsion base paint may be used in repainting over any other type of paint except calcimine, which should be removed. Removal of old resin-emulsion or oil paint finishes is unnecessary if they continue to adhere to the surface. Surfaces which require



Proper method of painting a corner.

(Cont'd)

priming should be painted with one coat of synthetic rubber-emulsion base primer. This primer dries rapidly and the finish paint may be app ' after approximately 12 hours.

(2) Priming Metal Surfaces. The importance of removing loose paint and rust spots down to the bare metal is stressed if corrosion is to be halted and a durable finish obtained. After removing loose paint and rust, wire brush the entire surface and spot prime the exposed metal with a rust inhibitive undercoat, such as red lead or zinc chromate, as soon as possible after the metal has been cleaned. Allow 24 hours for the spot priming to dry.

Priming metal window sash.

5. Finish Paints

a. Choice of Paints. The paints which are commonly used for interior plaster, wood and metal surfaces are resin-emulsion paint, flat finish oil paint, semi-gloss enamel, gloss enamel, and synthetic rubber-emulsion base paint. Flat lustreless wall paints such as flat oil paint, resin-emulsion paint or synthetic rubber-emulsion base paint are ordinarily preferred for interior surfaces, except bath rooms and kitchens, because they provide better distribution of illumination. However, flat oil paints and resin-emulsion paint cannot stand washing as well as semi-gloss, gloss, and synthetic rubber-emulsion base paints and they are not as moisture-proof. Resin-emulsion, flat finish oil, semi-gloss, gloss, and synthetic rubber emulsion base paints are each progressively more washable in the order mentioned. Where maximum lighting and best vision are desired, choose paint of the lightest suitable color; to reduce glare from excessive sunlight, use more subdued colors. Semi-gloss and gloss paint and synthetic rubber-emulsion base paints are the best choice when selecting coatings which will withstand frequent washings and act as barriers against the penetration of moisture vapor.

(Cont'd)

b. Application

(1) Resin-emulsion Paint. Apply resin-emulsion paint in one thick coating, using a wide brush or roller. Spread the paint on thickly and evenly with the least possible brushing and without leaving brush marks. Work away from the light in narrow sections, and do not allow the edge of a section to dry and show the points where laps meet. If this happens, apply plain water with a clean brush, lightly and carefully, before joining the painted areas. In joining laps do not apply more paint to the lap than elsewhere but gently brush paint from one section into the edge of the preceding one. After painting, ventilate fully or heat the room if there is excessive moisture in the air. Slow drying sometimes causes a spotted appearance. Resin-emulsion paint may be used as a finish for wood, plaster, and metal interior surfaces.

Applying paint with a lamb's wool roller.

(2) Flat Oil Paint, Semi-Gloss, and Gloss Enamels. These coatings may be used as finishes for interior wood, plaster, and metal surfaces. The brush action which results in the best appearing job is quite different than the brushing of paint on the exterior. Exterior paint remains quite wet for a while and can be brushed over or touched up without damaging the paint film. But there is no quicker way to ruin the appearance of a flat or gloss oil paint coated surface than to go back over painted work or to spread out the material too much. These paints set quickly and get sticky, so all spreading and finishing with the brush must be done immediately. Mix the paint moderately thin and flow it on the surface. Put just as much paint on the surface as will stay in one place without running or sagging. Do not play with oil paint. Put it where you want it on the wood, plaster, or metal surface, finish the job as smoothly as possible, and let it alone. Brush flat oil paint as little as possible and gloss paint only enough to smooth it out. In painting a wall, start at the top with about a 1-foot wide stretch and bring it down one foot at a time. When finishing off each one-foot area and in joining it to the next, apply the brush lightly and move every stroke of the brush in a slightly semi-circular manner, up and down. Straight strokes are taboo for smoothing and finishing. (Cont'd)

(3) Synthetic Rubber-Emulsion Base Paint. This type of paint may be used as a finish coat on interior wood, plaster, or metal surfaces, and on surfaces which are subject to frequent washing or excessive moisture. Apply the paint generously and evenly with a large flexible brush but do not put on so much that it will sag or run. After spreading the paint over an area, level off the surface lightly with the tip of the brush. Keep the brush well filled at all times. Do not brush this type of paint excessively or brush it out too thinly. It should be applied by moving the brush in a slightly semi-circular manner up and down. Synthetic rubber-emulsion base paint dries to touch in approximately 30 minutes and one coat is normally sufficient on a repainting job. This type of paint dries to a glareless finish.

6. Transparent Coatings. Natural finished interior wood doors and trim may be refinished with varnish, shellac, or sealer and wax. Painted woodwork may also be stripped of its paint and refinished with any of these transparent coatings.

a. Preparing Surfaces

(1) Varnished or Shellacked Surfaces. To prepare natural finished woodwork for refinishing with varnish, shellac, or sealer, sand the surface lightly to remove all marks or blemishes. Such marks or blemishes if not removed will appear through the new coating. Remove grease film on wood by rubbing with a cloth dampened in turpentine and be sure that the surface is free of dust. If the condition of the existing finish is such that its complete removal is necessary to produce a satisfactory job, apply paint and varnish remover. When the old finish has softened sufficiently, scrape it off with a paint scraper or sharpened putty knife. Wash the wood with turpentine to dissolve wax left by the remover, and follow with a sanding or rubbing with steel wool to remove dust particles. To remove shellac, apply denatured alcohol to the surface and scrape clean.

(2) Painted Surfaces. To strip painted wood which is to be refinished in varnish, sealer, or shellac, soften paint with paint and varnish remover and scrape off old coating.

(3) Stained Surfaces. There are numerous commercial stain removers available on the market for use in removing stain from wood. If the old stain becomes dark and uneven, or a light stain is desired, clean wood may be uncovered by deep sanding or by application of a stain remover or bleach. A method of lightening old stain is to apply a bleaching solution made of 8 ounces of oxalic acid added to 2 quarts of hot water. More than one application may be necessary. After the surface has dried, smooth down the raised grain in the wood with fine sandpaper. Brush off dust and refinish as new wood.

(Cont'd)

b. Application

(1) Resin-emulsion Paint. Apply resin-emulsion paint in one thick coating, using a wide brush or roller. Spread the paint on thickly and evenly with the least possible brushing and without leaving brush marks. Work away from the light in narrow sections, and do not allow the edge of a section to dry and show the points where laps meet. If this happens, apply plain water with a clean brush, lightly and carefully, before joining the painted areas. In joining laps do not apply more paint to the lap than elsewhere but gently brush paint from one section into the edge of the preceding one. After painting, ventilate fully or heat the room if there is excessive moisture in the air. Slow drying sometimes causes a spotted appearance. Resin-emulsion paint may be used as a finish for wood, plaster, and metal interior surfaces.

Applying paint with a lamb's wool roller.

(2) Flat Oil Paint, Semi-Gloss, and Gloss Enamels. These coatings may be used as finishes for interior wood, plaster, and metal surfaces. The brush action which results in the best appearing job is quite different than the brushing of paint on the exterior. Exterior paint remains quite wet for a while and can be brushed over or touched up without damaging the paint film. But there is no quicker way to ruin the appearance of a flat or gloss oil paint coated surface than to go back over painted work or to spread out the material too much. These paints set quickly and get sticky, so all spreading and finishing with the brush must be done immediately. Mix the paint moderately thin and flow it on the surface. Put just as much paint on the surface as will stay in one place without running or sagging. Do not play with oil paint. Put it where you want it on the wood, plaster, or metal surface, finish the job as smoothly as possible, and let it alone. Brush flat oil paint as little as possible and gloss paint only enough to smooth it out. In painting a wall, start at the top with about a 1-foot wide stretch and bring it down one foot at a time. When finishing off each one-foot area and in joining it to the next, apply the brush lightly and move every stroke of the brush in a slightly semi-circular manner, up and down. Straight strokes are taboo for smoothing and finishing. (Cont'd)

(3) Synthetic Rubber-Emulsion Base Paint. This type of paint may be used as a finish coat on interior wood, plaster, or metal surfaces, and on surfaces which are subject to frequent washing or excessive moisture. Apply the paint generously and evenly with a large flexible brush but do not put on so much that it will sag or run. After spreading the paint over an area, level off the surface lightly with the tip of the brush. Keep the brush well filled at all times. Do not brush this type of paint excessively or brush it out too thinly. It should be applied by moving the brush in a slightly semi-circular manner up and down. Synthetic rubber-emulsion base paint dries to touch in approximately 30 minutes and one coat is normally sufficient on a repainting job. This type of paint dries to a glareless finish.

6. Transparent Coatings. Natural finished interior wood doors and trim may be refinished with varnish, shellac, or sealer and wax. Painted woodwork may also be stripped of its paint and refinished with any of these transparent coatings.

a. Preparing Surfaces

(1) Varnished or Shellacked Surfaces. To prepare natural finished woodwork for refinishing with varnish, shellac, or sealer, sand the surface lightly to remove all marks or blemishes. Such marks or blemishes if not removed will appear through the new coating. Remove grease film on wood by rubbing with a cloth dampened in turpentine and be sure that the surface is free of dust. If the condition of the existing finish is such that its complete removal is necessary to produce a satisfactory job, apply paint and varnish remover. When the old finish has softened sufficiently, scrape it off with a paint scraper or sharpened putty knife. Wash the wood with turpentine to dissolve wax left by the remover, and follow with a sanding or rubbing with steel wool to remove dust particles. To remove shellac, apply denatured alcohol to the surface and scrape clean.

(2) Painted Surfaces. To strip painted wood which is to be refinished in varnish, sealer, or shellac, soften paint with paint and varnish remover and scrape off old coating.

(3) Stained Surfaces. There are numerous commercial stain removers available on the market for use in removing stain from wood. If the old stain becomes dark and uneven, or a light stain is desired, clean wood may be uncovered by deep sanding or by application of a stain remover or bleach. A method of lightening old stain is to apply a bleaching solution made of 8 ounces of oxalic acid added to 2 quarts of hot water. More than one application may be necessary. After the surface has dried, smooth down the raised grain in the wood with fine sandpaper. Brush off dust and refinish as new wood.

(Cont'd)

b. Refinishing

(1) Staining

(a) Softwoods. Stains for softwoods are pigment oil stains. They may be applied directly to the bare wood or if more control over the depth of color is desired, they may be applied over the wood after it has been sealed with one coat of wood sealer or one coat of thin shellac (about a 1-pound cut). Apply pigment oil stain with rags or spread it by brush. Wipe off the excess before a stain dries.

(b) Small Pore Hardwoods. Hardwoods are divided into wood with pores smaller than those in birch and wood with pores as large or larger than those in birch. For hardwoods with pores smaller than those in birch, use pigment oil stains in the same manner as on softwoods or apply penetrating oil stains made with dyes. Water stains also may be used. It is seldom desirable to apply sealer or shellac to hardwoods before staining unless some unusual effects are desired. When using penetrating oil seal, apply a thin coat of shellac (2-pound cut) after the stain has dried. If water stain is used and raises the grain of hardwoods, apply a wash coat of thin shellac (1/2-pound cut) over the stain and smooth the surface lightly with No. 000 sandpaper.

(c) Large Pore Hardwoods. Hardwoods with large pores should be finished in a similar manner as small pores hardwoods except that the pores should first be filled with either natural or colored wood filler. Apply filler before an oil stain; but after a water stain. When no stain is used, apply a colored filler. Brush the filler vigorously across the grain. Allow it to stand for 10 to 30 minutes for the volatile portion to evaporate, then remove the excess by wiping with rags, first across the grain then lightly along the grain.

(2) Varnishing

(a) Varnishing Bare Wood Surfaces. On surfaces where the old coating has been completely removed, refinish as a new surface. Apply varnish with a clean brush either flat or oval in shape. Take a full load of varnish on the brush but not enough to drip off. Brush the varnish out well, but not more than necessary to give a smooth, even coating. When the brush is fairly empty after spreading the varnish on the surface, brush rapidly across the grain, then brush lightly with the grain with long even strokes to even up the coating in thickness and remove brush marks, laps, or joints in the varnish. A thin coat is better

(Cont'd)

than a thick one which runs, sags, or wrinkles. Subsequent coats are usually a little thicker and should be spread out vigorously. Allow at least 24 hours for drying between coats. After one coat has dried hard, rub the surface lightly with steel wool, before applying the next coat. The number of coats needed depends on the absorptive qualities of the wood and the desired fullness of finish.

(b) Refinishing Varnished Surfaces. If the old varnished surface is in good condition and no change in the finish is desired, lightly sandpaper the surface and apply one coat of varnish.

(3) Shellacking

(a) Shellacking Bare Wood Surfaces. Shellac is used much in the same manner as varnish. It dries very rapidly. Two coats can be put on an hour or two apart, if necessary, but as with other coating materials, a better job results from allowing ample time for drying. Shellac is mixed thinner than varnish so you must work fast with it. It is so thin that you do not have to bother about laps and joints showing that care must be taken to avoid skipping some places. On bare wood surfaces, apply at least three coats of shellac. Shellac should be brushed as varnish, first across the grain and then along the grain. Each coat of shellac, with the exception of the last one, should be lightly sandpapered after it has dried thoroughly and the dust carefully removed before applying the next coat.

(b) Refinishing Shellacked Surfaces. The process of refinishing old shellacked surfaces is primarily the same as refinishing old varnished surfaces. After they have been lightly sanded to remove any blemishes, water marks, or dirt, apply one coat of shellac. Carefully remove dust before applying shellac.

(4) Sealer-and-Wax Finish

(a) Sealing Bare Wood Surfaces. Penetrating sealer is a suitable finish for wood surfaces, particularly if they are to be subject to any moisture. Brush or mop the sealer on the surface and allow to stand for about 30 minutes. Then rub the surface with No. 2 steel wool, along the direction of the grain. After allowing 24 hours for the sealer to dry, apply one coat of paste or liquid wax. Let wax remain to set and dry for 30 minutes, then polish with a soft cloth or rotary polisher.

(Cont'd)

(b) Refinishing Sealed Surfaces. After the old surface has been cleaned of wax and dirt, and blemishes removed by sanding, apply one coat of sealer, as in above par. 6b(4)(a). When dry, apply one coat of paste or liquid wax and polish with soft cloth or rotary polisher.

BULLETIN NO. LR-35

SUGGESTED PROCEDURES FOR HANDLING THE RELOCATION OF SITE OCCUPANTS

P H A LOW-RENT HOUSING

BULLETIN

PUBLIC HOUSING ADMINISTRATION
HOUSING AND HOME FINANCE AGENCY WASHINGTON 25, D. C.

AUGUST 1951

LIST OF BULLETINS WHICH HAVE BEEN PUBLISHED

Bulletin No.	Title	
LR-1	Zoning and Rezoning	
LR-2	Subsurface Soil Investigation	
LR-3	Site Planning	A series of eight Housing Design Notes
LR-4	Site Engineering	
LR-5	Structural Design, Materials and Methods	
LR-6	Architectural Planning and Design	
LR-7	Plumbing, Heating and Ventilation	
LR-8	Electrical	
LR-9	Lawns and Planting	
LR-10	General Design	
LR-11	Selection of Utilities	
LR-12	Construction Contract Documents	
LR-13	Guide Specifications	
LR-14	Equipment Contract Documents	
LR-15	Operation and Repair of Heating Systems (Care of Boilers out of Service)	
LR-16	Corrosion of Underground Piping	
LR-17	Rules for Boiler Operation	
LR-18	Preparation of Exterior Surfaces for Repainting	
LR-19	Control of Condensation in Crawl Spaces	
LR-20	Glazing	
LR-21	Maintenance of Wood Floors	
LR-22	Basic Specifications for Rural Nonfarm Housing	
LR-23	Operation and Repair of Heating Systems--Boilers (Types, Use and Repair)	
LR-24	Maintenance of Concrete Floors	
LR-25	Indoor Tenant Activity Areas	
LR-26	Routine Care of Lawns	
LR-27	Repainting Exterior Surfaces	
LR-28	Rural Nonfarm Construction Documents	
LR-29	Occupancy Policy Determinations to be Made and Action to be Taken Previous to Opening of Application Office	
LR-30	Suggestions for Selecting and Training Occupancy Personnel for Initial Tenant Selection	
LR-31	Publicizing Occupancy Policies	
LR-32	Suggested Operating Procedures for the Receipt and Processing of Applications	
LR-33	Do Community Services Programs Pay Dividends?	
LR-34	Refinishing Interior Surfaces	
LR-35	Suggested Procedures for Handling the Relocation of Site Occupants	

NOTE: Some bulletins will be issued in parts, of which one or more will be contained in the initial release of each bulletin; other parts will be issued subsequently from time to time as they are completed.

- -

SUGGESTED PROCEDURES FOR HANDLING THE RELOCATION OF SITE OCCUPANTS

1. INTRODUCTION

This Bulletin is issued for the purpose of calling to the attention of Local Authorities, planning to develop low-rent projects on other than vacant sites, certain matters which should be considered in developing a program for the removal of the occupants of such sites. The material contained in this Bulletin does not cover the procedure for submitting a demonstration of feasibility and a plan for the relocation of the occupants of the slum site on which it proposes to build a low-rent project. (See Low-Rent Housing Manual Section 213.2). However, this Bulletin will be helpful in formulating such relocation plan.

2. SCHEDULING RELOCATION ACTIVITIES

Experience has shown that for a Local Authority to assure an occupied site being cleared in time for demolition to proceed as scheduled with the minimum amount of hardship to the site occupants, it must plan its relocation activities well in advance of the actual date that relocation is to begin. Inherant in scheduling relocation activities is the setting up of a time table; selecting staffing and equipping a Housing Advisory Office; devising forms to be used and procedures to be followed in effecting the removal of site occupants; developing a satisfactory public relations program; arranging with welfare and other interested groups for assistance to such site occupant families as may be found unable for financial or other reasons to cope with the problem of relocation; and establishing a permanent record of site occupant families. The same care and consideration should be given when only a few families are to be relocated as is extended to occupants of slum sites. The Relocation Time Table (see Exhibit 1 attached), the following commentaries on the various steps comprising the relocation process, and the specimen forms attached as Exhibits 2, 3, 4, and 5 are more or less general in nature and should be treated as guides for conducting relocation activities in any given locality.

3. TIMING OF THE STEPS INVOLVED IN THE RELOCATION OF SITE OCCUPANTS

a. Progress in site acquisition and the date scheduled for demolition to begin are important factors in timing the various steps comprising the relocation process. In the Relocation Time Table attached as Exhibit 1, the principal steps which the Local Authority will need to take in connection with the removal of site occupants are shown in relation to progress made in acquiring and clearing the site.

b. If there is a time lag between site evacuation and the actual starting of demolition, it may be necessary either to have the structures boarded up

to prevent vandalism and re-entry by squatters or to employ watchmen. Where possible, demolition should proceed immediately subsequent to or concurrently with the site occupant removal program. The immediate demolition of vacated structures will help to quell any feeling of resentment which may have developed in the community over pressure which was brought to bear in removing site occupants.

4. DELEGATION OF RESPONSIBILITY FOR HANDLING RELOCATION AND DETERMINATION OF RELOCATION PERSONNEL REQUIREMENTS

a. Regardless of how few or how many families are to be relocated, the responsibility for clearing the site of occupants should be vested in a qualified person at the time option taking is begun. The number of persons who will be needed to handle relocation will depend upon the vacancy situation in the locality, the number of families to be relocated, the extent of cooperation to be received from other agencies and the time allowed for effecting the removal of site occupants. In delegating responsibility for relocation or in selecting personnel for this phase of the work, recognition should be given to the fact that the home and office interviews required in conjunction with relocation call for the services of professionally trained persons experienced in dealing with the problems of low-income families and familiar with local community agencies and resources. As a matter of fact, essentially the same qualities and skills are needed in persons to be made responsible for effecting the removal of site occupants as are needed by those persons who are or are to be engaged in receiving and processing applications and in selecting tenants.1/

b. Because of this similarity it is suggested, when the size of the low-rent program being developed locally necessitates the employment of full time relocation and tenant selection personnel, that Local Authorities without existing low-rent projects, select relocation personnel with a view to their later functioning in connection with the selection of tenants. Local Authorities with existing projects may find it desirable to delegate the responsibility for relocation to some member of its staff who is experienced in the selection of tenants. In localities where it is not feasible to employ a full-time person or to offer reasonable permanent employment because of the relatively few families to be relocated, lapse of time between site clearance and initial tenant selection, or some other factor, Local Authorities may find it advantageous to obtain through some local welfare agency, possibly on a temporary loan and reimbursable basis, the services of a family welfare worker who has had supervisory experience.

1/ See Bulletin No. LR-30, "Suggestions for Selecting and Training Personnel for Initial Tenant Selection" for resume of personal attributes or qualities and educational or experiential backgrounds which have been found to be an asset for persons to be engaged in occupancy work.

c. In communities where relocation programs are being carried on by other agencies as well as by the Local Authority it is suggested that the Local Authority establish and maintain close liaison with such groups and cooperate with them to the extent possible (see Low-Rent Housing Manual Section 213.2). In this connection it must be remembered that low-income families apparently eligible for public housing who are displaced by a public slum clearance or redevelopment project are entitled to the same preferential treatment as are low-income families apparently eligible for public housing who are living on a site selected for a public housing project.

5. ADVISING THE PUBLIC CONCERNING RELOCATION OF SITE OCCUPANTS

The often expressed concern of local civic, welfare, and other groups over the effect of relocation upon site occupants and the community at large makes the relocation of families a matter of interest to the community as well as to the families involved. Reports issued at frequent intervals through the medium of press releases concerning the progress made in relocating site occupants will tend to create an informed and sympathetic understanding of relocation problems as well as of the housing program in general. In addition, brief informational talks to various groups, including real estate boards and the local Chamber of Commerce, may serve to overcome antagonism and also to prevent landlords and agents in decontrolled areas from raising rents.

6. ARRANGING FOR COMMUNITY GROUPS AND AGENCIES TO PARTICIPATE IN AND ASSIST WITH THE RELOCATION OF SITE OCCUPANTS

The Local Authority should, as soon as option taking gets under way, meet with representatives of each welfare agency or municipal department which may be able to render financial or other assistance in moving needy families from the site. At this meeting the Local Authority should point out the various types of assistance which the site occupants will need and ascertain the type and extent of help which the agencies represented feel that they will be able to give. Also, it may be found highly desirable to enlist the cooperation of neighborhood groups, such as churches, schools, and other organizations in the immediate neighborhood with which the families to be relocated have existing contacts.

7. ESTABLISHMENT OF RELOCATION POLICIES AND PROCEDURES

a. In addition to determining staff requirements for relocation and arranging for assistance from outside groups and agencies the Local Authority will need to formulate and establish certain policies and procedures for its personnel to follow in connection with effecting the removal of site occupants. This principally involves determinations with respect to (1) the length of time to be allowed occupants of purchased properties to find other accommodations; (2) steps to be taken in assembling factual data on families to be displaced; (3) methods to be used in obtaining and maintaining on a current basis, a listing of vacancies available to and suitable for the families to be relocated

including any necessary inspection of such vacancies; (4) form of Notice to Vacate to be used and method of service; (5) rents to be charged site occupants pending their moving from the site; and (6) the follow-up to be made on relocated families.

b. In establishing the length of time to be allowed a family to vacate its site dwelling, it is suggested that the Local Authority take into consideration the availability of other accommodations appropriate to the needs of the families being displaced and the time between acquisition and demolition. In formulating its overall policy on this matter, care should be taken to make it flexible enough to permit latitude when warranted by unusual circumstances. Also conditions which may justify an extension of time should be taken into consideration.

c. If a Local Authority anticipates a significant time lag between the date it expects to acquire title to a site and the date by which the occupants of such site must vacate, it will need to establish a policy with respect to the rent to be charged site occupant families. In instances where, in the opinion of the Local Authority, occupants of the site are paying a fair rent based on the rental market value of the accommodations occupied, it is suggested that the Local Authority, upon acquiring title to the property occupied by such families, charge these families the same rent as they were being charged by the former landlord. When, however, site occupant families are found to be paying a lower or higher rent than is generally charged for comparable accommodations or in instances where the purchased properties are occupied by the former owner, it is suggested that rents for the units occupied by such tenants be adjusted to or established at a figure compatable with the rents normally charged in the area for comparable accommodations.

d. Suggestions with respect to assembling data on site occupants, obtaining listings and making inspections of vacancies, setting up relocation procedures, devising forms, and following up on relocated families are covered elsewhere in this Bulletin. Suffice to say here that, these are matters which the Local Authority should decide upon prior to its acquisition of any part of the site.

8. PREPARATION FOR SETTING UP A HOUSING ADVISORY OFFICE

a. Preparations for setting up a Housing Advisory Office to which site occupants may be referred for advice and assistance in their efforts to locate off-site dwellings entail selecting a location for such office or offices, determining the records to be maintained in such offices, and arranging for necessary equipment for the office or offices.

b. A Housing Advisory Office should preferably be located on or adjacent to the site being cleared so that its facilities and services are readily available to the site occupants. A vacant dwelling unit or storeroom on the site has frequently been utilized for this purpose. If

only one site is being cleared or if relocation is being carried on simultaneously on more than one site and these sites are more or less adjacent one to the other, one Housing Advisory Office, if located so as to be easily accessible to the families concerned, will suffice. If, however, relocation is being carried on concurrently on sites which are widely separated, it will be advisable to establish a Housing Advisory Office on each site with a staff member in charge. In cases where it is necessary to operate two or more Housing Advisory Offices at the same time, it is suggested that one of them be designated as the main office and that administrative control of the whole relocation program be exercised out of that office under the direction of the Supervisor of Relocation. Centralized controls are essential in achieving desired uniformity in policies and procedures and in obviating duplication of effort in public relations, vacancy listings and in contacting other agencies.

c. The Site Occupants Relocation Records (see paragraph 9g, below) for the site or sites being served by the Housing Advisory Office should be maintained in that office as well as a listing of vacant dwellings to which to refer site occupants. Daily clearance with the central relocation office will be necessary to keep vacancy listings current.

d. Each Housing Advisory Office should be equipped with a telephone, file cabinets and other office essentials. Also, each such office should be supplied with a map of the site or sites concerned showing land parcels and structures which may be used to show progress in site acquisition and evacuation. Progress in acquiring parcels may be noted on this map by special coloring. Occupant families can be indicated by colored pins, which are removed as families vacate the site. In addition to the map, it may also be desirable to maintain in the Housing Advisory Office a more detailed system of controls. Such a system might consist of a listing of all properties and the recording of the date on which significant actions occurred. Attached as Exhibit 2 is a suggested form for this purpose. A separate sheet may be made out for each street, and house numbers listed in numerical order. In multiple family structures, a separate line should be used for each unit in the structure. Dates and other notations should be posted daily in the columns, as indicated. The column marked "Date Title Acquired" means the date on which title to the parcel concerned is vested in the Local Authority not date optioned.

e. It may be wise to set up the Housing Advisory Office just prior to making the survey of site occupants. It should not, however, be opened to the public until purchasing starts.

9. SURVEY OF SITE OCCUPANTS

a. The site occupant survey should be started when the PHA approves the first land Purchase Approval, Form PHA-1974. The importance of establishing a sympathetic relationship with site occupants during this and all

subsequent interviews cannot be overestimated, for these early contacts may have a far-reaching effect upon the attitudes developed in the community toward the entire housing program.

b. During the initial interview, site occupants should be given a simple but adequate explanation of the objectives of the local housing program. The relocation interviewer should make it clear that this visit does not constitute a notice to the family to vacate nor to discontinue paying rent to the present landlord. The site occupants should be informed that when the property they occupy is acquired by the Local Authority, they will receive a written notice to vacate and will be instructed at that time as to when, where, and to whom they are to pay rent pending their removal from the site. At the time of this initial contact, site occupant families, without exception, should be informed that subsequent to their receiving a written notice to vacate, issued for site clearance purposes, they will, provided they are eligible for admission to a low-rent project, receive preference over other eligible applicants who have not been displaced from or are not under notice to vacate the site of a low-rent housing project or a public slum clearance or redevelopment project. In informing site occupants of their rights as displaced families, the interviewer must make it quite clear that site occupancy in itself does not establish eligibility.

c. Site occupant families who appear to be eligible for low-rent housing should be advised to preserve the Notice to Vacate which they will receive so that in event they apply for admission to public housing they can use such notice as proof of their displaced status.

d. The interviewer in pointing out the preferential consideration to which site occupant families are entitled should advise them that as among site occupants and other displaced families determined to be eligible for admission, preference will be accorded first, to families of disabled Veterans; second, to families of deceased Veterans or Servicemen, provided such disability or death has been determined by the Veterans Administration to be service-connected; third, to families of other Veterans or Servicemen; and fourth, to site occupant or other displaced families without Veteran or Serviceman status.

e. Undue hardship to site occupants will be avoided, clearance of the site expedited, and legal actions involving evictions kept to a minimum to the extent the Local Authority evidences an interest in the relocation problems of site occupants. In line with this, all site occupant families should be advised during this first interview of the location of the Housing Advisory Office and that it will be the function of that office to assist them in their efforts to locate another place to live.

f. Attached as Exhibit 3 is a suggested Site Occupants Relocation Record form for recording family and other data which will be helpful in planning for relocation and recording progress made in each case. Also included

- -

are those items required in connection with establishing the formal record of site occupants required by Low-Rent Housing Manual Section 213.2. Certain modifications may need to be made to adapt this form to local conditions.

g. One Site Occupant Relocation Record card should be filled in for each site occupant family group. Where two or more families are occupying one dwelling unit and plan to move together again into one dwelling, the cards may be clipped together for relocation purposes and later separated for use in setting up the permanent record of site occupants. These cards should be filed either alphabetically or by street address in three sections, as follows: (1) Families still living on the site; (2) families relocated but not yet interviewed at new address (follow-up calls should be made as soon as possible after family has moved from the site); and (3) families relocated with follow-up interview completed. The data recorded on the Site Occupant Relocation Record card will also be useful in determining whether the site constitutes a slum or if it does not constitute a slum, the number of sub-standard dwellings for which credit may be given toward meeting the equivalent elimination requirements.

10. SETTING UP AND MAINTAINING A LISTING OF AVAILABLE VACANCIES

a. Setting up and maintaining a listing of vacant dwellings suited to the needs of the site occupant families to be relocated usually entails a survey of rental housing to locate vacant dwellings as well as establishing liaison with private rental agents and other sources of information on existing vacancies and, as required, an inspection of vacancies to obtain pertinent information on physical characteristics and rental rates prior to listing them.

(1) The survey to locate vacant dwellings should be conducted in areas where rents and environmental conditions are suited to the economic, and other needs of the families to be relocated. Any one or a combination of the following methods may be used to locate available vacancies:

(a) Obtain vacancy listings from realtors and arrange to keep listings current.

(b) Make a house-to-house canvass. Since experience has shown that site occupants generally prefer to relocate as near the site as possible, the canvass should first be made in areas immediately adjacent to the site and then extended to other areas. This type of survey usually reveals vacancies such as light housekeeping rooms, and other arrangements rarely listed with real estate agencies, advertised in newspapers, or indicated by "For Rent" signs.

(c) Ask mail carriers in specified areas to report vacancies noted on their routes.

(d) Seek cooperation of family welfare agencies in making their listings of vacancies, if any, available to the housing office.

(2) In addition to the above, the Local Authority will, in many instances, need to make a direct appeal for accommodations by talks to church congregations, clubs, citizens' associations, and other public or quasi-public groups, or through special releases to the local newspapers or appeals over the radio. In some instances, owners of vacant properties who had felt that the cost of needed repairs or the bother of finding tenants was not justified by the small amount of income the property would yield, have responded to appeals from the Local Authority by making repairs and offering their houses for rent to site occupants.

(3) To be absolutely sure that the vacant dwellings to which site occupants not eligible for public low-rent housing are referred are as good as those from which such families will move will necessitate their being inspected by some member of the relocation staff. Therefore, it is suggested that immediately upon locating or being advised of a vacancy seemingly suited to the needs of such families, an inspection be made of the vacant unit and that the findings from such inspection be noted on the listing of such vacancy.

b. A form similar to the specimen Vacant Dwelling File Card shown as Exhibit 4 should be used to list each vacancy located. It will be noted that this card makes provision for recording the findings from the inspection as well as other necessary information. If forms such as these are used it is suggested that they be filed in divisions according to the number of rooms with subdivisions according to rental charges. For ready reference it will also be helpful to flag vacancy listings for specified minority or nationality groups. Whenever a listed vacancy is rented, the card pertaining to such dwelling should be removed from the Vacant Dwelling File and the reason for its removal entered on the card.

11. OPENING OF HOUSING ADVISORY OFFICE. The Housing Advisory Office should be opened as soon as purchasing of the site begins. In announcing the opening of this office it may be well to stress in any publicity releases concerning it, the need for vacancy listings, The address of the office, the hours it is to be kept open, the services which it is equipped to render and any other information concerning the Local Authority's plans for assisting site occupants which may be of interest to the public at large should also be featured. In releasing information of this nature, it is suggested that the Local Authority refrain from mentioning the possibility of direct financial assistance to site occupant families. The tendency has been where financial assistance has been publicized for the site occupants who do not require such help to delay moving in hopes of receiving monetary help.

12. REVIEWING SITE OCCUPANTS RELOCATION RECORD CARDS

a. As soon as the Local Authority starts acquiring title to the site, the relocation records of families who were at the time of the site occupants' survey occupying the parcels purchased should be pulled from the file for the purpose of determining whether such families are still in occupancy and the type and extent of relocation assistance which such families may require.

b. The first step to be taken in reviewing the survey records involves a contact with occupants of purchased parcels. This contact should be made on the same day as that on which title to the property is vested in the Local Authority or as soon thereafter as possible. Whenever it is found that the family in residence as of the time of the survey has moved from the site, it should be noted under "Remarks" on the Site Occupants Relocation Record card pertaining to such family that said family moved from the site prior to its receiving a Notice to Vacate from the Local Authority. Families who move from the site before receiving a Notice to Vacate issued for site clearance purposes do not qualify as displaced families and therefore are not entitled to the statutory preference to be accorded displaced families (see Low-Rent Housing Manual Section 407.1). If the unit is found to be vacant, action similar to that suggested in paragraph 18, below should be taken to prevent its becoming occupied. If, however, the unit is occupied by a family who has moved into it since the survey was made, a Site Occupants Relocation Record card should be filled in for the family. This checkup on site occupants serves specifically to indicate the families to whom a Notice to Vacate is to be issued.

c. As the Site Occupants Relocation Record cards are brought up to date the data contained thereon should be reviewed to determine the type and extent of assistance individual families will require in locating off the site. The findings from this review and analysis should be reported to appropriate community agencies (see paragraph 15 below).

13. ISSUING NOTICE TO VACATE TO SITE OCCUPANTS

a. As soon as possible after title to a parcel of the site is vested in the Local Authority, it is suggested that a Notice to Vacate be issued to each tenant of such parcel advising him of the date by which he must surrender possession of the premises occupied. The Notice should be prepared in triplicate. The original should be given to the lessee, one copy should be retained in the Housing Advisory Office, and, if the area is under rent control, one copy should be sent to the area rent office within 24 hours after the Notice is served on the site occupant.

b. Extreme care should be exercised in determining the form of Notice to Vacate to be issued and the method to be followed in serving such notices for in most states the Notice to Vacate is made the basis of any possible later suit for eviction. In instances where State statutes

stipulate valid methods for serving a Notice to Vacate the statutes must be followed in order for the Notice to have any legal force or significance. Therefore, the Attorney of the Local Authority should be consulted concerning the form of Notice to Vacate to be issued and the method of service to be followed. For special regulations governing the issuance of Notices to Vacate in rent controlled areas see Low-Rent Housing Manual Section 213.1.

c. In localities where personal delivery by an employee of the Local Authority of a Notice to Vacate is recognized by the courts as a valid means of serving such a document, it is suggested that relocation personnel be given the responsibility of serving site occupants with a written Notice to Vacate. Personal service of a Notice to Vacate by Local Authority personnel affords an opportunity to explain the terms of the notice and to discuss relocation plans with the site occupant family. When serving a Notice to Vacate to site occupant families who appear to be eligible for public low-rent housing, it is suggested that the preferential consideration to which they as displaced families are entitled and of which they were informed at the time of the Site Survey be again called to their attention and that they be advised as to where applications for low-rent housing may be filed.

d. Concurrently with serving them with a Notice to Vacate, tenants of purchased properties should be advised in writing as to where and to whom they should pay rent pending their removal from the site. When it is found that site occupants have lease agreements with or have made outstanding advance payments of rent to former landlords extending beyond the date of purchase of the property, this fact should be recorded on the Site Occupants Relocation cards pertaining to such family and the matter referred to the Local Authority's attorney for appropriate action. The actions called for in such cases generally involve the effecting of arrangements with the former owner for cancelling outstanding leases and having advance payments of rent transferred to the account of the Local Authority. In connection with advance payments of rent, it will be necessary in event the period covered by such advance payments extends beyond the effective date of the Notice to Vacate, to arrange for returning to the tenant any unearned rent to which he may be entitled.

e. If the tenant is to continue in occupancy beyond the minimum period of notice required, it may be necessary to establish a legal rental agreement between the tenant occupying the site and the Local Authority. The terms of this agreement should be explained and the signature of the tenant on a new lease should be secured. The Local Authority's attorney or some other person familiar with local regulations governing leases and tenancy should be consulted in cases of this nature.

f. Site occupants should always be permitted a reasonable length of time in which to locate suitable vacancies and to make necessary arrangements for moving, taking into account the availability of suitable dwellings, weather conditions, and other significant factors.

g. Difficulties with site occupants will occasionally arise despite the most careful planning and execution of relocation activities. One problem is that of the site occupant refusing admittance to interviewers serving the Notice to Vacate. In such cases the matter should be referred to the Local Authority's attorney for determination as to the proper method to be followed in serving such families with a Notice to Vacate. Whenever Notices to Vacate are served other than personally by a member of the relocation staff, a letter should be sent to the site occupant family stating why the site must be cleared by the date specified in the Notice to Vacate and informing the family of the services available at the Housing Advisory Office.

h. After the Notice to Vacate has been served, "This is the Property of _____" signs should be posted on each building.

14. INFORMING NOTIFIED FAMILIES OF EXISTING VACANCIES

When site occupants call to obtain information concerning vacancies, they should be given two or three listings if possible.

a. If there is an existing public low-rent housing project in the community it is recommended that site occupant families appearing to be eligible for such housing be referred to the rental office of such project before being referred elsewhere. In event such site occupant families are not interested in moving into public housing they should be referred to vacancies on the private market preferably at least equal in quality to their accommodations on the site and which are within their financial reach. In the case of families desiring to move into public low-rent projects but who will be unable to do so by the time their Notice to Vacate expires, either because there is no existing public low-rent housing in the community or because there are no vacancies in such housing suited to the needs of such families, it is suggested that these families, after applying for public housing, be referred to and encouraged to accept as a temporary expedient any dwelling which will serve their needs until such time as they can be suitably housed in public housing. Every effort should be made, however, to see that the interim accommodations to which these families are referred are at least as satisfactory as those they occupy on the site.

b. With respect to site occupant families who are not eligible for low-rent public housing it is essential that extreme care be exercised in referring them to existing vacancies so as to avoid having relocation adversely affect their housing conditions or family finances. When such family seeks assistance from the Housing Advisory Office in locating off-site accommodations, the rent which the family is able and willing to pay should be ascertained, housing conditions on the site should be reviewed, and the family should be referred to one or more vacancies which have been found to be comparable to or better than those from which the family is being required to move and which are available at a rental which will not impose an undue financial burden on the family.

15. REFERRAL OF NEEDY FAMILIES TO APPROPRIATE AGENCY

Names of all site occupants who appear to be in need of assistance other than advice should be sent to the Social Service Exchange 1/ for clearance, and then referred to the specific agency to which they are known. Problems of families who have never been on the local relief rolls but who will need financial aid will have to be discussed with representatives of the various cooperating agencies and special arrangements made for assisting them. In connection with families not currently on relief, the Local Authority should never make a referral unless it has good reason to believe that the family will be unable to move without financial assistance, and that the agency to which such family is to be referred will lend the assistance needed. Ill-considered referrals may overburden the facilities and resources of the cooperating agencies and may seriously handicap the relocation program. After it is determined that a family is to be assisted, appropriate entries should be made on the Site Occupants Relocation Record card concerning the specific type of assistance to be given and by whom or by what agency it will be supplied.

16. DETERMINING NATURE AND EXTENT OF FINANCIAL ASSISTANCE TO BE PROVIDED SITE OCCUPANTS BY THE LOCAL AUTHORITY

a. After having referred Site Occupant families requiring help in relocating, other than advice as to existing vacancies, to agencies or groups in the community which can reasonably be expected to assist such families and having ascertained from such referral sources the nature and extent of assistance to be given such families, the Local Authority will be in a position to determine if any financial assistance to site occupants will be required.

b. Immediately upon becoming aware of the fact that, in all probability direct financial assistance will have to be furnished some site occupant families in order to clear the site, the circumstances of the families concerned should be reviewed to determine the type and amount of assistance which will be needed and can be provided pursuant to Low-Rent Housing Manual Section 213.2. If it is found that the amount provided for assisting site occupants in the approved Development Program is insufficient or needs to be used for reasons other than those stated therein, the Local Authority should so advise PHA (see Low-Rent Housing Manual Section 213.2).

c. Another step which the Local Authority will need to take preparatory to rendering direct financial assistance to site occupants is to define in dollar amounts the terms "a reasonable amount for moving expenses" and "a reasonable amount for the first month's rent in appropriate

1/ An office established in some localities for the purpose of maintaining a central listing of all families in the community who are or have been clients of various relief or welfare agencies.

quarters." Such amounts as are established should be considered as the maximum amount to be so used in any one case and not as an uniform allowance.

17. FOLLOW-UP CALLS BETWEEN NOTIFICATION AND REMOVAL

a. As soon as possible after the site occupant is served with a Notice to Vacate, a relocation interviewer should again call on the family and inquire as to what arrangements, if any, the family has made for moving. The interviewer should ascertain during this interview whether there are any factors other than the difficulty of locating suitable accommodations which will preclude the family from vacating the site within the time allowed. In instances where it appears that the family will require financial or other assistance, the interviewer should make a note of it so that a follow-up can be made with the appropriate cooperating agency by the Relocation Supervisor. In case the family requests assistance, it should be advised to come into the Housing Advisory Office and discuss the matter with the Supervisor. The interviewer should remind the family of the vacancy listings being maintained in the Housing Advisory Office and point out that the sooner it starts looking for another place to live the better selection it will have. The relocation interviewer should also tell the family that he will call back from time to time to see what success it is having in locating other accommodations.

b. All families should be impressed with the importance of notifying the Housing Advisory Office concerning the date of their moving from the site so that the necessary steps may be taken to close the vacated structure. Also, families who appear to be eligible for public low-rent housing should be impressed with the need of their keeping the Local Authority informed of their whereabouts subsequent to their moving from the site so that they may be contacted with respect to filing an application for admission to the project. To encourage such notification, self-addressed form postcards upon which the families can enter their names and change of address may be left with such families.

18. CLOSING VACATED STRUCTURES

a. As structures are vacated, "No Trespass" signs should be posted. The demolition contractor should be notified that the building is vacant so that if it is not to be demolished immediately, it may be stripped of all removable salvage material. At this stage in relocation, the Local Authority may find it necessary to obtain special police protection or watchman service to prevent vandalism or accidents. It also may be necessary to board up vacated buildings to prevent their being reoccupied by squatters.

b. Utility companies should be notified to discontinue service and to remove their equipment from the premises of vacated properties. Attached as Exhibit 5 is a suggested form letter suitable for use in this connection.

19. INTERVIEWING RELOCATED FAMILIES

a. After a family moves from the site, it is suggested that a visit be made to the new home to determine what effects, if any, relocation has had upon the family, particularly with respect to the effect of relocation upon the family's housing conditions. Assembling of such data will enable the Local Authority to answer authoritatively any of the inquiries which it may receive in connection with its relocation program.

b. In most cases the Local Authority will find it impossible to locate all former site occupants since some families will have moved without reporting their new addresses. Financially independent families who desired no help in relocation often fail to keep the Local Authority informed as to their new location. Again, some families prefer not to disclose their new addresses. Some families will give one address when interviewed and, for one reason or another, will remain at such address only a short time before moving elsewhere.

20. PREPARING SUMMARY REPORTS ON RELOCATION

As soon as the site has been evacuated and the follow-up interviews completed, the Local Authority may find it desirable to prepare a resume of the method followed in accomplishing relocation. This report can serve both to measure the results of its relocation program and to make appropriate acknowledgment of the services of cooperating agencies. An interesting feature of such a report is frequently a comparative analysis of the housing conditions of the site occupants before and after relocation.

21. ESTABLISHING A PERMANENT RECORD OF SITE OCCUPANTS

Establishing a permanent record of site occupants involves assembling and recording the information called for in Low-Rent Manual Section 213.2. The record of site occupants may be established and maintained by using the Site Occupants Relocation Record cards. If this is done, the space provided for changes of address should be utilized whenever the Local Authority is notified that one of its former site occupants has moved from one place to another.

RELOCATION TIME TABLE

(1) Option taking started.	(a) Delegate Functional Responsibility for Relocation and Determine Personnel Requirements. (b) Contact public and private community agencies and groups to ascertain type and extent of assistance each may be able and willing to render. (c) Set up policies and procedures for relocation. (d) Select and arrange for equipping and opening a Housing Advisory Office readily accessible to site occupants.
(2) First request for Land Purchase Approval, Form PHA-1974, Approved by the PHA.	(a) Employ and train relocation staff. (b) Make survey of site occupants. (c) Start a listing of vacant dwellings. (d) Start inspection of vacancy listings.
(3) Purchasing Begun.	(a) Open Housing Advisory Office. (b) Bring survey records up-to-date by visiting occupants of each parcel as it is acquired by the Local Authority. (c) Serve Notice to Vacate to occupants of purchased parcels. (d) Advise site occupants concerning location of and services available from Housing Advisory Office. (e) Start providing site occupants with such assistance as they require in locating other housing. (f) Advise occupants of purchased properties where and to whom they shall pay rent pending their removal from the site. (g) Post "This is the property of (Name of LHA)" signs on purchased properties. (h) Clear names of welfare cases and other needy families with Social Service Exchange or individual welfare agencies. (i) Supply cooperating agencies with names of families requiring assistance. (j) Determine any financial assistance to be supplied by Local Authority. (k) Call back periodically on site occupants to check progress being made in locating other accommodations.

RELOCATION TIME TABLE

(4)	Structures Vacated	(a) Post "No Trespass" signs on vacated structures. (b) Prepare reports weekly listing structures vacated during that week. (c) Notify demolition contractor of vacant structures. (d) Notify utility companies to discontinue service (e) Call on relocated families at their new addresses.
(5)	Site cleared of occupants	(a) Prepare Summary Report on Relocation. (b) Establish formal record of Site Occupants. (c) Close Housing Advisory Office.

RELOCATION PROGRESS RECORD

Project No. _____ Street _____

Nos. _____ to _____

Name of Family												
Street No.												
Parcel No.												
Use of property (dwelling, commercial, vacant, etc.)												
Date title acquired												
Date vacate notice served												
Date signs posted "This is the Property of _____"												
Date required to vacate												
Date vacated												
Date "No Trespass" sign posted												
Date structure demolished												
Date family interviewed at new location												
Remarks												

Bulletin No. LR-35
Exhibit 3
SITE OCCUPANTS RELOCATION RECORD

(Face of Form)

(Name of Local Housing Authority)
(Address of Local Housing Authority)

HHFA
PHA
8-3-51
Project No.

1. Family head:
2. No.of Persons ___No.of minors ___race ___
3. Family of: a veteran ☐, a serviceman ☐, Disabled ☐, Deceased ☐, no veteran or service status ☐, a U.S. citizen ☐.
4. Estimated Family Income $___per ___ of which $___is from U.S. Gov't for military disability or death.
5. Present Rent $___ per ___ paid thru ___; Arrears $___
6. Type of Lease ___expires ___ Rent due on ___
7. Rent includes: Furniture ☐, Water ☐, Hot Water ☐, Heat ☐, Lights ☐, Refrigeration ☐, Cooking fuel ☐, Other ___
8. Average monthly cost of utilities not in rent $___
9. Financial assistance needed ☐ Yes, ☐ No if yes, extent ___ by whom ___
10. Other aid need: Type ___ By whom ___
11. Dwelling required: Location ___ No. of rooms ___ Rent ___
12. Interest in project housing ☐ Yes, ☐ No

13. Site address ___
14. Type and use of structure ___
15. No. of Families in structure ___

16. Housing Condition:	Others on site	Others relocated
a. Gross rent		
b. No. of rooms		
c. Overcrowded		
d. Private bath		
e. Private inside flush toilet		
f. Inside running water		
g. Needs major repair		
h. Adequate heating facilities		
i. Adequate light and ventilation		
j. Other (specify)		
k. Standard house		

17. Date interviewed: ___
18. By: ___
19. Subsequent Interviews:
Date ___ by ___
Date ___ by ___
Date ___ by ___

(Back of Form)

20. Date vacate notice served:* ___ a: effective ___ b: extended to ___
21. Date legal action started: ___ 22. Date family moved from site ___
23. Cleared with S.S.E. ☐ Yes ☐ No Date ___; a: Family known to ___
b. Family Referred to: ___
c. Remarks: ___

24. Relocation accomplished by:
☐ a: Occupant's initiative primarily.
☐ b: Vacancy found by housing authority.
☐ c: Vacancy found by welfare agency.
☐ d: Legal eviction.
☐ e: Other ___
☐ f: Unknown.

25. Financial assistance by Housing Authority, ☐ Yes ☐ No; Moving expense, Amount $___ date ___. One month's rent, Amount $___ Date ___

26. Relocated addresses of head: Date

27. Family divided when relocated: ☐ Yes ☐ No.
28. Family notified to apply for low-rent housing, ☐ Yes, ☐ No.
29. By ___ Date ___

30. Remarks: (Address of vacancies to which referred, etc.)

* Preference for admission to Low-Rent Housing extends 3 years from this date.

VACANT DWELLING FILE CARD

Address_____ No. of Rooms_____
Rent $_____ per_____ includes_____
Facilities_____ Location & type of unit:_____
Condition_____
Landlord or Agent_____
Address_____
Keys at_____ Open at night_____
Lease required_____ Deposit required_____ Restrictions_____

Inspected by_____ Date_____
Report on Inspection:_____

(Front 3 x 5 card)

RECORD OF REFERRALS

(Record name of each family referred to vacancy, date of referral and action taken by family).

Final Disposition:_____

(Reverse 3 x 5 card)

Name of LHA
Address

Gentlemen:

The (name of LHA) has acquired title to the properties listed below. Said properties are now vacant and will be demolished in the near future.

You are requested to discontinue service to these structures immediately and to move from the premises listed all equipment of which you are the rightful owner.

(List here the addresses of the structures which have been vacated)

Very truly yours,

(Name of LHA)

_____
Executive Director

BULLETIN NO. LR-36

DEMOLITION CONTRACT DOCUMENTS

P H A LOW-RENT HOUSING

BULLETIN

PUBLIC HOUSING ADMINISTRATION

HOUSING AND HOME FINANCE AGENCY WASHINGTON 25, D. C.

AUGUST 1951

LIST OF BULLETINS WHICH HAVE BEEN PUBLISHED

Bulletin No.	Title	
LR-1	Zoning and Rezoning	
LR-2	Subsurface Soil Investigation	
LR-3	Site Planning	A series of eight Housing Design Notes
LR-4	Site Engineering	
LR-5	Structural Design, Materials and Methods	
LR-6	Architectural Planning and Design	
LR-7	Plumbing, Heating and Ventilation	
LR-8	Electrical	
LR-9	Lawns and Planting	
LR-10	General Design	
LR-11	Selection of Utilities	
LR-12	Construction Contract Documents	
LR-13	Guide Specifications	
LR-14	Equipment Contract Documents	
LR-15	Operation and Repair of Heating Systems (Care of Boilers out of Service)	
LR-16	Corrosion of Underground Piping	
LR-17	Rules for Boiler Operation	
LR-18	Preparation of Exterior Surfaces for Repainting	
LR-19	Control of Condensation in Crawl Spaces	
LR-20	Glazing	
LR-21	Maintenance of Wood Floors	
LR-22	Basic Specifications for Rural Nonfarm Housing	
LR-23	Operation and Repair of Heating Systems--Boilers (Types, Use and Repair)	
LR-24	Maintenance of Concrete Floors	
LR-25	Indoor Tenant Activity Areas	
LR-26	Routine Care of Lawns	
LR-27	Repainting Exterior Surfaces	
LR-28	Rural Nonfarm Construction Documents	
LR-29	Occupancy Policy Determinations to be Made and Action to be Taken Previous to Opening of Application Office	
LR-30	Suggestions for Selecting and Training Occupancy Personnel for Initial Tenant Selection	
LR-31	Publicizing Occupancy Policies	
LR-32	Suggested Operating Procedures for the Receipt and Processing of Applications	
LR-33	Do Community Services Programs Pay Dividends?	
LR-34	Refinishing Interior Surfaces	
LR-35	Suggested Procedures for Handling the Relocation of Site Occupants	
LR-36	Demolition Contract Documents	

NOTE: Some bulletins will be issued in parts, of which one or more will be contained in the initial release of each bulletin; other parts will be issued subsequently from time to time as they are completed.

DEMOLITION CONTRACT DOCUMENTS

INTRODUCTION

This Bulletin is designed to assist Local Authorities, and their architects and engineers, in the preparation of the essential contract documents for the demolition, clearing, and removal of structures on the site of a public, low-rent housing project, when demolition work is done under a separate contract and prior to operations under a contract for project construction. (In all cases where it is feasible to do so, demolition work should be included as a part of the general project construction work, and set forth in the Construction Contract Documents.) While the contents are generally advisory in character, there are a number of items of text and treatment in these documents which, because of existing laws or for other sufficient and justified reasons, are to be followed. Instructions and explanations relative to such items will be found in appropriate sections of the PHA Low-Rent Housing Manual, which are published from time to time.

Reference should be made to the "Detailed Instructions Covering the Preparation and Use of Construction Contract Documents," in Bulletin No. LR-12, which should be followed generally to the extent that they apply.

Since it is not feasible for these standard demolition contract documents to anticipate all of the various conditions and problems which may exist in connection with specific projects, they have been prepared with no particular project or locality in mind. Thus, they will usually require some modifications to conform them with State or local laws, codes, ordinances, regulations, etc. It is the responsibility of the Local Authority to insure that the demolition contract documents, as issued for bidding and construction purposes, do so conform.

The documents which comprise the Contract as a whole are composed of the Drawings and the Specifications. The Specifications include the Instructions and Forms, General Specifications (consisting of the General Conditions, Special Conditions, General Scope of the Work, Schedule of Drawings, etc.), and the Technical Specifications. Guide specifications for reference in preparing the Technical Specifications for separate demolition contract documents will be incorporated in Bulletin No. LR-13, Guide Specifications, Division 1a. The Drawings, as enumerated in the Schedule of Drawings in the Specifications are, of course, physically separate from the Specifications, although they are incorporated therein by specific reference.

Close study, reference and careful use of these standard demolition contract documents should facilitate and expedite the work of preparing the contract documents for demolition work under a separate contract, obtaining responsible and satisfactory bids, and the administration of the contract and contract demolition work.

SPECIFICATIONS

CONTENTS

INSTRUCTIONS AND FORMS

GENERAL SPECIFICATIONS

TECHNICAL SPECIFICATIONS

(NOTE: For Guide Specifications, refer to Bulletin No. LR-13, Division 1a.)

FORM OF INVITATION FOR BIDS

INSTRUCTION AND FORMS

(Must be modified if law requires other form)

INVITATION FOR BIDS

The _____(Name of Local Authority)_____ will receive bids for _____(brief description of demolition work and project identification)_____ until _____M., (__S.T.) (___ Daylight Saving Time) on the_____day of _____, 19__, at _____(address of Local Authority)_____ ___(City or town)___, _____(State)_____ at which time and place all bids will be publicly opened and read aloud.

Proposed forms of Contract Documents, including drawings and specifications are on file at the office of _____(Local Authority)_____ at ___(address)___, and at the office of _____(architect or building exchange)_____ at _____(address)_____.

Copies of the documents may be obtained by depositing $_____ with the _____(Local Authority)_____ for each set of documents so obtained. Such deposit will be refunded to each person who returns the drawings, specifications and other documents in good condition within 10 days after bid opening.

A certified check or bank draft, payable to the _____(Local Authority)_____, U. S. Government bonds, or a satisfactory bid bond executed by the bidder and acceptable sureties in the amount of $_____ shall be submitted with each bid.

The successful bidder will be required to furnish and pay for satisfactory performance and payment bond or bonds.

Attention is called to the fact that not less than the minimum salaries and wages as set forth in the Specifications must be paid on this project.

The _____(Local Authority)_____ reserves the right to reject any or all bids or to waive any informalities in the bidding.

No bid shall be withdrawn for a period of thirty (30) days subsequent to the opening of bids without the consent of the _____(Local Authority)_____.

_____(Name of Local Authority)_____

Date _____, 19___. By _____

Title _____

INSTRUCTIONS TO BIDDERS

1. USE OF SEPARATE BID FORMS

These Specifications include a complete set of bidding and contract forms. These are for the convenience of bidders and are not to be detached from the Specifications, or filled out, or executed. Separate copies of Bid Forms are furnished for that purpose, in quadruplicate, three to be submitted with the bid and one to be retained by the bidder for his records. Only one of the three copies of the bid shall be signed. The other two shall be conformed copies only.

2. INTERPRETATIONS

No oral interpretation will be made to any bidder as to the meaning of the Specifications, including the Drawings. Every request for such an interpretation shall be made in writing to the Local Authority at _____. Any inquiry received seven or more days prior to the date fixed for opening of bids will be given consideration. Every interpretation made to a bidder will be in the form of an addendum to the Specifications which, if issued, will be on file in the office of the Local Authority and the office of the Architect at least five days before bids are opened. In addition, addenda will be mailed to each bidder, but it shall be the bidder's responsibility to make inquiry as to addenda issued. All such addenda shall become part of the Contract and all bidders shall be bound by such addenda, whether or not received by the bidders.

3. PROPOSALS

a. All bids must be submitted on forms prepared by the Local Authority and shall be subject to all requirements of the Specifications, the Drawings, and these Instructions. Only the original shall be signed. Two additional conformed copies shall be submitted.

b. Bid Documents shall be enclosed in envelopes (outer and inner), both of which shall be sealed and clearly labeled with the words "Demolition Bid Documents", the project number, name of bidder, and date and time of opening so as to guard against premature opening of any bid.

c. The Local Authority may consider as informal any bid on which there is an alteration of or departure from the Bid Form hereto attached.

d. The Contract will be based upon the completion of the work according to the Specifications (including any Drawings) together with all Addenda thereto.

4. BID GUARANTY

a. The bid must be accompanied by a bid guaranty which shall be in the amount of $_____, and at the option of the bidder may be a certified check, bank draft, U. S. Government Bonds (at par value), or a bid

bond secured by a guarantee company or a surety company in the form attached. No bid will be considered unless it is so guaranteed. Certified check or bank draft must be made payable to the order of (Local Authority). Cash deposits will not be accepted. The bid guaranty shall insure the execution of the Contract and the furnishing of performance and payment bond or bonds by the successful bidder, all as required by these Specifications.

b. In case Bid Guaranty is in the form of a certified check, bank draft, or U. S. Government Bonds, the Local Authority may make such disposition of the same as will accomplish the purpose for which submitted. Certified checks or bank drafts, or the amount thereof, and U. S. Government bonds of unsuccessful bidders will be returned as soon as practicable after the opening of bids.

5. COLLUSIVE AGREEMENTS

Each person submitting to the Local Authority a bid for the work contemplated by the bidding documents shall execute an affidavit, in the form herein provided, to the effect that he has not colluded with any other person, firm or corporation in regard to any bid submitted. Such affidavit shall be attached to the bid.

6. STATEMENT OF BIDDER'S QUALIFICATIONS

Each bid and each conformed copy thereof must be accompanied by a statement, on the form furnished for that purpose, a copy of which is included in the Specifications, of the bidder's financial resources, his demolition experience, and his organization and equipment available for the work contemplated. The Local Authority shall have the right to take such steps as it deems necessary to determine the ability of the bidder to perform the work and the bidder shall furnish the Local Authority all such information and data for this purpose as the Local Authority may request. The right is reserved to reject any bid where an investigation of the available evidence or information does not satisfy the Local Authority that the bidder is qualified to carry out properly the terms of the Specifications.

7. CORRECTIONS

Erasures or other changes in the bid must be explained or noted over the signature of the bidder.

8. TIME FOR RECEIVING BIDS

a. Bids received prior to the time of opening will be securely kept, unopened. The officer whose duty it is to open them will decide when the specified time has arrived, and no bid received thereafter will be considered; except that when a bid arrives by mail after the time fixed for opening, but before award is made, and it is shown to the satisfaction of the officer authorized to make the award that the non-arrival on time was due solely to

delay in the mails for which the bidder was not responsible, such bid will be received and considered. No responsibility will attach to an officer for the premature opening of a bid not properly addressed and identified. Unless specifically authorized, telegraphic bids will not be considered, but modification by telegraph of bids already submitted will be considered if received prior to the hour set for opening; Provided, that written confirmation of such modification over the signature of the bidder is placed in the mail and postmarked prior to the time set for bid opening.

b. Bidders are cautioned that, while telegraphic modifications of bids may be received as provided above, such modifications, if not explicit or if in any sense subject to misinterpretation, shall make the bid so modified or amended subject to rejection.

c. Bidders are cautioned to allow ample time for transmittal of bids by mail or otherwise. Bidders should secure correct information relative to the probable time of arrival and distribution of mail at the place where bids are to be opened; and, so far as practicable, make due allowance for possible delays in order to avoid the necessity for investigations of claims that such delay in receipt of bids were due solely to dealy in the mails as provided in this section.

9. OPENING OF BIDS

At the time and place fixed for the opening of bids, every bid received within the time fixed for receiving bids will be opened and publicly read aloud, irrespective of any irregularities therein. Bidders and other persons properly interested may be present, in person or by representative.

10. WITHDRAWAL OF BIDS

Bids may be withdrawn on written or telegraphic request dispatched by the bidder in time for delivery in the normal course of business prior to the time fixed for opening; Provided, that written confirmation of any telegraphic withdrawal over the signature of the bidder is placed in the mail and postmarked prior to the time set for bid opening. Negligence on the part of the bidder in preparing his bid confers no right of withdrawal or modification of his bid after such bid has been opened.

11. AWARD OF CONTRACT; REJECTION OF BIDS

a. The Contract will be awarded to the lowest responsible bidder complying with the conditions of the Invitation for Bids if the Local Authority pays the bidder, or to the highest responsible bidder complying with the conditions of the Invitation for Bids if the bidder pays the Local Authority, provided such bid is reasonable and it is to the interest of the Local Authority to accept it. Where, in addition to requesting bids for the demolition of the

entire site, the Local Authority requests bids for separate parcels, the Local Authority may accept either the bid for the entire site as described, or bids for individual parcels making up the entire site, whichever it is to the financial interest of the Local Authority to accept, or may reject any or all bids on the individual parcels and also on the work for the entire site.

b. The Local Authority also reserves the right to reject the bid of any bidder who has previously failed to perform properly, or to complete on time, contracts of a similar nature; who is not in a position to perform the contract; or who has habitually and without just cause neglected the payment of bills or otherwise disregarded his obligations to subcontractors, materialmen, or employees. In determining the successful bidder the following elemen in addition to those above mentioned, will be considered; whether the bidder involved (1) maintains a permanent place of business; (2) has adequate plant equipment available to do the work properly and expeditiously; (3) has suitable financial resources to meet the obligations incident to the work; (4) has appropriate technical experience.

c. The ability of a bidder to obtain a performance bond shall not be regarded as the sole test of such bidder's competency or responsibility.

12. PERFORMANCE AND PAYMENT BOND, EXECUTION OF CONTRACT

a. Subsequent to the award and within seven days after the prescribed forms are presented for signature, the successful bidder shall execute and deliver to the Local Authority a contract in the form included in the Specifications in such number of counterparts as the Local Authority may require. Separate contract forms, in lieu of those found in the Specifications, shall be used for the purpose.

b. Having satisfied all conditions of award as set forth elsewhere in these documents, the successful bidder shall, within the period specified in paragraph 12a, above, furnish a performance and payment bond in the penal sum of $_____ as security for the faithful performance of the contract, and for the payment of all persons, firms or corporations to whom the Contractor may become legally indebted for labor, materials, tools, equipment, or services, of any nature, employed or used by him in performing the work. Such bond shall be in the form of bond included in the Specifications and shall bear a date the same as or subsequent to the date of the contract.

c. On each such bond the rate of premium shall be stated, together with the total amount of the premium charged. The current power of attorney for the person who signs for any surety company shall be attached to such bond.

d. The failure of the successful bidder to execute such contract and to supply the required bonds within seven days after the prescribed forms are presented for signature, or within such extended period as the Local Authority may grant based upon reasons determined adequate by the Local Authority, shall constitute a default, and the Local Authority may either award the contract to the next responsible bidder or readvertise for bids, and may charge against the bidder the difference between the amount of the bid and the amount for which a contract for the work is subsequently executed irrespective of whether the amount thus due exceeds the amount of the bid bond.

13. INSPECTION OF PREMISES BY BIDDERS

Bidders who wish to inspect the premises may do so by contacting (the Local Authority or its designated representative for the purpose) at (address). Such inspections will be authorized only between the hours of ___M. and ___M. on any days except _____.

14. RELEASE OF BUILDINGS; SEQUENCE OF WORK

Bidders are referred to the Special Conditions for information regarding the manner in which the buildings will be released and the site made available for demolition purposes, and the sequence in which the work is to be performed.

FORM OF BID (1)

(Must be modified if law requires other form)

BID FOR DEMOLITION, REMOVAL AND CLEARING

To the _____(Local Authority)_____
_____(address)_____

Gentlemen:

1. Pursuant to and in compliance with your Invitation for Bids dated _____, 19___, the Instructions to Bidders and other documents related thereto, the undersigned, having familiarized ____(himself)____ (themselves)____ with said documents and with local conditions affecting the cost of the work, hereby proposes to furnish all labor, materials, equipment and services required to perform and complete the work of demolition, removal and clearing for _____(identify the project)_____ in strict accordance with the Specifications, and Addenda, if any thereto, as prepared by _____ and on file in the office of _____ for the consideration of:

(a) $_____ to be paid by the Contractor to the Local Authority.

(b) $_____ to be paid by the Local Authority to the Contractor.

(Bidder to cross out line not applicable)

2. In submitting this bid it is understood that the right is reserved by the _____(Local Authority)_____ to reject any and all bids. If written notice of the acceptance of this bid is mailed, telegraphed or delivered to the undersigned within thirty (30) days after the opening thereof, or at any time thereafter before this bid is withdrawn, the undersigned agrees to execute and deliver a contract in the prescribed form and furnish the required bond within seven (7) days after the contract is presented to him for signature.

3. Security in the sum of _____ Dollars ($_____), in the form of _____, is submitted herewith in accordance with the Specifications.

4. Attached hereto is an affidavit in proof that the undersigned has not entered into any collusion with any person in respect to this proposal or

FORM OF BID (1)

any other proposal or the submitting of proposals for the contract for which this proposal is submitted. Also attached is a Statement of Bidder's Qualifications.

Date _____, 19___. _____ (Name of bidder)

Official address: By _____

_____ Title _____

_____

_____

(SIGN ORIGINAL ONLY)

FORM OF BID (2)

(Must be modified if law requires other form)

BID FOR DEMOLITION, REMOVAL AND CLEARING

To the _____(Local Authority)_____
_____(address)_____

Gentlemen:

1. Pursuant to and in compliance with your Invitation for Bids dated _____, 19__, the Instructions to Bidders and other documents related thereto, the undersigned, having familiarized __(himself)____(themselves)__ with said documents and with local conditions affecting the cost of the work, hereby proposes to furnish all labor, materials, equipment and services required to perform and complete the work of demolition, removal and clearing for _____(identify the project)_____ in strict accordance with the Specifications, Drawings and Addenda, if any thereto, as prepared by _____ _____ and on file in the office of _____ for the following sum or sums:

BID 1. Parcel A. The area shown on boundary line plan bounded by _____ _____ comprised of Blocks numbered _____ for the following consideration:

(a) $_____ to be paid by the Contractor to the Local Authority.
(b) $_____ to be paid by the Local Authority to the Contractor.

Bid Guaranty required $_____.
Amount of Performance and Payment Bond(s) required $_____.

BID 2. Parcel B. The area shown on boundary line plan bounded by _____ _____ comprised of Blocks numbered _____ for the following consideration:

(a) $_____ to be paid by the Contractor to the Local Authority.
(b) $_____ to be paid by the Local Authority to the Contractor.

Bid Guaranty required $_____.
Amount of Performance and Payment Bond(s) required $_____.

(continue as necessary)

BID ___. The entire site consisting of Parcels A, B, ... and _____ for the consideration of:

(a) $_____ to be paid by the Contractor to the Local Authority.
(b) $_____ to be paid by the Local Authority to the Contractor.

Bid Guaranty required $_____.
Amount of Performance and Payment Bond(s) required $_____.

(Bidder to cross out lines not applicable)

FORM OF BID (2)

2. In submitting these bids, or any of them it is understood that the right is reserved by the _____(Local Authority)_____ to accept one or more of the foregoing bids, or to reject any or all bids. If written notice of the acceptance of any or all of these bids is mailed, telegraphed or delivered to the undersigned within thirty (30) days after the opening thereof, or at any time thereafter before this bid is withdrawn, the undersigned agrees to execute and deliver a contract in the prescribed form and furnish the required bond(s) within seven (7) days after the contract is presented to him for signature. It is further understood, however, that this bid is limited to a maximum of _____ and a minimum of _____ of the number of parcels bid upon and the undersigned reserves the right to refuse the award of a contract covering work not within such limits.

3. Security in an amount sufficient to equal or exceed the total of the amounts of Bid Guaranties required above for the maximum number of parcels for which the undersigned will accept contract award, in the form of _____, is submitted herewith in accordance with the Specifications.

4. Attached hereto is an affidavit in proof that the undersigned has not entered into any collusion with any person in respect to this proposal or any other proposal or the submitting of proposals for the contract for which this proposal is submitted. Also attached is a Statement of Bidder's Qualifications.

Date _____, 19__. _____(Name of bidder)_____

Official address: By _____

_____ Title _____

_____

_____

(SIGN ORIGINAL ONLY)

FORM OF BID BOND

BID BOND

KNOW ALL MEN BY THESE PRESENTS, That we the undersigned,

_____(Name of Principal)_____

as PRINCIPAL, and

_____(Name of Surety)_____, as SURETY are held and firmly bound unto _____(Corporate name of Local Authority)_____ hereinafter called the "Local Authority", in the penal sum of _____Dollars, lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal has submitted the accompanying bid, dated _____, 19___, for _____.

NOW, THEREFORE, if the Principal shall not withdraw said bid within the period specified therein after the opening of the same, or, if no period be specified, within sixty (60) days after the said opening; and shall within the period specified therefor, or, if no period be specified, within ten (10) days after the prescribed forms are presented to him for signature, enter into a written contract with the Local Authority in accordance with the bid as accepted, and give bond with good and sufficient surety or sureties, as may be required, for the faithful performance and proper fulfillment of such contract; or in the event of the withdrawal of said bid within the period specified, or the failure to enter into such contract and give such bond within the time specified, if the Principal shall pay the Local Authority the difference between the amount specified in said bid and the amount for which the Local Authority may procure the required work or supplies or both, if the latter amount be in excess of the former, then the above obligation shall be void and of no effect, otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above-bounden parties have executed this instrument under their several seals this _____ day of _____, 19___, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

In presence of:

_____ _____(Individual Principal)_____ (SEAL)

_____ _____(Business address)_____

_____ _____(Individual Principal)_____ (SEAL)

_____ _____(Business address)_____

FORM OF BID BOND

Attest:

_____ _____(Corporate Principal)_____

_____(Business address)_____

By _____ Affix corporate seal

_____ _____

Attest:

_____ _____(Corporate Surety)_____

_____

By _____ Affix corporate seal

_____ _____

(Power-of-attorney for person signing for surety company must be attached to bond.)

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, _____, certify that I am the _____ _____ Secretary of the corporation named as Principal in the within bond; that _____, who signed the said bond on behalf of the Principal was then _____ of said corporation; that I know his signature, and his signature thereto is genuine; and that said bond was duly signed, sealed, and attested to for and in behalf of said corporation by authority of its governing body.

_____(Corporate Seal)

- -

FORM OF NON-COLLUSIVE AFFIDAVIT

(To be modified if law requires other form)

A F F I D A V I T

State of _____)
County of _____) ss.

_____, being first duly sworn, deposes and says:

That he is _____(a partner or officer of the firm of, etc.)_____, the party making the foregoing proposal or bid, that such proposal or bid is genuine and not collusive or sham; that said bidder has not colluded, conspired, connived or agreed, directly or indirectly, with any bidder or person, to put in a sham bid or to refrain from bidding, and has not in any manner, directly or indirectly, sought by agreement or collusion, or communication or conference, with any person, to fix the bid price of affiant or of any other bidder, or to fix any overhead, profit or cost element of said bid price, or of that of any other bidder, or to secure any advantage against the _____(Local Authority)_____ or any person interested in the proposed contract; and that all statements in said proposal or bid are true.

Signature of:
Bidder if the bidder is an individual;

Partner if the bidder is a partnership;

Officer if the bidder is a corporation.

Subscribed and sworn to before me
this _____ day of _____, 19___.

_____

My commission expires _____, 19___.

FORM OF STATEMENT OF BIDDER'S QUALIFICATIONS

STATEMENT OF BIDDER'S QUALIFICATIONS

(Demolition Contractor)

All questions must be answered and the data given must be clear and comprehensive. This statement must be notarized.

1. Name of bidder _____
2. Business address _____
3. When organized _____
4. Where incorporated _____
5. How many years have you been engaged in the demolition contracting business under your present firm or trading name? _____
6. Financial Statement: (attach separate sheet)
7. Credit available for this contract? _____ $ _____
8. Contracts now in hand. Gross Amount $ _____
9. Plan of organization _____
10. Personnel of organization _____
11. Have you ever refused to sign a contract at your original bid? _____
12. Have you ever defaulted on a contract? _____
13. Remarks: _____
14. Will you, upon request, fill out a detailed financial statement and furnish any other information that the _____(Local Authority)_____ may require? _____
15. The undersigned hereby authorizes and requests any person to furnish any information requested by the _____(Local Authority)_____ in verification of the recitals comprising this Statement of Bidder's Qualifications.

Dated at _____ this _____ day of _____, 19___.

_____(Name of bidder)_____
By _____
Title _____

State of _____)
County of _____) ss.

_____, being duly sworn deposes and says that he is _____ of _____(Name of bidder)_____ and that the answers to the foregoing questions and all statements therein contained are true and correct.

Sworn to before me this _____ day of _____, 19___.

My commission expires _____.

_____
Notary Public

- -

FORM OF CONTRACT

THIS AGREEMENT made this _____ day of _____, in the year nineteen hundred and _____ by and between _____ a corporation organized and existing under the laws of the State of _____ a partnership consisting of _____ an individual trading as _____

hereinafter called the "Contractor", and

_____

_____

hereinafter called the "Local Authority",

WITNESSETH, That the Contractor and the Local Authority for the consideration stated herein mutually agree as follows:

ARTICLE 1. Statement of Work. The Contractor shall furnish all labor, material, equipment and services, and perform and complete all work required for the demolition of buildings and structures, removal of debris, and clearing of the site of Project No._____, located in (City), (State), in strict accordance with the "Specifications for _____ (identify the Specification) and Addenda thereto numbered and dated _____ and the Drawings referred to therein, all as prepared by _____,

which said Specifications, Addenda and Drawings are incorporated herein by reference and made a part hereof.

ARTICLE 2. The Contract Price. The Local Authority shall pay the Contractor
The Contractor shall pay the Local Authority
(delete inapplicable line)
for the performance of the Contract, in current funds, subject to additions and deductions as provided in the Specifications, the sum of _____ Dollars ($_____)

ARTICLE 3. Contract Documents. The Contract shall consist of the following component parts:

a. This Instrument
b. General Conditions
c. Special Conditions
d. General Scope of Work
e. Technical Specifications
f. Drawings

- -

FORM OF CONTRACT

This Instrument, together with the other documents enumerated in this Article 3, which said other documents are as fully a part of the Contract as if hereto attached or herein repeated, form the Contract. In the event that any provision in any component part of this Contract conflicts with any provision of any other component part, the provision of the component part first enumerated in this Article 3 shall govern, except as otherwise specifically stated. The various provisions in Addenda shall be construed in the order of preference of the component part of the Contract which each modifies.

IN WITNESS WHEREOF, the parties hereto have caused This Instrument to be executed in _____ original counterparts the day and year first above written.

Attest:

_____
(Contractor)

_____ By_____

_____ Title_____

_____

_____
(Street)

_____
(City)

_____
(Local Authority)

_____ By_____

_____ Title_____

(Print or type the names underneath all signatures)

(Contractor's business address must appear on all copies)

- -

FORM OF CONTRACT

Certifications

I, _____, certify that I am the _____ of the corporation named as Contractor herein; that _____, who signed this Contract on behalf of the Contractor, was then _____ _____ of said corporation; that said Contract was duly signed for and in behalf of said corporation by authority of its governing body, and is within the scope of its corporate powers.

:Corporate:
_____: Seal :

_____

I HEREBY CERTIFY that, to the best of my knowledge and belief, based upon observation and inquiry, _____, who signed this Contract for the _____, had authority to execute the same, and is the individual who signs similar contracts on behalf of this corporation with the public generally.

_____

(This last certification must be made by the person who signed the Contract for the Local Authority)

(Print or type the names underneath all signatures)

- -

FORM OF PERFORMANCE AND PAYMENT BOND (OR BONDS)

(MUST COMPLY WITH STATE LAW)

NOTE TO THE ARCHITECT: Insert here appropriate form of bond (or bonds) securing performance of the work and payment of laborers and materialmen. On each form the following shall appear beneath the signature space for Corporate Surety and ahead of the space for Certificate As To Corporate Principal:

"The rate of premium on this bond is $_____ per thousand.
The total amount of premium charged is $_____.
(The above is to be filled in by surety company)
(Power-of-attorney of person signing for surety company must be attached)"

Following the Form of Bond(s) include in the specifications the "Directions for Preparation of Performance and Payment Bond".

GENERAL CONDITIONS

GENERAL SPECIFICATIONS

1. DEFINITIONS

Wherever used in any of the contract documents, the following meanings shall be given to the terms herein defined:

a. The "Contract" means the contract executed by the Local Authority and the Contractor, of which these General Conditions form a part. The entire list of documents which comprise the contract is set forth in the contract form.

b. The terms "Local Authority" and "Contractor" mean the respective parties to the contract.

c. The term "PHA" means the Public Housing Administration, successor in interest to the United States Housing Authority under Reorganization Plan 3 of 1947 (12 F.R. 4981), an agency and instrumentality of the United States of America created by the United States Housing Act of 1937 (Public No. 412, 75th Congress), as amended, which (subject to the provisions of a certain contract for financial aid between the Local Authority and the PHA) has agreed to purchase certain obligations of the Local Authority to aid in financing the work to be performed under the Contract. However, nothing contained in the Contract shall be construed to create any contractual relation between the Contractor and the PHA.

d. The "Architect" is the person, firm or corporation under contract with the Local Authority for architectual and engineering services related to the work.

e. The term "Project" means the housing project, demolition and clearing work for which is contemplated in whole or in part under this contract.

f. The term "Specifications" means the volume which includes, and the term shall include, the Instructions and Forms (consisting of the Form of Invitation for Bids, Instructions to Bidders, Form of Bid, Form of Bid Bond, Form of Non-Collusive Affidavit, Form of Statement of Bidder's Qualifications, Form of Contract and Form of Performance and Payment Bond or Bonds), the General Specifications (consisting of the General Conditions, the Special Conditions, the General Scope of Work and the Schedule of Drawings) and the Technical Specifications.

g. The term "Drawings" means the drawings, maps, plans or plats enumerated in the Schedule of Drawings.

h. The term "Contracting Officer" means the person within the Local Authority's organization duly authorized by the governing body thereof to administer demolition contracts for and in the name of the Local Authority.

GENERAL CONDITIONS

It does not necessarily mean the person executing this Contract. The Local Authority shall advise the Contractor the person or official which it designates as Contracting Officer.

2. CONTRACTOR

Only one Contractor is recognized as a party to this Contract, and where the term "Contractor" is used the prime contractor who signed this contract is referred to.

3. SUPERINTENDENCE BY CONTRACTOR

a. The Contractor shall give his personal superintendence to the work or have a competent superintendent, satisfactory to the Local Authority and the Architect, on the work at all times during progress with full authority to act for him. The Contractor shall also provide an adequate staff for the proper coordination and expediting of his work.

b. The Contractor shall be responsible for the coordination of the operations of all trades, subcontractors, and materialmen engaged upon the work.

4. SUBCONTRACTS

a. The Contractor shall not award any work to any subcontractor without prior written approval of the Local Authority, which approval will not be given until the Contractor submits to it a written statement containing such information as the Local Authority may require concerning the proposed subcontractor and the scope of the subcontract, together with the proposed subcontractor's non-collusive affidavit in the following form:

A F F I D A V I T

(Subbidder)

State of _____)
County of _____) ss.

_____, being first duly sworn, deposes and says:

That he is _____(a partner or officer of the firm of, etc.)_____ the party making a certain proposal or bid dated _____, 19____, to __(Name of Contractor)__ for subcontract work in connection with demolition at the site of PHA-aided Housing Project No. _____, located in ____(City)____, ____(State)____, and the party proposed by said ___(Name of Contractor)___ as subcontractor for said work as a result

of said bid, that such bid is genuine and not collusive or sham; that said bidder has not colluded, conspired, connived or agreed, directly or indirectly with any bidder or person, to put in a sham bid or to refrain from bidding, and has not in any manner, directly or indirectly, sought by agreement or collusion, or communication or conference, with any person, to fix the bid price or affiant or of any other bidder, or to fix any overhead, profit or cost element of said bid price, or of that of any other bidder, or to secure any advantage against the ___(Local Authority)___ or any person interested in the proposed contract; and that all statements in said proposal or bid are true.

Signature of:
Bidder if the bidder is an individual;

Partner if the bidder is a partnership;

Officer if the bidder is a corporation.

Subscribed and sworn to before me this _____ day of _____, 19____.

_____

My commission expires _____, 19____.

b. No proposed subcontractor shall be disapproved except for cause.

c. The Contractor shall be as fully responsible to the Local Authority for the acts and omissions of his subcontractors, and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him.

GENERAL CONDITIONS

d. The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind subcontractors to the Contractor by the terms of the General Conditions, Special Conditions, and other documents comprising the Contract insofar as they are applicable to the work of subcontractors and to give the Contractor the same power as regards terminating any subcontract that the Local Authority may exercise over the Contractor under any provisions of the Contract. The contractor shall insert in each of his subcontracts the provisions (appropriately modified) of Sections 25, 30, 31, 32, 33, and 40 of these General Conditions.

e. Nothing contained in the Contract shall create any contractual relationship between any subcontractor and the Local Authority.

5. OTHER CONTRACTS

The Local Authority may award other contracts for additional work, and the Contractor shall fully cooperate with such other contractors and carefully fit his own work to that provided under other contracts as may be directed by the Local Authority. The Contractor shall not commit or permit any act which will interfere with the performance of work by any other contractor. Where more than one prime contractor is employed on the site it shall be the responsibility of the Local Authority to coordinate the work of all such prime contractors unless otherwise expressly provided herein.

6. MUTUAL RESPONSIBILITY OF CONTRACTORS

If, through acts or neglect on the part of the Contractor, any other contractor or any subcontractor shall suffer loss or damage on the work, the Contractor agrees to settle with such other contractor or subcontractor by agreement or arbitration, if such other contractor or subcontractor will so settle. If such other contractor or subcontractor shall assert any claim against the Local Authority on account of any damage alleged to have been so sustained, the Local Authority shall notify the Contractor, who shall defend at his own expense any suit based upon such claim, and, if any judgment or claims against the Local Authority shall be allowed, the Contractor shall pay or satisfy such judgment or claim and pay all costs and expenses in connection therewith.

7. RISK OF LOSS

Upon the award of the contract, the bidder to whom the award is made will bear all risk of loss. Until that time, the Local Authority will bear all risk of loss.

8. ACCEPTANCE OF WORK AND PAYMENT

a. Performance of the obligations of the Contractor under the Contract is subject to a written acceptance of the work by the Local Authority.

NOTE: These pages 23 and 24 supersede pages 23 and 24 dated 8-13-51. The last sentence of paragraph c has been deleted and footnote 1 has been added on page 24.

GENERAL CONDITIONS

b. If the accepted bid (and the Contract) requires payment to the Local Authority, payment of the full amount agreed to be paid by the Contractor under his bid shall be made by him by certified check payable to the order of the (Local Authority) on or before the execution of the Contract.

c. If the accepted bid (and the Contract) requires payment by the Local Authority to the Contractor, partial payments will be made during the progress of the work as follows:

(1) 25% of the Contract price when one-third of the work has been completed;

(2) An additional 25% of the Contract price when two-thirds of the work has been completed;

(3) The balance due under the Contract, or the final payment, after all work covered by the Contract has been completed and accepted by the Local Authority.

Provided, however, that the total of all payments made during the progress of the work shall at no time exceed 75% of the Contractor's total payroll from the beginning of the work to the date on which payment is authorized. The proportion of the work completed at any time shall be determined by the Local Authority, which will give consideration only to those buildings which have been removed from the site and when the immediate area in which they were located has been cleared, cleaned, and brought to the condition required by the Contract. The amount due the Contractor for a partial payment will be paid as soon as practicable after the Contractor presents to the Local Authority a correct statement and request therefor.1/

d. No payment made under the Contract shall act as a waiver of the right of the Local Authority to require the fulfillment of all of the terms of the Contract.

e. Acceptance of the work of the Contractor by the Local Authority shall not be deemed to release any surety upon any bond furnished in connection with the work covered by the Contract, and each such surety shall be deemed to be released only in accordance with the terms of the bond executed by such surety.

1/ Where the Local Authority pays the Contractor for the work the Local Authority may elect to have the Contractor furnish a breakdown for partial payments, by buildings identified by their street addresses, or by groups of buildings so identified. In this case, a clause must be inserted in the General Conditions requiring the successful bidder to furnish and abide by such a breakdown, and the payment clause, subsection 8.c.(1) (2) and (3) above, must be modified to recognize this method.

GENERAL CONDITIONS

f. No change in or variation of the time, method or conditions of payment as provided herein shall release or discharge, to any extent whatsoever, the surety or sureties upon any bond furnished under the Contract.

g. Upon completion and acceptance of all the work required hereunder, the contractor shall (1) upon request by the Local Authority if the contractor is required to pay the Local Authority for the performance of the work or (2) prior to final payment if the Local Authority is to pay the Contractor for the performance of the work, furnish a release in satisfactory form of all claims against the Local Authority arising under and by virtue of the Contract, other than such claims, if any, as may be specifically excepted by the Contractor from the operation of the release; Provided, each such exception embraces no more than one claim the basis and scope of which is clearly defined and the amount stated; and provided further the amounts of such excepted claims are not included in the voucher for final payment.

GENERAL CONDITIONS

10. CLAIMS FOR EXTRA COST

a. If the Contractor claims that any instructions by drawings or otherwise involve extra cost or an extension of time, he shall, within seven days after the receipt of such instructions, and in any event before proceeding to execute the work, submit his protest thereto in writing to the Local Authority, stating clearly and in detail the basis of his objections. No such claim shall be valid unless so made.

b. By execution of this Contract the Contractor warrants that he has visited the site of the proposed work and fully acquainted himself with the conditions there existing relating to demolition, construction and labor, and that he fully understands the facilities, difficulties and restrictions attending the execution of the work under the Contract. The Contractor further warrants that he has thoroughly examined and is familiar with the Drawings, Specifications, and all other documents comprising the Contract. The Contractor further warrants that by execution of this Contract his failure when he was bidding on his Contract to receive or examine any form, instrument or document, or to visit the site and acquaint himself with conditions there existing, in no wise relieves him from any obligation under the Contract and the Contractor agrees that the Local Authority shall be justified in rejecting any claim based on facts regarding which he should have been on notice as a result thereof.

11. TERMINATION FOR BREACH

In the event any of the provisions of the Contract are violated by the Contractor, the Local Authority may, without prejudice to any other rights or remedies of the Local Authority, terminate the Contract by written notice to the Contractor and complete the work under separate contract or otherwise, and the Contractor and his surety shall be liable for and shall pay to the Local Authority either (1) the amount of any excess cost occasioned the Local Authority thereby if the Contract requires consideration to flow from the Local Authority to the Contractor, or (2) the amount necessary to absorb the cost of completing the work and restore to the Local Authority in full the consideration originally stipulated in the Contract if the Contract requires consideration to flow from the Contractor to the Local Authority.

12. DELAYS - DAMAGES

a. If the Contractor refuses or fails to prosecute the work, or any separable part thereof, with such diligence as will insure its completion within the time specified in the Special Conditions, or any extension thereof, or fails to complete said work within such time, the Local Authority may, by written notice to the Contractor, terminate his right to proceed with the work or such part of the work as to which there has been delay. In such event the Local Authority may take over the work and prosecute the same

to completion, by contract or otherwise and the Contractor and his sureties shall be liable to the Local Authority for any excess cost occasioned the Local Authority thereby. If the Contractor's right to proceed is so terminated, the Local Authority may take possession of and utilize in completing the work such materials, appliances, and plant as may be on the site of the work and necessary therefor. Until such time as the Local Authority terminates the right of the Contractor to proceed, the Contractor shall continue the work, and the Contractor shall pay to the Local Authority as fixed, agreed, and liquidated damages (it being impossible to determine the actual damages occasioned by the delay) for each calendar day of delay, until the work is completed, or accepted, or until such time as the Contractor's right to proceed shall be terminated, the amount as set forth in the Special Conditions and the Contractor and his sureties shall be liable for the amount thereof. In the event the Local Authority shall at any time subsequent to the date of completion, as established in the Contract or any amendment thereto, terminate the Contractor's right to proceed, such termination shall not relieve the Contractor of the payment of the liquidated damages which have accrued from the completion date as established in the Contract, up to and including the date of the termination of the Contractor's right to proceed; Provided, That the right of the Contractor to proceed shall not be terminated or the Contractor charged with liquidated damages because of any delays in the completion of the work due to unforeseeable causes beyond the control and without the fault or negligence of the Contractor, including but not restricted to acts of God, or of the public enemy, acts of the Government, acts of the Local Authority, acts of another contractor in the performance of a contract with the Local Authority, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and unusually severe weather, or delays of subcontractors due to such causes, if the Contractor shall within 10 days from the beginning of any such delay (unless the Local Authority, with the approval of the PHA, shall grant a further period of time prior to the date of final settlement of the Contract) notify the Contracting Officer in writing of the causes of delay, who shall ascertain the facts and the extent of delay, and the Local Authority shall, subject to prior approval of the PHA, extend the time for completing the work when in its judgment the findings of fact of the Contracting Officer justify such an extension, and his findings of fact thereon shall be final and conclusive upon the parties thereto.

b. No payment or compensation of any kind shall be made to the Contractor for damages because of hindrance or delay from any cause in the progress of the work, whether such hindrances or delays be avoidable or unavoidable.

13. ASSIGNMENT OF CONTRACT

The Contractor's obligations and duties under this Contract shall not be assigned in whole or in part by the Contractor without the approval of the Local Authority, but this shall not prohibit the assignment of any proceeds due hereunder to a bank or financial institution nor shall this provision preclude the

Contractor from subletting, as provided in this Contract, parts of the work in accordance with the general practice of the building industry. This Contract may be assigned by the Local Authority to any corporation, agency, or instrumentality authorized to accept such assignment.

14. DISPUTES

a. All disputes, other than those required to be handled under Section 32 of the General Conditions, arising under this Contract or its interpretation, whether involving law or fact or both, or extra work, and all claims for alleged breach of contract shall within ten days of commencement of the dispute as presented to the Contracting Officer for decision. A copy of the notice of the dispute shall be forwarded to the Field Office of the Public Housing Administration. Such notice need not detail the amount of the claim but shall state the facts surrounding the claim in sufficient detail to identify the claim, together with its character and scope. In the meantime the Contractor shall proceed with the work as directed. The parties agree that any claim not presented within the time limit specified within this subsection is waived, except that if the claim is of a continuing character and notice of the claim is not given within ten days of its commencement, the claim will be considered only for a period commencing ten days prior to the receipt by the Local Authority of notice thereof.

b. The Contractor shall submit in detail his claim and his proof thereof. The decision of the Contracting Officer shall be approved in writing by the Public Housing Administration prior to its issuance. Any decision not so approved shall be a nullity. Each decision by the Contracting Officer shall be in writing and shall be mailed to the Contractor by registered mail, return receipt requested. A copy shall be delivered to the PHA Field Office.

c. If the Contractor does not agree with any decision of the Contracting Officer, he shall except from the final release the decision in question.

d. Provided the Contractor has:

(1) given notice of any dispute within the time limit stated in paragraph 14a, above;

(2) presented his dispute to the Contracting Officer;

(3) taken exception in his release from the Contracting Officer's decision; and

(4) brought suit within 120 days after receipt of final payment under this Contract or within six months of a written request by the Local Authority that he submit a final voucher and release, whichever time is the lesser;

GENERAL CONDITIONS

The Contracting Officer's decision shall not be final and conclusive but the dispute shall be tried in court on its merits. In the event the above conditions precedent have not been met, the Contractor hereby agrees that his noncompliance with the conditions precedent constitute a waiver of his right to assert said claim.

15. OWNERSHIP OF DRAWINGS AND SPECIFICATIONS

Except the Contractor's executed set, all drawings and the Specifications are and remain the property of the Local Authority. Such drawings and Specifications are not to be used on other work, and those sets in usable condition shall be returned to the Local Authority, upon request, at the completion or cessation of the work or termination of the contract.

16. PERMITS AND CODES

The Contractor shall give all notices and comply with all applicable laws, ordinances, codes, rules and regulation, and shall obtain and pay for all required permits before commencing work. The Contractor shall make all arrangements for the cutting off, capping, sealing, or connecting to overhead and underground utility services as may be necessary in the conduct of the work and shall pay all fees and charges therefor.

17. CARE OF THE WORK

a. The Contractor shall adopt reasonable methods during the life of the contract to furnish continuous protection to the site and to the work, materials, and equipment thereon to the end that loss or damage may be prevented. He shall refuse entry to persons not having business on the site. He shall be responsible for all damages to persons or property that occur as a result of his fault or negligence in connection with the prosecution of the work and shall be responsible for the proper care and protection of all materials delivered and work performed until completion and final acceptance, whether or not the same has been covered by partial payments made by the Local Authority, and whether or not the damage to his work was caused by the Contractor or by other contractors or by others than the employees of the Local Authority in the course of their employment.

NOTE: These pages 29-30a supersede pages 29-30 dated 8-13-51. Section 17a has been revised. A new Section 17b has been added. Former Section 26b is now Section 26c.

GENERAL CONDITIONS

b. In the event of delay in completion of the contract work due to loss or damage caused by failure of the contractor to adopt reasonable and continuous protective methods, the contractor shall not be relieved from payment of liquidated damages because of such delay.

c. The Contractor shall assume all responsibility for damage to any property upon, or passing through, the site but excluded from the work or not owned by the Local Authority, such as utility lines or like items.

d. In an emergency affecting the safety of life or property, including adjoining property, the Contractor, without special instructions or authorization from the Local Authority, is authorized to act at his discretion to prevent such threatened loss or injury, and he shall so act. Likewise, he shall so act if instructed to do so by the Local Authority. Any compensation claimed by the Contractor on account of such emergency work shall be determined by the Local Authority, subject to PHA approval, and as provided in the Contract.

e. The Contractor shall avoid damage as a result of his operations to existing sidewalks, streets, curbs, pavements, utilities, adjoining property, etc., and he shall at his own expense completely repair any damage thereto caused by his operations.

f. Wherever required by law, the Contractor shall shore up, brace, underpin, secure, and protect as may be necessary all foundations and other parts of existing structures adjacent to, adjoining, and in the vicinity of the site, which may be in any way affected by the demolition or other operations connected with the performance of the Contract. The Contractor shall be responsible for the giving of any and all required notices to any adjoining or adjacent property owner or other party before the commencement of any work. The Contractor shall indemnify and save harmless the Local Authority from any damages on account of settlements or the loss of lateral support of adjoining property and from all loss or expense and all damages for which the Local Authority may become liable in consequence of such injury or damage to adjoining and adjacent structures and their premises.

g. Where disconnections are required to be made at street mains the Contractor shall, at his own expense, restore the pavement over such cuts in accordance with local regulations.

h. The Contractor shall, periodically or as directed during the progress of the work, remove and properly dispose of the resultant dirt

and debris, and keep the premises reasonably clear of hazardous obstructions. Upon completion of the work the Contractor shall remove all temporary construction, facilities, and materials (except as otherwise specified) and leave the site in a neat and clean condition satisfactory to the Local Authority.

i. The Contractor shall, during the progress of the work, provide sufficient competent watchmen, both day and night, including Saturdays, Sundays and holidays, as he deems necessary in order to protect his interests, or as may be required by civic authorities.

18. ACCIDENT PREVENTION

The Contractor shall exercise proper precaution at all times for the protection of persons and property. The safety provisions of applicable law, building and construction codes shall be observed, and the Contractor shall take or cause to be taken such additional safety and health measures as the Local Authority may determine to be reasonably necessary. Machinery, equipment and all hazards shall be guarded in accordance with the safety provisions of the Manual of Accident Prevention in Construction published by the Associated General Contractors of America, to the extent that such provisions are not in contravention of applicable law.

19. SANITARY FACILITIES

The Contractor shall furnish, install and maintain ample sanitary facilities for the workmen. As the needs arise, enclosed temporary toilets, in sufficient number, shall be placed as directed by the Local Authority. Drinking water shall be provided from a proved safe source, so piped or transported as to be

kept clean and fresh and served from single service containers or satisfactory types of sanitary drinking stands or fountains. All such facilities and services shall be furnished in strict accordance with existing governing health regulations.

20. USE OF PREMISES

a. The Contractor shall confine his apparatus, storage of materials, and demolition operations to the limits prescribed by ordinances or permits, or as may be directed by the Local Authority.

b. The Contractor shall comply with and enforce any instructions of the Local Authority, or local laws regarding signs, advertising, fires, danger signals, barricades, and smoking.

21. FINAL INSPECTION

a. When the work is substantially completed the Contractor shall notify the Local Authority in writing that the work will be ready for final inspection on a definite date which shall be stated in such notice. Such notice shall be given at least 10 days prior to the date stated for final inspection.

b. Neither inspection, approval, nor acceptance of the work, in whole or in part, by the Local Authority or its agents shall relieve the Contractor or his sureties of full responsibility for work performed not in strict accordance with the Contract.

22. REVIEW BY LOCAL AUTHORITY AND PHA

The Local Authority, the PHA, and their authorized representatives and agents, shall, at all times, have access to and be permitted to observe and review all work, materials, equipment, payrolls, personnel records, employment conditions, material invoices, contracts, books of account, and other relevant data and records; Provided, however, that all instructions and approvals with respect to the work shall be given to the Contractor only by the Local Authority, or its authorized representatives or agents.

23. DEDUCTION FOR UNCORRECTED WORK

If the Local Authority deems it inexpedient to require the Contractor to correct work injured or not done in accordance with the Contract, an equitable adjustment of the Contract price shall be made by agreement between the Contractor and the Local Authority, subject to settlement, in case of dispute, as herein provided.

GENERAL CONDITIONS

24. INSURANCE

a. Before commencing work each Contractor shall submit to the Local Authority for review and approval his Workmen's Compensation, Manufacturers' and Contractors' Public Liability, and Property Damage Insurance policies, and shall similarly submit his subcontractors' policies before each commences work. The policies to be thus submitted shall be scheduled on an approval form to be supplied by the Local Authority. Such insurance shall be carried with financially responsible insurance companies approved by the Local Authority and shall be kept in force until the Contractor's work is accepted and taken over by the Local Authority. Contracts of insurance which expire before the Contractor's work is accepted and taken over by the Local Authority shall be renewed and submitted to the Local Authority for its approval.

b. The Contractor shall carry Workmen's Compensation Insurance for all his employees engaged in work at the site, in accordance with State or Territorial Workmen's Compensation Laws. Each Contractor shall require his subcontractors to carry such insurance for all their employees working at the site.

c. The Contractor shall carry Manufacturers' and Contractors' Public Liability Insurance with limits of $50,000/$100,000 to protect the Contractor against claims for injury to or death of one or more than one person as a result of accidents which may occur at the site from operations under the Contract. Each Contractor shall require his subcontractors to carry such insurance. Such insurance shall cover the use of all equipment, hoists, and vehicles on the site.

d. The Contractor shall carry, during the life of the Contract, Property Damage Insurance in an amount of not less than $5,000 to protect him and his subcontractors from claims for property damage which might arise from operations under the Contract.

25. PREVAILING SALARIES OR WAGES

a. The Contractor shall pay to all architects, technical engineers, draftsmen, and technicians employed in connection with this contract not less than the salaries or wages prevailing in the locality of the Project, as determined or adopted (subsequent to a determination under applicable State or local law) by the PHA.

b. The contractor shall pay to all laborers and mechanics employed in the development of the Project not less than the wages prevailing in the locality of the Project, as predetermined by the Secretary of Labor of the United States pursuant to the Davis-Bacon Act (Title 40, U. S. C., Secs. 276a - 276a-5).

GENERAL CONDITIONS

c. All laborers and mechanics employed in the development of the Project shall be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by the Anti-Kickback Regulations (29 CFR Part 3), the full amounts due at time of payment computed at wage rates not less than those contained in the wage determination decision of the Secretary of Labor of the United States, the substance of which is included in the Special Conditions, regardless of any contractual relationship which may be alleged to exist between the contractor or subcontractor and such laborers and mechanics; and the wage determination decision shall be posted by the contractor at the site of the work in a prominent place where it can be easily seen by the workers.

d. If the contractor or any of his subcontractors finds it necessary or desirable to exceed the prevailing salary or wage rates specified in his contract, any expense incurred by the contractor or subcontractors because of the payment of salaries or wages in excess of such amounts shall not be cause for any increase in the amount payable under his contract. The Local Authority shall not consider or allow any claim for additional compensation made by the contractor or subcontractors because of such payments.

e. The Local Authority will not make any payment under this contract unless and until the Local Authority has received an affidavit from the contractor that such contractor and each of his subcontractors has made payment to each class of employees in compliance with the applicable provisions of a, b, and c of this Section.

f. Apprentices shall be employed in the development of the Project only under a bona fide apprenticeship program registered with a State Apprenticeship Council which is recognized by the Federal Committee on Apprenticeship, United States Department of Labor, or if no such recognized Council exists in a State, under a program registered with the Bureau of Apprenticeship, United States Department of Labor.

g. No laborer or mechanic employed in the development of the Project shall be discharged or in any other manner discriminated against because such laborer or mechanic has filed any complaint or instituted or caused to be instituted any proceedings or has testified or is about to testify in any proceedings under or relating to the labor standards incorporated in this Contract.

26. HOURS OF WORK

Architects, technical engineers, draftsmen, technicians, laborers, and mechanics shall not be permitted to work more than eight hours per day nor more than 40 hours per week, unless such employees are paid at least time and a half for hours of work in excess of the limits prescribed above. The said limits shall

not apply to executive, supervisory, or administrative employees, as such. If there is a State or local law applicable to any or all of the foregoing classes of employees prescribing hours of work not in excess of the hours above prescribed the Local Authority will require compliance with the State or local laws applicable to such class or classes, instead of compliance with the above requirements.

27. QUALIFICATIONS FOR EMPLOYMENT

a. No person under the age of sixteen (16) years and no person undergoing sentence of imprisonment at hard labor shall be employed in the development of the Project. No person whose age or physical condition is such as to make his employment dangerous to his health or safety or to the health and safety of others shall be employed in the development of the Project; provided, that this shall not operate against the employment of physically handicapped persons, otherwise employable, where such persons may be safely assigned to work which they can ably perform.

b. There shall be no discrimination against any employee or applicant for employment because of race, creed, color, or national origin. This provision shall be included in all subcontracts.

c. The Local Authority may require the Contractor to dismiss from the work such employee or employees as the Local Authority may deem incompetent, or careless, or insubordinate, or otherwise objectionable.

28. PERSONS ENTITLED TO BENEFITS OF LABOR AND MATERIALS PROVISIONS

a. The Contractor and each subcontractor shall extend to every person who performs for him the work of an architect, technical engineer, draftsman, technician, laborer, or mechanic, on the Project or on any part thereof, or in any connection therewith, the benefits of the labor and wage provisions of this Contract regardless of any contractual relationship between the Contractor and such person or between any subcontractor and such person.

b. The Contractor shall promptly pay all amounts due from him for services rendered, work performed and materials supplied.

29. WEEKLY PAYMENTS

Every employee of the Contractor or a subcontractor shall be paid in lawful money of the United States, or by check if the Contractor provides or secures convenient and satisfactory facilities approved by the Local Authority for the cashing of the same without cost or expense to the employee, in the full amount accrued to each individual at the time of closing of the payroll, which shall be at the latest date practicable prior to the date of payment, and there shall be no deductions or rebates on account of goods purchased, rent, or other obligations, but such obligations shall be subject to collection only by legal process.

June 20, 1952

ADDENDA SHEET NO. 1

to

LOW-RENT HOUSING BULLETIN NO. LR-36

I. GENERAL CONDITIONS

(1) Delete Subsection 31a in its entirety and renumber the remaining Subsections accordingly.

(2) In the 2nd and 4th lines of renumbered Subsection 31a (formerly 31b) delete the word "certified" and insert in lieu thereof the word "notarized".

GENERAL CONDITIONS

30. NON-REBATE OF WAGES

The Contractor agrees to comply with the regulations, rulings, and interpretations of the Secretary of Labor of the United States pursuant to the Anti-Kickback Act (Title 18, U.S.C., Sec. 874 and Title 40, U.S.C., Sec. 276c) which makes it unlawful to induce any person employed in the construction or repair of public buildings or public works to give up any part of the compensation to which he is entitled under his contract of employment; and the contractor agrees to insert a like provision in all subcontracts hereunder.

31. SUBMISSION OF PAYROLLS AND RELATED REPORTS

a. The Contractor shall, not later than the 7th day following the payment of wages, submit to the Local Authority two notorized, legible copies of his own payroll and those of each of his subcontractors, together with two notorized, legible copies of payroll summaries, all on forms furnished by the Local Authority.

b. Payroll records shall be maintained during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics employed in the development of the Project. Such records shall contain the name and address of each such employee, his correct classification, rate of pay, daily and weekly number of hours worked, deductions made, and actual wages paid. The contractor shall submit weekly to the Local Authority such copies and summaries (on forms prescribed by the PHA and furnished by the Local Authority) of all his payrolls and those of each of his subcontractors, as the Local Authority or the PHA may require. Each payroll and summary shall be accompanied by an affidavit to the effect that (1) such payroll is correct and complete, (2) the wage rates contained therein are not less than those determined by the Secretary of Labor of the United States, and (3) the classifications set forth for each laborer or mechanic conform with the work performed. The contractor shall make his employment records available for inspection by authorized representatives of the Local Authority, the PHA, and the United States Department of Labor, and shall permit such representatives to interview employees during working hours on the job.

c. The Contractor shall also furnish to the Local Authority any other information or certifications relating to employees in such form as the Local Authority may request.

NOTE: These pages 35 and 36 supersede pages 35 and 36, dated 8-13-51. Former paragraph 31a has been removed and subparagraphs b - d have been renumbered.

GENERAL CONDITIONS

32. DISPUTES CONCERNING WAGE RATES AND CLASSIFICATION OF LABOR

a. All disputes concerning prevailing wage rates or classifications arising under this Contract involving (1) significant sums of money, (2) large groups of employees, or (3) novel or unusual situations shall be promptly reported by the Local Authority to the PHA for decision or, at the option of the PHA, referral to the Secretary of Labor of the United States. The decision of the PHA or the Secretary of Labor, as the case may be, shall be final.

b. All questions arising under this Contract relating to the application or interpretation of the Anti-Kickback Act or Sec. 16(2) of the Act shall be referred to the Secretary of Labor of the United States of ruling or interpretation, and such ruling or interpretation shall be final.

33. WAGE CLAIMS AND ADJUSTMENTS

In cases of underpayment of salaries or wages to any architects, technical engineers, draftsmen, technicians, laborers, or mechanics by the contractor or any of his subcontractors, the Local Authority may withhold from such contractor out of payments due, an amount sufficient to pay persons employed on the work covered by the contract the difference between the salaries or wages required to be paid under the contract and the salaries or wages actually paid such employees for the total number of hours worked, and the amounts withheld may be disbursed by the Local Authority for and on account of the contractor or the subcontractor to the respective employees to whom they are due. The Local Authority shall in cases of such underpayment withhold such monies: Provided, That the Local Authority shall not be considered in default under this sentence if it has in good faith made payments to the contractor in reliance upon an affidavit of the contractor that the salaries and wages required under his contract have actually been paid.

34. PATENTS

The Contractor shall hold and save the Local Authority, its officers, and employees, harmless from liability of any nature or kind, including costs and expenses, for, or on account of, any patented or unpatented invention, process, article, or appliance manufactured or used in the performance of the Contract, including its use by the Local Authority, unless otherwise specifically stipulated in the Contract.

35. WARRANTY OF TITLE

The Contractor agrees upon completion of all work to deliver the premises to the Local Authority free from any claims, liens or charges for any work covered by the Contract and further agrees that neither he nor any person, firm or corporation furnishing any materials or labor for any work covered

by the Contract shall have any right to lien upon the premises. Nothing contained in this Section, however, shall defeat or impair the right of such persons furnishing materials or labor under any bond given by the Contractor for their protection or any right under any law permitting such persons to look to funds due the Contractor in the hands of the Local Authority. The provisions of this Section shall be inserted in all subcontracts and material contracts and notice of its provisions shall be given to all persons furnishing materials for the work when no formal contract is entered into for such materials.

36. GENERAL GUARANTY

Neither the final certificate of payment nor any provision in the Contract nor partial nor entire use or occupancy of the premises by the Local Authority shall constitute an acceptance of work not done in accordance with the Contract or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship. The Contractor shall promptly remedy any defects, errors or omissions in the work and pay for damage to other work resulting therefrom upon notification from the Local Authority, which notification will be given with reasonable promptness.

37. REMOVAL AND SALVAGE

a. Upon receipt by the Contractor of Notice to Proceed with the work on all or any part of the premises, all right, title and interest of the Local Authority in and to buildings, structures and other property to be demolished and/or removed by the Contractor, on said part or all of the premises as described in such Notice, shall be deemed to be vested in the Contractor, subject to all provisions of the Contract and the following:

(1) No right, title, property or interest of any kind whatsoever in or to land or premises upon which such buildings and structures stand, is created, assigned, conveyed, granted or transferred to the Contractor or any other person or persons, except only the license and right of entry to remove such buildings and structures in strict accordance with the Contract.

(2) Property belonging to public bodies or public service companies shall not become the property of the Contractor by reason of the transfer herein provided for, and the Local Authority does not warrant title to such property.

(3) Except as otherwise provided all salvage and materials become the property of the Contractor and shall be taken from the premises. Storage of materials and equipment on the site will not be permitted. All rubbish and debris found existing on the site at the start of the work shall be removed from the premises.

(4) Personal property of third persons or of occupants of buildings on the site shall not become the property of the Contractor.

(5) In the event the Local Authority terminates the Contractor's right to proceed in accordance with either Section 11 or 12 of the General Conditions all rights and all title in and to buildings, structures, material, and property transferred by this Section 37 shall revert to and vest in the Local Authority without prejudice to any claim which the Local Authority may have against the Contractor arising from the Contractor's default.

(6) Materials left on the site after acceptance of the work by the Local Authority shall be deemed to have been abandoned by the Contractor to the Local Authority and title thereto shall thereupon revert to and vest in the Local Authority, without prejudice, however, to any claims which the Local Authority may have against the Contractor arising from the action of the Contractor in so leaving such materials on the site.

(7) If the Technical Specifications provide that the Contractor may elect to remove underground utilities with title thereto being vested in the Contractor, he shall, within ten days after the award of the Contract, notify the Local Authority of his election to remove such property. If any such property is not removed within the time for completion of that portion of the work within which it lies, or any extension thereof, title to such property not removed shall revert to the Local Authority.

b. Unless otherwise specified, no dwelling buildings shall be removed from the premises as a whole, or in a substantially whole condition, but shall be demolished on the premises.

38. INTEREST OF MEMBER OF CONGRESS

No member of or delegate to the Congress of the United States of America or Resident Commissioner shall be admitted to any share or part of this Contract or to any benefit to arise therefrom; Provided that this provision shall not be construed to extend to this Contract if made with a corporation for its general benefit.

39. CONVICT-MADE MATERIALS

No materials manufactured or produced in a penal or correctional institution shall be incorporated in the Project under this Contract.

40. TERMINATION BECAUSE OF VIOLATION OF WAGE PROVISIONS

This Contract may be terminated by the Local Authority upon default by the contractor of any of the provisions of Sections 25, 30, 31, 32, and 33.

- -

SPECIAL CONDITIONS

1. TIME FOR COMPLETION

The work shall be commenced at the time stipulated in the Notice to Proceed to the Contractor and shall be fully completed within_____consecutive calendar days thereafter.

2. LIQUIDATED DAMAGES

a. As actual damages for any delay in completion are impossible of determination the Contractor and his Sureties shall be liable for and shall pay to the Local Authority the sum of $_____per day as fixed, agreed and liquidated damages for each calendar day of delay (not beyond the control of the Contractor) until the work is completed or accepted.

b. The Local Authority may accept any part of the work prior to completion of the work of the entire Contract if such part has, in its opinion, been brought to a condition meeting all Contract requirements.

3. COMMUNICATIONS

a. All notices, demands, requests, instructions, approvals, proposals and claims must be in writing.

b. Any notice to or demand upon the Contractor shall be sufficiently given if delivered at the office of the Contractor stated on the signature page of the Contract (or at such other office as he may from time to time designate in writing to the Local Authority), or deposited in the United States mail in a sealed, postage-prepaid envelope, or if delivered with charges prepaid to any telegraph company for transmission, in each case addressed to such office.

c. All papers required to be delivered to the Local Authority shall, unless otherwise specified in writing to the Contractor, be delivered to the _____at_____, and any notice to or demand upon the Local Authority shall be sufficiently given if so delivered, or deposited in the United States mail in a sealed, postage-prepaid envelope, or delivered with charges prepaid to any telegraph company for transmission to said _____ at such address, or to such other representatives of the Local Authority or to such other address as the Local Authority may subsequently specify in writing to the Contractor for such purpose.

d. Any such notice shall be deemed to have been given as of the time of actual delivery or (in the case of mailing) when the same should have been received in due course of post, or in the case of telegrams, at the time of actual receipt, as the case may be.

SPECIAL CONDITIONS

4. SIGNS

a. The Contractor shall construct and maintain on the site of the Project at locations to be designated by the Local Authority_____ _____ signs, as follows:

(1) These signs shall be built of wood. The signboard shall be of 3/4" Marine plywood, 6'-0" long, 4'-0" high, securely fastened to 4" x 4" wood posts 10 feet long, set in concrete bases 10" square. Bottom of sign shall be 3'-6" above grade. Bottom of posts shall extend into concrete bases to a point 2'-6" below grade. Concrete bases shall extend 3'-0" below grade and 0'-4" above grade, with tops beveled down 1" away from posts on all sides. Posts shall be of No. 1 Y.P. or equal -34S. Protect all edges of plywood with a band and moulding.

(2) The entire wood work shall be given a lead-in-oil priming coat on all surfaces before assembly and two such coats after assembly. The field of the sign shall be white and all lettering shall be black. The sign shall be built, erected, and lettered in accordance with the following detail, and the sizes and the character of lettering shall be as per detail furnished by the Architect.

b. The Contractor shall maintain these project signs in good condition satisfactory to the Local Authority during the construction period, and upon completion of the Contract work or when directed, shall turn them over to the Local Authority cleaned, (freshly painted and lettered, if required), and in acceptable condition.

- -

c. Subject to prior approval of the Local Authority as to size, design, type, and location, and to local regulations, the Contractor and his subcontractors may erect temporary signs for purposes of identification and controlling traffic. The Contractor shall furnish, erect and maintain such signs as may be required by Safety Regulations or as necessary to safeguard life and property.

5. JOB OFFICE

The Contractor may maintain such temporary office on the site as may be necessary in the proper conduct of the work and shall, upon completion, or as directed by the Local Authority, remove the same and leave the premises in the condition required by the Contract.

6. MINIMUM RATES OF PAY

The following minimum rates have been determined and adopted in accordance with the provisions contained in the Gneral Conditions and not less than the rates listed herein shall be paid to the following trades and occupations:

Classification	Rate per Hour
.....	.....
.....	.....
.....	.....

7. DRAWINGS AND SPECIFICATIONS

The Local Authority will furnish the Contractor all necessary copies of the Drawings and Specifications without charge.

8. RELEASE OF BUILDINGS

The entire Contract area will be released to the Contractor for demolition purposes at one time under a single Notice to Proceed, whereupon the Contractor shall have full control of the progress and sequence of the work subject to all Contract stipulations and covenants.

GENERAL SCOPE OF WORK

1. APPLICATION

This "General Scope of Work" Division of the Specifications is applicable to all work contemplated.

2. PROJECT SITE

The Project site of Housing Project No. _____ consists of that area within the property limits bounded in general (by / on the) _____ within the (City), (County), (State), all as shown on the (title of drawing or drawings) designated as Drawing(s) No.(s) _____.

3. RESPONSIBILITIES OF CONTRACTOR

Except as otherwise specifically stated in the Contract, the Contractor shall provide and pay for all materials, labor, tools, equipment, water, light, heat, power, transportation, superintendence, temporary construction of every nature, taxes legally collectible because of the work, and all other services and facilities of every nature whatsoever necessary to execute the work to be done under the Contract and deliver it complete in every respect within the specified time.

4. WORK BY OTHERS

The following work will be done by others:

a. At no expense to the Contractor:

(1) On site:
(a) .....
(b) .....
etc.

(2) Off site:
(a) .....
(b) .....
etc.

b. At the expense of the Contractor:

(1) On site:
(a) .....
(b) .....
etc.

(2) Off site:
(a) .....
(b) .....
etc.

5. WORK NOT INCLUDED IN CONTRACT

Work noted on the Drawings or mentioned in the Specifications, or both, as not being a part of the Contract.

- -

SCHEDULE OF DRAWINGS

Drg. No.	Date	Title
.....	.....	.....
.....	.....	.....
.....	.....	.....

NOTES TO THE ARCHITECT

DETAILED INSTRUCTIONS FOR THE PREPARATION AND USE OF DEMOLITION CONTRACT DOCUMENTS

1. INTRODUCTION

These instructions provide explicit information necessary in the preparation and use of the Demolition Contract Documents. Inasmuch as many elements of a demolition contract awarded under competitive bidding are fundamentally the same as those of a construction contract, similarly awarded, the Architect is referred to the "Detailed Instructions Covering The Preparation and Use of Construction Contract Documents", as contained in Low-Rent Housing Bulletin No. LR-12, for instructions regarding the particular provisions which are common to both types. The section numbers may vary, but the section titles and substance are generally identical or but slightly modified, and can be readily recognized. Consequently, it is not deemed necessary to repeat here at length what may be found applicable in the reference mentioned above.

The various items of subject matter in these Notes are treated in the order in which they appear in the first part, Demolition Contract Documents, of this Bulletin. Titles, section numbers, and letters for subsections, as used herein, correspond to those in the documents.

2. INVITATION FOR BIDS — See LR-12, page 85, par. 2.

3. INSTRUCTIONS TO BIDDERS — See LR-12, page 86, par. 3.

SECTION 1. USE OF SEPARATE BID FORMS — See LR-12, page 86, SEC. 1.

SECTION 2. INTERPRETATIONS

Since it is considered that, in all probability, the bidders will be local, the time limits for inquiry and issuance of addenda of seven and five days respectively should be sufficient. There is no objection, however, to raising these to ten and seven respectively, at the discretion of the Local Authority.

SECTION 4. BID GUARANTY

There is no relation between a proper bid guaranty and the bid price in demolition contracts. The amount of security called for in this provision must be stated in dollars and should be not less than 10% of a realistic estimate of the actual cost of labor, materials, equipment, services, and incidental expenses necessary to perform and complete the work, without any consideration being given to salvage value.

NOTES TO THE ARCHITECT

SECTION 5. COLLUSIVE AGREEMENTS See LR-12, page 87, SEC. 6.

SECTION 12. PERFORMANCE AND PAYMENT BOND, EXECUTION OF CONTRACT

See LR-12, page 87, SEC. 17, for applicable general provisions.

The penal sum named for a combined bond must be stated in dollars, and should be not less than the full amount of a realistic estimate of the actual cost of labor, materials, equipment, services, and incidental expenses necessary to perform and complete the work, without any consideration being given to salvage value. Where separate performance and payment bonds are required by law, the penal sums are likewise to be stated in dollars, and should be not less than 50% of such realistic estimate in either of them. The Local Authority may require greater security if desired.

SECTION 13. INSPECTION OF PREMISES BY BIDDERS

This suggested provision may be modified as deemed necessary to fit the circumstances, but should not be omitted.

SECTION 14. SEQUENCE OF THE WORK

In demolition work, the better informed a bidder is as to when and in what manner he may be able to develop marketable salvage materials from his operations, if awarded the contract, the more realistic will be the bids received. This section merely points to the Special Conditions for definite information and should not be changed, nor should any definite statement be included here inasmuch as this Instructions to Bidders will not become a contract document. See Section 9 of the Special Conditions.

4. STANDARD FORMS The first par., top of page 89, of LR-12, is particularly pertinent.

a. FORM OF BID (1)

This form (1) is applicable to a condition where a demolition contract covering the entire site (or such portion thereof as is scheduled for construction work in the near future under one main construction contract) may be economically awarded to one demolition contractor.

b. FORM OF BID (2)

This form (2) is suggested for use where it is deemed advantageous to break down large sites into parcels in order to attract the smaller contractors, all awards to be made simultaneously. It is important that definite and unmistakable boundaries be established for the several parcels, and that the

NOTES TO THE ARCHITECT

form provide for one overall bid covering all parcels. The number of parcels into which the site is divided is a matter of good judgment on the part of the Local Authority and its Architect.

The amount of the bid guaranty and performance and payment bond(s) required for each parcel, and for the overall bid, should be carefully and realistically predetermined and inserted in the form before publication. If form (2) is used, the opening sentence of Section 4.a. of the Instructions to Bidders must be modified as follows:

"4 BID GUARANTY

a. The bid must be accompanied by a bid guaranty which shall be in an amount not less than the greatest total amount to be obtained by combining the several bid guaranties specified in the bid form in the maximum number of parcels for which the bidder will accept contract award, and at the option of the bidder may be . . . (etc. without change to the end of subsection a.).

Subsection b. must not be changed.

The use of form (2) will also require a modification in Section 12. b. of the Instructions to Bidders, as follows:

" b. Having satisfied all conditions of award as set forth elsewhere in these documents, the successful bidder shall, within the period specified in 12.a. above, furnish a performance and payment bond, in an amount not less than the total of the several amounts of Bid Guaranty required specified in the bid corresponding to the parcels covered by the Contract, as security for the faithful performance . . . (etc. without change to the end of subsection b.).

Subsections a., c. and d. must not be changed.

Care must be exercised in preparing the bid form so that all bidders will fully understand it and submit clear and unambiguous bids. The form should not be in conflict with the "General Scope of Work" division of the Specifications.

c. FORM OF BID BOND — See LR-12, page 89, par. 4.b.

d. FORM OF CONTRACT — See LR-12, pages 89, 90, 91 and 92.

The PHA will require two original counterparts of the Contract, and with one each to the Local Authority and the Contractor, the minimum number to be produced is four. PHA will require two conformed copies in addition to the two original counterparts.

NOTES TO THE ARCHITECT

It is important that the Contractor's exact address appear on the signature page of the Contract in the space provided. The "Communications" section of the "Special Conditions" places dependence upon this address.

e. FORM OF PERFORMANCE AND PAYMENT BOND (OR BONDS) See LR-12, page 92, par. d.

The directions for preparation of this bond (or bonds) should be published on the pages immediately following the Form of Bond, or on the back thereof, since it is the successful bidder's responsibility to furnish the bond in satisfactory form.

5. GENERAL CONDITIONS

The first paragraph at top of page 94 of Bulletin No. LR-12 is particularly pertinent.

Because they reflect Federal Statutes, Executive Orders of the President, or established PHA policy, the following provisions herein contained are to be incorporated verbatim, without qualification:

Sections 25, 26, 27, 30, 31, 32, 33, 38, and 40 and Section 6 of Special Conditions. Although the use of the General Conditions without any modifications whatever is not mandatory, they are so drafted that they may be incorporated without change in the average demolition contract. If they are used without changes, the specific requirement of subsection 14.d.(4) should be carefully checked (as explained herein).

Conditions peculiar to the Project do not belong in the "General Conditions", but should be incorporated in the "Special Conditions" (as the name implies).

SECTION 1. DEFINITIONS (Subsection g.)

A page, titled "Schedule of Drawings", should appear in the bound Specifications as indicated. If no drawings, maps, plans, plats, surveys, or similar documents were issued, place a note on this page reading: "NONE ISSUED".

SECTION 1. DEFINITIONS (Subsection h) See LR-12, pages 94 and 95, subsec. i.

SECTION 7. RISK OF LOSS

Previously, some demolition contracts have placed the risk of loss upon the bidder at the time of issuance of the Invitation for Bids, and some have provided for a time-consuming joint taking of inventory and consideration of claims for disappearance of materials during the bidding period. Neither of these is considered as workable and equitable as the method presently provided.

NOTES TO THE ARCHITECT

When the award is made, the successful contractor is determined (subject only to his default), and he can take steps to protect his interest by guarding the property.

SECTION 8. ACCEPTANCE OF WORK AND PAYMENT (Subsection b.)

The Local Authority should not accept the check nor sign the Contract prior to receipt of the performance and payment bond(s), the form and amount(s) of which must be satisfactory and the surety company acceptable.

SECTION 14. DISPUTES (Subsection d.(4))

It is essential that the Local Authority investigate Local statutes and if it finds that it is not legal to reduce the time within which suit may be brought, subsection 14.d.(4) must be changed to read:

> "(4) submitted his final voucher and release within six months after a written request therefor by the Local Authority;"

SECTION 17. CARE OF THE WORK (Subsection f.)

If local regulations or codes require existing water or gas service lines to be cut off at the street mains, each should be shown and definitely located on the Utility Map furnished under the Surveyor's contract.

SECTION 20. USE OF PREMISES

Special Note: Establishment on the premises of a sales office by the Contractor and conducting the sale of salvaged materials from there, if permitted by civic authorities, may be of such advantage as to result in more favorable bids than if prohibited. These documents contain nothing regarding the practice. It is suggested that a new subsection "c" be added to Section 20 defining precisely what the Contractor may or may not do in the matter, as decided by the Local Authority.

SECTION 21. FINAL INSPECTION

In case buildings are released to the Contractor singly, or in groups, Section 21.a. may be modified to recognize a series of final inspections, if desired. Such modification, however, should not conflict with the provisions of written acceptance and payment as provided in Section 8.

SECTION 24. INSURANCE (Subsection d.)

The Local Authority has discretion as to requiring the Contractor to carry any property Damage Insurance as provided herein, and also as to the amount thereof. If included, however, it is recommended that the amount be not less than $5000.

NOTES TO THE ARCHITECT

SECTION 25. WAGE RATES - SALARIES - CERTIFICATION See LR-12, page 97, Sec. 37.

SECTION 35. WARRANTY OF TITLE See LR-12, page 97, Sec. 47.

SECTION 37. REMOVAL AND SALVAGE

If, under state laws, or Third party agreements, storage water heaters, stoves, and/or similar items do not become property of the Local Authority, subsection 37.a.(4) should be expanded to include specific mention of this fact.

6. SPECIAL CONDITIONS

The last paragraph on page 97 of Bulletin No. LR-12 is particularly pertinent.

SECTION 1. TIME FOR COMPLETION See LR-12, page 98, SEC. 1.

The first two paragraphs on page 98 under this heading are particularly pertinent.

SECTION 2. LIQUIDATED DAMAGES See LR-12, page 98, SEC. 2.

The first paragraph on page 98 under this heading is particularly pertinent.

Special Note Regarding Sections 1 and 2:

As written these two provisions are based upon the Contractor being given right of entry to the entire Contract area at one time under one Notice to Proceed. If the situation is such that the Local Authority is able to release only portions of the area, progressively as vacated, both Sections 1 and 2 must be replaced by the following versions:

"1. TIME FOR COMPLETION

a. Each Notice to Proceed to the Contractor will state the specific property limits of the area thereby released to the Contractor and the work within such limits shall be commenced on the date stipulated in such Notice and shall be fully completed within the number of consecutive calendar days named in said Notice for such portion of the work.

b. All work of the entire Contract shall be fully completed on or before the date established by the time for completion named in the final Notice to Proceed.

2. LIQUIDATED DAMAGES

a. As actual damages for any delay in completion are impossible of determination the Contractor and his Sureties shall be liable for and

NOTES TO THE ARCHITECT

shall pay to the Local Authority the sum of $_____per day for each calendar day of delay (not beyond the control of the Contractor) until the entire Contract work is completed or accepted.

b. The Local Authority may accept any part of the work if there has been such a degree of completion as will, in its opinion, make such part reasonably safe, fit and convenient for the use and accommodation for which it was intended. "

SECTION 3. COMMUNICATIONS — See LR-12, page 98, SEC. 3.

Note also, that, because of the stipulation in this provision concerning the Contractor's address, it is essential that it is not overlooked on the signature page of the Contract.

SECTION 4. SIGNS — See LR-12, page 98, SEC. 4.

This provision, and the corresponding one in the main construction contract documents which are to follow, should be carefully correlated to express clearly what it is desired be done by the demolition contractor and what else be done by the contractor for main construction without conflict between the two. If installation of project signs is deferred until after demolition, subsections 4.a. and 4.b. may be eliminated but 4.c. should be retained, deleting the letter "c".

SECTION 6. MINIMUM RATES OF PAY — See LR-12, page 99, SEC. 7.

SECTION 7. DISCRIMINATION — See LR-12, page 101, SEC. 13.

SECTION 9. RELEASE OF BUILDINGS

Where the entire Contract area cannot be released to the Contractor at one time, so that buildings are released singly or in groups, Section 9 must be broken down into two subsections as follows:

"a. The buildings and structures to be demolished, when vacated, will be released to the Contractor for demolition purposes either singly or in groups, as rapidly as circumstances permit, under a series of Notices to Proceed, and the Contractor agrees to perform the work in such order as the Local Authority in its discretion may require.

b. The Contractor shall be entitled to an extension of Contract time if the Local Authority fails to release any building or structure within such time as will enable the Contractor to complete the Contract work within the Contract time, but the Local Authority shall be under no further liability to the Contractor for such failure. "

NOTES TO THE ARCHITECT

Note also, that under the circumstances of release by increments, Sections 1 and 2 of the Special Conditions will require revision as has been indicated in the "Special Note Regarding Sections 1 and 2" several paragraphs above.

7. GENERAL SCOPE OF WORK

SECTION 2. PROJECT SITE

This general description of the entire project site should be retained even if it has been subdivided into several parcels for the taking of separate prices. In such a case, this clause should be expanded to include a brief identification of each parcel.

SECTION 3. RESPONSIBILITIES OF CONTRACTOR See LR-12, page 101, for comment under this heading.

8. SCHEDULE OF DRAWINGS

Each applicable drawing, map, plan, or plat should be listed in this schedule by number, date and title.

If none was issued, the page should be retained in the Specifications, but should bear the notation "NONE ISSUED".

If any revised document of this nature, or portion thereof, is issued by an addendum, such addendum, in addition to its description of the change, must contain a separate paragraph making appropriate revision in this schedule.

BULLETIN NO. LR-37

TERMITE CONTROL

ONE OF A SERIES OF
OPERATIONS ENGINEERING BULLETINS

P H A LOW-RENT HOUSING
BULLETIN

PUBLIC HOUSING ADMINISTRATION
HOUSING AND HOME FINANCE AGENCY WASHINGTON 25, D. C.

AUGUST 1951

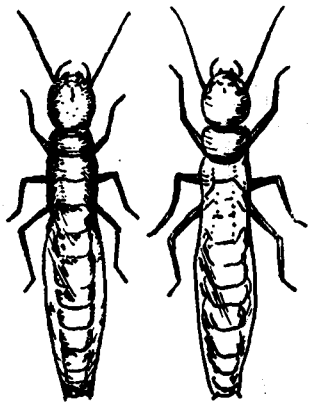
LIST OF BULLETINS

WHICH HAVE BEEN PUBLISHED

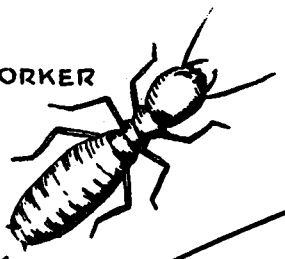
Bulletin No.	Title	
LR-1	Zoning and Rezoning	
LR-2	Subsurface Soil Investigation	
LR-3	Site Planning	)
LR-4	Site Engineering	)
LR-5	Structural Design, Materials and Methods	) A series
LR-6	Architectural Planning and Design	) of eight
LR-7	Plumbing, Heating and Ventilation	) Housing
LR-8	Electrical	) Design
LR-9	Lawns and Planting	) Notes
LR-10	General Design	)
LR-11	Selection of Utilities	
LR-12	Construction Contract Documents	
LR-13	Guide Specifications	
LR-14	Equipment Contract Documents	
LR-15	Operation and Repair of Heating Systems (Care of Boilers Out of Service)	
LR-16	Corrosion of Underground Piping	
LR-17	Rules for Boiler Operation	
LR-18	Preparation of Exterior Surfaces for Repainting	
LR-19	Control of Condensation in Crawl Spaces	
LR-20	Glazing	
LR-21	Maintenance of Wood Floors	
LR-22	Basic Specifications for Rural Nonfarm Housing	
LR-23	Operation and Repair of Heating Systems--Boilers (Types, Use and Repair)	
LR-24	Maintenance of Concrete Floors	
LR-25	Indoor Tenant Activity Areas	
LR-26	Routine Care of Lawns	
LR-27	Repainting Exterior Surfaces	
LR-28	Rural Nonfarm Construction Contract Documents	
LR-29	Occupancy Policy Determinations to be Made and Action to be Taken Previous to Opening of Application Office	
LR-30	Suggestions for Selecting and Training Occupancy Personnel	
LR-31	Publicizing Occupancy Policies	
LR-32	Suggested Operating Procedures for the Receipt and Processing of Applications	
LR-33	Do Community Services Programs Pay Dividends?	
LR-34	Refinishing Interior Surfaces	
LR-35	Suggested Procedures for Handling the Relocation of Site Occupants	
LR-36	Demolition Contract Documents	
LR-37	Termite Control	

NOTE: Some Bulletins will be issued in parts, of which one or more will be contained in the initial release of each Bulletin; other parts will be issued subsequently from time to time as they are completed.

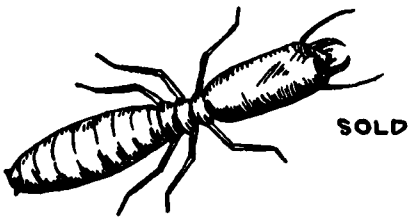
THE LIFE CYCLE OF THE TERMITE



SUPPLEMENTARY REPRODUCTIVES

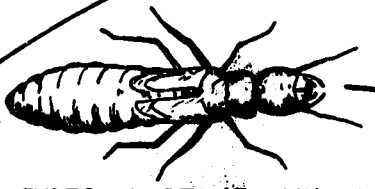


WORKER

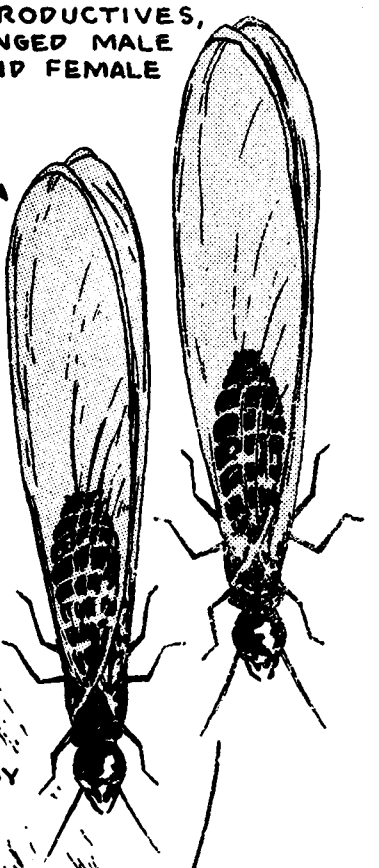


SOLDIER

ALATES OR REPRODUCTIVES, WINGED MALE AND FEMALE



REPRODUCTIVE NYMPH

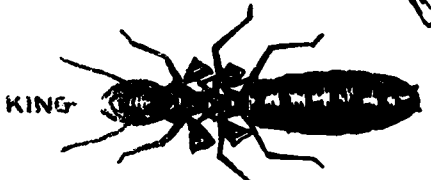


OLDER NYMPH

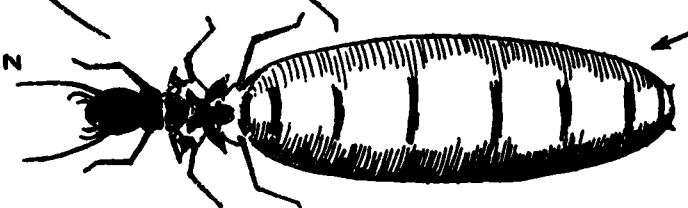
YOUNGEST NYMPH

TERMITES CAUSE ECONOMIC WASTE WHICH RESULTS IN LOSS OF MILLIONS OF DOLLARS ANNUALLY TO INDUSTRY AND HOME OWNERS ALIKE. THIS CALLS FOR AN ALL-OUT EFFORT TO EXTERMINATE AND EXCLUDE TERMITES BY STARTING EFFECTIVE MEASURES NOW.

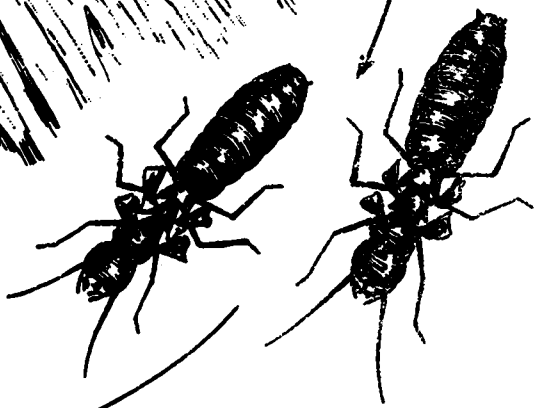
EGGS



KING



QUEEN



REPRODUCTIVES AFTER LOSS OF WINGS

HHFA
PHA
8-20-51

Bulletin No. LR-37

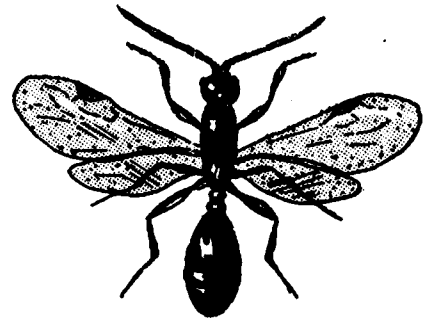
SUBTERRANEAN TERMITES

1. Introduction. Subterranean or ground-nesting termites are world-wide in distribution, small, yet big enough to seriously damage the wood in any structure. The expenditures for making repairs and applying control measures total many millions of dollars annually, but we lose sight of the fact that prevention is cheap and cure can also be economical if measures are taken at the time of early infestation. But if allowed to continue, the cure can be extremely expensive. Originally existing only in the forests as scavengers of timber, the termites were forced to migrate to buildings for food and shelter because of man's ambition and progress of civilization which required the clearing of more woodlands for cultivation and more building sites for homes and industry. In atonement for this unfriendly act, mankind invited Mr. Termite to come and live with him by providing heated dwellings, insufficient drainage and ventilation in crawl spaces and basements, which provided lots of damp lumber for food. An additional inducement was the practice of placing untreated wood in direct contact with the ground surfaces or on masonry foundation walls less than 18 inches above the soil. Thus they became recognized as a destructive insect.

The purpose of this bulletin is to bring to the attention of Local Authorities the damage done by termites and the methods of control and eradication. By following the procedure outlined in this bulletin, maintenance costs can be effectively reduced by early discovery of termites. If this procedure is followed, the cost of control will be nominal when compared to methods normally used.

2. Characteristics

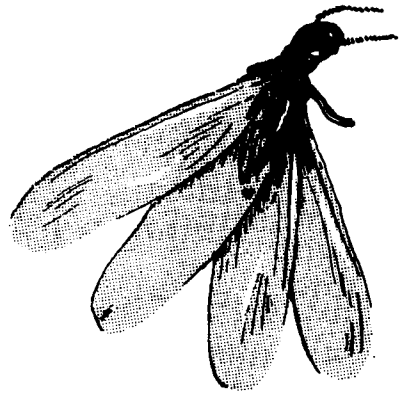
a. How to Recognize. Frequently the first knowledge that a Manager has that his project is infested with termites is when they swarm. This usually occurs in the first warm days of Spring or on warm days in early Winter. Generally, tenants complain to the Manager about flying ants. But the flying ants can easily be distinguished from swarming termites as all ants have a thread-like waistline and two pairs of unequal-sized wings. The swarming termites have no distinct waistline and two pairs of whitish opaque wings of equal size. The termites seen flying are the adult reproductive species which have left the colony and are endeavoring to establish new colonies. Flights are generally of short duration and after finding a suitable location, they pair and shed their wings. When they find wood in contact with the ground, a pair



Winged Ant
(Greatly Enlarged)

(Cont'd)

of termites will dig in and proceed to establish the colony. As additional broods are hatched, the workers take over the duties of providing food for the king and queen, thus leaving the queen, to devote all of her time to enlarging the colony. The adult soldiers and workers are wingless grayish-white, similar in appearance except that the soldiers have a longer head and a pair of longer and stronger mandibles or jaws. The workers, although somewhat smaller, are the most numerous and do all the work of caring for the colony, while the soldiers are fitted solely for defense.



Winged Termite
(Greatly enlarged)

b. Habits. The termites live in colonies with a well-developed caste system consisting of a king, queen, soldiers, and workers. They lead a secluded life differing from their nearest relative, the cockroach, in that they always are found concealed in the woodwork of buildings, which they consume, or deep in the soil where they live, for (1) a constant source of moisture; (2) seclusion from light; and (3) protection from their dominant enemy, the ant. There is one other caste in the colony. This is the secondary reproductives which, upon the death of the king or queen, develop, produce eggs, and proceed to increase the size of the colony.

Adult Worker Adult Soldier
(Greatly Enlarged)

c. Source of Food. On occasion, termites have been known to injure living plants but the greatest economic loss is caused by their activities in the woodwork of buildings where they find "cellulose" -- their principal form of food -- eating and digesting the soft portion of wood and leaving the inside of of their galleries covered with brownish specks of excrement, wood, and earth.

3. To Distinguish Termite Damage from Decay. The difference between termite damage and decay can be easily distinguished. The termites besides destroying wood fiber, leave longitudinal channels in the wood

(Cont'd)

and deposits of excrement and mud, while the decay fungi merely destroys the wood fiber. The important fact to remember in preventing decay and termite infestation is that both depend upon moisture for existence. Fungi do not thrive in dry wood. Decayed wood is often dry after it has rotted, but not while the decay is taking place. There is no such thing as "dry rot." Wood completely air-dry contains less than 15 percent moisture and decay can occur only when wood contains more than 20 percent. When the air is extremely moist and fairly warm, the decay fungi will produce tiny threads which weaken and destroy the fibers. When this condition is encountered, it may be mistaken for termite damage. However, remember that none of the fungi cause continuous clear-cut tunnels and galleries such as are produced by termite feeding.

Wood honeycombed by termites. A portion of the exterior surface has been removed to reveal the extensive tunneling within, along the grain.

A decay fungus and its effect on wood. The tiny threads of which the fungi mainly consist grow within the wood and can be seen there.

(Cont'd)

only with a microscope. Where the air is extremely moist they may develop on the surface in sufficient quantity to be visible. The upper part of the wood in this specimen is softened and weakened, the lower edge nearly disintegrated, but there are no definite galleries such as those cut by termites.

4. Inspection of Property. Since the swarming period of the termite is usually during the first few days of spring or on warm days of late fall, it is virtually impossible to schedule and inspection just as they swarm. But even though an actual flight of termites is not witnessed, any inspection at these times of the year should include a careful examination of all basement floors beneath doors and windows for discarded wings that were broken off by the termites in their attempt to escape to establish new colonies elsewhere. The presence of these wings on the floor is indication that a well-developed colony may be nearby.

a. Foundation Walls. Examine the interior and exterior surfaces of foundation walls and look for mud tubes which are built by the termites and used to travel between the soil and wood or over obstructions. These shelter tubes or covered passageways vary in width from 1/8-inch to 1/2-inch or more A dry or light-colored tube is usually one that has been abandoned or is in little use. But one that is dark in color, because it is damp, is an indication of active use by the termites in their many trips to and from the soil for moisture. If a small section of the dark tube is broken out, you may observe the termites from the upper portion of the tube trying to return to the soil. But there is little chance of the termites in the lower portion of the tube exposing themselves other than attempting to repair the broken tube or begin extending it in another direction.

Portion of shelter tube removed, exposing termites within.

b. Damaged Timbers. Up to this point of the inspection, the fact that no tubes were found is not positive proof that termites may not be present, for entry directly to timbers may have been made through loose joints or cracks in masonry walls. This condition can be detected by testing each of the timbers with a sharp instrument such as an ice pick. If termite damage has occurred, the pick will easily enter

(Cont'd)

the wood which, when opened up, will expose some of the burrows and extensive tunneling by the termites along the grain of the wood. To find the extent of the damage done, the wood framing should be tested in all directions from this point. By using this method, the point of entry can often be determined. It is possible also to test the timbers with a hammer. By tapping with the hammer, a hollow sound may be detected if termites are working within. When they are discovered, a combination of poisoning and establishing road blocks is the best method of eradicating them.

5. Materials and Method of Treating Affected Areas

a. Types of Chemicals. Although there may be many different chemicals available for treating termite infestation, the ones most commonly used are: sodium arsenite, pentachlorophenol, trichlorobenzene, and orthdichlorobenzene. From our own experience on low-rent projects, we have found that sodium arsenite and pentachlorophenol have been used successfully in the treatment of termite infestation, and are easily obtained from suppliers on the open market; especially sodium arsenite, which is comparatively cheap and very effective. WARNING. Extreme care should be taken because all of the chemicals used in the treatment of termite infestation are harmful to humans and animals, and inflammable when fuel oil is used as the dilutant. Sodium arsenite, which is dissolved in water, is the only one that may be used near an open flame or where an electric spark may cause a fire. None of the poisons should be used near the source of water supply or in crawl spaces and basements without first providing adequate ventilation. Remove all food supplies stored in basements as absorption of the odor will render the food unfit for use.

b. Importance of Careful Workmanship. No method of termite control can be depended upon unless the work is carefully performed with intelligence and thoroughness in detail. Generally, 95 percent of the colonies will be exterminated with the first treatment. Follow-up treatments at the next swarming are all that are required. If buildings border a woodland, special care must be taken as buildings can become infested anew with termites originating in dead stumps and trees.

c. Protection of Workman and Shrubbery

(1) Workman. The use of goggles and rubberized gloves is strongly recommended when handling any of these poisons due to the irritation that may be caused to the eyes and skin.

(2) Shrubbery. When shrubs and flowers are within 18 inches of the area that is to be treated, the side of the trench nearest the shrubbery should be lined with tar paper or copper-coated kraft paper to prevent the plants from being killed.

(Cont'd)

d. Standard Treatment. The standard treatment and one of the most effective used to discourage termite entry to buildings, is the treating of the soil adjacent to the foundation walls with any one of the above chemicals referred to in paragraph (5a), above.

(1) Proportions of Chemicals to be Used

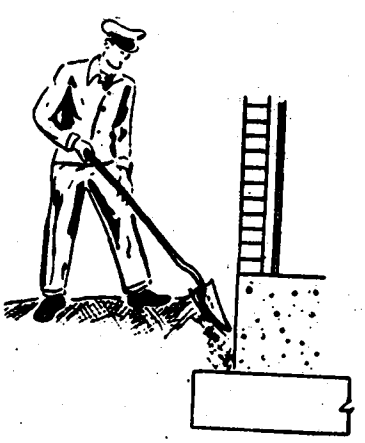
(a) Sodium Arsenite. May be purchased in powder form and should be applied as a 10 percent solution which is equivalent to 13 ounces of powder to a gallon of water. But because of its cheapness and for easier measuring, it is generally mixed 1 pound to 1 gallon of water.

(b) Pentachlorophenol. May be purchased in either 17½ percent or 40 percent concentrate. If 17½ percent is used, add 4 gallons of #1 or #2 fuel oil to 1 gallon of concentrate. If 40 percent is purchased, add 10 gallons of the oil to 1 gallon of concentrate. If bought under a trade name, follow directions on the container. Generally, the best price can be obtained by purchasing the concentrate. The pentachlorophenol is less liable to damage plants and for that reason should be used. around the exterior of a building rather than sodium arsenite.

(c) Orthodichlorobenzene and Trichlorobenzene. These are widely used as a repellent for clothes moths, but either one is an excellent penetrant to use for termite infestation if diluted with 3 parts of light fuel oil to 1 part of chemical.

(2) Treatment

(a) Walls with Deep Footings. Frequently you will read articles and see recommendations to dig deep trenches along the foundation and pour one-half of the chemical in the bottom of the trench and the remainder to be added as the earth is replaced. We have found this method to be rather expensive and for that reason we have followed the system to treat the soil adjacent to exterior walls of buildings. Make a V-shape trench about 12 inches deep around the foundation wall. In some soils the trench can be formed by driving a spade into the ground between the



Trenching

(Cont'd)

wall and earth and pulling the handle out from the wall. By doing this the earth is forced away from the wall forming a V-shape trench. Into this trench pour 10 gallons of 5 percent solution of pentachlorophenol for each 10 feet of trench. We recommend pentachlorophenol for use on the exterior as it is less liable to damage plants, "remains put," and is not washed away by rains.

(b) Buildings with Basements. When signs indicate that termites are coming through defects in the concrete floor, drill small holes in the floor along the foundation wall every 12 inches and funnel either sodium arsenite or pentachlorophenol solution through the hole until the earth is well saturated. After treating, use only 1 inch of mortar to plug the holes as this can be easily removed in case it is necessary to retreat. If the point of entry is actually determined, it is only necessary to extend the holes a distance of 6 feet in both directions along the perimeter wall. If the entry point is under a partition, follow the same method.

Holes Spaced 12" Apart

(c) Treating Slab-on-Ground. If termites are found under porch slabs or floors of dwellings, it will be necessary to bore holes around the perimeter of the slab and treat in the same manner as specified in paragraph 5d (2)(b), above. Some cases may be found where the slab is above the ground level. If so, it may be easier to drill through the foundation wall. This is especially true if concrete block was used for the foundation; if it was, some of the chemical should be poured in the voids of the block. Where openings are made inside the building, we have found that sodium arsenite is preferable to use because it is odorless.

(d) Crawl Spaces. When the crawl space is fairly dry, i.e., does not have standing or flowing water along the foundation, it has been found satisfactory to spray sodium arsenite against the face of the wall allowing it to trickle down on the ground. Use 10 gallons for each 10 lineal feet of wall. If a power spray is used, the nozzle operator will, after a little experimenting, be able to judge a 10-gallon rate of flow for effective treatment. If there is indication of extremely heavy infestation (many points of entry), the ground floor of the crawl space

(Cont'd)

should also be sprayed at the rate of 10 gallons per 100 square feet. When wet crawl spaces are found, form a trench along the wall as described in paragraph 5d (2)(a), above and treat with 1 gallon of solution per lineal foot of trench.

6. Preventing Infestation. Satisfactory results will be obtained if preventive measures are taken in accordance with the following:

   a. Clean out all wood, rags, or paper debris from under the building.

   b. Keep the structural wood in sound dry condition.

   c. Keep roofs tight and gutters and downspouts free from obstruction. Also make a careful check for pipe or any other leaks that keep any part of the framing wet.

   d. If chemical control measures are used, accompany them by removing any susceptible points of entry by structural changes if possible.

   e. If termite tubes or damage are found, block the entry routes, such as cracks in foundation, with coal-tar pitch. If there is condensation water on sills or joists or any softening by decay under the building, dry out by increased drainage and ventilation or cover the crawl space floor with 55-lb. roll roofing.

   f. Do not plant shrubbery close to frame buildings. This prevents the wood from drying out. Vines covering foundation vents prevent ventilation of crawl spaces; and while they improve appearance, they offer opportunity for termites to conceal their shelter tubes.

BULLETIN NO. LR-38

LOCAL AUTHORITY PRE-OCCUPANCY MANAGEMENT CHECK LIST

P H A LOW-RENT HOUSING
BULLETIN

PUBLIC HOUSING ADMINISTRATION
HOUSING AND HOME FINANCE AGENCY WASHINGTON 25, D. C.

OCTOBER 1951

LIST OF BULLETINS

WHICH HAVE BEEN PUBLISHED

Bulletin No.	Title	
LR-1	Zoning and Rezoning	
LR-2	Subsurface Soil Investigation	
LR-3	Site Planning	)
LR-4	Site Engineering	)
LR-5	Structural Design, Materials and Methods	) A series
LR-6	Architectural Planning and Design	) of eight
LR-7	Plumbing, Heating and Ventilation	) Housing
LR-8	Electrical	) Design
LR-9	Lawns and Planting	) Notes
LR-10	General Design	)
LR-11	Selection of Utilities	
LR-12	Construction Contract Documents	
LR-13	Guide Specifications	
LR-14	Equipment Contract Documents	
LR-15	Operation and Repair of Heating Systems (Care of Boilers Out of Service)	
LR-16	Corrosion of Underground Piping	
LR-17	Rules for Boiler Operation	
LR-18	Preparation of Exterior Surfaces for Repainting	
LR-19	Control of Condensation in Crawl Spaces	
LR-20	Glazing	
LR-21	Maintenance of Wood Floors	
LR-22	Basic Specifications for Rural Nonfarm Housing	
LR-23	Operation and Repair of Heating Systems--Boilers (Types, Use and Repair)	
LR-24	Maintenance of Concrete Floors	
LR-25	Indoor Tenant Activity Areas	
LR-26	Routine Care of Lawns	
LR-27	Repainting Exterior Surfaces	
LR-28	Rural Nonfarm Construction Contract Documents	
LR-29	Occupancy Policy Determinations to be Made and Action to be Taken Previous to Opening of Application Office	
LR-30	Suggestions for Selecting and Training Occupancy Personnel	
LR-31	Publicizing Occupancy Policies	
LR-32	Suggested Operating Procedures for the Receipt and Processing of Applications	
LR-33	Do Community Services Programs Pay Dividends?	
LR-34	Refinishing Interior Surfaces	
LR-35	Suggested Procedures for Handling the Relocation of Site Occupants	
LR-36	Demolition Contract Documents	
LR-37	Termite Control	
LR-38	Local Authority Pre-Occupancy Management Check List	

NOTE: Some Bulletins will be issued in parts, of which one or more will be contained in the initial release of each Bulletin; other parts will be issued subsequently from time to time as they are completed.

HHFA
PHA
10-1-51

Bulletin No. LR-38

LOCAL AUTHORITY PRE-OCCUPANCY MANAGEMENT CHECK LIST

INTRODUCTION

This Bulletin is intended for use by new Local Authorities as a guide to the various management operations which should be performed in the process of opening their first projects.

The material contained herein is based on more than a decade of accumulated experience in the administration of Public Housing and can serve as a supplement but not a substitute for the Low-Rent Housing Manual. The Bulletin is arranged by function and is not in chronological order. It is designed so that it may be separated by function if desired.

Since the volume and scope of management operations vary substantially in relation to the size of the Local Authority program, it is recommended that the check list be adjusted accordingly.

Where possible, references have been made to specific chapters of the Low-Rent Housing Manual and PHA Bulletins.

LOCAL AUTHORITY PRE-OCCUPANCY MANAGEMENT CHECK LIST

ADMINISTRATIVE OPERATIONS

A. Initial Planning

1. Make comprehensive study of work to be done.
2. Review plans, specifications, and change orders.
3. Review Annual Contributions Contract.
4. Review PHA Low-Rent Housing Manual, Bulletins, and Circulars.
5. Employ manager at least 30 days before first Operating Budget is required.
6. Prepare first Operating Budget and submit to the PHA for approval within 90 days after award of the main construction contract or within 150 days of the award of the main construction contract when such contract covers a period of one year or longer.

B. Personnel

1. Determine staff requirements
2. Prepare organization chart showing functions, responsibilities, and delegations of authority.
3. Determine personnel and travel policy.
4. Establish liaison with unions or other employment sources.
5. Determine salaries for administrative employees.
6. Determine job assignments.
7. Develop employee handbook.
8. Select and employ other key management and maintenance staff in time to permit adequate organization and training prior to initial occupancy.
9. Inform staff of personnel and travel regulations.
10. Establish administrative channels and work flow.
11. Conduct employee training and orientation program.

C. General Management and Administration

1. Plan office layout.
2. Arrange for office space.
3. Establish filing system.
4. Order office furniture, equipment, and supplies.
5. Order initial operating equipment and supplies.
6. Design and order office forms, service requests, job orders, time sheets, pay roll sheets, leases, and other printed materials.
7. Set up door key control system.
8. Acquire 8½" x 11" Site Plan Diagrams for use in developing operating schedules.

D. Personal Property

1. Procurement
   a. Develop and adopt procurement policy.
   b. Prepare procedures for requisitions, purchase orders, and contracts.
   c. Determine initial requirements for operating equipment and supplies.
   d. Prepare specifications for competitive bidding.
   e. Prepare invitations to bid and make award of contracts for required services and materials.
   f. Establish starting dates for service contracts.
   g. Inspect purchases and contract work.
2. Property Accountability
   a. Prepare procedures for property accountability.
   b. Establish property records and inventory controls.
   c. Mark non-expendable property.
   d. Establish procedures for issuance of supplies and equipment to staff and tenants.

3. Disposition

   a. Develop and adopt disposition policy.

   b. Prepare disposition procedures.

E. Insurance

1. Prepare specifications for fire and extended coverage and Owners' and landlords and tenants public liability insurance and request bids 90 days prior to initial occupancy.

2. Analyze and submit bid to the Central Office Insurance Branch of the PHA for approval of award 60 days prior to initial occupancy.

3. After PHA approval, notify successful bidders of effective date for insurance.

4. Obtain burglary, inside robbery, and outside robbery insurance.

5. Add additional positions for fidelity bond.

6. Submit duplicates of all new policies and endorsements to the Central Office Insurance Branch of the PHA at least 45 days prior to the effective dates of the policies.

7. Obtain burglar-proof safe, if economically feasible.

F. Public Services and Public Relations

1. Arrange for municipal services.

2. Complete pending dedications.

3. Establish liaison with pertinent city, State, and Federal agencies.

4. Confirm working relationships with community, educational, recreational, health, and welfare organizations which should have already been established.

5. Prepare appropriate press releases.

6. Interpret the Low-Rent Housing Program to interested groups.

LEASING AND OCCUPANCY ACTIVITIES

*(Suggested Time Schedule for a 200 Unit Project)

A. Nine Months Before Scheduled Initial Occupancy

1. Place responsibility with qualified staff member for answering inquiries and accepting dwelling registrations (see Bulletin 29).

2. Establish and obtain PHA approval of Schedule of Income Limits for Admission and Continued Occupancy (see Chapter 404).

3. Establish and obtain PHA approval of a Schedule of Rents. Set up a schedule of other charges (see Chapter 405).

4. Establish and formalize eligibility and tenant selection policies (see Chapters 403, 407, and Exhibit 3 of Bulletin 29).

5. Plan campaign for disseminating information to low-income families (see Bulletins 29 and 31).

6. Determine personnel requirements for initial selection of tenants (see Bulletins 29 and 30).

7. Employ Occupancy Supervisor or designate staff member to be responsible for initial selection of tenants (see Bulletin 29).

B. Nine to Approximately Seven Months Before Initial Occupancy

1. Define and establish formulas for computing Net Family Income (see Chapter 402 and Bulletin 29).

2. Determine what characterizes substandard housing in the locality and establish criteria for determining that a dwelling is unsafe, insanitary, or overcrowded (see Chapter 403 and Bulletin 29).

3. Establish criteria for determining urgency of housing need (see Chapter 407 and Bulletin 29).

C. Seven to Three Months Before Initial Occupancy

1. Establish working relationships with employers, social and welfare agencies, Veterans Administration, etc., for the purpose of disseminating information to low-income families and verifying statements made by applicants (see Bulletin 29).

---

* Projects larger or smaller than 200 units should adjust their Time Schedule as necessary.

2. Select and arrange for unit to be used for demonstration purposes, if required (see Bulletin 29).

3. Establish operating procedures and internal administrative controls, including setting up the application and related files (see Bulletin 32).

4. Design all necessary forms and form letters (see Chapter 408 and Bulletins 29 and 32).

5. Study occupancy reporting requirements and develop reporting procedures.

6. Prepare Occupancy Operating Manual (see Bulletin 29 and Appendix B).

7. Prepare Resident Handbook or other type of informational material to be given tenants on rules and regulations of the project and the care and use of dwellings.

8. Select and equip application office (see Bulletin 29).

9. Select, employ, and train occupancy staff (see Bulletins 29 and 30).

10. Initiate publicity campaign for the purpose of informing potential applicants of eligibility criteria and related matters (see Bulletins 29 and 31).

11. Inform site occupants, and other families who have been or are about to be displaced and registrants in writing of the scheduled opening of the application office (see Bulletin 32).

12. Make public announcement of the opening of the application office (see Bulletin 32).

D. Three Months Before Initial Occupancy

1. Open application office and begin taking formal applications (see Bulletin 32).

2. Open demonstration unit (see Bulletin 29).

3. Review applications as received to determine classification to be assigned and factors to be verified (see Bulletin 32).

4. Prepare and submit reports on applications as required.

5. Effectuate working relationships with the principal sources from which verifying data will be required.

6. Begin verification of applicants' eligibility status (see Bulletin 32).

7. Make follow-up with applicants when additional information is required (see Bulletin 32).

8. Begin to send notices to applicants as they are found to be ineligible (see Bulletin 32).

E. Two Months Before Initial Occupancy

1. Assign responsibility of renting and leasing of dwelling units.

2. Establish Move-In Schedules, key controls, tenant ledgers, and rental files.

3. Start selection of tenants (see Chapter 407).

4. Determine effectiveness of selection policies and initiate such changes as may be necessary to serve better a representative cross selection of eligible families of low incomes, or to maintain solvency (see Chapter 407).

5. Notify selected applicants (see Bulletin on Selection of Tenants).

F. One Month Before Initial Occupancy

1. Begin the rechecking of eligibility status of selected applicants (see Chapter 407).

2. Begin the assignment of units to selected applicants.

3. Begin scheduling move-in dates.

4. Begin conducting leasing interviews and executing leases (see Chapter 409).

5. Begin accepting rental payments.

6. Begin making assignments for the use of community laundry or other utility space shared by a group of tenants.

7. Prepare space control chart to avoid conflicting times for use.

G. Date of Initial Occupancy and Thereafter

1. Assist maintenance department in supervising move-ins.

2. Advise new tenants on care and use of dwelling facilities and equipment.

3. Advise new tenants of project and off-site community facilities (indoor and outdoor) and services.

4. Advise new tanants of neighborhood educational, recreational, health, and welfare organizations and their facilities and services (see Chapter 413).

5. Submit required reports on move-ins, and on leasing and occupancy.

6. Process applications and select tenants at a rate commensurate with development progress.

7. Reduce occupancy staff as soon as intake and processing of applications permit.

8. Close demonstration unit (see Bulletin 29).

MAINTENANCE OPERATIONS

A. Personnel

1. Determine staff size and qualifications.
2. Secure PHA Job Title, Wage Rates, and Hours of Work determination for manual maintenance employees.
3. Employ staff.
4. Train staff.

B. Initial Planning

1. Assure that "As Built" drawings are being properly prepared.
2. Make comprehensive study of equipment, structures, materials, and grounds.
3. Obtain manufacturers' operating instructions for all equipment.
4. Learn location, method of operation, and adjustment of controls for plumbing, heating, and electrical distribution systems.
5. Determine scope of work to be done by project and tenant maintenance.
6. Determine routine maintenance intervals.
7. Obtain and become familiar with original plans, specifications, change orders, and "As Built" drawings.
8. Determine the responsibility of tenant and management with respect to the supplying of maintenance equipment and materials, such as lawn mowers, garden hose, small garden tools, trash containers, insecticides, etc.

C. Work Schedules and Procedures

1. Develop work schedules to conform to routine maintenance intervals.
2. Establish service request procedure, including retention of records for future reference.
3. Devise plan for assignment and regulation of tenant storage space.
4. Develop specific job descriptions, instructions, and assignment.
5. Prepare job sheets for time and material accounting.
6. Prepare daily time report.

7. Develop periodic dwelling inspection schedule.

D. Tenant Maintenance

1. Determine scope, areas, and methods.

2. Prepare operating and maintenance instructions.

3. Procure tools, equipment, and materials.

4. Establish control system for tools and supplies.

5. Establish inspection and supervision schedules.

E. Purchases and Services

1. Requisition supplies and materials..

2. Prepare specifications.

3. Inspect deliveries and services and prepare receiving reports.

4. Establish and maintain records of supply and service contracts.

F. Project Maintenance

1. Determine shop and supply room layout.

2. Order initial supplies, equipment, and spare parts.

3. Establish tool and supply controls.

4. Set up inventory records.

5. Establish uniform tenant service and damage charges.

6. Prepare inspection schedules and reports.

G. Hot Water, Heating, and Related Utility System Maintenance

1. Determine specifications for most economical and efficient grade of coal, oil, or other fuel.

2. Record initial utility meter readings.

3. Advise utility companies of initial occupancy date so utility services can be turned on at suitable time.

4. Obtain complete instructions and become thoroughly familiar with all boiler room equipment and instruments, feed water treatment, machine room equipment, heating control system, and heating equipment in dwelling units.

5. Set up methods for corrosion protection of hot water tanks where water is of a corrosive character.

6. Check with local gas company to determine corrosivity of soil and mitigate corrosion of underground pipe lines if necessary.

H. Janitorial and Refuse Removal

1. Establish schedule for cleaning public spaces.

2. Establish grounds maintenance schedule.

3. Determine garbage, trash, and ash removal schedules.

4. Establish incinerator operation schedule.

5. Develop plan and schedule for control of household pests, including exterminating treatment of household goods where necessary.

6. Procure tools, equipment, and supplies.

I. Fire and Safety

1. Know location of hydrants and fire alarm signals.

2. Locate and know method of operation of emergency cut-off points for all utility distribution systems.

3. Learn location and method of operation of all safety valves and circuit breakers.

4. Obtain the required tools and equipment for adequate fire and safety protection.

5. Provide proper storage for all combustible materials or supplies.

6. Prepare rules and regulations to govern storage of combustibles.

7. Post phone number of nearest Fire Station where available to all tenants.

8. Prepare rules and regulations and directive signs for use of parking areas and traffic ways.

9. Provide and locate fire extinguishers as necessary.

J. Inspection. Inspect each dwelling unit to assure that they are satisfactory for occupancy and all equipment, facilities, and utilities are in operating condition.

ACCOUNTING OPERATIONS

A. Initial Planning

1. Determine the Sections of the Low-Rent Housing Manual that are pertinent to accounting and financial reporting.
2. Review the Preliminary Loan Contract.
3. Review the Annual Contributions Contract.
4. Determine PHA requirements related to accounting, such as insurance, budgeting, and limitations on Miscellaneous Authority Expense.
5. Review all resolutions passed by the Commissioners to determine established policies and to determine policies which need to be established.
6. Review all outstanding contracts.
7. Establish system of fiscal check and internal control.
8. Design and obtain all necessary accounting forms and records.

B. Establish Books of Account and Records

1. General Ledger.
2. Cash Receipts Register.
3. Cash Disbursements Register.
4. Preliminary Loan Cost Analysis Ledger.
5. Development Cost Analysis Ledger.
6. Income Analysis Ledger.
7. Expense Analysis Ledger.
8. Contract Register.
9. Insurance Register.
10. Voucher Checks.
11. Petty Cash Vouchers.
12. Journal Vouchers.
13. Inventory Records.

C. Establish Cash Funds

1. Cash-General Fund.
2. Cash-Preliminary Loan Fund.
3. Cash-Petty Cash Fund.
4. Cash-Security Deposit Fund.
5. Cash-Change Fund.
6. Reconcile cash account monthly with bank statements.

D. Purchases and Services

1. Prepare requisitions.
2. Issue invitations to bid.
3. Prepare purchase orders.
4. Prepare receiving reports.
5. Prepare and approve vouchers for payment.
6. Establish and maintain records of supply and service contracts.

E. Tenant Accounting

1. Prepare tenant ledger sheets or cards.
2. Establish security deposit ledger.
3. Examine tenant leases.
4. Determine pro-rata schedule for each rent grade.
5. Prepare "Analytical Tenant Ledger Control."
6. Prepare "Reconciliation of Rent Roll and Analysis of Dwelling Rent Schedule."
7. Prepare "Daily Statement of Operations."
8. Prepare trial balance of tenant accounts receivable and security deposit ledgers.
9. Prepare adjustment slips, explain and obtain approval, and post to tenant ledgers.

10. Maintain and distribute vacate notices.

11. Prepare report of delinquent accounts.

12. Prepare quarterly list of uncollectible accounts.

13. Follow up on uncollectible accounts.

14. Follow up on collection procedures.

15. Prepare vacancy loss report.

F. Personnel Records

1. Establish daily time reports.

2. Establish summary of daily time reports.

3. Establish monthly distribution of labor report.

4. Establish records of leave, overtime, retirement, and any disability fund credit.

5. Establish and maintain workmen's compensation records.

6. Establish and maintain employee savings bond deduction records.

7. Establish and maintain tax deduction records.

8. Maintain record of Surety and Fidelity bonds.

G. Travel Expense

1. Prepare and approve travel orders.

2. Prepare vouchers for per diem and reimbursement of travel expense.

3. Establish and maintain travel records.

4. Establish and maintain motor vehicle travel and gasoline consumption reports and records.

BULLETIN NO. LR-40

FINANCIAL BENEFITS AVAILABLE TO

VETERANS AND SERVICEMEN, AND THEIR FAMILIES, DEPENDENTS, AND BENEFICIARIES

ONE OF A SERIES OF BULLETINS ON
SUGGESTED OCCUPANCY PROCEDURES

PHA LOW-RENT HOUSING
BULLETIN

PUBLIC HOUSING ADMINISTRATION
HOUSING AND HOME FINANCE AGENCY WASHINGTON 25, D. C.

JULY 1952

LIST OF BULLETINS

WHICH HAVE BEEN PUBLISHED

Bulletin No.	Title	
LR-1	Zoning and Rezoning	
LR-2	Subsurface Soil Investigation	
LR-3	Site Planning	)
LR-4	Site Engineering	)
LR-5	Structural Design, Materials and Methods	) A series
LR-6	Architectural Planning and Design	) of eight
LR-7	Plumbing, Heating and Ventilation	) Housing
LR-8	Electrical	) Design
LR-9	Lawns and Planting	) Notes
LR-10	General Design	)
LR-11	Selection of Utilities	
LR-12	Construction Contract Documents	
LR-13	Guide Specifications	
LR-14	Equipment Contract Documents	
LR-15	Operation and Repair of Heating Systems (Care of Boilers Out of Service)	
LR-16	Corrosion of Underground Piping	
LR-17	Rules for Boiler Operation	
LR-18	Preparation of Exterior Surfaces for Repainting	
LR-19	Control of Condensation in Crawl Spaces	
LR-20	Glazing	
LR-21	Maintenance of Wood Floors	
LR-22	Basic Specifications for Rural Nonfarm Housing	
LR-23	Operation and Repair of Heating Systems--Boilers (Types, Use and Repair)	
LR-24	Maintenance of Concrete Floors	
LR-25	Indoor Tenant Activity Areas	
LR-26	Routine Care of Lawns	
LR-27	Repainting Exterior Surfaces	
LR-28	Rural Nonfarm Construction Contract Documents	
LR-29	Occupancy Policy Determinations to be Made and Action to be Taken Previous to Opening of Application Office	
LR-30	Suggestions for Selecting and Training Occupancy Personnel	
LR-31	Publicizing Occupancy Policies	
LR-32	Suggested Operating Procedures for the Receipt and Processing of Applications	
LR-33	Do Community Services Programs Pay Dividends?	
LR-34	Refinishing Interior Surfaces	
LR-35	Suggested Procedures for Handling the Relocation of Site Occupants	
LR-36	Demolition Contract Documents	
LR-37	Termite Control	
LR-38	Local Authority Pre-Occupancy Management Check List	
LR-39	Suggested Procedures for Initially Selecting Tenants from Among Eligible Applicants	
LR-40	Financial Benefits Available to Veterans and Servicemen, and Their Families, Dependents, and Beneficiaries	

NOTE: Some Bulletins will be issued in parts, of which one or more will be contained in the initial release of each Bulletin; other parts will be issued subsequently from time to time as they are completed.

TABLE OF CONTENTS

Part II

Financial Benefits Available to Servicemen and Their Dependents

Part III

Examples of Determinations of Aggregate and Net Family Income for Families of Veterans and Servicemen

Exhibits

Financial Benefits Available to Veterans and Servicemen; and Their Families, Dependents, and Beneficiaries

Introduction

1. Purpose

a. The purpose of this Bulletin is to acquaint local management staffs with the principal Federal financial benefits available to Veterans and Servicemen, their families, dependents, and beneficiaries, as an aid to such staffs in determining the Aggregate and Net Family Income of tenants in, and applicants for, low-rent public housing projects.

b. This Bulletin is not intended for, nor should it be allowed to be used by, persons seeking information to serve their individual purposes. Such persons should be referred to the Veterans Administration or to the appropriate Division of the Service involved.

2. Types of Benefits Included in Bulletin

a. The benefits included in Part I of this Bulletin are in the nature of pensions, compensations, retirement pay, and other direct income available to Veterans and their families, dependents, and beneficiaries. Some of these benefits are administered by the Veterans Administration and others by the Secretaries of the various uniformed services.

b. The benefits included in Part II are the basic pay and extra pay schedules applicable to servicemen, and the schedule of allowances applicable to their dependents. These pay and allowance schedules are administered by the Secretaries of the various uniformed services.

c. Federal benefits available to Veterans and Servicemen and their families, dependents, and beneficiaries which do not affect determinations of Aggregate and Net Family Income such as medical treatment, hospitalization, and insurance have not been included.

3. Verification of Benefits by Local Authorities

a. Verification of Service and Veteran status and family income is a responsibility of local management staffs. Verification of Service or Veteran status for eligibility and preference purposes can generally be made through document and records in the applicant's or tenant's possession. In some instances verification of the types and amounts of benefits received by families can be made from documents and checks. In other instances, however, verification of the types and amounts of such payments is possible only through direct inquiry to the Veterans Administration or officials of the Serviceman's post or base.

b. Verification through the Veterans Administration or post or base officials will be necessary (1) when the evidence presented by the Veteran, Serviceman, or other recipient is not of recent date or does not conclusively indicate the type and amount of the benefit; (2) where there are combinations of benefits; and (3) where the amount of the benefit or payment is subject to periodic review and adjustment. An example of a case requiring verification through post or base officials is that of a Serviceman whose present rate or rank, length of service, nature and location of duty, and special pay, etc., cannot otherwise be verified. An example of a case requiring verification through the Veterans Administration is that of a Veteran receiving a combination of benefits such as a disability allowance of 50% or more, a dependency allowance, one or more statutory awards, and benefits under either the G. I. Bill or PL-16, 78th Congress. Disability payments generally require verification through VA since the amount paid is dependent upon the degree of disability as rated by the VA and is subject to review and adjustment as the Veteran's condition warrants.

c. The Exhibits in this Bulletin of pay scales, compensation allowances, etc., are to be used as a supplement to and not as a substitute for verification of income from authoritative sources and documents.

d. Requests for verification of benefits administered by the VA should be referred to the appropriate regional VA office. Except for special cases over which the VA's Central Office in Washington has exclusive jurisdiction, claims are processed and records are maintained in the regional offices. Requests for verification of service pay and allowances should be referred to the base or post where the Serviceman is stationed.

4. Membership in National Guard and Reserve Units

There has not been included in this Bulletin detailed information concerning the pay, allowances, and other benefits available to members of the National Guard and Reserve Units of the armed forces. It is the responsibility of each Local Authority, however, to obtain and verify all income received by a member of a family from such sources, including pay for regular "drills" and periodic active training duty.

PART I

Financial Benefits Available to Veterans and Their Families

Dependents, and Beneficiaries

1. Benefits Available to Veterans

a. Servicemen's Readjustment Act of 1944--"G. I. Bill of Rights"

(1) Educational Benefits. Under the Servicemen's Readjustment Act of 1944, Veterans of World Ward II, Regardless of age, are entitled to one year of educational benefits for the first 90 days of service, plus additional time equal to the length of active service, but not to exceed four years. While the Veteran is attending school, there is paid directly to him a subsistence allowance of $75 per month, if he has no dependents, $105 per month if he has one dependent, or $120 if he has more than one dependent.

There is a legal limit of $210 per month upon the amount which Veterans without dependents may receive from subsistence allowance and personal income. The limit increases to $270 for a Veteran with one dependent, and $290 for a Veteran with two or more dependents. (This limit applies to earnings or income of the Veteran himself and not to earnings or income of his dependents). Thus, if the personal income of a Veteran with no dependents exceeds $135 ($165 if he has one dependent, $170 if two or more), his subsistence allowance is reduced sufficiently so that the total will not exceed $210 ($270 if he has one, $290 if he has two or more dependents). If personal income exceeds $210 ($270 or $290), the allowance is discontinued altogether.

Educational benefits may also take the form of on-the-job training for a period of not less than three months nor more than two years. Apprentice program supervised by State or Federal agencies may be carried on for the same length of time as school training. During such on-the-job training, subsistence allowance may be paid at the rate of $65 a month for a Veteran without dependents or $90 a month for a Veteran with one or more dependents. Subsistence when added to what the Veteran earns may not exceed $210, if he has no dependents, $270 if he has one dependent, or $290 if he has two or more dependents.

(Cont'd)

NOTE: The material contained in Part I of this Bulletin was formerly contained in Bulletin No. 65. As it appears in this Bulletin it has been rewritten to include information concerning the principal benefits available to Veterans who served in the uniformed services anywhere in the world since June 27, 1950 (the start of the Korean Campaign), for their dependents and beneficiaries.

(2) Unemployment Allowances. Under the Servicemen's Readjustment Act, Veterans of World War II who served and were discharged under conditions other than dishonorable after at least 90 days of service, 16 days of which were between and including September 16, 1940 and July 25, 1947, (or were discharged in less than 90 days because of service-incurred disability) may qualify for unemployment or self-employment allowances. Such Veterans while totally unemployed may receive an allowance of $20 per week for a period not exceeding 52 weeks, depending upon the length of active service.

In the case of partial employment, the amount of wages for a week in excess of $3 is deducted from the $20 allowance. Self-employed Veterans may receive an allowance if their net earnings for the previous month were less than $100. The amount of the allowance payable for any month is the difference between their net earnings and $100 for a maximum period of 10-2/5 months.

A Veteran may not receive an unemployment allowance for the same period that an educational or vocational rehabilitation subsistence allowance is received. Unemployment and self employment allowances are payable only with respect to unemployment occurring not later than 2 years after discharge or release from active duty, or 2 years after July 25, 1947, whichever is later. They are payable for any week or month within this period up to the limit of the Veterans' total eligibility but no payments may be made for any week which begins later than July 25, 1952, except for those who enlisted or reenlisted under the Armed Forces Voluntary Recruitment Act of 1945.

b. The Veterans Vocational Rehabilitation Training Act--Public Law 16, 78th Congress. The Veterans Administration is authorized to administer a vocational rehabilitation training program which is independent of the Servicemen's Readjustment Act. Vocational rehabilitation is provided for handicapped Veterans with service-incurred or aggravated disabilities who are in need of such training in order to restore their employability. Veterans may receive training totaling four years. The rate of subsistence allowance is similar to that provided for educational benefits under the Servicemen's Readjustment Act of 1944.

Any Veteran of World War II (and those qualifying under the Armed Forces Voluntary Recruitment Act of 1945) eligible for benefits under Public Law 16, 78th Congress, or under the Servicemen's Readjustment Act of 1944 may elect either benefit but may not receive benefits under the two Acts simultaneously. Eligible Veterans who have served since June 27, 1950 are entitled to benefits under PL-16.

c. Veterans' Readjustment Assistance Act of 1952. The Veterans' Readjustment Assistance Act of 1952 (Public Law 550, 82nd Congress) provides education and training assistance and unemployment compensation to certain

(Cont'd)

persons who served in the armed forces on or after June 27, 1950, and prior to such date as shall be fixed by the President or the Congress.

(1) Education and Training Assistance. To be eligible to receive the benefits set forth in the Veterans' Readjustment Assistance Act of 1952, a veteran must have (a) been discharged under conditions other than dishonorable; (b) served any time after June 27, 1950; and (c) served at least 90 days total service, unless discharged sooner for a service-connected disability. Eligible veterans are entitled to a maximum of 36 months of education or training. Veterans who have previously trained under earlier veterans' training laws--the World War II G.I. Bill or Public Laws 16 or 894 for the disabled--may receive up to 48 months, minus whatever time they have already spent in training under these earlier programs.

Each eligible veteran who is pursuing a program of education or training under this Act will receive directly from the Government an education and training allowance to meet in part the expenses of his subsistence, tuition, fees, supplies, books and equipment. 1/

Rates for veterans in full-time training in schools and colleges are $110 a month without dependents; $135 with one dependent; and $160 with more than one dependent. Those in training less than full time will receive lower monthly rates.

Top monthly amounts for on-the-job trainees are $70 without dependents; $85 with one dependent, and $105 with more than one dependent. The maximums for institutional on-farm trainees are $95, $110 and

(Cont'd)

1/ For veterans of World War II attending school or receiving training under the Servicemen's Readjustment Act of 1944, allowances for tuition, fees, books, etc., are paid directly to the institution by the Government. In addition, a subsistence allowance in the amounts specified in paragraph 2a(1) is paid directly to the veteran. In determining Aggregate Family Income for veterans of World War II attending education or training institutions, only the amount of subsistence allowance paid to the veteran is included.

Since the allowance paid to veterans receiving training under the Veterans' Readjustment Act of 1952 includes the full amount allowed him for subsistence, tuition, and other costs, there should be included in Aggregate Family Income only the amount received specifically for subsistence. If a lump sum is received with no specific amount designated for subsistence, it is recommended that there be included in Aggregate Family Income an amount equal to the subsistence allowance paid to veterans of World War II receiving similar training.

Mustering-out pay (even though it may be paid in installments) is considered a lump sum payment--an addition to assets--and is not included in income.

$130, respectively. The law requires that on-job and on-farm rates be reduced at four-month intervals, as the training progresses and the veteran's own earnings increase. The law also specifies that veterans taking institutional on-farm training must devote full time to their program.

The new G.I. Bill places a $310-a-month ceiling on job training, regardless of dependency status. Should a veteran's training allowance plus his earnings as a trainee exceed this amount, the Government will reduce the allowance accordingly.

No training allowances may be paid for any period prior to August 20, 1952.

(2) Unemployment Allowances. The Veterans' Readjustment Act of 1952 provides unemployment compensation to eligible veterans (as defined in subparagraph c(1) of this section) with payments of $26 a week, up to a total of 26 weeks. The maximum unemployment compensation which a veteran may receive is $676. This program is effective 90 days from July 16, 1952. The deadline for unemployment compensation under the new law will be five years after the end of the emergency period as determined by Presidential proclamation or concurrent resolution of the Congress.

d. The Armed Forces Voluntary Recruitment Act of 1945. The Armed Forces Voluntary Recruitment Act of 1945 provides that persons enlisting or reenlisting in the armed forces between October 6, 1945 and October 5,

(Cont'd)

1946 may count the entire period of such enlistment or reenlistment as war service for purposes of GI Bill benefits, regardless of the date the war was declared officially ended.

e. Compensation for Service-Connected Disability. Compensation may be paid to Veterans of World Wars I and II and Veterans who have served since June 27, 1950, for disability incurred in, or aggravated by active war service according to the degree to disability as rated by the Veterans Administration. The present scale of compensation payments effective July 1, 1952, is attached as Exhibit 1.

Veterans receiving disability compensation are subject to regular and special re-examination, and as a result, compensation payments may be adjusted upward or downward. In cases of arrested tuberculosis, Veterans receive compensation ratings which are adjusted according to periods of time established by law.

Veterans with dependents and whose disabilities have been rated by the Veterans Administration as 50 per cent or more, receive compensation in addition to the basic rates available to all such cases. The "dependency allowance" varies with the number and relationship of dependents as well as with the percent of disability (See Exhibits 2 and 3 attached).

f. Pension for Disability Not Service-Connected

(1) Veterans of World Wars I and II and Veterans who have served since June 27, 1950 may receive pensions subject to income limitations, for permanent total disability not service-connected. The Veteran must have been discharged other than dishonorably after a minimum of 90 days' service or else discharged sooner for line of duty disability.

This pension is not payable if the annual income of the Veteran exceeds $1400 if unmarried, or $2700 if married or there are minor children. (See Exhibit 4 for monthly pension rates.)

(2) Veterans of the Spanish American War may receive pensions based on age (beginning at 62 years) or due to permanent disability not service-connected. Because of the double determining factor on which to base monthly compensation - that of age or permanent disability - and the scarcity of such veterans, no attempt will be made in this

(Cont'd)

NOTE: Pages 3 through 24 of this Bulletin have been revised to reflect the provisions of Public Laws 346, 356 and 357 of the 82nd Congress. The new laws provide: (1) increases, effective May 1, 1952, in the basic rates of pay and quarters allowance for Servicemen and their families; (2) increases, effective July 1, 1952, in disability, compensation, and pension payments; and (3) increases, effective July 1, 1952, in the annual income limitations governing the payment of pension to certain veterans and their dependents.

Bulletin to tabulate the various rates of compensation available to this group. It is suggested that these amounts be verified either by satisfactory evidence presented by the tenant, or, if necessary, through the local Veterans Administration Office.

g. Retirement Pay. Enlisted and officer personnel of all branches of the service are eligible for retirement after specified periods of service for disability. Retirement pay is based on rank and length of service.

2. Benefits Available to Families, Dependents, and Beneficiaries of Veterans

a. National Service Life Insurance for Persons in Active Service on or After June 27, 1950. Under the Servicemen's Indemnity and Insurance Acts of 1951, effective April 25, 1951, persons in active service on and after June 27, 1950 are automatically covered against death in active service for $10,000 - less any NSLI or U. S. Government Life Insurance in force at the time of death. For those called to active duty 31 days or more this free indemnity protection continues for 120 days after separation or release from active service.

Two types of Government life insurance are available to these Veterans after their separation. The first type is a five-year level premium term policy that may be renewed every five years at the premium rate for the then-attained age. This insurance is not convertible to any other form of Government life insurance, nor does it pay dividends. The second type of insurance is available to eligible disabled Veterans. This coverage is a special form of Government life insurance, in either term or permanent plans, similar to those of NSLI except that the premiums are on a different basis, the insurance pays no dividends, and the benefits upon maturity are different because they are based on different actuarial tables.

These two types of insurance are issuable to eligible Veterans in amounts ranging from $1,000 to $10,000, less any other Government life insurance in force at the time of application.

b. National Service Life Insurance, World War II Veterans. From October 1940 to April 25, 1951 persons in the active military, naval, and certain related services (serving under orders to active duty for a period of 31 days or more) were eligible for insurance against their death. The insurance was issued for a specified term of years with the privilege of converting it to one of several permanent plans, within certain time limits. These permanent policies under NSLI are comparable to ordinary commercial insurance.

c. U. S. Government Life Insurance, World War I Veterans. Veterans who served in the armed forces between October 6, 1917 and July 2, 1921, or their widows or children, may be receiving monthly payments under U. S.

(Cont'd)

Government Life Insurance. Upon proof of total permanent disability, the insured will be paid $5.75 per thousand per month during such total permanent disability. Beneficiaries under U. S. Government Life Insurance may be receiving death benefits according to the mode of settlement selected.

d. Compensation for Widows, Children, and Dependent Parents of World Wars I and II Veterans and Veterans Who Served Since June 27, 1950, Whose Death Resulted From Service. Compensation is payable to the unremarried widow, child, or children, and dependent parents of a Veteran who died as the result of injury or disease incurred in, or aggravated by active service, in line of duty. If discharged or released from active service, such discharge or release must have been under conditions other than dishonorable. Families of World Wars I and II Veterans and Veterans who served since June 27, 1950 who died under the above circumstances are entitled to pensions at the monthly rates established in **Exhibit 5.**

e. Pensions for Widows and Children of Veterans Whose Deaths Were Not Due to World Wars I or II Service or Service Since June 27, 1950. The unremarried widow, and children of a person who served in the armed forces are entitled to a pension even though the Veterans death was not due to such service, under the following conditions:

(1) At the time of death the Veteran was receiving or was entitled to receive compensation, pension or retirement pay for disability incurred in such service, or

(2) The Veteran (a) having served at least 90 days during the war period was discharged or released from active duty under conditions other than dishonorable, or (b) having been discharged for disability incurred in line of duty during such service, dies from a disease or disability not service-connected and at the time of death had a definitely ascertainable service-connected disability.

This pension is not payable to a widow without a child, or to a child if either of the individuals' annual income exceeds $1400; nor is it payable to a widow with a child or children whose annual income exceeds $2700. A widow loses her entitlement upon remarriage, and children, normally, become ineligible when they reach age 18. A child attending a Veterans Administration school after age 18 will continue to receive the pension while attending this school, but not beyond the age of 21, or if married.

See Exhibit 6 for monthly pension rates.

f. Pensions for Widows and Children of Spanish American War Veterans Whose Deaths Were Not Due to Spanish American War Service. The widows and children of persons who served in the armed forces in line of duty are entitled to a pension, even though the Veteran's death was not due to such service, under the following conditions:

(Cont'd)

(1) A Veteran having been honorably discharged after having served 90 days or more unless discharged sooner for service-incurred disability;

(2) The widow having been married to Veteran prior to September 1, 1938; or dependent unremarried widow, age 60 years or over, married subsequent to December 31, 1937, if married 10 or more years prior to his death. (Continuous cohabitation required in either case.) Unmarried children under the age of 18 (21 years if attending school approved by VA).

See Exhibit 7 for monthly pension rates.

3. General Information

a. Apportionment of Benefits. Where a Veteran, receiving pension or compensation, and his wife are not living together because of estrangement, or where the child or children are not in the Veteran's custody, or in the case of death where the child or children are not in custody of the widow, the amount of the pension or compensation may be apportioned as prescribed by the Administrator of Veterans affairs.

b. Peacetime Service. Pension and compensation rates for disabilities sustained during military or naval service during time of peace are paid for at 80 percent of the wartime rate. Additional rates are provided for dependents, where the Veteran's disability is rated at 50 per cent or more.

There is also provision for payment of pension or compensation for disabilities sustained during peacetime at the wartime rate under certain conditions such as unusually hazardous duty, simulated warfare, etc.

Payments to the widow, children or dependent parents of a Veteran who dies as a result of injury or disease incurred in, or aggravated by peacetime service are made at 80 per cent of the wartime rates.

See Exhibit 8 for monthly pension rates.

(Cont'd)

PART II

Financial Benefits Available to Servicemen and Their Dependents

1. Basic Pay and Extra Pay Schedules Applicable to Servicemen 1/

a. Basic Pay. See Exhibit 10 for Monthly Basic Pay Within Each Pay Grade According to Cumulative Years of Service. This Exhibit gives basic pay for enlisted persons and warrant officers.

b. Extra Pay. In addition to the Serviceman's basic pay he may also receive extra remuneration (designated as "special pay") for (1) sea and foreign duty, and (2) the performance of hazardous duty required by competent orders.

(1) Sea and Foreign Duty Special Pay. Enlisted persons entitled to receive basic pay shall, in addition thereto, while on sea duty or while on duty in any place beyond the continental limits of the United States or in Alaska, be entitled to receive pay at the following monthly rates: Grade E-1, $8.00; E-2, $8.00; E-3, $9.00; E-4, $13.00; E-5, $16.00; E-6, $20.00; and E-7, $22.50.

(2) Hazardous Duty Special Pay. Enlisted persons and warrant officers entitled to receive basic pay shall, in addition thereto, be entitled to receive pay for the performance of specified hazardous duty as follows:

(a) For duty as a crew member involving frequent and regular participation in aerial flight; or for duty on board a submarine, the special pay is determined by the pay grade and is at the following monthly rates: Grade E-1, $30.00; E-2, $37.50; E-3, $45.00; E-4, $52.50; E-5, $60.00; E-6, $67.50; E-7, $75.00; W-1, $100.00; W-2, $100.00; W-3, $100.00; and W-4, $100.00.

(b) For the performance of any of the following duties designated as "hazardous duty", the special pay is fixed at $50.00 per month for all pay grades of enlisted personnel

(Cont'd)

1/ Public Law 346, 82nd Congress, (amending Public Law 351, 81st Congress) increases the basic pay of members of the uniformed services by 4%, effective 5-1-52. Members of the "uniformed services" includes the Army, Navy, Air Force, Marine Corps, Coast and Geodetic Survey, and Public Health Service and all regular and reserve components thereof.

NOTE: The material contained in Part II of this Bulletin was formerly contained in Exhibit 11 of Section 4614 of the Local Housing Authority Manual.

and $100.00 per month for officers: duty involving frequent and regular participation in aerial flights not as a crew member; duty involving frequent and regular glider flights; duty involving parachute jumping; duty involving intimate contact with persons afflicted with leprosy; duty involving demolition of explosives, including training for such duty; duty at a submarine escape training tank, when such duty involves participation in the training; and duty at the Navy Deep Sea Diving School or the Navy Experimental Diving Unit, when such duty involves participation in training.

2. Schedule of Allowances for Servicemen and Their Dependents

a. Allowances for Quarters--Enlisted Persons. Under the provisions of Public Law 771, Dependents Assistance Act of 1950, a "basic allowance for quarters" is paid to or on behalf of the dependent or dependents of an enlisted member of the uniformed services, provided the Serviceman contributes from his pay an amount not less than $40 per month in the case of enlisted members in pay grades, E-1, E-2 and E-3; or not less than $60 per month in the case of enlisted members in pay grades E-4 and E-5; or not less than $80 per month in the case of enlisted members in pay grades E-6 and E-7. Public Law 346, 82nd Congress, effective May 1, 1952, amended Public Law 771 by establishing a 14% increase in the basic allowance for quarters. The increase is included in the Serviceman's regular pay check for May, June and July, 1952. Beginning August 1952, the increased quarters allowance will be included in the allotment check for his dependent or dependents. The following table shows in monthly amounts by pay grades, the enlisted men's contributions, the quarters allowance and the totals of these two items (which, beginning in September 1952, are paid and mailed directly to the designated dependent--in most cases the wife--of the Serviceman).

Grade	Enlisted Man's Minimum Contribution	Quarters Allowance and Dependents Allowance: 1 Dependent Quarters 1/	1 Dependent Total	2 Dependents Quarters 1/	2 Dependents Total	Over 2 Dependents Quarters 1/	Over 2 Dependents Total
E-1	$40.00	$51.30	$91.30	$77.10	$117.10	$96.90	$136.90
E-2	40.00	51.30	91.30	77.10	117.10	96.90	136.90
E-3	40.00	51.30	91.30	77.10	117.10	96.90	136.90
E-4	60.00	77.10	137.10	77.10	137.10	96.90	156.90
E-5	60.00	77.10	137.10	77.10	137.10	96.90	156.90
E-6	80.00	77.10	157.10	77.10	157.10	96.90	176.90
E-7	80.00	77.10	157.10	77.10	157.10	96.90	176.90

(Cont'd)

1/ In determining Aggregate Family Income, enter for the Dependent's allowance the appropriate amount from the "Quarters" column rather than the "Total" column, since the $40, $60 or $80 which the serviceman contributes of the total amount will already have been included in Aggregate Family Income as a part of his total pay.

b. Allowances for Quarters--Warrant Officers. Allowances for quarter for Warrant Officers are established by Public Law 346, 82nd Congress, as follows: W-1, $85.50; W-2, $94.20; W-3, $102.60; and W-4, $119.70. These allowances apply to men with dependents and hold regardless of the number of dependents.

c. Subsistence Allowances. Enlisted personnel may receive cash allowances for subsistence (which are in addition to basic pay) under the following conditions in amounts shown: (1) When rations in kind are not available, $2.57 per day; (2) when permission to mess separately is granted, $1.20 per day; or (3) when assigned to duty under emergency conditions where no government messing facilities are available, not to exceed $3.42 per day.

(Cont'd)

NOTE: These pages 9 and 10 supersede pages 9 and 10 dated 7-15-52. Paragraph 2C on page 9 has been revised to reflect the latest subsistence allowances available to enlisted personnel.

PART III

Examples of Determinations of Aggregate and Net Family Income for Families of Veterans and Servicemen

1. Family Status Factor as it Affects Local Authority Determinations of Aggregate and Net Family Income 1/

a. If the Veteran or Serviceman is the Head of the Family, whether he is living in the dwelling or not, his full income from any and all sources must be included in Agreegate Family Income, and deductions allowed from such income as are appropriate in determining Net Family Income.

b. If the Veteran or Serviceman is actually occupying the dwelling, or will actually occupy the dwelling with his family, whether he is the Head of the Family or not, his full income from any and all sources shall be included in Aggregate Family Income, and deductions allowed from such income as are appropriate in determining Net Family Income.

c. If the Veteran or Serviceman is not the Head of the Family and is not actually or will not actually occupy the dwelling with his family, only such amount of his income as he may contribute to the family is to be included in Aggregate Family Income. This is true even though it is through such a Veteran or Serviceman that a family may qualify for the waiver of previous housing requirements, and for the preference requirements applicable to families of Veterans and Servicemen.

(Cont'd)

1/ This paragraph is based upon the provisions of Section 402.1.

NOTE: The policies for determining Aggregate and Net Family Income for all families, including those of Veterans and Servicemen, are established in Section 402.1 of the Low-Rent Housing Manual. Part III directs attention to certain policies established in that Section which relate to the effect of the Veteran's or Serviceman's family status upon determinations of Aggregate and Net Family Income. There are also included several examples of income determinations for such families.

2. Examples of Computations of Aggregate and Net Family Income for Families of Veterans and Servicemen in Accordance With Applicable Income Definitions and Family Status Factors

a. Serviceman Living in Dwelling

Example No. 1 - Assume a family of 3, a Serviceman, his wife and child, with the Serviceman living in the dwelling. His rating is E-2 with less than 2 years of service. Basic pay for Grade E-2 with less than 2 years of service is $85.80 per month. Quarters allowance for Grade E-2 with 2 dependents is $117.10 per month, of which $40 is contributed by the Serviceman from his basic pay of $85.80 and $77.10 is contributed by the Government. Wife is employed regularly in a part-time job at $15 per week but without paid vacation.

Computation:

Basic pay of Serviceman - $85.80 x 12	$1,029.60
Quarters allowance - (contributed by Government) $77.10 x 12	925.20
Wife's income - $15 x 50 weeks	750.00
Aggregate Family Income	$2,704.80
Less allowable deductions (S. S. - 1½% of $750)	11.25
Net Family Income	$2,693.55

Example No. 2 - Assume a family of 4, a Serviceman and 3 dependents, with the Serviceman living in the dwelling. His rating is E-4 with over 6 years of service. Basic pay for Grade E-4 with over 6 years of service is $145.24 per month. Quarters allowance for Grade E-4 with 3 dependents is $156.90 per month, of which $60 is contributed by the Serviceman from his basic pay of $145.24 and $96.90 is contributed by the Government. There is no other income received by the family.

Computation:

Basic pay of Serviceman - $145.24 x 12	$1,742.88
Quarters allowance - (contributed by Government) $96.90 x 12	1,162.80
Income from other sources and members of family	- 0 -
Aggregate Family Income	$2,905.68
Less allowable deductions	- 0 -
Net Family Income	$2,905.68

b. Serviceman, the Head of Family, but Not Living in Dwelling

Example No. 1 - Assume a family of 4, with the Serviceman, the family head, not living in the dwelling because of duty in another locality. His rating is E-5 with 3 years of service. Basic pay for Grade E-5 with over 2 years of service is $152.88 per month. Quarters allowance for Grade E-5 with 3 dependents is $156.90 per month, of which

(Cont'd)

$60 is contributed by the Serviceman from his basic pay of $152.88 per month and $96.90 is contributed by the Government. There is no other income received by the family.

Computation:

Basic pay of Serviceman - $152.88 x 12	$1,834.56
Quarters allowance - (contributed by Government) $96.90 x 12	1,162.80
Income from other sources and members of family	- 0 -
Aggregate Family Income	$2,997.36
Less allowable deductions (Serviceman's occupational expense - $50 x 12)	600.00
Net Family Income	$2,397.36

Example No. 2 - Assume a family of 5, the family head, a sailor with an E-4 rating and less than 2 years of service, serving aboard a submarine. Basic pay for E-4 rating with less than 2 years of service is $122.30 per month; extra pay for sea duty for Grade E-4 is $13 per month; and for hazardous duty special pay for E-4, $52.50 per month. Quarters allowance for Grade E-4 with over 2 dependents is $156.90 per month, of which $60 is contributed by the Serviceman from his basic pay of $122.30 and $96.90 is contributed by the Government. There is no other income received by the family.

Computation:

Basic pay of Serviceman - $122.30 x 12	$1,467.60
Extra pay for sea duty - $13 x 12	156.00
Extra pay for submarine duty - $52.50 x 12	630.00
Quarters allowance - (contributed by Government) $96.90 x 12	1,162.80
Income from other sources and members of family	- 0 -
Aggregate Family Income	$3,416.40
Less allowable deductions (Serviceman's occupational expense - $50 x 12)	600.00
Net Family Income	$2,816.40

c. Serviceman Not Living in Dwelling and Not Head of the Family

Example: Assume a family of 4 with an absent Serviceman who is not the family head. His rating is E-6 with under two years of service. Basic pay for Grade E-6 with under 2 years of service is $175.81 per month. Inasmuch as the family does not depend on the absent serviceman for support, no quarters allowance for dependents is provided by the U. S. Government. However, the Serviceman sends his family $20 per month.

(Cont'd)

Computation:

Serviceman's contribution - $20 x 12	$ 240.00
Income received by other members of the family	1,800.00
Aggregate Family Income	2,040.00
Allowable deductions (S. S., union dues, etc.)	300.00
Net Family Income	$1,740.00

d. Veteran Living in the Dwelling

Example: Assume a Veteran living in the dwelling with his wife and child. He has peacetime 50% service-connected disability. The peacetime rate of compensation for this Veteran is $83 per month. In addition, he is employed part-time at a salary of $20 per week for 52 weeks.

Computation:

Veteran's peacetime compensation for 50% service-connected disability - $83 x 12	$ 996.00
Income from part-time employment - $20 x 52	1,040.00
Income from other sources and family members	- 0 -
Aggregate Family Income	$2,036.00
Less allowable deductions (S. S. - 1½% of $1,040)	15.60
Net Family Income	$2,020.40

e. Veteran, the Family Head, Not Living in Dwelling

Example: Assume a Veteran, the Head of the Family, who is not living in the dwelling with his wife and 2 children because he is receiving vocational training in another locality. He receives $90 per month subsistence allowance while in training. He also has a war-time 50% service-connected disability. The rate of compensation for the disability in this instance is $109.00 per month.

Computation:

Subsistence allowance for vocational rehabilitation - $90 x 12	$1,080.00
Veteran's war-time compensation for 50% service-connected disability - $109.00 x 12	1,308.00
Income from other sources and members of family	- 0 -
Aggregate Family Income	$2,388.00
Less allowable deductions (expense incurred by absence from home while attending a training institution - $75 x 12)	900.00
Net Family Income	$1,488.00

(Cont'd)

Service-Connected Disability Compensation Rates Authorized for Wartime and Peacetime Service for Veterans of World Wars I and II and Veterans Who Served Since June 27, 1950.

Percentage of Disability	Wartime Rates	Peacetime Rates 1/
10	$15.75	$12.60
20	31.50	25.20
30	47.25	37.80
40	63.00	50.40
50	86.25	69.00
60	103.50	82.80
70	120.75	96.60
80	138.00	110.40
90	155.25	124.20
100	172.50	138.00

1/ Peacetime rates are 80% of wartime rates.

Pensions for Veterans of World Wars I and II and Veterans Who Served Since June 27, 1950 for Permanent Total Disability Not Service-Connected 1/

	Per Month	Per Year
Veteran, under 65	$63.00	$756.00
Veteran, 65 or over, or after it has been paid continuously for 10 years	75.00	900.00

1/ See Part I of Bulletin for information regarding eligibility for this benefit. Amounts paid for non-service connected disability may not be exempted in determining eligibility for admission and continued occupancy.

Compensation Rates for Widows, Children and Dependent Parents of World Wars I and II Veterans and Veterans Who Served Since June 27, 1950 Whose Death Resulted from Service 1/

	Per Month	Per Year
Widow, no child	$ 75.00	$ 900.00
Widow and 1 child	121.00	1,452.00
Each additional child	29.00	348.00
1 child, no widow	67.00	804.00
2 children, no widow	94.00	1,128.00
3 children, no widow	122.00	1,464.00
Each additional child	23.00	276.00
(Total amount paid for two or more children to be divided equally)		
One dependent parent	60.00	720.00
Two dependent parents	35.00 each	420.00 each

1/ This benefit is paid under VA Codes 6A1 and 10A.

See Part I of Bulletin for information regarding eligibility for this benefit. Amounts paid for service-connected deaths may be exempted from Net Family Income in determining eligibility only for admission and continued occupancy. (See Section 403.1)

Pensions for Widows and Children of Veterans Whose Deaths Were Not Due to World Wars I and II Service or Service Since June 27, 1950 1/

	Per Month	Per Year
Widow, no child	$ 48.00	$ 576.00
Widow, 1 child	60.00	720.00
Each additional child	7.20	86.40
1 child, no widow	26.00	312.00
2 children, no widow	39.00	468.00
3 children, no widow	52.00	624.00
Each additional child	7.20	86.40
(Total amount paid for 2 or more children to be divided equally)		

1/ This benefit paid under VA Codes 6A2 and 10A1.

See Part I of Bulletin for information regarding eligibility for this benefit. Amounts paid as nonservice connected death benefits may not be exempted from Net Family Income in determining eligibility for admission and continued occupancy. (See Section 403.1.)

NOTE: These pages 19 and 20 supersede pages 19 and 20 dated 7-15-52. No changes appear on page 19. Page 20 has been revised to reflect changes in the monthly pension rate.

Pensions for Widows and Children of Spanish American War Veterans Whose Deaths Were Not Due to Spanish American War Service 1/

	Per Month	Per Year
Widow, any age	$ 51.60	$ 619.20
Widow, 1 child	59.34	712.08
Each additional child	7.74	92.88
1 child, no widow	59.34	712.08
2 children, no widow	67.08	804.96
3 children, no widow	74.82	897.84
Each additional child	7.74	92.88

1/ See Part I of Bulletin for information regarding eligibility for this benefit. Amounts paid as nonservice connected death benefits may not be exempted from Net Family Income in determining eligibility for admission and continued occupancy. (See Section 403.1.)

Compensation Rates for Widows, Children and Dependent Parents of a Veteran Who Dies as a Result of Injury or Disease Incurred in or Aggravated by Peacetime Service 1/

	Per Month	Per Year
Widow, no child	$ 60.00	$ 720.00
Widow, 1 child	96.80	1,161.60
Each additional child	23.20	278.40
1 child, no widow	53.60	643.20
2 children, no widow	75.20	902.40
3 children, no widow	97.60	1,171.20
Each additional child	18.40	220.80
1 dependent parent	48.00	576.00
2 dependent parents	28.00 (each)	336.00 each

1/ This benefit is paid under VA Code 731.

Compensation paid for peacetime service-connected death may be exempted from Net Family Income in determining eligibility only for admission and continued occupancy.

Pay Grades with Corresponding Rank. Following are the ranks corresponding to pay grades in each of the armed services.

Pay Grade	Army	Navy	Air Force	Marine Corps
E-1	Recruit	Recruit	Private	Private
E-2	Private	Apprentice	Private 1st Cl.	Private 1st Cl.
E-3	Private 1st Cl.	Airman Construction Man Dentalman Fireman Hospitalman Seaman Stewardsman	Corporal	Corporal
E-4	Corporal	Petty Officer, 3rd Cl. Steward, 3rd Cl.	Sergeant	Sergeant
E-5	Sergeant	Petty Officer, 2nd Cl. Steward, 2nd Cl.	Staff Sergeant	Staff Sergeant
E-6	Sergeant 1st Cl.	Petty Officer, 1st Cl. Steward, 1st Cl.	Technical Sergeant	Technical Sergeant
E-7	Master Sergeant	Chief Petty Officer	First Sergeant Master Sergeant	Master Sergeant

Monthly Basic Pay Within Each Pay Grade According to Cumulative Years of Service

Pay Grade	Cumulative Years of Service												
	Under 2	Over 2	Over 4	Over 6	Over 8	Over 10	Over 12	Over 14	Over 16	Over 18	Over 22	Over 26	Over 30
Warrant Officers													
W-4	$332.90	$332.90	$332.90	$348.04	$363.17	$378.30	$393.43	$408.56	$423.70	$438.83	$453.96	$469.09	$484.22
W-3	302.64	302.64	302.64	310.21	317.77	325.34	332.90	340.48	348.04	363.17	378.30	393.43	408.56
W-2	264.82	264.82	264.82	264.82	272.38	279.95	287.51	295.08	302.64	317.77	332.90	348.04	363.17
W-1	219.42	219.42	219.42	226.98	234.55	242.11	249.68	257.24	264.82	279.95	295.08	310.21	310.21
Enlisted Persons													
E-7	$206.39	$206.39	$214.03	$221.68	$229.32	$236.96	$244.61	$252.25	$259.90	$275.18	$290.47	$305.76	$305.76
E-6	175.81	175.81	183.46	191.10	198.74	206.39	214.03	221.68	229.32	244.61	259.90	259.90	259.90
E-5	145.24	152.88	160.52	168.17	175.81	183.46	191.10	198.74	206.39	221.68	236.96	236.96	236.96
E-4	122.30	129.95	137.59	145.24	152.88	160.52	168.17	175.81	183.46	198.74	198.74	198.74	198.74
E-3	99.37	107.02	114.66	122.30	129.95	137.59	145.24	152.88	152.88	152.88	152.88	152.88	152.88
E-2	85.80	93.60	101.40	109.20	117.00	124.80	124.80	124.80	124.80	124.80	124.80	124.80	124.80
E-1 (Over 4 months)	83.20	91.00	98.80	98.80	98.80	98.80	98.80	98.80	98.80	98.80	98.80	98.80	98.80
E-1 (Under 4 months)	78.00												

NOTE: For the first 4 months of service, the recruit receives $78.00 per month. After 4 months he goes into the grade indicated above as E-1.

Benefits to Families of Veterans and Servicemen Afforded
by Acts Relating to Low-Rent Public Housing

Benefits and Applicable Law	Qualifying Conditions
1. Waiver of eligibility requirement with respect to previous housing conditions Public Law 171	a. Serviceman or Veteran must have served in active military or naval forces of U. S. on or after September 16, 1940, and prior to July 26, 1947, or on or after April 6, 1917, and prior to November 11, 1918, or on or after June 27, 1950, and prior to such date thereafter as shall be determined by the President. b. Veteran must have been discharged or released under conditions other than dishonorable. c. Application for admission must be made before March 1, 1954.
2. Waiver of citizenship requirement Appropriation Act	a. Serviceman or Veteran must have served in active military or naval forces of U. S. on or after September 16, 1940, and prior to July 26, 1947, or on or after April 6, 1917, and prior to November 11, 1918, or on or after June 27, 1950, and prior to such date thereafter as shall be determined by the President. b. Veteran must have been discharged or released under conditions other than dishonorable. c. Application for admission must be made not more than 4 years after date of discharge from or date of death in the armed forces.
3. Preference in selecting tenants at specified rents Public Law 171	a. Serviceman or Veteran must have served in active military or naval forces of U. S. on or after September 16, 1940, and prior to July 26, 1947, or on or after April 6, 1917, and prior to November 11, 1918, or on or after June 27, 1950, and prior to such date thereafter as shall be determined by the President. b. Veteran must have been discharged or released under conditions other than dishonorable. As among families of such Veterans and Servicemen found to be eligible, additional preference is given first to families of disabled Veterans and Servicemen and second to families of deceased Veterans and Servicemen, provided such disability or death has been determined by the Veterans Administration to be service-connected.
4. Exclusion of amounts received from U. S. Government for disability or death in determining net income for eligibility purposes Public Law 901	Disability or death must have occurred in connection with military service. The law imposes no restrictions as to periods of service, type of discharge or date of application, nor does it indicate source of verification.

BULLETIN NO. LR-41

SAWS - THEIR CARE, USE, AND CONDITIONING

ONE OF A SERIES OF
OPERATIONS ENGINEERING BULLETINS

PHA LOW-RENT HOUSING
BULLETIN

PUBLIC HOUSING ADMINISTRATION
HOUSING AND HOME FINANCE AGENY WASHINGTON 25, D. C.

JULY 1952

LIST OF BULLETINS

WHICH HAVE BEEN PUBLISHED

Bulletin No.	Title	
LR-1	Zoning and Rezoning	
LR-2	Subsurface Soil Investigation	
LR-3	Site Planning	)
LR-4	Site Engineering	)
LR-5	Structural Design, Materials and Methods	) A series
LR-6	Architectural Planning and Design	) of eight
LR-7	Plumbing, Heating and Ventilation	) Housing
LR-8	Electrical	) Design
LR-9	Lawns and Planting	) Notes
LR-10	General Design	)
LR-11	Selection of Utilities	
LR-12	Construction Contract Documents	
LR-13	Guide Specifications	
LR-14	Equipment Contract Documents	
LR-15	Operation and Repair of Heating Systems (Care of Boilers Out of Service)	
LR-16	Corrosion of Underground Piping	
LR-17	Rules for Boiler Operation	
LR-18	Preparation of Exterior Surfaces for Repainting	
LR-19	Control of Condensation in Crawl Spaces	
LR-20	Glazing	
LR-21	Maintenance of Wood Floors	
LR-22	Basic Specifications for Rural Nonfarm Housing	
LR-23	Operation and Repair of Heating Systems--Boilers (Types, Use and Repair)	
LR-24	Maintenance of Concrete Floors	
LR-25	Indoor Tenant Activity Areas	
LR-26	Routine Care of Lawns	
LR-27	Repainting Exterior Surfaces	
LR-28	Rural Nonfarm Construction Contract Documents	
LR-29	Occupancy Policy Determination to be Made and Action to be Taken Previous to Opening of Application Office	
LR-30	Suggestions for Selecting and Training Occupancy Personnel	
LR-31	Publicizing Occupancy Policies	
LR-32	Suggested Operating Procedures for the Receipt and Processing of Applications	
LR-33	Do Community Services Programs Pay Dividends?	
LR-34	Refinishing Interior Surfaces	
LR-35	Suggested Procedures for Handling the Relocation of Site Occupants	
LR-36	Demolition Contract Documents	
LR-37	Termite Control	
LR-38	Local Authority Pre-Occupancy Management Check List	
LR-39	Suggested Procedures for Intially Selecting Tenants from among Eligible Applicants	
LR-40	Financial Benefits Available to Veterans and Servicemen, and Their Families, Dependents, and Beneficiaries	
LR-41	Saws - Their Care, Use, and Conditioning	

NOTE: Some Bulletins will be issued in parts, of which one or more will be contained in the initial release of each Bulletin; other parts will be issued subsequently from time to time as they are completed.

SAWS - THEIR CARE, USE AND CONDITIONING

1. Introduction

The purpose of this Bulletin is to assist maintenance mechanics in the care, use, and conditioning of handsaws.

The most important tooth-cutting tool used in carpentry maintenance work is the saw. The cutting edge is equipped with teeth that vary in size and shape to accommodate the purpose for which the tool is used. Saws used for cutting across the grain of the wood are called cut-off or cross-cut saws and the teeth are shaped for shearing the fibres of the wood. Saws used for cutting parallel with the grain of the wood are called rip saws and the teeth are shaped for paring off thin layers of the wood fibres. Saws used for cutting knurly wood or wood assemblies in which the grain of the wood is crossed are called combination cut-off, and rip and alternating teeth are fitted for cutting across and parallel with the grain of the wood.

There are many other types of saws that are designed for special uses such as mitre saws, stair saws, compass saws, etc., but since all of these are used in cutting across the grain of the wood, their teeth are fitted for that purpose.

There are also saws of other kinds that are motor driven and adapted for various uses, but no consideration will be given to such saws herein since their conditioning requires special skills and equipment not usually available, except on comparatively few projects.

Cut-off saws range in length from 14 to 30 inches with variations at two inch intervals. Rip saws are usually 28 to 30 inches long.

2. Care of the Saw

a. To keep a saw in trim condition great care should be exercised in its handling and use. The teeth should be properly set to provide clearance for the blade. Otherwise, the saw may be cramped, particularly when being used on damp lumber. This can result in buckling or bending the blade to a degree that the metal is stretched; this often results in permanent damage to the blade. This is what is commonly known as "kinking the saw". Severe cramping of the blade may also cause the blade to crack.

b. A saw should always be stored dry, in a dry place, in a straight position and where there is no danger of the teeth coming in contract with any object that can damage or dull the points of the teeth. If a saw is to be stored for any extended period of time it should be thoroughly greased and wrapped in a cellophane or other moisture-resistant wrapping. It is good practice, at the end of each day's use, to

(Cont'd)

wipe the blade with an oil soaked cloth or rub the blade with paraffin or other wax.

3. Conditioning the Saw

a. Tools Required for Conditioning Saws. The tools required for conditioning saws are as follows:

Saw vise or clamp
Jointer
Saw set
File) Slim taper for coarse saws.
) Extra slim taper for fine saws.

The cost of these tools should not exceed $5.00.

b. Saw Vise or Clamp. In order to keep a saw in good operating condition, the teeth must be sharp and maintained at the correct angle and set. To accomplish this the saw must be held in a fixed position. A saw clamp or vise is a tool that is designed for this purpose. There are a number of types of saw clamps on the market, any of which is generally suitable.

c. Jointing the Handsaw

(1) "Jointing" means making the teeth of even length. This is important for smooth and accurate operation of the saw. There are several types of saw jointers on the market but one can be "home made" with little trouble as shown in Fig. 1.

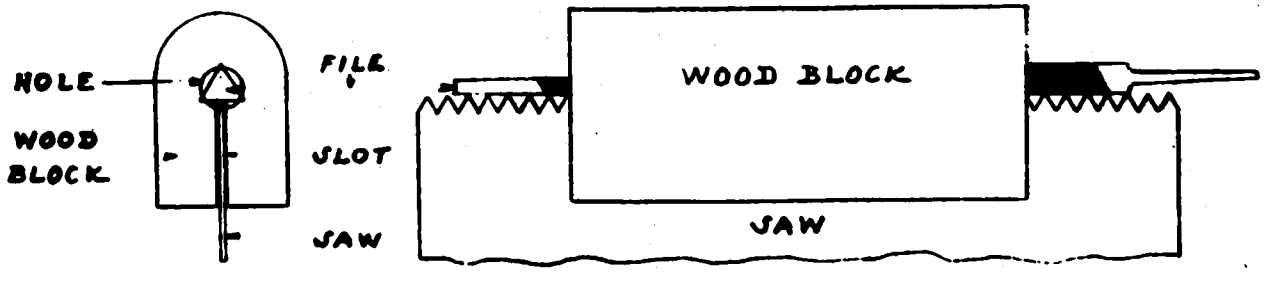


FIG. 1

(Cont'd)

(2) The points of the teeth should be cut to the length of the shortest tooth as shown in Fig. 2.

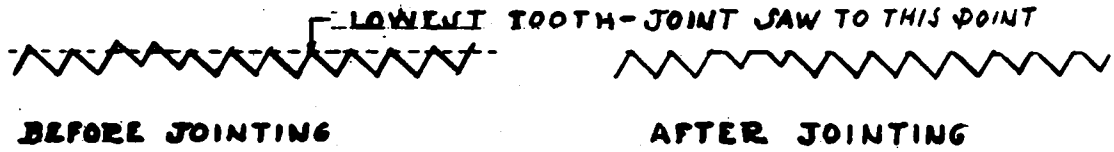


FIG. 2

d. Setting the Saw

(1) After a saw is jointed it must be set. "Set" means projecting the points of alternating teeth beyond the plane of the surface on both sides of the saw blade. This is done to make the cutting points wider than the blade to prevent the blade from binding, also to extrude the saw dust and prevent clogging as shown in Fig. 3.

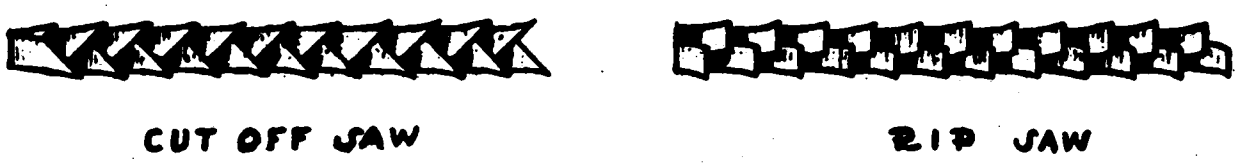


FIG. 3

(2) The distance the teeth are projected on each side of the blade should be as nearly equal as possible to insure accurate operation. If the teeth are extended more on one side of the blade than on the other, the blade will become bent. The condition will also cause the saw to "run" or lead away from the line of cut.

(3) There are a number of commercial saw sets on the market. However, those having graduated faces on the anvil for selecting the set desired are the most practical since the distance the points of the teeth are to be bent can be accurately controlled. Graduations indicated on the anvil of the saw set range from one to ten and are divided into three sections marked F, M and C, meaning fine, for saws having fine teeth; medium, for saws having medium teeth; and coarse, for saws having coarse teeth. The reference numbers are to identify the faces on the anvil, but have no reference to the number of teeth on the saw.

(Cont'd)

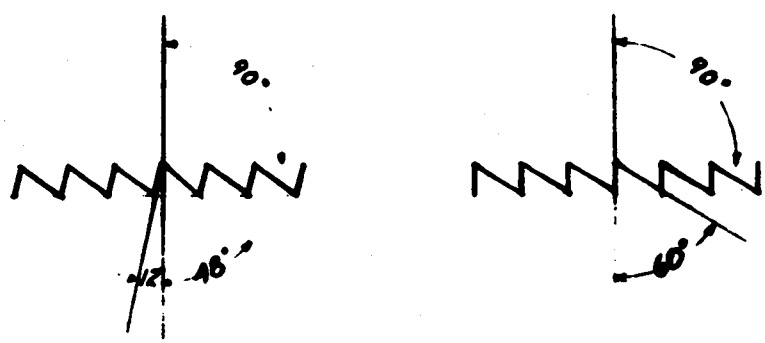
e. Shaping the Teeth

(1) The correct angle of the teeth for cut-off and rip saws is important for ease in operation. "Angle" means the relative pitch of the front of the teeth from the points to the line of the blade at base of the teeth.

(2) The points of the teeth of a cut-off saw should be approximately 12 degrees toward the handle, taken from the 90 degree angle at the base of the teeth.

(3) The points of the teeth of a rip saw should be on the same line as that at the base of the teeth or at 90 degrees to the line of the blade at the base of the teeth.

(4) If the angles of the teeth for both cut-off and rip saws slope forward from the 90 degree line, the saw will "bite" or gouge into the lumber which may result in kinking the blade and will make it difficult to push the blade forward. If the angles slope backward from the 90 degree line too great a distance the saw will "bounce" or "jump" and it will be difficult to hold the saw in proper position. The angles should be formed as shown in Fig. 4,



CUT-OFF SAW RIP SAW

FIG. 4

f. Filing the Saw by Hand

(1) To "file" a saw means to form the pitch angles, and in case of cut-off saws, form the cutting angles on the faces of the teeth, also to sharpen the teeth.

(2) In filing a cut-off saw the front of each tooth should be slightly steeper than the back, the angle line of the teeth should

(Cont'd)

be about 66 degrees, that of a compass saw about 75 degrees and that of a rip saw about 90 degrees.

(3) The saw should be held sufficiently tight in a saw vice or a clamp to prevent vibration. Start from either end of the saw and file every other tooth. Usually a slim taper file is used except for very fine saws, in which event an extra slim taper file should be used. The filer should tilt his file with the point inclined toward the handle and at the proper side angle. Work the file in an outward stroke against the front or cutting edge of the tooth, with the cutting edge set toward the filer. File alternate teeth then reverse the saw in the vice with the filer changing his position accordingly and repeat the operation on the remaining alternate teeth. File the front side of one tooth and the back side of the next adjacent tooth on the same stroke, make sufficient strokes to bring the point of the tooth to the same plane as established when the teeth were jointed. This is done to assure having the teeth even when filing is complete.

Filing should be performed as shown in Fig. 5.

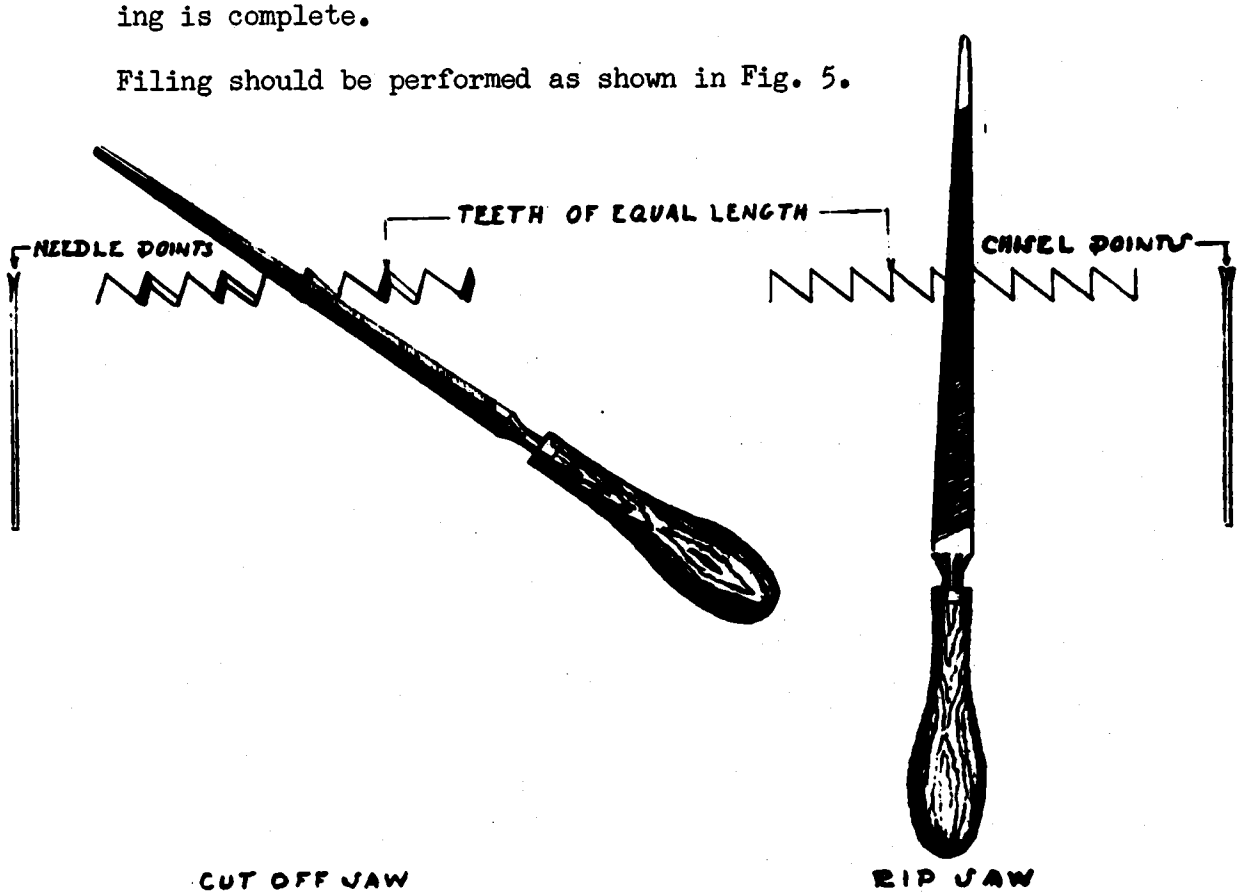


FIG. 5

(Cont'd)

g. Dressing the Saw

Lay the saw on a flat surface and rub the side of the teeth with an oil stone or partly worn flat file, turn the saw over and repeat the operation on the other side. Rub the surface of the teeth sufficient only to remove any feather edges that may have occurred during filing.

GPO 83-39603

BULLETIN NO. LR-42

CHISELS - THEIR USE AND CARE

ONE OF A SERIES OF
OPERATIONS ENGINEERING BULLETINS

PHA LOW-RENT HOUSING
BULLETIN

PUBLIC HOUSING ADMINISTRATION
HOUSING AND HOME FINANCE AGENY WASHINGTON 25, D.C.

JULY 1952

LIST OF BULLETINS

WHICH HAVE BEEN PUBLISHED

Bulletin No.	Title	
LR-1	Zoning and Rezoning	
LR-2	Subsurface Soil Investigation	
LR-3	Site Planning	)
LR-4	Site Engineering	)
LR-5	Structural Design, Materials and Methods	) A series
LR-6	Architectural Planning and Design	) of eight
LR-7	Plumbing, Heating and Ventilation	) Housing
LR-8	Electrical	) Design
LR-9	Lawns and Planting	) Notes
LR-10	General Design	)
LR-11	Selection of Utilities	
LR-12	Construction Contract Documents	
LR-13	Guide Specifications	
LR-14	Equipment Contract Documents	
LR-15	Operation and Repair of Heating Systems (Care of Boilers Out of Service)	
LR-16	Corrosion of Underground Piping	
LR-17	Rules for Boiler Operation	
LR-18	Preparation of Exterior Surfaces for Repainting	
LR-19	Control of Condensation in Crawl Spaces	
LR-20	Glazing	
LR-21	Maintenance of Wood Floors	
LR-22	Basic Specifications for Rural Nonfarm Housing	
LR-23	Operation and Repair of Heating Systems--Boilers (Types, Use and Repair)	
LR-24	Maintenance of Concrete Floors	
LR-25	Indoor Tenant Activity Areas	
LR-26	Routine Care of Lawns	
LR-27	Repainting Exterior Surfaces	
LR-28	Rural Nonfarm Construction Contract Documents	
LR-29	Occupancy Policy Determinations to be Made and Action to be Taken Previous to Opening of Application Office	
LR-30	Suggestions for Selecting and Training Occupancy Personnel	
LR-31	Publicizing Occupancy Policies	
LR-32	Suggested Operating Procedures for the Receipt and Processing of Applications	
LR-33	Do Community Services Programs Pay Dividends?	
LR-34	Refinishing Interior Surfaces	
LR-35	Suggested Procedures for Handling the Relocation of Site Occupants	
LR-36	Demolition Contract Documents	
LR-37	Termite Control	
LR-38	Local Authority Pre-Occupancy Management Check List	
LR-39	Suggested Procedures for Initially Selecting Tenants from Among Eligible Applicants	
LR-40	Financial Benefits Available to Veterans and Servicemen, and Their Families, Dependents, and Beneficiaries	
LR-41	Saws - Their Care, Use, and Conditioning	
LR-42	Chisels - Their Use and Care	

NOTE: Some Bulletins will be issued in parts, of which one or more will be contained in the initial release of each Bulletin; other parts will be issued subsequently from time to time as they are completed.

CHISELS - THEIR USE AND CARE

1. Introduction

The purpose of this Bulletin is to assist maintenance mechanics in the care and use of wood chisels.

The chisel is one of the most widely used tools in carpentry. It is also one of the most abused tools. There is a tendency on the part of many to use the chisel for any purpose, ranging from a screw driver to a pry bar. Such practice will not only ruin the cutting edge but may result in bending or even breaking the blade.

To keep the tool in top working condition, it is necessary that the cutting edge be kept sharp at all times. Good work cannot be accomplished with dull tools and the chisel is no exception to this rule.

2. Classification and Description of Chisels

a. A chisel is made from a flat piece of tool steel, one end of which is formed at an acute angle for a cutting edge, and the opposite end formed to receive a handle.

b. The classification of chisels is as follows:

(1) With reference to service:

(a) Paring

(b) Firmer

(c) Mortise or Framing

(2) With reference to blade length:

(a) Mill

(b) Pocket

(c) Butt

(3) With reference to extraordinary blade width:

(a) Slick

(4) With reference to shape of blade edge:

(a) Bevel

(b) Plain

(Cont'd)

(5) With reference to blade shape:

(a) Flat

(b) Corner

(c) Gouge

(6) With reference to handle attachment:

(a) Socket

(b) Tang

c. Following is a brief description of each type of chisel:

(1) Paring chisel. The paring chisel is intended for light work such as shaping, dressing and smoothing the surface of wood on a long even plane. The tool is operated by pushing on the handle with one hand and guiding the blade with the other. This chisel should never be operated by striking the handle with a mallet or hammer as this would result in a rough, uneven cut. See Figure 1.

PARING CHISEL - WIDTH 1/4 TO 2"

FIG. 1

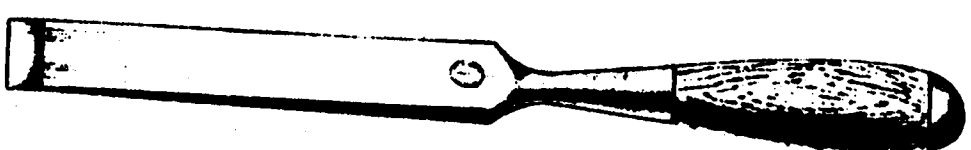
(2) Firmer chisel. The Firmer chisel is intended for medium work and may be used in much the same manner as a paring chisel, but may also be used for light mortising work. The blade is shorter and slightly thicker than that of the paring chisel. The handle is constructed to withstand being struck with a mallet. See Figure 2.

(Cont'd)

FIRMER CHISEL - WIDTH ¼" TO 2"

FIG. 2

(3) Mortise or Framing chisel. The Mortise or Framing chisel is a heavy duty tool used for cutting deep mortises and therefore may be subjected to severe strain. The blade is shorter and slightly thicker than that of the Firmer chisel. The handle is constructed to withstand being struck with a mallet. See Figure 3.



MORTISE OR FRAMING CHISEL - WIDTH ⅛" TO ⅝"

FIG. 3

(4) Mill, Pocket and Butt chisels. These chisels are similar in design except that their classification relates only to the relative length of their blades. Their blade lengths vary about as follows:

Mill - 8 to 10 inches; pocket - 4 to 5 inches; butt - 2½ to 3¼ inches. The widths of their blades range from 1/8 to 1 inch in quarter inch variations. It will be noted that bevels are

(Cont'd)

shown on the sides of the blades on the pocket and butt chisels. The handles of these chisels are constructed to withstand being struck with a mallet. See Figure 4.

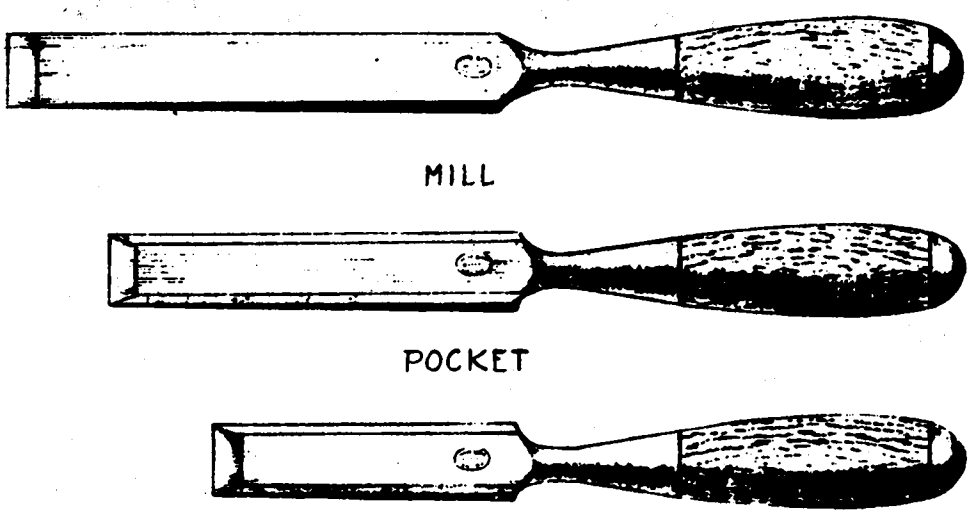
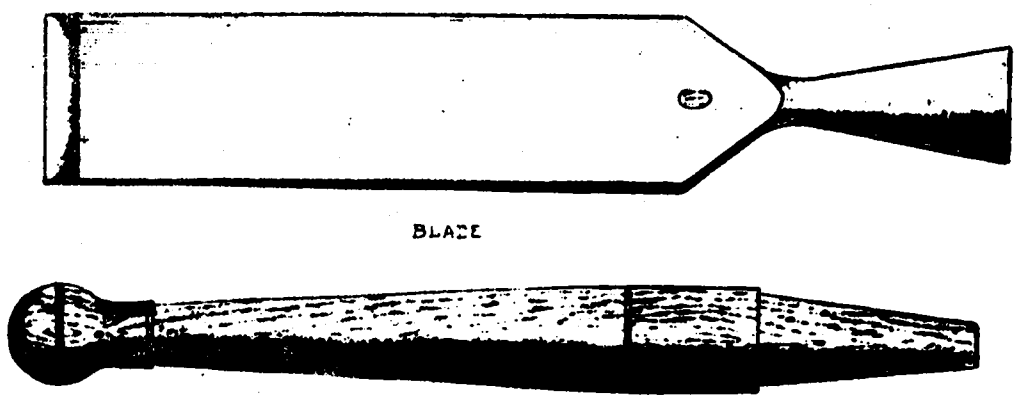


FIG. 4

(5) Slick. The slick is used for heavy duty paring work where a large amount of material is to be removed and a relatively smooth surface is required. It is well adapted for rounding corners and smoothing tennons on heavy timber construction. The blade length range is 8, 10 and 12 inches. The width of the blade ranges from 2½ to 4 inches in half inch variations. To operate a slick, considerable power is needed on the part of the operator, which under certain conditions may be necessary to obtain a desired finish. The handle is constructed to withstand being struck with a mallet. See Figure 5.

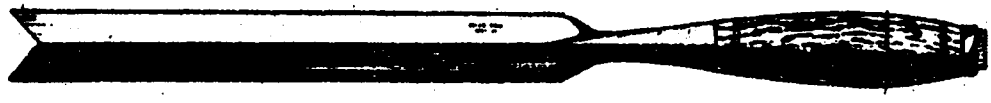
(Cont'd)



SLICK

FIG. 5

(6) Corner Chisel. The blade of the corner chisel is formed at a 90 or a greater degree angle. Those having a 90° blade are used primarily for squaring the corners of mortises; while those having blades formed at angles greater than 90° are used mostly for work that is turned on a lathe. See Figure 6.



CORNER CHISEL

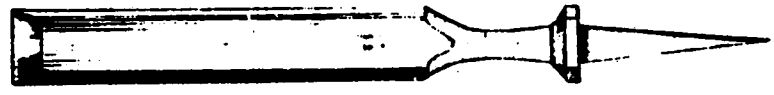
FIG. 6

(Cont'd)

(7) Gouge. The blade of the gouge is formed on an arc, and the bevel at the end of the blade may be formed on either the inside or outside. The tool is used for cutting circular openings and like the corner chisel, is used on turned work. See Figures 7 and 8.

OUTSIDE BEVEL ON CUTTING EDGE

FIG. 7



INSIDE BEVEL ON CUTTING EDGE

FIG. 8

GOUGES

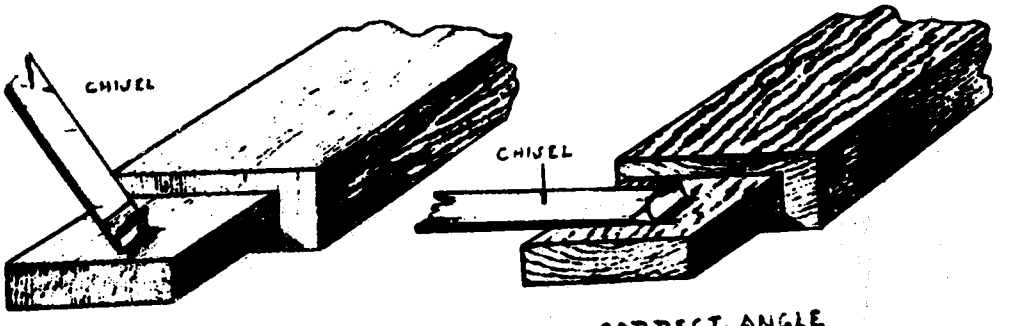
3. Methods of Attaching Chisel Handles

a. The blade of a socket chisel is adapted to the handle by means of a tapered socket formed to receive a similar taper formed on one end of the handle.

b. The blade of a tang chisel is adapted to the handle by means of a shank which projects into the handle.

4. How to Use a Chisel

a. For paring, too deep cuts should be avoided, since to make a deep cut, undue work must be exerted to perform the operation and the blade of the chisel may be subjected to too great a stress. The blade should be kept nearly parallel with the work. The handle should be raised sufficiently only to provide for paring of a relatively thin shaving. See Figures 9 and 10. (Cont'd)



WRONG ANGLE

FIG. 9

CORRECT ANGLE

FIG. 10

b. For mortising, the blade should be grasped near the cutting end in order to guide the blade at the position marked for the cut. Tap the handle with a mallet or hammer and continue this operation along the layout mark of the area to be mortised. The blade should be guided so that it is parallel with the wall line of the mortise. The flat side of the blade should always face the finished side of the mortise. This is done to provide a smooth, even surface on the finished work. It is desirable to select a chisel the width of which is as near as possible to the length or width of the mortise. If the mortise is so large that this is not possible, use as wide a chisel as can be used conveniently. Care should be exercised not to cut past the layout mark and after the area has been cut around on the layout mark and the inside chipped out, further cutting is made by holding the handle of the chisel with one hand and striking it with the other. See Figures 11 and 12.

(Cont'd)

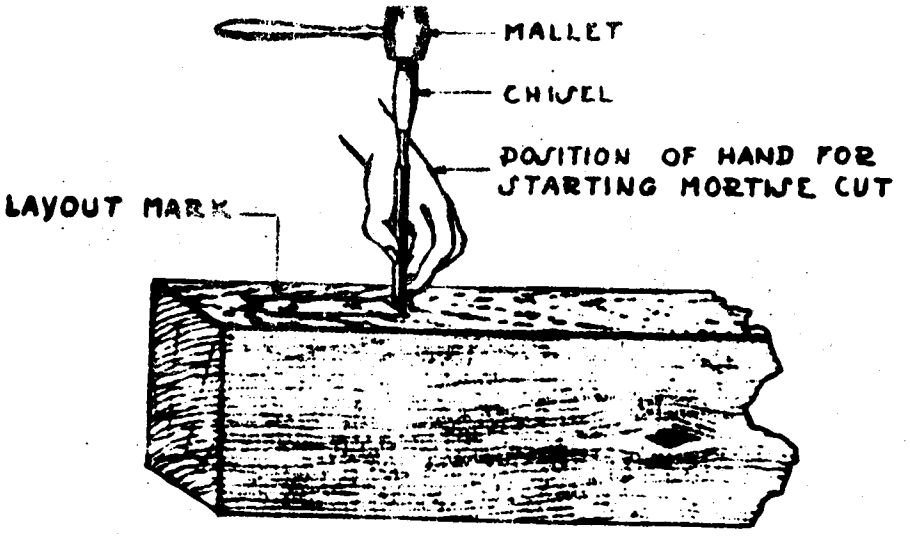


FIG. 11

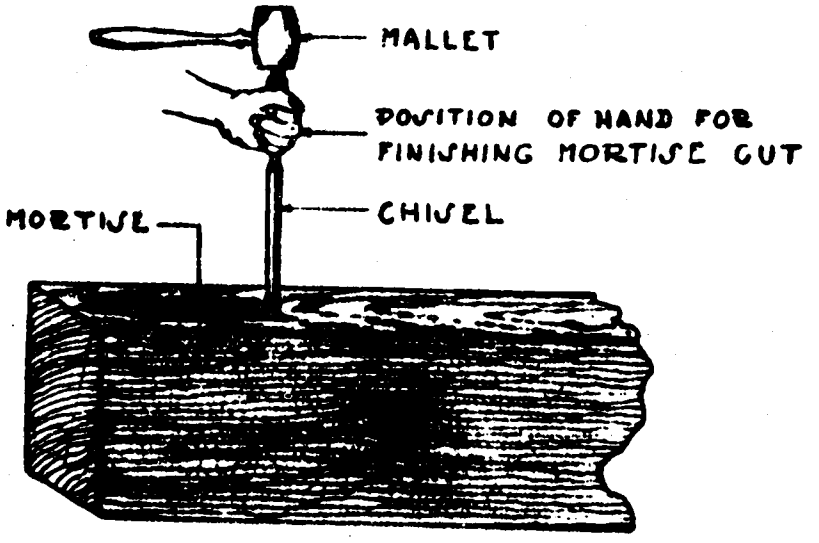


FIG. 12
MORTISING

(Cont'd)

c. Never use a Firmer chisel for heavy mortising work.

d. Do not drive any chisel deep enough into the work that undue pressure is required to throw out the chips.

e. Never use a good chisel for work other than that for which it was intended.

f. Any chisel having a solid wood handle should never be struck except with a wood, fibre or plastic head mallet. Successive strokes on such a handle with a hammer will result in splitting or wearing the handle within a relatively short time.

g. Any chisel having a wood handle that is equipped with a metal ferrule, leather or metal cap may be struck with a hammer without doing any material damage to the handle.

5. How to Sharpen a Chisel

a. A chisel that is very dull or is nicked should first be ground on an emery wheel or abrasive stone. Grinding is performed for three reasons: One, to remove unevenness; two, to form the proper bevel angle to fit the purpose for which the chisel will be used; and three, to bring the cutting edge to a fine feather edge.

b. The bevel angle on a Paring chisel should be approximately 15°; that of a Firmer chisel about 20°; and that of a Mortise or Framing chisel about 25°. The cutting edge should be straight and at a 90° angle with the side edges of the blade for all chisels except those used for wood turning.

c. After the blade has been ground to the desired shape, the cutting edge should be honed or whetted to remove the feather left from grinding and to obtain a smooth keen edge. This operation should be performed on an oil stone by taking a low hold on the handle with one hand and placing the index and middle fingers of the other hand near the cutting edge with the bevel of the blade facing the stone. Raise the blade sufficiently so that the heel of the bevel barely clears the stone and rub it in a circular motion, bearing down on each stroke that the blade is pushed toward the stone. Repeat this operation until a keen edge is obtained. Turn the blade over and lay it flat on the stone, rub the blade the same as above described. Repeat these operations until no trace of a feather edge remains.

d. The blade should be honed from time to time during use to insure that a keen cutting edge will be maintained at all times.

(Cont'd)

6. Care of the Chisel

a. To keep a chisel in trim condition, the cutting edge should be protected at all times by hanging the tool in a rack or storing it in such a manner that the cutting edge cannot come in contact with anything that will subject it to damage.

b. The tool should be kept clean and free from rust.

c. It is good practice to wipe the blade with an oiled cloth each time the tool is stored, and if it is to be stored for an extended period of time it should be wrapped in a water resistant material.

BULLETIN No. LR 43

PLANES - THEIR CARE, USE, AND CONDITIONING

One of a Series of
Operations Engineering Bulletins

PHA LOW-RENT HOUSING
BULLETIN

PUBLIC HOUSING ADMINISTRATION
HOUSING AND HOME FINANCE AGENCY WASHINGTON 25, D. C.

AUGUST 1952

LIST OF BULLETINS

WHICH HAVE BEEN PUBLISHED

Bulletin No.	Title	
IR-1	Zoning and Rezoning	
IR-2	Subsurface Soil Investigation	
IR-3	Site Planning	)
IR-4	Site Engineering	)
IR-5	Structural Design, Materials and Methods	) A series
IR-6	Architectural Planning and Design	) of eight
IR-7	Plumbing, Heating and Ventilation	) Housing
IR-8	Electrical	) Design
IR-9	Lawns and Planting	) Notes
IR-10	General Design	)
IR-11	Selection of Utilities	
IR-12	Construction Contract Documents	
IR-13	Guide Specifications	
IR-14	Equipment Contract Documents	
IR-15	Operation and Repair of Heating Systems (Care of Boilers Out of Service)	
IR-16	Corrosion of Underground Piping	
IR-17	Rules for Boiler Operation	
IR-18	Preparation of Exterior Surfaces for Repainting	
IR-19	Control of Condensation in Crawl Spaces	
IR-20	Glazing	
IR-21	Maintenance of Wood Floors	
IR-22	Basic Specifications for Rural Nonfarm Housing	
IR-23	Operation and Repair of Heating Systems--Boilers (Types, Use and Repair)	
IR-24	Maintenance of Concrete Floors	
IR-25	Indoor Tenant Activity Areas	
IR-26	Routine Care of Lawns	
IR-27	Repainting Exterior Surfaces	
IR-28	Rural Nonfarm Construction Contract Documents	
IR-29	Occupancy Policy Determinations to be Made and Action to be Taken Previous to Opening of Application Office	
IR-30	Suggestions for Selecting and Training Occupancy Personnel	
IR-31	Publicizing Occupancy Policies	
IR-32	Suggested Operating Procedures for the Receipt and Processing of Applications	
IR-33	Do Community Services Programs Pay Dividends?	
IR-34	Refinishing Interior Surfaces	
IR-35	Suggested Procedures for Handling the Relocation of Site Occupants	
IR-36	Demolition Contract Documents	
IR-37	Termite Control	
IR-38	Local Authority Pre-Occupancy Management Check List	
IR-39	Suggested Procedure for Initially Selecting Tenants from Among Eligible Applicants	
IR-40	Financial Benefits Available to Veterans and Servicemen, and Their Families, Dependents and Beneficiaries	
IR-41	Saws--Their Care, Use, and Conditioning	
IR-42	Chisels--Their Use, and Care	
IR-43	Planes--Their Care, Use, and Conditioning	

NOTE: Some Bulletins will be issued in parts, of which one or more will be contained in the initial release of each Bulletin; other parts will be issued subsequently from time to time as they are completed.

PLANES - THEIR CARE, USE, AND CONDITIONING

1. Introduction

The purpose of this Bulletin is to assist maintenance mechanics in the care, use, and conditioning of planes.

Of all of the various types of sharp edged tools, the plane is one of those most commonly used.

For carpentry, the plane is an indispensable tool and is designed in various shapes and sizes to accommodate the numerous types of work to be performed. The cutting edges of some plane blades or irons are ground or set at an angle. This is done to obtain a shearing action in making the cut. Some irons are ground in various ways for cutting concave and convex curves and other shapes. For general use, however, the iron is ground straight or slightly curved and at right angles with the side edges of the blade or iron.

The principles involved in conditioning the irons of these various types are similar, with some variations to accommodate special conditions.

To perform good work with an edge-cutting tool of any type it is absolutely necessary that the cutting edge be sharp. Dull tools are not only difficult to operate, they also produce a very inferior quality of work.

2. Use of the Plane

Planes are used for smoothing the faces and for trimming the edges of lumber or other material to produce a finished surface, for cutting the material to fit in a specific place, and for cutting lumber to a desired shape such as mouldings, beadings, rabbets, etc.

3. Classification of Planes

a. The classification of planes, to be comprehensive, should be taken from several points of view, such as the following:

(1) With reference to construction:

(a) Iron
(b) Wood
(c) Iron and wood (combination)

(2) With reference to size and direction of cut:

(a)	Jointer	28 to 30 inches	with the grain
(b)	Trying	22 to 24 inches	with the grain

(Cont'd)

(c)	Jack	14 to 16 inches	with the grain
(d)	Smooth	5½ to 12 inches	with the grain
(e)	Fore	8 to inches	with the grain
(f)	Block	3 to 8 inches	across the grain

(3) With reference to special uses:

(a) Combination and moulding
(b) Router
(c) Chamfer
(d) Nosing and scotia
(e) Compass
(f) Filister and rabbet
(g) Dado
(h) Grooving or trenching
(i) Spoke shaves of various types
(j) Scrapers

4. Jointer and Trying Planes

Jointer and Trying planes are both intended for smoothing and fine finish work and for fitting two wood surfaces for joining together where a tight joint is required. These planes will even the surfaces and produce a smooth and true finish.

5. Jack Plane

The Jack plane is used for rough, heavy work in removing irregularities, and to prepare the work for finishing with a Jointer or Trying plane. The iron is usually set for a heavy cut. However, in some instances the Jack plane may be used in a similar fashion as that of the Jointer and Trying planes. The Jack plane is an excellent all-around tool for use on small work and the average routine job.

6. Smooth Plane

The Smooth plane, because of its small size, is used for smoothing uneven surfaces. Its use is adaptable for smoothing the uneven surfaces of rough sawed lumber.

7. Fore Plane

The Fore plane is used in much the same manner as the Jointer and Trying planes, but on shorter lumber. This plane is light and easier to handle by those not experienced in the use of planes. A good, smooth, even surface can be obtained with this plane when the iron is properly set. The iron is usually set for a finer cut than that of the Jack plane.

(Cont'd)

8. Block Plane

The Block plane is used for edge [illegible] across the grain of the wood. It is especially adapted for [illegible] the cross joints of wood siding, installation of wood doors, [illegible], etc.

9. Combination Planes and Planes for Special Uses

These planes are made in [illegible] ways and adapted to accommodate cutting various shapes. Their use is confined largely to more intricate shop work. Since there is so little necessity for their use on housing projects, no further mention of them will be made.

10. Mechanics of the Plane

a. The principle of all planes, as far as operation is concerned, is quite similar. They are all designed for paring off thin [illegible] of material. Most planes are equipped with levers for adjusting the depth of cut and for aligning the iron, although some of the older wood-bodied planes are not so equipped. There are also special attachments which are available for keeping the plane parallel with the edge of a board but such attachments are intended for use where extremely accurate work is required. For the various parts of the average plane see Fig. 1.

b. To remove the blade or iron:

(1) Raise thumb lever 1 and remove blade lever 2.
(2) Remove blade cap assembly 3 and 4.

This assembly will be held together by a screw 8.

c. To adjust the iron for sharpening:

(1) Loosen the [illegible] screw 8 and slide the cap back about 1/8 of an inch.
(2) Make sure the sides of the cap are parallel with the [illegible] of the iron and tighten screw.

d. To adjust the iron for alignment with the mouth on the bed of the plane: Move blade side adjustment lever 5 sideways in either direction.

e. To adjust the blade or iron for depth of cut: Turn depth adjustment screw 6 clockwise for a heavy cut and counterclockwise for a light cut.

(Cont'd)

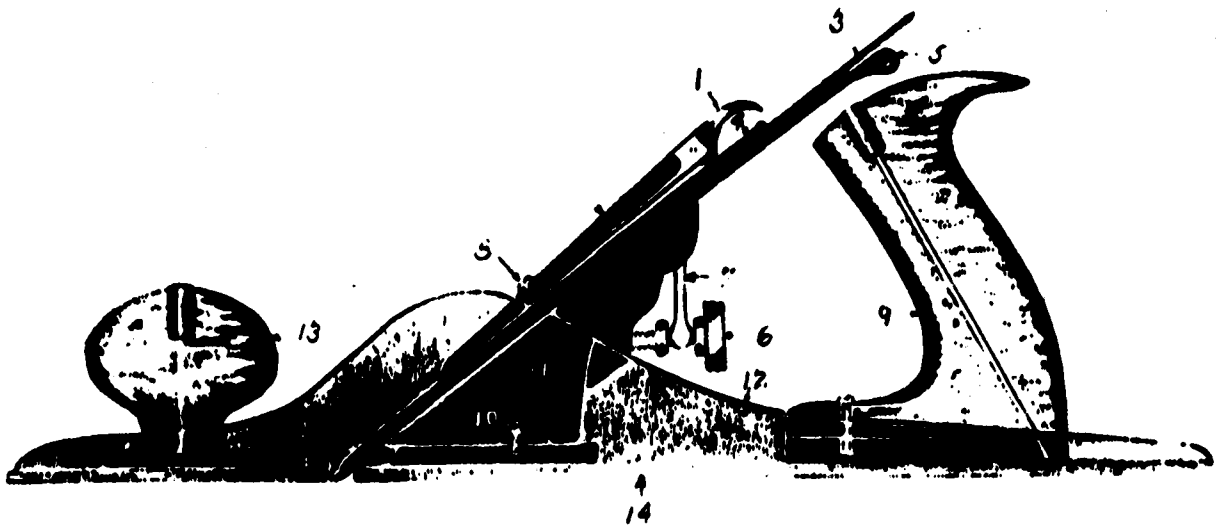


FIG I

Mechanical Parts of a Plane

1-Thumb latch
2-Blade lever
3-Blade or iron } Blade cap assembly
4-Blade iron cap }
5-Blade side adjustment lever
6-Blade depth adjustment screw
7-Blade depth adjustment lever arm
8-Blade lever tightening screw
9-Rear handle
10-Frog
11-Mouth regulator adjustment screw
12-Body of plane
13-Front handle
14-Bed of plane (smooth or corrugated)

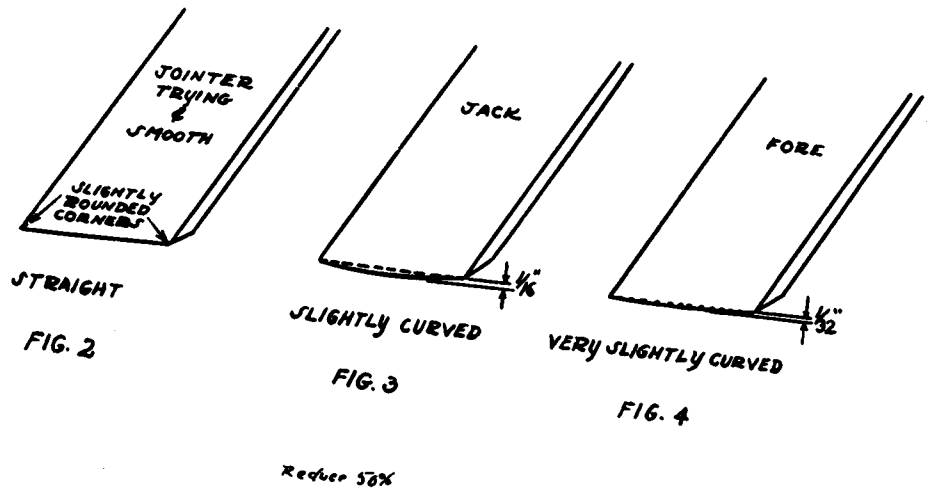
11. Grinding the Blade or Iron

a. Grinding is performed for removing metal from the cutting edge of the iron with an emery wheel or abrasive stone. The grinding operation serves two purposes; first, to bring the cutting edge to a true line, free from nicks and to a feather edge; second, to establish the proper bevel. The bevel must be about 25 degrees. If it is too short the blade will not cut well and if it is too long the blade will chatter. The bevel should be slightly less for cutting across the grain of wood than for cutting with the grain.

b. Plane blades or irons should be ground to accommodate the type of work for which they will be used. The cutting edges of Jointer, Trying and Smooth planes are ground straight and at right angles to the side

(Cont'd)

edges of the iron. The cutting edge of the Jack plane is ground on a slight curve and that of the Fore plane on a very slight curve. This is done because the Jack and Fore planes are usually adapted for heavier cutting than the Jointer, Trying, or Smooth planes. However, when a Jack or Fore plane is adapted for smooth finish work, the iron should be ground straight. The point at both ends of the cutting edge of all straight ground irons should be slightly rounded to prevent the corners from leaving a mark on newly planed surfaces. See Figs. 2, 3 and 4.



STRAIGHT

FIG. 2

SLIGHTLY CURVED

FIG. 3

VERY SLIGHTLY CURVED

FIG. 4

Reduce 50%

12. Sharpening the Blade or Iron

After the iron is ground it should be honed or whetted on an oil stone to remove all traces of a feather edge left from grinding. Remove the cap and hone the blade by pressing the beveled side against the oil stone, raising the heel of the bevel sufficiently to just clear the stone. Rub the iron in a circular motion, bearing down on each stroke so that the cutting edge is moved toward the stone. Turn the iron over and place it flat against the oil stone and rub in a circular motion. Repeat these operations until no trace of a feather edge remains. See Figs. 5, 6 and 7.

(Cont'd)

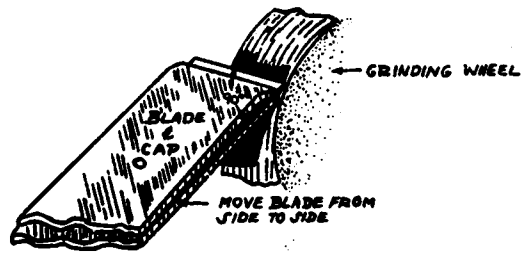


FIG. 5

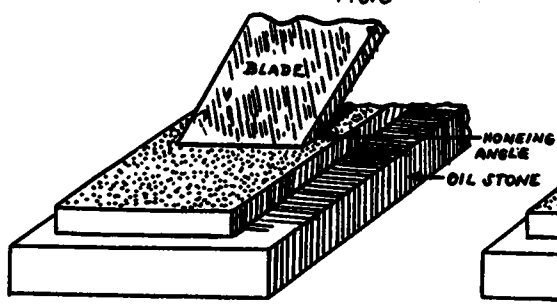


FIG 6

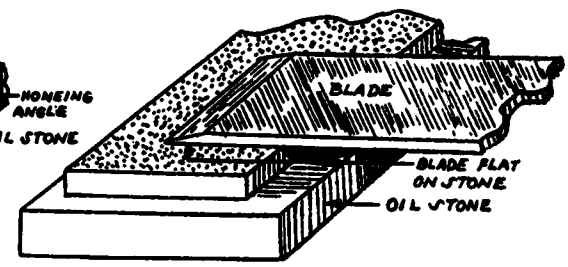


FIG. 7

Reduce 50%

13. Setting the Blade or Iron

a. After the iron is sharpened, replace and fasten the cap and adjust the cap so that the bottom edge will be about 1/32 of a inch from the cutting edge of the iron for planes used for smoothing work, and about 3/32 of an inch for planes used for rough or heavy cutting. These differences in setting are made to permit easy removal of shavings. Use a fine set for thin cuts and a coarse set for heavy cuts. It is necessary that the bottom of the cap fits smugly against the top of the iron to prevent shavings from becoming choked between the cap and iron.

b. Replace this assembly in the body of the plane and replace the blade lever and fasten in place with the thumb latch. Turn the plane, bed side up, and adjust the depth of cut desired by turning the depth adjustment screw and for alignment by moving the side adjustment lever. This can be more easily accomplished by sighting along the bed of the plane, from front to back.

14. How To Use a Plane

a. Establish a dimension line on the material to be planed. This is the line which is made at some place on the material to determine its finished size for any dimension. In some instances it may be desired to establish a dimension line for both rough and finish cutting. The

(Cont'd)

dimension line may not necessarily be straight since in many instances the material is planed to fit in a specific place such as a shelf when it is necessary that one or more of its edges must fit irregularities on the surface of a wall, should they occur.

b. Before planing any material, be sure that the surface is free from dirt, grit, nails, etc., that may dull or nick the cutting edge of the iron.

c. The heel of the plane should be raised on the return of each stroke. Don't drag the cutting edge back over the material as this will hasten its becoming dull.

d. When planing the edge of a long board to obtain a straight line, sight along the edge to determine where high and low places occur; next plane off the high places until the edge is straight and parallel with the dimension line; then plane the board to the desired size by taking off a certain number of strokes, moving ahead and taking off a few more strokes. Continue this operation throughout the entire length of the board and repeat if necessary until the dimension line is nearly reached. Return to the starting point and make continuous strokes throughout the entire length of the board until the dimension line is reached.

e. To plane a wide surface such as the face side of a wide board or several boards that have been glued together, a long-based block plane should be used. Plane diagonally across the grain of the wood over the entire surface area. If the wood is knurled and knotty, care should be exercised not to set the iron too deep as this may result in pulling out small splinters of wood and will cause additional work by having to plane the surface until the pit, thus made, is removed. Finishing should be performed by setting the iron for a very fine cut. Plane the surface until all blemishes and high spots are removed and finish smoothing the surface with a scraper and sandpaper. The final operations should be performed with the grain of the wood.

15. Care of the Plane

a. The cutting edge of the iron should be protected while the plane is not in use. This may be done by pulling the cutting edge back inside the body of the plane with the depth adjustment screw.

b. The adjustment screws and levers should be lubricated with machine oil sufficiently to insure ease of operation.

c. Planes should be wiped off occasionally with an oiled cloth. It is also well to lubricate the bed of the plane. Carpenters often carry a piece of paraffin wax for this purpose.

(Cont'd)

d. Planes should be stored in a dry place at all times, and if they are to remain in storage for an extended period of time, they should be wrapped in a water resistant material.

DETECTION OF EXCESSIVE FUEL CONSUMPTION IN PROJECT-OPERATED HEATING PLANTS

1. Purpose. The average annual fuel bill for project-operated heating plants in public low-rent housing projects is in excess of $4,500,000. Increased attention to the operation of project-operated heating plants might conceivably reduce fuel consumption by an appreciable amount. The purpose of this Bulletin is to provide a convenient method for evaluating the performance of project-operated heating plants with respect to fuel consumption. The purpose of such evaluation is not only to detect adverse departure from past performance but to permit prompt measurement of "change in efficiency" resulting from steps taken to improve past performance.

2. Method of Evaluating Performance

a. A frequently employed method of evaluating performance is to make a rough comparison of the number of degree-days during a current period with the average number for the same period of past years. This generally assumes that the amount of fuel consumed is in proportion to the degree-days, and if the current period has been colder, that is, the number of degree-days has increased, then an increase can be expected in fuel consumed over the average of past years' performance. If it has been warmer, of course, the reverse is true, that is, a decrease in consumption can be expected. Although this method possesses value, it may not disclose trends and requires careful analysis to detect other than major departures from normal. A far more accurate and sensitive method is to compare "rates of fuel consumption", e.g., quantities of fuel consumed per degree-day. This method will "red flag" a radical departure from normal as well as make it possible to evaluate changes in operational policy or equipment adjustment.

b. The evaluation of current operation is accomplished by comparison with an average of prior years of operation (base period) during which there was no major alteration of plant equipment. For example, if heating controls had been installed four years ago, the average for those years following the installation should be used. Since fuel consumption records are usually kept on a monthly basis and the consumption rate varies during a heating season, monthly intervals can be selected as the most logical for comparative purposes. Practical methods of keeping such records for ready comparison are shown in Exhibit 1: Chart I shows an easily prepared and satisfactory form on which to record date; Chart II shows an alternative method of presenting "base period" vs. "current rate" for those who prefer graphs.

c. In general, with a well operated plant, the rate of fuel consumption per degree-day will follow an established seasonal pattern: As the number of degree-days increases the quantity of fuel burned per degree-day decreases; conversely, as the number of degree-days decreases, the quantity of fuel burned per degree-day increases. (Cont'd)

d. Let us examine, in detail, the data presented in Chart I, to see how simple and easy such a chart is to keep and interpret so as to show the operating efficiency of the plant. On this chart the current season monthly consumption is readily compared with the monthly average of the base period and, by computing for each month the rate of consumption, abnormal operating conditions are immediately discoverable and can be as immediately corrected. The consumption data used in Chart I is that of a project selected at random from our files. A detection system had not been used. This fact is important and should be kept in mind, for with such a system corrective steps taken when indicated are usually reflected throughout the following periods in improved economy:

SEPTEMBER: The current degree-days increased 11% over the base period; the amount of fuel increased 132%; the change in rate was 6% above base. With good operation, in accordance with the "seasonal pattern", a decrease in rate should have occurred. However, at the beginning and ending of a heating season, due to wide temperature variations (frequently within a 24-hour period) reasonable departure from the "pattern" should not be viewed seriously. Nevertheless, this rate should have signalled an "alert" to watch consumption during the following month.

OCTOBER: There was a 5% increase in degree-days with a 74% increase in fuel consumed; the rate increased 66%. Any method of comparison would have detected this extreme deviation. With good operation, a decrease in rate should have occurred. For the purpose of illustration, let us suppose the project had been using a detection system; the "alert" from September's operation should have resulted in this condition being noted considerably prior to the end of the month with prompt corrective action being taken.

NOVEMBER: There was a 15% decrease in degree-days and a corresponding 10% decrease in fuel consumed; the rate increased 5%. This is in accordance with the "pattern" and should be considered as satisfactory with reference to the "base period."

DECEMBER: During the period there was a 20% decrease in degree-days; a 16% decrease in fuel and an increase in rate of 5%. Performance satisfactory.

JANUARY: The degree-days decreased 19%; yet the fuel consumed increased 1%; there was a rate increase of 24%. This would have called for immediate investigation if the project had been using a detection system. If corrective measures had been taken following the poor performance during October such measures might have been reflected in satisfactory to excellent performance during January.

(Cont'd)

FEBRUARY: The degree-days decreased 7%; the fuel consumption decreased 9%; and the rate decreased 1%. An increase in rate would have been acceptable, indicating that with respect to past performance the operation was "in line." However, a slight decrease occurred, which indicates a considerably improved operation. This might logically have followed corrective measures taken after the January period.

MARCH: The degree-days increased 32%; the fuel consumption 11%; the rate decreased 16%. Consumption was satisfactory - the rate decreased as the degree-days increased.

APRIL: This period provides an opportunity to illustrate the advantage of the "seasonal pattern" comparison over other comparative methods. The degree-days increased 70%; the fuel consumption increased 74%. Casual observation of the relationship between the increase in degree-days and total fuel might appear reasonable, but note that the rate likewise increased. This was a fairly cold month and from the "seasonal pattern" a rate decrease of 15% to 20% should have occurred instead of a 2% increase.

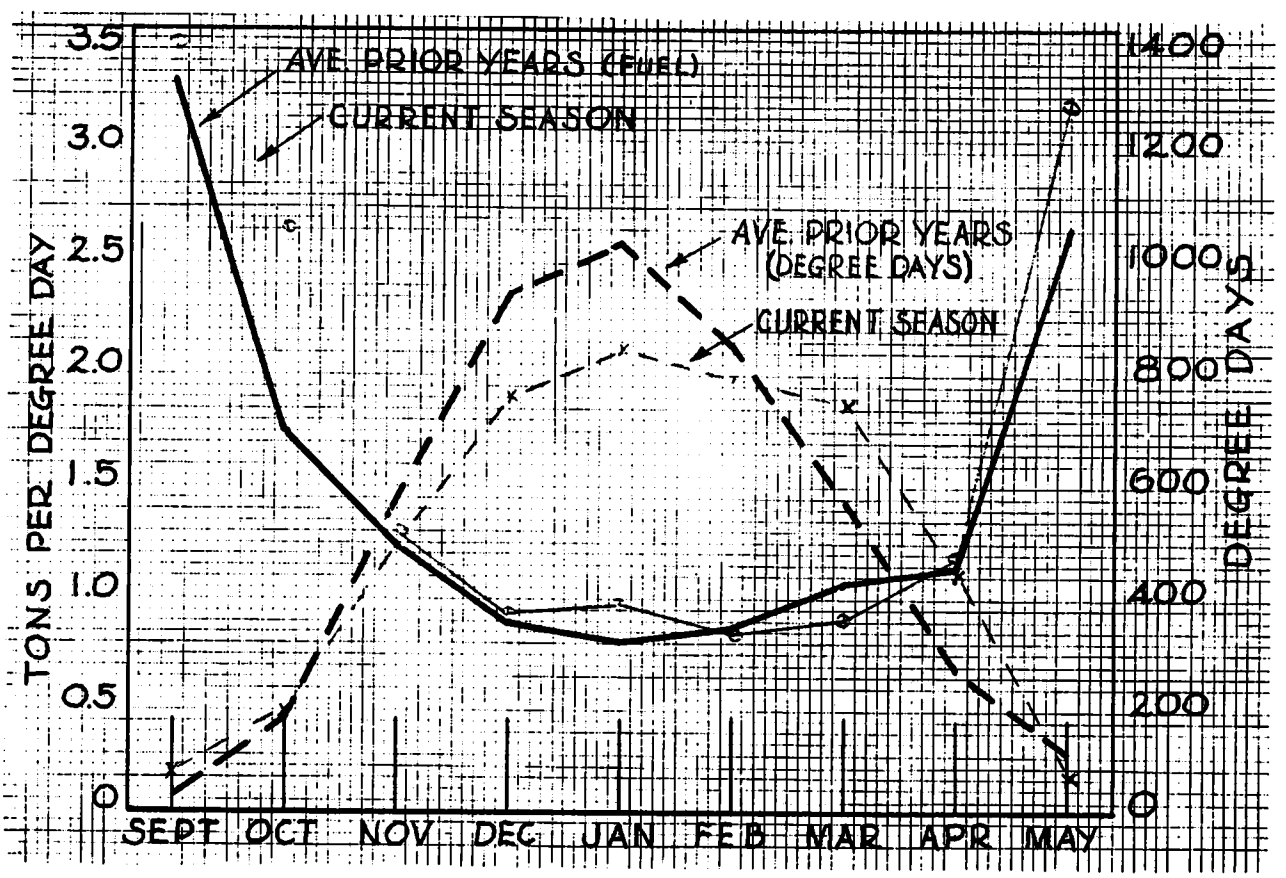
MAY: This is an "end" month and a rate increase of 23% with a 60% decrease in degree-days is not unreasonable.

3. Application of Method to Other Utilities. A comparison system could likewise be applied to other utilities such as electricity, gas, and water. To effect economies in operation without curtailment of essential services, it would appear that accurate interim "measurements" would be preferable to waiting until the end of a season to ask, "How do we compare with last year?"

Chart I

MONTH	DEGREE DAYS			FUEL CONSUMED (TONS)			CONSUMPTION RATE (TONS PER DD)		
	AVE. PRIOR YEARS	CURRENT SEASON		AVE. PRIOR YEARS	CURRENT SEASON		AVE. PRIOR YEARS	CURRENT SEASON	
		NO.	% CHANGE		NO.	% CHANGE		NO.	% CHANGE
SEPT.	32.	70	+119	104.2	241.6	+132	3.26	3.45	+6
OCT.	167.	175	+5	262.7	456.6	+74	1.57	2.61	+66
NOV.	561.	480	-15	662.9	598.2	-10	1.18	1.25	+5
DEC.	922.	741	-20	774.6	653.1	-16	0.84	0.88	+5
JAN.	1018.	829	-19	762.2	772.5	+1	0.75	0.93	+24
FEB.	833.	771	-7	675.5	616.4	-9	0.81	080	-1
MAR.	552.	728	+32	562.6	625.1	+11	1.02	0.86	-16
APR.	249.	423	+70	272.4	473.6	+74	1.09	1.12	+2
MAY	101.	61	-60	258.3	192.5	-25	2.56	316	+23

Chart II



BULLETIN No. LR-44

DETECTION OF EXCESSIVE FUEL CONSUMPTION IN PROJECT-OPERATED HEATING PLANTS

One of a Series of
Operations Engineering Bulletins

PHA LOW-RENT HOUSING
BULLETIN

PUBLIC HOUSING ADMINISTRATION
HOUSING AND HOME FINANCE AGENCY WASHINGTON 25, D. C.

AUGUST 1952

LIST OF BULLETINS

WHICH HAVE BEEN PUBLISHED

Bulletin No.	TITLE	
LR-1	Zoning and Rezoning	
LR-2	Subsurface Soil Investigation	
LR-3	Site Planning	)
LR-4	Site Engineering	)
LR-5	Structural Design, Materials and Methods	) A series
LR-6	Architectural Planning and Design	) of eight
LR-7	Plumbing, Heating and Ventilation	) Housing
LR-8	Electrical	) Design
LR-9	Lawns and Planting	) Notes
LR-10	General Design	)
LR-11	Selection of Utilities	
LR-12	Construction Contract Documents	
LR-13	Guide Specifications	
LR-14	Equipment Contract Documents	
LR-15	Operation and Repair of Heating Systems (Care of Boilers Out of Service)	
LR-16	Corrosion of Underground Piping	
LR-17	Rules for Boiler Operation	
LR-18	Preparation of Exterior Surfaces for Repainting	
LR-19	Control of Condensation in Crawl Spaces	
LR-20	Glazing	
LR-21	Maintenance of Wood Floors	
LR-22	Basic Specifications for Rural Nonfarm Housing	
LR-23	Operation and Repair of Heating Systems--Boilers (Types, Use and Repair)	
LR-24	Maintenance of Concrete Floors	
LR-25	Indoor Tenant Activity Areas	
LR-26	Routing Care of Lawns	
LR-27	Repainting Exterior Surfaces	
LR-28	Rural Nonfarm Construction Contract Documents	
LR-29	Occupancy Policy Determinations to be Made and Action to be Taken Previous to Opening of Application Office	
LR-30	Suggestions for Selecting and Training Occupancy Personnel	
LR-31	Publicizing Occupancy Policies	
LR-32	Suggested Operating Procedures for the Receipt and Processing of Applications	
LR-33	Do Community Services Programs Pay Dividends?	
LR-34	Refinishing Interior Surfaces	
LR-35	Suggested Procedures for Handling the Relocation of Site Occupants	
LR-36	Demolition Contract Documents	
LR-37	Termite Control	
LR-38	Local Authority Pre-Occupancy Check List	
LR-39	Suggested Procedures for Initially Selecting Tenants From Among Eligible Applicants	
LR-40	Financial Benefits Available to Veterans and Servicemen, and Their Families, Dependents, and Beneficiaries	
LR-41	Saws - Their Care, Use and Conditioning	
LR-42	Chisels - Their Use and Care	
LR-43	Planes - Their Care, Use, and Conditioning	
LR-44	Detection of Excessive Fuel Consumption in Project-Operated Heating Plants	

NOTE: Some Bulletins will be issued in parts, of which one or more will be contained in the initial release of each Bulletin; other parts will be issued subsequently from time to time as they are completed.

BULLETIN NO. 47

RECREATION SERVICES IN LOW-RENT HOUSING PROJECTS

PHA LOW-RENT HOUSING

BULLETIN

PUBLIC HOUSING ADMINISTRATION
Housing and Home Finance Agency—Washington 25, D.C.

SEPTEMBER 1953

LIST OF BULLETINS

WHICH HAVE BEEN PUBLISHED

Bulletin No.	Title
LR-1	Zoning and Rezoning
LR-2	Subsurface Soil Investigation
LR-3	Site Planning
LR-4	Site Engineering
LR-5	Structural Design, Materials and Methods
LR-6	Architectural Planning and Design
LR-7	Plumbing, Heating and Ventilation
LR-8	Electrical
LR-9	Lawns and Planting
LR-10	General Design
LR-11	Selection of Utilities
LR-12	Construction Contract Documents
LR-13	Guide Specifications
LR-14	Equipment Contract Documents
LR-15	Operation and Repair of Heating Systems (Care of Boilers Out of Service)
LR-16	Corrosion of Underground Piping
LR-17	Rules for Boiler Operation
LR-18	Preparation of Exterior Surfaces for Repainting
LR-19	Control of Condensation in Crawl Spaces
LR-20	Glazing
LR-21	Maintenance of Wood Floors
LR-22	Basic Specifications for Rural Nonfarm Housing
LR-23	Operation and Repair of Heating Systems--Boilers (Types, Use and Repair)
LR-24	Maintenance of Concrete Floors
LR-25	Indoor Tenant Activity Areas
LR-26	Routine Care of Lawns
LR-27	Repainting Exterior Surfaces
LR-28	Rural Nonfarm Construction Contract Documents
LR-29	Occupancy Policy Determinations to be Made and Action to be Taken Previous to Opening of Application Office
LR-30	Suggestions for Selecting and Training Occupancy Personnel
LR-31	Publicizing Occupancy Policies
LR-32	Suggested Operating Procedures for the Receipt and Processing of Applications
LR-33	Do Community Services Programs Pay Dividends?
LR-34	Refinishing Interior Surfaces
LR-35	Suggested Procedures for Handling the Relocation of Site Occupants
LR-36	Demolition Contract Documents
LR-37	Termite Control
LR-38	Local Authority Pre-Occupancy Management Check List
LR-39	Suggested Procedures for Initially Selecting Tenants From Among Eligible Applicants
LR-40	Financial Benefits Available to Veterans and Servicemen, and Their Families, Dependents, and Beneficiaries
LR-41	Saws--Their Care, Use and Conditioning
LR-42	Chisels--Their Use and Care
LR-43	Planes--Their Care, Use, and Conditioning
LR-44	Detection of Excessive Fuel Consumption in Project-Operated Heating Plants
LR-45	Assistance From Local Community Agencies
LR-46	Inspection of the Physical Plant by Project Personnel
LR-47	Recreation Services in Low-Rent Housing Projects

NOTE: Some Bulletins will be issued in parts, of which one or more will be contained in the initial release of each Bulletin; other parts will be issued subsequently from time to time as they are completed.

RECREATION SERVICES IN LOW-RENT HOUSING PROJECTS

1. General. The purpose of this Bulletin is to assist Local Authorities in securing recreation services and in organizing their recreation programs. Since the beginning of the public housing program, it has been recognized that recreation facilities for children and adults are necessary for normal living. For this reason it has been the established policy of the PHA and its predecessors to require provision of outdoor recreation space on projects unless adequate and convenient off-site facilities are available. The provision of indoor recreation facilities is not now required by the PHA but is left optional with Local Authorities. It is encouraging to note that in more than 60 per cent of the projects this space is being built.

2. Public and Private Provision for Recreation in the United States

a. The recognition of the need for recreation for public housing tenants is part of a general acceptance of this need for all citizens in our present day American standard of living. For the year 1950 over 2,000 cities and towns ranging in population from less than 1,000 to nearly 8,000,000 reported total expenditures of $269,000,000 from public and private sources for recreation, including parks.1/ Of this amount 90 per cent came from public funds.

b. In addition to the above, no estimate is available for considerable expenditures by churches, schools, industries, colleges, and universities, lodges, labor unions, and other groups to provide recreation for their members.

c. In certain cities private real estate developers are required by the city government to provide recreation space on new multiple unit projects; and in many other instances such developers provide recreation facilities voluntarily. FHA standards require equipped play areas for pre-school and school age children in developments built for occupancy by families with children.

3. Why is Recreation Provided by Public Bodies? Cities provide recreation because their citizens demand safe and healthful places for their children to play under competent and responsible supervision. They also demand opportunities for young men and women to engage in sports and other recreation activities and for recreational programs adapted to the needs of mature and older persons. Because people are living longer nowadays and older people are a larger part of the population, their particular needs are being given more attention. More and more attention is being directed toward the planning of recreation areas—in extending them and in perfecting them to meet the needs of the public. They are considered a need for the people.

1/ Recreation and Park Yearbook, Midcentury Edition - National Recreation Association.

4. Recreation Needs for Various Age Groups

a. Children's Play

(1) The importance of children's play is now better understood by people in general. Not too long ago a child's play was considered merely "pastime" which occupied him until he was ready for the really worthwhile things of life. Now it is recognized that play is the child's most important experience and the means by which his body is developed and trained, his mind awakened, and his imagination stimulated. Through play he learns to adapt himself to others and develops good standards of conduct. Especially in the latter experience, skilled adult guidance is essential.

(2) This guidance is most necessary at the age when normal children feel the need to be a member of a group and to be well thought of by the other members. They want to excel in the activities of the group. In a recreation program, a variety of group activities are provided such as games and sports, handicraft, music, dramatics, camping, and nature activities so that children with various talents can gain recognition and acceptance by their companions. Without such opportunities the group is likely to turn to undersirable "gang" activities such as street fights, vandalism, and petty thieving, and members of the gang vie with each other in achieving expertness in these activities.

(3) Self-governing clubs, sports teams, and other self-governing organizations usually included in recreation programs give children experience in selecting leaders, making group decisions, abiding by the will of the majority, and establishing good standards of conduct through their own rules and regulations. This is training in the democratic process. The gang, on the other hand, is an autocracy. The leader is usually the bully who asserts his domination by bluffing or "licking" the other kids or out-daring them in deviltry. Undesirable gang activity is a major concern of juvenile court authorities not only because of minor and sometimes serious offenses by children but also because it frequently leads to organized adult crime.

b. Young People. The young person in his late teens and early twenties who considers work or advanced study as his primary interest is unusual. This is the age when young people become expert and intensely interested in various sports and other recreational activities. The work and play day is extended to the limit so that parents are concerned about the minimum amount of time left for sleeping. Sports fields and other outdoor facilities are needed for this group as well as indoor facilities for arts, crafts, music, and dramatic and social activities in which young people of both sexes participate. Since space for entertaining at home is limited for low and middle income groups, inexpensive opportunities for social activities in a wholesome atmosphere are most important for these young people. In the community center they may meet and enjoy each other's company on terms of mutual respect rather than as "pick-ups" at commercial dance halls, taverns, or night clubs.

c. Adults

(1) During the years between 30 and 40 the interest of adults in participation in sports which require sudden and strenuous bursts of activity usually declines. However, many sports such as quoits, golf, bowling games, fishing, and hunting retain their interest into later life. Interest and skill in arts and crafts are likely to increase, and musical and dramatic interests continue. Interest also increases in various hobbies. Social activities become important and mature adults enjoy getting together for suppers, teas, card parties, and other events with conversation and companionship their main purpose.

(2) Many adults get their greatest enjoyment in organizing and directing recreation activities for others as managers and coaches of athletic teams, teachers of various arts and crafts, directors of musical and dramatic groups, organizers of hobby clubs, or leaders of boys', girls', or teen-age clubs.

d. Older People

(1) People who have reached the age where they no longer have steady employment or responsibility for family are particularly in need of recreational opportunity. They must adjust themselves to a greatly increased amount of leisure time, and the fact that others are no longer dependent upon them is likely to make them feel lonely, useless, and unwanted. They need both the contact with other age groups and the mutual help and companionship of those of their own age.

(2) Clubs for this age group, often called "Golden Age" clubs, have been successful in many communities and on housing projects. Their programs have included horseshoe pitching, quoits, croquet; arts and crafts; choral and other musical groups; dramatics; hobby groups; lectures, forums, current events discussions; entertainments; socials; and quiet games such as cards, chess, checkers, chinese checkers, dominoes, and cribbage. Since these persons have a strong desire to be useful to others, they often give volunteer service such as library work, registration at clinics, taking tickets, chaperoning teen-age groups, fund solicitation, first aid, home nursing, and civil defense. They also give leadership in recreation activities suited to their activity, experience, and talents.

5. Why is Recreation Needed on Public Housing Projects?

a. Tenants on housing projects need recreation for the same reasons that other people do. However, this need is intensified since they have low incomes. The lack of money deprives them of many of the opportunities for travel, membership in clubs, funds for commercial entertainment, and other experiences enjoyed by people in better circumstances.

b. Dwelling units in public housing projects are not designed for entertaining groups of people. Parties, weddings, social functions, or even informal groups must be held outside the home, and the project community facilities are in demand for these functions.

c. People of low income need the opportunity to participate in community recreation activities at little or no cost, since dependence on commercial amusement for the whole family is so expensive that the family may be deprived of some of the other necessities of life. The tavern, which has been called "the poor man's club," the gambling place, the night club; even frequent movie going, takes money badly needed for other things, sometimes including the rent money. Carnivals, amusement parks, and other such enterprises which give only momentary entertainment at high cost depend largely for their patronage upon people who have not had opportunities to develop more satisfying recreational interests, and such people are included in low-income groups.

d. If only the physical maintenance and protection of property is considered, recreation provision is necessary since children denied suitable opportunity for play will exhaust every available substitute. For example, experience shows that if no sandbox or digging area is provided for small children, they will dig in lawns or around shrubbery. If no climbing apparatus is provided, they will climb and damage trees and project structures. If no adequate play area is provided, older children will play ball on project streets or lawns and may cause broken windows and danger to passersby. If not otherwise occupied older children may form "gangs" and commit acts of vandalism.

6. Leadership

a. Trained leadership is essential to a well balanced recreation program which should include activities for both sexes and all age groups. Since the interests of people are so diverse, a program to meet the needs of all the tenants should include sports and games, music, drama, arts and crafts, hobbies, and nature and social activities and within these categories there should be a variety of activities based on the interests, age, and skill of the participants. Except in rare instances, only the professional recreation leader is able to organize such a comprehensive program.

b. Children's activities require adult leadership and supervision and the trained leader knows which activities have developmental value and how the child's play experience can be made to contribute to desirable qualities of character and personality.

c. For older groups the trained leader knows how to organize groups according to their interests; to stimulate interest in new activities; to increase the skill of the participants and thereby improve the quality of their recreation experience.

7. Sources of Leadership

a. Recreation Departments

(1) In localities where there is a recreation program conducted by a municipal recreation department, such a department should provide overall leadership and supervision for recreation programs on PHA projects since such projects are part of the municipality. Most cities have summer playground programs and the recreation departments should provide leadership during the summer period on the play areas provided on the projects. Such leadership should also be expected for year-round programs where the recreation departments operate on a year-round basis.

(2) To secure this service it is desirable to interest the Director of Recreation in the needs of the tenants for recreation service and to acquaint him with the facilities available. In some instances he will have authority and available funds to provide this service. In others it will be necessary to secure approval from the Recreation Commission, or directors in charge of the program. A strong representation of the recreation needs of the project and the availability of project facilities should be made to these officials. Where difficulties are experienced because of budget limitations or other factors, the assistance of private groups should be sought.

b. Privately-Supported Community Agencies

(1) In those communities where there is no public recreation department or where such a department provides only a summer program, it is most urgent that the Local Authority explore every other available resource in obtaining assistance. Such sources of assistance and how to secure these services are indicated in the following discussion. Even though the recreation department does provide year-round leadership, the program can be enriched by recreation services from other organizations.

(2) Services from privately-supported community agencies may be secured by a direct approach by the Local Authority to the agencies.

(3) In one city the following recreation activities, in addition to other services, are being provided by various agencies:

(a) The Park and Playgrounds Department of the city provides six full-time workers for the summer program and also maintains the equipment.

(b) On a year-round basis the YWCA conducts story telling for boys and girls of four to six years, a games program for girls seven to nine years, and hobby classes for boys and

girls seven to 11 years. The Police Athletic League supervises basketball for boys 7 to 16 years old on two afternoons a week and a general sports program on Saturdays. A State Teachers College provides three physical education instructors for a program of sports and games two afternoons a week during the school season, and a story teller twice a week.

(c) The Civic Association (the tenant organization) conducts movies, teen-age dancing, bridge club, Saturday night open house with cards and dancing, a garden society, and a boys' club.

(4) Throughout the country the following list of recreation activities are being conducted on PHA projects by community agencies other than recreation departments:

(a) Settlements which are occasionally located near projects: Athletics, creative activities, supervision of game room, crafts, bridge, play school, boys' clubs, teen town, movies, camping, adult classes, and outdoor activities. In several projects, settlements have assumed primary responsibility for the recreation program.

(b) YMCA: Football leagues, movies, baseball, tennis, dances, special events, square dancing, boys' club, girls' clubs, parties, Golden Age clubs, indoor sports.

(c) YWCA: Arts and crafts, adult recreation, story-telling, games, hobby classes, Golden Age clubs.

(d) Churches: Story-telling, kindergarten, play school, arts and crafts, folk dance class, outings, camping and youth groups. (In one project a community center supported by a church group and within the boundaries of the project provides a comprehensive program of recreation as well as other services.)

(e) Schools: playgrounds, boys' and girls' clubs, teen-age socials, dance classes, art institute, craft classes, weaving, and cooperative play school.

(f) Colleges and Universities: Adult and teen-age groups, clubs, sports, story telling, craft classes.

(g) Salvation Army: Year-round recreation program, boys' club, recreational and educational association, craft shop, youth club.

(h) CYO: Arts, crafts, movies, dancing.

(Cont'd)

(i) Police Departments: Jr. Police, Police Athletic League. (The latter organization provides leadership and supervision for various sports and organizes leagues and tournaments.)

c. Civic Organizations and Special Interest Groups. Civic organizations and special interest groups have assisted in the program as follows:

(1) Service clubs (Rotary, Kiwanis, Lions, etc.): Sponsored boys' clubs, dances, sports, cooperative play group.

(2) Women's Clubs: Parties, cooperative play group.

(3) Story-telling League: Story telling.

(4) Art Association: Children's art classes.

(5) Little Theater Groups: Dramatics.

(6) Parent-Teachers' Association: Mothers' club, movies, teen-age club.

(7) There are undoubtedly many other groups and individuals in various localities which would be willing to assist in activities according to their special interests. Such groups as garden clubs, Isaac Walton Leagues, folk dance societies, arts and crafts organizations, philatelic societies, historical societies, and hiking and camping groups are usually enthusiastic about extending interest in their hobbies. This is true also of individuals. Persons of unusual attainment in arts, crafts, music, dramatics, and other recreational interests have given generously of their time in many communities on a volunteer basis.

d. Tenants

(1) When leadership has been obtained from community agencies, there is always the problem of determining what recreational activities should be introduced and tenant interest. It is desirable to begin with activities with which a considerable number of tenants are familiar and to introduce activities which are new to them after a general interest in the program has been developed. Furthermore, people, especially adults, are usually backward about joining a group unless they know someone in it.

(2) For the above reasons the best results are usually obtained when some form of tenant organization is established through which the interests of the tenants are determined and through which tenants take responsibility for publicizing and organizing the activity groups. In addition, tenant organizations sometimes take full responsibility for conducting and financing certain activities. These efforts give the tenants a sense of responsibility for the welfare of others and increase

(Cont'd)

loyalty to and pride in the project, and also give tenants experience in group action and leadership, which is valuable to them.

(3) On one project with a successful program no new activity may be introduced until it is approved by a majority vote of the tenant organization. If the activity requires community agency leadership, the office of the Executive Director makes the necessary arrangements with the agency and a committee of the tenant organization organizes the activity group. This tenant organization also takes full responsibility for and conducts a number of activities, among them a boys' club. Supervision of this activity is rotated among all the boys' fathers so that each can observe his own son's conduct in the group. This has led to more understanding and less criticism of the behavior of other tenant children.

(4) In addition to organizing and conducting activity programs, some tenant organizations have made outstanding contributions, such as contributing funds to improve the project playground and furnishing scholarships for project boys to a YMCA camp. Another secured a branch YMCA with a capable director for their project, and one tenant organization secured the establishment of a year-round recreation center across the street from the project and contributed $400 to equip the craft shop in the new center. In other localities tenant associations are active in planning and financing a great variety of activities.

(5) A Tenant-Organized Program

(a) The program on one project has a particularly interesting history. A group of boys wanted to have a baseball team so they set out in search of men who would sponsor them. They found six interested tenants and got them together. The men conducted a raffle to finance the team, then added to their group and formed a men's club to provide additional boys' activities. To finance their activities, they arranged with a young man from the CYO to show moving pictures to which they charged admission. Later they bought the machine for $150 and took over the showings which were held in the community building on Friday nights for 25 cents admission and on Saturday nights outdoors on a donation basis. They organized an 11-piece orchestra on the project and conducted weekly dances. They bought draperies for the community hall and a professional decorator, a tenant, decorated the hall for the dances. They equipped a room with a regulation boxing ring, which cost them $400, a light and heavy sand bag, three punching bags, boxing gloves, head protectors, weight lifting equipment and gymnasium mats. Two boys have been in Golden Gloves competition - one a finalist. Thirty-five boys joined the weight lifting class, taught by a tenant. They also have a tumbling class. They provide table tennis, checkers, and comic books for quiet recreation. They have organized a Senior and Junior Boys' Club and have

(Cont'd)

provided the members with reversible jackets with the name of the project inscribed on them. They organized a camera club.

(b) They interested women tenants in organizing a women's club to provide activities for girls. The women have organized a girls' club. The men's and women's clubs provide a Christmas Party for all the children on the project and give presents to all the children with nc gift costing less than 75 cents.

(c) They provide equipment for a Boy Scout troop. They bought tennis nets, installed posts, and marked off courts. They provide baseball suits, bats, gloves, balls, etc., for the baseball team. They bought a mimeograph machine which they use to prepare notices of activities.

(d) A tenant painted banners with the name of the project which they put on their cars when they take boys and girls to baseball games or other activities.

(e) The Manager and his staff are actively interested and assist the tenants in every way possible but the initiative and responsibility are left with the tenants. The men's club has gone into debt to the extent of $300 at times but has paid all its bills. It makes regular financial reports to the Manager.

(f) With their own project program under way, the men's club visited the other public housing projects in the city and organized an inter-project boys' baseball league. Other inter-project competition has since developed.

(g) When the leaders were asked who started this program, they said, "The kids did."

8. Training. The effectiveness of tenant leaders can be greatly increased by training. City recreation departments usually have a training program for employed workers and often for volunteer workers. The needs for training for tenant volunteers should be presented by Local Authorities. The National Recreation Association conducts training institutes at various locations throughout the country and it is often possible to take advantage of these.

9. Advantages to Management

a. In this connection the following statements from Local Authorities reports are typical:

(1) "We are very fortunate in having a worker of the Bureau of Recreation who understands our program and cooperates with management toward the ultimate goal of having people live together harmoniously, respecting the rights and privileges of others, and

(Cont'd)

also having a sense of community responsibility."

(2) "The Boys' Club has proved of particular value to both the boys and the project. As a result of this club there has been a noticeable decline in the number of complaints received."

(3) "The Clean-Up Club, part of the recreation program, keeps play areas and exterior banks and public areas, neat, clean, and attractive. The group functions on a weekly basis. We hope to induce better maintenance in homes and ground areas."

b. On one project the tenants of a certain section were disturbed by boys making noise and engaging in mischief. They called the police but they were unable to improve the situation. Management called a meeting of the boys and the tenants. The result was that the tenants who were disturbed offered their services to supervise a boys' club. Management provided a basement space, a club was established and the disturbance ceased.

c. A New Program on an Old Project

(1) A project in an eastern city has been occupied for nine years. Indoor tenant activity space was provided but no continuing program was developed. Subsequently the space was converted into plush quarters for board meetings and offices for the Executive Director. Relations between tenants and management were not good. Vandalism was rife and there was little interest in tenant maintenance. An open space near the center of the project became so littered with trash that it had the appearance of a city dump.

(2) Two years ago a new Executive Director was appointed who had a keen interest in the welfare of the tenants. Out of operating funds two basement spaces were remodeled. One is called the Small Fry Club and the other the Golden Age Club.

(3) The Small Fry Club includes children from 5 to 12 years. Their primary activity is handicraft. The Star of Hope, a religious organization, provides two workers, once a week, with a program of handicraft and bible reading but with no sectarian teaching. In addition, a tenant volunteer teaches electrical work; another, a cabinet maker, teaches woodwork; teenagers and mothers assist with sewing projects. The club members make and repair various articles, make a charge, and put the proceeds in the club treasury. The boys repair lamps and make such items as electric Christmas candles. Window flower boxes for tenants is a favorite article. The club has a discarded refrigerator which the boys have put in working order. The girls repair dolls and make articles of clothing. Needy families are provided with materials and are given such assistance as is needed in making clothes.

(Cont'd)

(4) Most of the clothing materials are donated by textile companies. The Executive Director has also secured the following donations: Tools for woodworking; electrical supplies, instructional materials from the city recreation department; a sewing machine from a sewing machine company, together with free instructions for teenage leaders in its use. The teenagers have their own club with a varied recreation program. They salvage paper to assist in financing their activities.

(5) In the summer, the City Recreation Department provides playground workers and intra-project leagues are organized. Dances, talent nights, picnics, and other activities for the whole project population are held.

(6) The older people gather daily in the Golden Age Center for cards, shuffleboard, and other activities. They have a business meeting once a month and a social once a week. One of the men has made himself a workbench and, among other articles, has made a cabinet for the club.

(7) That this program has improved relations between tenants and management has been evidenced by many occasions. For instance, 385 tenants attended a dinner which they gave in honor of an Executive Director, at which time they presented him with a plaque inscribed as follows: "Presented to (name of Executive Director) for his friendship, understanding, and fairness in carrying out his duties."

(8) A management advisor of a Field Office stated that since this program has been inaugurated, vandalism has been reduced to nil and the appearance of the project has been improved. The once-littered open space now has the appearance of a well-kept park and is the scene of tenant gatherings. Other locations are being explored so that the administrative offices of the Housing Authority can be relocated and the space in the community building restored to tenant use.

BULLETIN NO. LP-16

WATERPROOFING MASONRY WALLS

ONE OF A SERIES OF
OPERATIONS ENGINEERING BULLETINS

PHA LOW-RENT HOUSING BULLETIN

PUBLIC HOUSING ADMINISTRATION
HOUSING AND HOME FINANCE AGENCY WASHINGTON 25, D.C.

JANUARY 1952

LIST OF BULLETINS
WHICH HAVE BEEN PUBLISHED

Bulletin No.	Title	
LR-1	Zoning and Rezoning	
LR-2	Subsurface Soil Investigation	
LR-3	Site Planning	)
LR-4	Site Engineering	)
LR-5	Structural Design, Materials and Methods	) A series
LR-6	Architectural Planning and Design	) of eight
LR-7	Plumbing, Heating and Ventilation	) Housing
LR-8	Electrical	) Design
LR-9	Lawns and Planting	) Notes
LR-10	General Design	)
LR-11	Selection of Utilities	
LR-12	Construction Contract Documents	
LR-13	Guide Specifications	
LR-14	Equipment Contract Documents	
LR-15	Operation and Repair of Heating Systems (Care of Boilers Out of Service)	
LR-16	Corrosion of Underground Piping.	
LR-17	Rules for Boiler Operation	
LR-18	Preparation of Exterior Surfaces for Repainting	
LR-19	Control of Condensation in Crawl Spaces	
LR-20	Glazing	
LR-21	Maintenance of Wood Floors	
LR-22	Basic Specifications for Rural Nonfarm Housing	
LR-23	Operation and Repair of Heating Systems--Boilers (Types, Use and Repair)	
LR-24	Maintenance of Concrete Floors	
LR-25	Indoor Tenant Activity Areas	
LR-26	Routine Care of Lawns	
LR-27	Repainting Exterior Surfaces	
LR-28	Rural Nonfarm Construction Contract Documents	
LR-29	Occupancy Policy Determinations to be Made and Action to be Taken Previous to Opening of Application Office	
LR-30	Suggestions for Selecting and Training Occupancy Personnel	
LR-31	Publicizing Occupancy Policies	
LR-32	Suggested Operating Procedures for the Receipt and Processing of Applications	
LR-33	Do Community Services Programs Pay Dividends?	
LR-34	Refinishing Interior Surfaces	
LR-35	Suggested Procedures for Handling the Relocation of Site Occupants	
LR-36	Demolition Contract Documents	
LR-37	Termite Control	
LR-38	Local Authority Pre-Occupancy Management Check List	
LR-39	Suggested Procedures for Initially Selecting Tenants From Among Eligible Applicants	
LR-40	Financial Benefits Available to Veterans and Servicemen, and Their Families, Dependents and Beneficiaries	
LR-41	Saws--Their Care, Use and Conditioning	
LR-42	Chisels--Their Use and Care	
LR-43	Planes--Their Care, Use, and Conditioning	
LR-44	Detection of Excessive Fuel Consumption in Project Operated Heating Plants	
LR-45	Assistance From Local Community Agencies	
LR-46	Inspection of the Physical Plant by Project Personnel	
LR-47	Recreation Services in Low-Rent Housing Projects	
LR-48	Waterproofing Masonry Walls	

NOTE: Some Bulletins will be issued in parts, of which one or more will be contained in the initial release of each Bulletin; other parts will be issued subsequently from time to time as they are completed.

WATERPROOFING MASONRY WALLS

1. Purpose of Bulletin

a. Most interior wall defects that cause leakage are due to the expansion and contraction of the building members because of the wide variation of temperatures. Such movement results in the following defects:

(1) Horizontal Cracks

(2) Vertical and Diagonal Cracks

(3) Shrinkage Cracks

(4) Racked Down Corners

(5) Defective Coping Joints

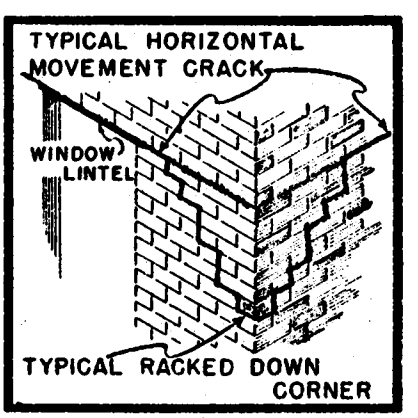
(6) Cracked Canopies

(7) Loose Window Sills

b. The purpose of this Bulletin is to describe how the first four types may be identified and to suggest inexpensive and satisfactory methods for repairing them with project labor. The guides provided herein should be modified as necessary for use on war and defense housing projects.

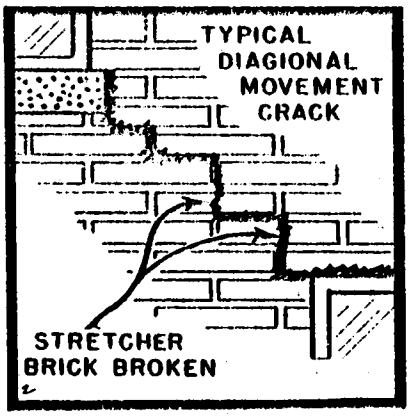
2. Identification of Horizontal, Vertical & Diagonal, and Shrinkage Cracks

a. Horizontal movement cracks are usually long, wide cracks in the mortar joints that occur along the line of the floor or roof slab or along the line of lintels over the windows. (Where these cracks turn the corner of a building they frequently rack down as shown on the sketch; racked down corners are discussed in paragraph 4.)



(Cont'd)

b. Vertical and diagonal movement cracks generally occur near the ends or offsets of buildings. They may also be found extending from a window sill to the lintel of a door or window on a lower floor. These vary from 1/8 to 3/8 of an inch inwidth and follow the mortar joints but in some instances they may break through the brick.



c. Shrinkage cracks are the fine hairline cracks that are found between the mortar and the bricks. The most noticeable ones are those running vertically but a close examination of a section of wall that leaks may also show them in the horizontal or bed joints.

3. Repair of Cracks. On projects where leaks are not too prevalent, horizontal, vertical and diagonal, and shrinkage cracks can often be repaired by a project maintenance man who has had experience with concrete or masonry work, or it may be possible for the Local Authority to temporarily employ someone to do this work. If the work is to be done by such labor it will be necessary to first examine the interior walls for the approximate location of the leaks and then examine the exterior walls above and on either side of the faulty areas for any or all of the above types of failures. These should then be repaired as described below. Where men are available on the project staff or cannot be employed temporarily it will, of course, be necessary to contract the work.

a. Horizontal and Vertical and Diagonal Cracks

(1) Repair Material. Since horizontal and vertical and diagonal cracks are caused by movement which may recur with temperature changes, a hard, brittle material such as cement or lime mortar should not be used. Similarly, ordinary caulking compounds dry out after being exposed to the weather and shrink along the edges of the crack, allowing water to enter; the use of caulking compounds requires priming oil. Therefore, a sealing compound that remains flexible should be used. Compounds that have little or no shrinkage, being almost 100% solids, are on the market. These remain plastic for many years, if not indefinitely. Three companies of which we have knowledge manufacture such compounds, namely:

(Cont'd)

Presstite Engineering Company, St. Louis, Missouri, makes Sealer #575,

Parr Paint & Varnish Company, Cleveland, Ohio, makes Parflex #23,

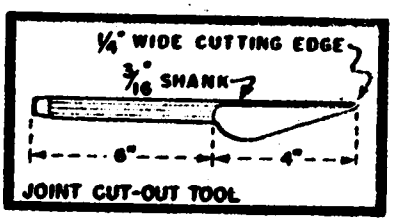
Minnesota Mining & Manufacturing Company, Detroit, Michigan, makes E.C. #981.

Each company can furnish a primer to be used with its material which will assure good adhesion. Other companies, no doubt, have or will soon have similar products on the market.

(2) Steps. To repair the above cracks the following steps are necessary:

(a) Cut out mortar from the crack:

The cracks should have the mortar joint cut out to a depth of 3/4 inch. This must be done carefully so the edges and corners of the brick are not broken. Using the joint cut-out chisel, start work on the mortar near the center of a brick and work towards the ends. Use light strokes of the hammer at first, increasing the weight of the blows as the cut-out gets deeper. Do not pry against the edges of the brick or they will be broken. The joint cut-out chisel has a flared cutting edge so that it doesn't bind. In sharpening, this shape should be retained.



(b) Remortar where necessary:

After cutting out the joint, voids or disintegrated mortar may be found beyond the 3/4-inch depth. In these cases the loose mortar should be cleaned out, the opening thoroughly wet, and new mortar placed therein to bring mortar in the joint within 3/4-inch of the face of the brick. The mortar to be used consists of:

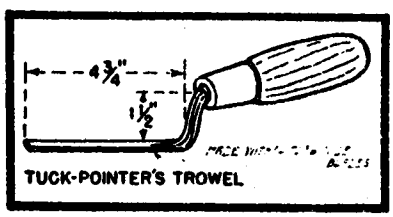
1 part Portland Cement
1 part (92% hydrated) lime
6 parts Mason's sand or sand passing a #10 sieve.

(Cont'd)

All new mortar should be kept damp for a period of 24 hours. This can be done by sprinkling the mortar at intervals. Small particles of mortar left on the surface of the brick should be loosened and either blown out with air or washed out with a hose.

(c) Clean and Prime the Opening. After the opening has dried thoroughly it should be coated with the primer, a liquid that forms a strong bond between bricks or mortar and the sealing compound.

(d) Fill with sealing compound. When the primer has become "tacky" the opening should be filled to the surface with the sealer. Apply the material in thin layers using a narrow bladed pointing trowel. Use strong pressure to form a good bond and to force out any air that might be trapped between the layers.



TUCK-POINTER'S TROWEL

b. Repairing Shrinkage Cracks. When these cracks are found they generally cover a large area of wall. As previously stated, they are narrow and seldom more than 1/16-inch wide. To chisel out and repair these areas would be very expensive. It has been found that scrubbing the joints with grout makes a satisfactory water tight job.

(1) Grouting Material. In selecting cement and sand for the grout, attempt to match the mortar already in place. Various shades of cement and sand ranging from dark gray to white can be purchased and with little trouble a matching shade of grout can be obtained. The sand should all pass through a #50 sieve or be as fine as can be obtained so that it will enter the narrow cracks. The grout should be a mixture of 65% cement and 35% sand by volume. Water is added until a liquid results that is about as thick as heavy molasses.

(2) Application. After wetting the wall the grout is scrubbed into the cracks with a fairly stiff bristled brush. If a common scrub brush is used and grout gets on the brick, it is possible to keep them from staining if they are wiped off with a damp sponge. In sponging the brick always wipe toward the mortar joints. On hard burned brick there will be little or no staining. On more absorbent brick the stain will weather off after a few months. If good pressure is used on the brush the grout will penetrate the cracks as much as 1/2 inch.

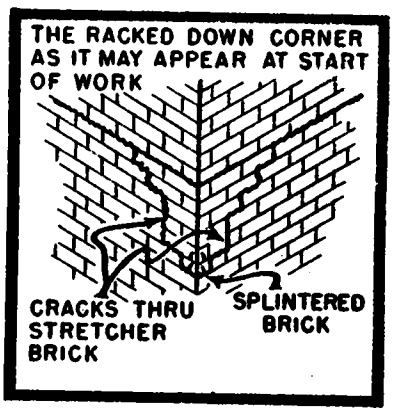
(Cont'd)

(3) Curing. After the grout has been in place about an hour the section of wall should be dampened with a very fine spray and again at intervals of 4 hours. This aids in the setting of the cement and will keep the grout from dusting.

4. Racked Down Corners

a. Description. On many projects built of masonry having concrete floor and roof slabs some of the buildings have sections of brick work damaged or loosened at the corners. This occurs where the horizontal movement cracks along the side and end of a building meet.

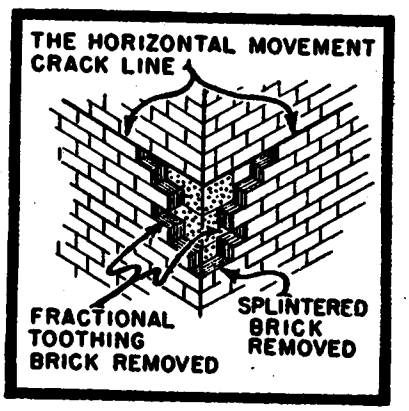
Frequently at the corners of the buildings the horizontal crack not only continues around the corner but forms part of a diagonal crack that takes a downward direction and meets a similar crack from the other side forming a "V". The brick inside this V are loosened and must be reset.



b. Repair

Step 1. The first step is to remove all the brick inside this V, including any brick that have been broken. This forms irregular sides and helps to hold or key the brick in place.

Step 2. After the brick are removed the good brick should be cleaned and as many new matching ones obtained as are necessary to fill the opening. These are then relaid in mortar (see paragraph 3, (2), (b)) up to and even with the horizontal crack running along the side and end of the building. If all joints are made the same width as the original joints and the mortar tends to match the old mortar a very presentable job will result. As the brick are built up the hack-up brick should be coated with mortar so that the newly laid brick will be bonded to them.



(Cont'd)

Step 3. The top joint which is on line with the horizontal crack should be partly filled with mortar. This can be done by pushing the mortar into the joint with the narrow pointing trowel. When about half the depth of the joint is filled the remainder can be filled with sealer in the same way the horizontal crack was sealed. This system of only mortaring half the joint supports the brick above but forms a weak plane along the top of the racked down areas. If movement takes place the mortar joint breaks but the relaid brick remain in place. The sealing compound keeps the joint watertight.