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DURATION DORMITORIES
NATIONAL HOUSING AGENCY
FEDERAL PUBLIC HOUSING AUTHORITY

General Scope
Page 1 of 2

GENERAL SCOPE

1. PROJECT SITE

(a) The Project Site of the _____ Defense Housing
Project No. _____, in _____ (City or Town) _____ State of _____
consists of that area within the property limits bounded in general by _____

all as shown on the _____ Plan,
designated as Drawing No. _____.

2. GENERAL SCOPE

NOTE TO ARCHITECT: (Do not copy)

The following paragraph must be copied carefully without any change.

(a) Except as otherwise specifically stated in the Contract Documents, the Contractor shall provide and pay for all materials, labor, tools, equipment, water, light, power, transportation, superintendence, temporary construction of every nature, and all other services and facilities of every nature whatsoever necessary to execute, complete and deliver the work within the specified time.

1- In addition to the work within the project site, the Contract shall include any work outside of the project site which may be called for on the drawings or specified.

3. WORK NOT INCLUDED IN CONTRACT

NOTE TO ARCHITECT: (Do not copy)

Omit this section when the entire work is to be included in one Contract.

(a) The work specified in divisions " _____ " " _____ " and " _____ " will be constructed under separate Contract and shall not be included in this Contract.

4. OPTIONAL CONSTRUCTION

(a) In lieu of the materials and methods of construction shown or specified, other materials and methods of construction may be used provided the materials and methods substituted are of comparable qualities and produce equivalent results in the opinion of the Contracting Officer, and approval is obtained by the Contractor before proceeding.

GENERAL SCOPE

5. MODIFICATION OF DETAIL SPECIFICATIONS

NOTE TO ARCHITECT: (Do not copy)

The following detailed divisions of the specification must be modified where necessary to suit local conditions. When there is insufficient time to edit and duplicate the detail divisions of the specifications, it is recommended that such modifications be incorporated herein under the "General Scope". The following are examples of forms for any required modifications.

(a) Requirements contained in the following divisions of the specifications are hereby modified as stated below.

Excavating and Grading

(b) On page , division "Excavating and Grading", article , "Scope", delete paragraph , in its entirety and substitute:

Masonry and Concrete

(c) On page , division "Masonry and Concrete", article , "Masonry Mortar Materials", after paragraph , insert the following:

Carpentry and Millwork

(d) On page , division "Carpentry and Millwork", article , in paragraph delete the sentence " (quote sentence) " and substitute the sentence " (quote sentence) ."

(e) On page , division "Carpentry and Millwork", delete article "Felt Weatherstrips" in its entirety.

END OF "GENERAL SCOPE"

DURATION DORMITORIES
SHELTER UNITS, MEN AND WOMEN

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NATIONAL HOUSING AGENCY
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SCHEDULE OF DRAWINGS

Architectural

- A-1 First Floor & Heating Room Plan
- A-2 Second Floor & Part Bed Room Plan
- A-3 Elevations
- A-4 Sections
- A-101 Wall Sections, Window Details, etc.
- A-102 Stairs, Interior Doors & Misc. Details
- A-103 Miscellaneous Details

Structural

- C-1 Foundation Type 1 & Basement Plan
- C-2 Foundation Type 2 & Basement Plan
- C-3 First Floor Framing Plan
- C-4 Second Floor Framing Plan
- C-5 Roof Framing Plan
- C-6 Wall Framing
- C-7 Wall Framing
- C-8 Foundation Type 3 & Basement Plan (wood piles)
- C-101 Framing Details
- C-102 Framing Details

Mechanical

- M-1 First Floor Heating - Electric - Plumbing
- M-2 Second Floor Heating & Electric
- M-3 Plumbing Details
- M-4 Plumbing Riser Diagram - Details

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NATIONAL HOUSING AGENCY
FEDERAL PUBLIC HOUSING AUTHORITY

DETAIL SPECIFICATIONS

<u>Division Number</u>	<u>Title of Division</u>	<u>Pages</u>
1	TEMPORARY CONSTRUCTION FACILITIES	1 to 2 incl.
2	DEMOLITION	1 to 3 incl.
3	EXCAVATING AND GRADING	1 to 7 incl.
4	MASONRY AND CONCRETE	1 to 10 incl.
5	DAMPPROOFING AND WATERPROOFING	1 to 5 incl.
6	CARPENTRY AND MILLWORK	1 to 24 incl.
7	INSULATION	1 to 2 incl.
8	CALKING	1 to 2 incl.
9	GLASS AND GLAZING	1 to 2 incl.
10	ROOFING	1 to 5 incl.
11	FLOOR COVERING	1 to 3 incl.
12	TILE FLOORING (CERAMIC) OPTION	1 to 4 incl.
13	PAINTING	1 to 9 incl.
14	HARDWARE (Builders' and Cabinet)	1 to 9 incl.
15	SHADES	1
16	PLUMBING	1 to 16 incl.
17	HEATING	1 to 7 incl.
18	ELECTRIC	1 to 13 incl.

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DURATION DORMITORIES
SHELTER UNITS, MEN AND WOMEN

Division 1
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NATIONAL HOUSING AGENCY
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TEMPORARY CONSTRUCTION FACILITIES

SCOPE

1. WORK INCLUDED

(a) Complete all temporary construction facilities and related items shown or specified unless specifically excepted. See "General Scope."

- 1- Signs.
- 2- Field Office Building.
- 3- Sanitary Facilities.
- 4- Temporary Heating.

2. SIGNS

(a) As soon as possible after notice to proceed provide 2 signs, located on project site where directed. Build signs of No. 1 Douglas fir, or No. 2 Southern or Ponderosa pine, using three 4 x 4 uprights 16 feet long, adequately braced and carrying a sign board approximately 12 feet long and 8 feet high with wood cap and bed mold at the top in accord with details. Build board of plywood or 3/4 inch matched boards battened together on the back. Securely fasten board to uprights. Embed wood posts 4 feet in ground and set bottom of sign 4 feet above ground.

(b) Paint entire sign with a priming and two finishing coats of lead and oil paint, of colors conforming to color samples to be furnished. Letter sign in conformity with details on the drawings.

(c) Maintain sign during period of this Contract and do all patching and re-lettering that may be required to keep the same in first class condition. On completion of work, signs shall be left on the premises in good state of repair.

3. FIELD OFFICE BUILDING

(a) Provide a field office building for use of the Government representatives, located and arranged as directed. Obtain approval of arrangement before starting work.

(b) The field office shall consist of a temporary building located as directed; containing a general office of 500 square feet and a private office of 100 square feet, and shall be of substantial construction as follows: Sidewalls, 2 x 4 studding with wood siding on exterior; dividing partitions of 2 x 4 stud construction; interior of walls and ceilings, lined with 7/16" insulation board; floor, T & G wood flooring; roof, double slope, covered with wood sheathing and rolled roofing felt; windows and doors, stock design, adequate to make all spaces accessible, well lighted and ventilated; exterior openings, provided with insect screen. Paint exterior woodwork 2 coats lead and oil paint, color as directed. Include two toilet rooms, each having flush toilet and lavatory. Provide 30 lineal feet of plan tables with plywood or hard fiberboard tops at least 3 feet wide, and 60 lineal feet of 12 inch shelving, located as directed.

TEMPORARY CONSTRUCTION FACILITIES

SCOPE (Cont.)

3. FIELD OFFICE BUILDING (Cont.)

(c) Provide and pay for adequate electric light, hot and cold water, heat, janitor and local telephone services.

(d) In lieu of the temporary field office building specified above, the Contractor may provide equivalent accommodations for Government representatives during the construction period in one of the buildings, subject to the approval of the Government representative in charge at the site, provided arrangements are made to completely finish same prior to final acceptance of the Project by the Contracting Officer.

4. SANITARY FACILITIES

(a) Furnish, install, and maintain ample sanitary facilities for the workmen. Temporary toilets shall be placed at the time work is commenced and as directed, and shall be maintained in conformance with local health ordinances.

5. TEMPORARY HEATING

(a) The Contractor shall provide temporary heating, covering, and enclosures, as necessary and to the satisfaction of the Contracting Officer to protect all work and material against damage by dampness and cold, to dry out the buildings properly, and to facilitate completion of the work; Provided, That the Contractor may utilize, with the approval of the Contracting Officer, the heating equipment, if any, to be installed under the Contract Documents, or such portions thereof as are ready and available, in which case the Contractor shall leave the same in proper and acceptable condition upon completion of the work. The fuel, equipment, and method shall be at all times satisfactory to the Contracting Officer.

6. REMOVAL OF TEMPORARY CONSTRUCTION FACILITIES

(a) Unless hereinbefore stated to the contrary, all temporary facilities furnished or constructed under work in this Division shall be removed when their use no longer is required, and, in any case upon completion of the contract for construction of the Project, and site shall be left clean and in sanitary condition.

END OF DIVISION 1

DURATION DORMITORIES
SHELTER UNITS, MEN AND WOMEN

Division 2
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NATIONAL HOUSING AGENCY
FEDERAL PUBLIC HOUSING AUTHORITY

DEMOLITION

1. SCOPE

- (a) Complete all demolition work and related items shown or specified, unless specifically excepted. (See "General Scope.")
- (b) Demolish and remove completely all buildings and structures, fences, steps, walls, and other construction to the existing ground level.
- (c) Remove retaining walls to the lowest adjacent ground level.
- (d) Remove, regardless of elevation, all floor construction over existing basements or cellars.
- (e) Remove partitions, masonry crosswalls, stairways, furnaces, piping, apparatus, and debris from within existing basements.
- (f) Furnish box protection for all trees designated to remain on site within area of this work.

2. RISK OF LOSS

- (a) The Government assumes no responsibility for condition of buildings and structures on the premises, nor their continuance in the condition existing at time of Invitation for Bids. Damage or loss (whether by reason of fire, theft or other happening) shall be at risk of bidder from and after date of advertising for bids, and no such damage or loss to buildings or structures shall relieve the Contractor from any obligation under the contract.

3. NOTICE TO PROCEED

- (a) On the date of opening of bids the Government may not have acquired title to all property covered by the Specification and many buildings may be occupied. Demolish no building until it has been vacated and title thereto has been vested in the Government. Notice to proceed with the work will advise Contractor of buildings and structures on which work may be started immediately. Notwithstanding failure of the Government to have ready all buildings or structures for demolition, Contractor shall proceed immediately with demolition and removal of buildings and structures released to him and perform the work in such order as the Government in its discretion shall require. Remaining buildings and structures will be released to the Contractor immediately upon acquisition of title to premises and removal of occupants therefrom.
- (b) The Contractor shall be entitled to an appropriate extension of time if the Government fails to release any building or structure within such time as to enable the Contractor to perform the contract within the contract time. The Government shall be under no further liability to the Contractor because of such failure, except that in case of failure of the Government to acquire all or any part of the property there shall be such equitable adjustment of the contract price as the Government shall determine.

DEMOLITION

4. DEMOLITION

- (a) Before starting demolition, have all services, such as water, gas, steam, electricity and telephone, disconnected at the service mains in accord with the rules and regulations governing the utility involved. Securely seal all storm and sanitary sewers leading from structures to be demolished. Preserve all active utilities traversing the project site. Disposition of utilities is specified in "Excavating and Grading."
- (b) Demolish structures in such manner as to avoid hazard to persons and property and to prevent spread of dust and flying particles by keeping work thoroughly wetted down; provide water and necessary connections therefor. Avoid interference with the use of adjacent buildings or interruption of free passage to and from same.
- (c) Demolish masonry walls in small sections. Remove individually and carefully lower structural steel, cast iron and heavy timber, framing members.
- (d) Do no blasting, except on prior written permission from the Architect.
- (e) Burn no materials or debris on the premises without specific permission from the Architect.
- (f) Provide adequate protection of persons and property at all times.

5. REMOVAL AND SALVAGE

- (a) Do not remove structures substantially as a whole, but completely demolish on the premises and, except as otherwise specified, remove salvaged materials and demolition debris, tools, and apparatus from entire project site.
- (b) Except as otherwise specified, salvage becomes the property of the Contractor.

1- Upon receipt by the Contractor of notice to proceed with work on any part or all of the premises, all right, title and interest of the Government in and to buildings, and other property to be demolished and removed by the Contractor and structures then located on said part or all of the premises described in such notice shall be deemed to be vested in the Contractor, subject to the provisions of Contract Documents. The Contractor shall accept said premises in the condition then existing and there shall be no adjustment in Contract Price because of any change in condition of said premises subsequent to date of advertisement for bids. Any insurance protection on buildings and structures in the interest of the Contractor shall be at the expense of the Contractor.

2- Subject to applicable provisions of Contract Documents, the Contractor shall be entitled to buildings and structures to be demolished and removed including salvaged lumber, brick, structural steel, glass, piping, miscellaneous metal and other items, but all piping, conduits, cables and other equipment belonging to public service companies shall not become the property of the Contractor unless abandoned by the various companies owning or controlling same. Personal property of third persons or tenants shall not become the property of the Contractor.

DEMOLITION

5. REMOVAL AND SALVAGE (Cont.)

(b) 3- It is expressly understood and agreed by the Contractor and it is only upon this condition that title to such buildings and structures is so vested in the Contractor, that 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 the Contractor to enter upon such land and premises to remove such buildings and structures in strict accord with the provisions of Contract Documents.

4- Materials left on the site after acceptance of the work by the Government shall be deemed to have been abandoned by the Contractor to the Government and title thereto shall thereupon revert to and vest in the Government, without prejudice, however, to any claims which the Government may have against the Contractor arising from the action of the Contractor in so leaving such materials on the site.

6. RODENT EXTERMINATION

(a) Before commencing other work, exterminate rodents and other pests on the entire project area; employ experienced exterminators.

1- Exercise necessary precautions. Display warning signs where necessary.

(b) To prevent migration, distribute bait in each building within 24 hours after occupants vacate (where possible) and do not start demolition within 3 days thereafter.

1- Bait used for the extermination of rats and mice shall be composed of powdered Red Squill mixed separately and thoroughly with the following foods: ground fresh lean beef and ground fresh fish in proportion of 1 part Red Squill to 10 parts food by weight.

(c) In addition to the bait specified, fumigate rat burrows with calcium cyanide (using foot pump dusters).

7. TREE PROTECTION

(a) Wrap trees to a height of 7'-0" with suitable protective covering and build 6'-0" high fence surrounding tree at a distance of 5'-0" minimum from tree trunk, using 2 x 4 studs and boards.

(b) When directed remove tree protection.

END OF DIVISION 2

DURATION DORMITORIES
SHELTER UNITS, MEN AND WOMEN

Division 3
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NATIONAL HOUSING AGENCY
FEDERAL PUBLIC HOUSING AUTHORITY

EXCAVATING AND GRADING

SCOPE

1. WORK INCLUDED

- (a) Complete all excavating, filling and grading and related items shown or specified unless specifically excepted, in general as follows: (See "General Scope").
- (b) Clearing of site of trees, shrubs, walls, fences, obstructions, etc., not to remain.
- (c) Protection of trees, shrubs and planting, bench marks, monuments, stakes, fences, etc., to remain.
- (d) Stripping, piling and spreading of top soil.
- (e) Excavation and backfilling for work of all trades except mechanical trades, as noted below in Art. 2.
- (f) Filling, cutting, grading and final grading.
- (g) Providing and placing any required additional material to establish finished grades.
- (h) Removal from site of excess excavated material and of materials unsuitable for filling.
- (i) Construction of dry wells (2) where shown.
- (j) Removal and correction of unsanitary conditions.
- (k) Keeping excavation free from water.
- (l) Existing utilities: Protection, relocation and removal of same as shown or specified.
- (m) Agricultural drain tile where shown on Architectural Drawings.

2. WORK EXCLUDED FROM THIS DIVISION

- (a) Excavating and backfilling for sanitary and storm sewers, water and gas piping, plumbing, heating and electrical work.
- (b) Fertilizing, seeding and planting.

EXCAVATING AND GRADING

WORKMANSHIP

3. EXISTING TREES, SHRUBS, ETC

- (a) Remove all trees, underbrush and shrubs within area of buildings, roads, etc., only, including stumps and major roots, from project site unless otherwise indicated. Box and protect as necessary trees and shrubs which are to remain. Such other trees, stumps and roots outside of areas described above, which interfere materially with installation of utilities (allowing reasonable adjustment of utility lines to avoid large healthy trees) shall be cut down and completely removed from site.
- (b) Remove interfering branches and roots of trees to remain, without injury to trunks. Do cutting and trimming only as directed. Cuts shall be painted immediately with coal-tar pitch or asphalt.
- (c) Perform grading around existing trees with extreme care to avoid disturbing feeder roots near surface.
- (d) Where existing grade at base of trunks is above required finished grade, slope ground from base of trunks to surrounding finished level without abrupt change of grade.
- (e) Where existing grades beneath the spread of the branches are less than 12 inches below the finished level, bring area to finished grade with acceptable soil.
- (f) Where existing grades beneath the spread of the branches are 12 inches or more below the finished grade, spread a layer of 3/4" broken stone or washed gravel over the low area in accordance with following schedule:

Depth of Required Fill

12 inches
13 "
14 "
15 "
16 "

Depth of Stone Layer

2 inches
3 "
4 "
5 "
6 "

Cover stone with layer of straw to form a compact mat approximately one inch thick, and bring entire area to finished grade with acceptable soil. Place 4 inch agricultural tile in upright positions 8 feet apart at outside edge of stone layer, extending from stone layer to finished grade. Fill tile with porous mixture of coarse sand and humus.

- (g) Place collars of 3/4 inch broken stone or washed gravel in an 18 inch ring around the trunk, extending from top of stone layer to within 3 inches of finished grade. Cover collar with mat of straw and then with topsoil to finished grade.
- (h) Remove tree protection when directed. Do not burn or place debris within this area.

EXCAVATING AND GRADING

WORKMANSHIP (Cont.)

4. BENCH MARKS AND SUBSURFACE SOIL DATA

- (a) Carefully maintain bench marks, monuments and other reference points, and, if disturbed or destroyed, replace as directed.
- (b) Subsurface investigations have been made and results indicated. No responsibility is assumed for variation of subsoil quality or condition at locations other than places shown and at time exploration was made.

5. TOP SOIL

- (a) Strip top soil from areas to be covered by building to full depth of top soil.
- (b) Strip top soil under areas to be surfaced not less than 6 inches deep.
- (c) Strip top soil off areas where cut and fill is required, not less than 4 inches deep.
- (d) Pile top soil in large stock piles as directed.
- (e) At completion, spread top soil to form finished grades, as directed.
- (f) Do not strip top soil from area where cut and/or fill is not required.
- (g) Hard-packed subgrade surfaces shall be scarified or loosened to a 3 inch depth before top soil is placed. Top soil stripped and placed shall be without admixture of subsoil, and shall be free from plants, roots, and stones over 2 inches in any dimension, hard clods, construction debris and other deleterious matter.

6. EXCAVATING

- (a) Remove existing walls, floors, footings, piers and other obstructions from areas to be occupied by new structures, and for a distance of 3 feet beyond perimeter of such new structures, unless otherwise shown or noted.
- (b) In areas to be surfaced or planted, remove existing walls, paving and other obstructions to a depth of not less than 24 inches below finished grades.
- (c) Break up masonry or concrete bottoms of existing basements, cisterns, cesspools and abandoned catch basins sufficiently to provide drainage.
- (d) Excavate to elevations and dimensions indicated, plus sufficient space to permit erection of forms for construction of masonry and inspection of foundation.

1- Where directed, excavation for footings may be made to accurate sizes and side forms omitted if concrete is poured in clean-cut trenches without cavings. Obtain approval of trenches before pouring concrete. See "Masonry and Concrete" Division.

EXCAVATING AND GRADING

WORKMANSHIP (Cont.)

6. EXCAVATING (Cont.)

(e) If rock, as defined herein, is encountered within the limits of excavation, the "Contract Price" will be adjusted. See "General Conditions." Rock is defined as any boulders exceeding 12 cubic feet in volume, or ledge rock or stone which cannot be broken and removed by a power shovel of 1/2 cubic yard bucket capacity. The "Contract Price" is understood to include full compensation for all excavation, except that classified as rock.

(f) Should latent soil conditions require changes, the "Contract Price" will be adjusted. See "General Conditions."

(g) The following rules of measurement shall be used in computing changes in quantities of excavation (extra or omitted) which may be ordered, irrespective of the actual quantities involved:

1- Excavation for buildings and structures measured as extending 2 feet outside of exterior face of foundation walls.

2- Excavation for footings measured as extending 6 inches outside of exterior face of concrete footings.

3- Trenches for walls measured as 2 feet wider than wall thickness, but in no case less than 3 feet.

4- Quantity of hand excavation computed from level at which hand excavation starts.

5- Quantity of rock excavation computed by: (1) stripping rock free of all earth and loose material and taking cross-sections on surface of rock before blasting; and: (2) by calculating depths therefrom to elevations shown or specified for bottom of excavation, provided that, if rock does not extend to bottom of excavation, only the actual depth of rock excavated shall be allowed. With each claim for rock excavation, a plan of the cross-sections and the depth at each point shall be filed by Contractor.

6- Backfilling computed as the volume of excavation, determined according to the foregoing rules less the volume of displacement of foundation walls and footings.

7- Where rock excavation replaces earth excavation required under the contract, deduct quantity of earth excavation omitted.

8- Sheet piling (when directed to be left in place) measured by board measure or by weight of steel (material only, less credit for cost of removal).

(h) Protect bottoms of excavations from frost.

EXCAVATING AND GRADING

WORKMANSHIP (Cont.)

6. EXCAVATING (Cont.)

(i) Shore and brace excavations, if necessary, to prevent cavings. Remove shoring before backfilling is completed, but not until permanent supports are in place.

(j) Keep excavations free from water. Do not conduct water to privately owned properties.

(k) Footings and foundations will not be permitted to be placed on earth fill. Any excess cut under footings and foundations shall be filled with concrete.

(l) Remove or correct unsanitary conditions.

7. FILLING AND BACKFILLING

(a) Remove all debris and deleterious materials from excavations before backfilling. Do not use frozen materials for backfill. Do not backfill against foundation walls until permission is obtained.

(b) Deposit fill and backfill in layers not exceeding 8" under pavements and under other surfacing, and 12" under planted areas, compacting each layer thoroughly.

(c) Do not backfill around Basement walls until framing of structure is in place.

(d) Fill old basements, cisterns, wells, cesspools and abandoned manholes and catch basins.

(e) Rocks, blocks of concrete, and masonry materials, but no debris, may be used for filling, if well distributed in earth, except for top 12" of fill below subgrade level of grass and planted areas, which fill shall be earth only.

8. GRADING

(a) Do all cutting, filling, backfilling, and grading necessary to bring entire area outside of buildings to finished grades:

1- for paving, walks and other surfaced areas, to underside of the respective surfacing, and:

2- for grass and planted areas, to 4" below finished grade with earth, and hence up to finish grade spread and rake top soil. In case sufficient top soil is not available, the above 4" may be decreased as directed by the Architect.

(b) Slope finished grades to drain away from building walls and grade entire area outside of buildings to a smooth, uniform surface. Finished grades not otherwise indicated shall be uniform levels or slopes between points where levels are given or between such points and existing finished grades, except that the surface shall be rounded at abrupt changes in slope. Should figures for finished grades conflict with finished grade contours shown, the figures shall govern.

EXCAVATING AND GRADING

WORKMANSHIP (Cont.)

8. GRADING (Cont.)

(c) Grade areas under concrete floor slabs bearing on ground to required subgrade, using acceptable material for fills and compacting thoroughly. Before depositing fill, clear surface of ground of topsoil, vegetation and other matter; also large stones which cannot be easily compacted. For fills of 1 foot or more, deposit material in 6-inch layers over slab area, sprinkle and roll with 5-ton roller, making 4 passes over each layer, all in advance of cutting trenches for footings and foundation walls. Later backfill space next to walls and tamp compactly.

(d) Under building, remove all debris and vegetable matter, grade to minimum clearances as shown, either with a uniform level or with slope for proper drainage. If natural grades are lower than required for minimum clearance, fill will not be required.

(e) Fill to required levels any ~~sub~~grades which settle.

9. DISPOSITION OF UTILITIES

(a) Protect active utilities from damage; remove or relocate only as indicated or as specified.

(b) Protect or relocate active utilities not shown on the drawings, in accord with written instructions. "Contract Price" will be adjusted for this additional work.

(c) Remove, plug or cap inactive and abandoned utilities. In absence of specific requirements, plug or cap pipes at least 3 feet outside of new building walls. Report in writing the location of such abandoned utilities.

10. DRAIN TILE

(a) Where so indicated, furnish and lay 4-inch agricultural drain tile, or 4-inch terra cotta bell and spigot tile, or 4-inch 3-cell terra cotta partition tile around foundation walls.

(b) Lay drain tile with butted open joints; slope in direction of flow and cover joints with burlap. Backfill over drain tile 18 inches deep and 18 inches wide with 1/4" to 1" broken stone or gravel, or clean cinders. Connection of drain tile to storm sewers is included under "Utilities."

11. DRY WELLS

(a) Court dry well shall be 3'-0" wide and 8'-0" long and 6'-0" deep. Fill lower 4'-0" with rocks or large crushed stone and cover with 16" of 2" gravel or crushed rock. Over this lay layer of straw or perforated waterproof paper, and fill to grade with top soil.

(b) Provide inlet of 8" diameter V.T. sewer pipe with perforated tile cover. Extend pipe to gravel, in vertical position. Set cover flush with finish grade.

EXCAVATING AND GRADING

WORKMANSHIP (Cont.)

11. DRY WELLS (Cont.)

(c) Dry well at Basement entrance shall be 2'-0" x 2'-0" x 1'-0" deep, filled with 2" gravel and covered with waterproof paper. Concrete floor, drain and frame will be furnished and set in other Divisions.

END OF DIVISION 3

DURATION DORMITORIES
SHELTER UNITS, MEN AND WOMEN

Division 4
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NATIONAL HOUSING AGENCY
FEDERAL PUBLIC HOUSING AUTHORITY

MASONRY AND CONCRETE

SCOPE

1. WORK INCLUDED

- (a) Complete all masonry and concrete and related items shown or specified unless specifically excepted, in general as follows: (See "General Scope.")
- (b) Footings for: walls, piers, chimney, bearing partitions; Grade "B" concrete.
- (c) Foundations: foundation walls, Basement bearing partitions and walls, Basement entrance area walls, piers, and area walls; at the Contractor's option may be either of the following materials:
 - 1- Concrete Grade "A"
 - or
 - 2- Concrete-units, load bearing.
- (d) Floor slabs on earth; Grade "A" concrete.
 - 1- Basement floor slabs, Basement step area and steps - Cement Finish, see Schedule of Interior Finishes.
 - 2- Lay slabs over waterproof felt and 6" bed of compacted stone or gravel.
- (e) First (lowest) step at all entrances: Concrete Grade "A", cement finish.
- (f) Floor slabs over wood framing: Grade "B" concrete, cement finish, cement gutters and base. See Schedule of Interior Finishes. Slabs to be laid over felt and wire mesh. (See "Tile Flooring (Ceramic) Option", Division 12.)
- (g) Basement wall opening lintels and ceiling beams where shown: Grade "A" concrete. Wood reinforcement furnished under "Masonry and Carpentry" Division.
- (h) Concrete coal chutes.
- (i) Wood forms for concrete work.
- (j) Basement partitions, non-bearing; Concrete-units, non-load-bearing type.
- (k) Chimney, 1st floor to cap: of brick; cap of concrete: T.C. flue linings and thimble for each flue.
- (l) Thimbles and plugs for flue cleanouts.
- (m) Cleaning, pointing, curing and protection.
- (n) All cutting and patching of work of this Division as required by all trades.

MASONRY AND CONCRETE

SCOPE (Cont.)

2. MATERIALS FURNISHED UNDER OTHER DIVISIONS, AND INSTALLED IN THIS DIVISION

- (a) Sleeves in masonry, furnished by respective mechanical trades.
- (b) Anchors for wood sills: spaced not over 10'-0" apart; at least 2 for each sill piece and 2 for each corner. (See "Carpentry and Millwork" Division.)
- (c) Metal flashing for chimney. (See "Roofing" Division.)

MATERIALS

3. CONCRETE AND CEMENT FINISH MATERIALS

- (a) Shall comply with the following Federal Specifications:

- 1- Cement - Portland, SS-C-191b; or High early strength Portland, SS-C-201.
- 2- Hydraulic Lime - SS-L-361.
- 3- Aggregates - SS-A-281, grade "A"; coarse aggregate of 3/4" maximum size for concrete, and of 1/8" minimum to 3/8" maximum for cement finish; fine aggregate for cement finish shall have 5% maximum pass a 100-mesh sieve, and 15% maximum pass a 50-mesh sieve. One inch or 1-1/2" aggregate may be used in footings and walls when approval is obtained.

4. MASONRY MORTAR MATERIALS

- (a) Masonry mortar materials, in addition to being suitable to produce specified mortar requirements, shall comply with the following Federal or ASTM Specifications:

- 1- Cementitious materials shall be any one, or mixtures, of:
 - a- Portland Cement, Federal SS-C-191b.
 - b- Masonry Cement, Federal SS-C-181b, Type II.
 - c- Natural Cement, ASTM C-10-37.
 - d- Slag Cement, conforming to requirements for portland cement, except that soundness shall conform to requirements for masonry cement.
 - e- Puzzolanic Cement, conforming to requirements for either portland or masonry cement.
 - f- Hydrated Lime, Federal SS-L-351, Type M, soaked and aged in accord with manufacturer's printed directions on containers, or aged 24 hours after proper soaking.
 - g- Quick Lime (either pulverized or lump), Federal SS-Q-351, slaked and aged in accord with manufacturer's printed directions on containers or completely slaked, and aged 72 hours if pulverized or 21 days if lump.
 - h- Hydraulic Lime, Federal SS-L-361.
- 2- Sand - ASTM C-144-39T, passing a No. 8 sieve.

5. WATER

- (a) Water shall be potable.

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MASONRY AND CONCRETE

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MATERIALS (Cont.)

6. BRICK

(a) Brick shall be new common brick made from clay or shale and conforming to ASTM Specification C-62-41T, Grade SW.

7. CONCRETE-UNITS (Masonry)

(a) Concrete-units (masonry), including necessary closures and fitters, shall be of standard sizes and shapes, cured by air, water or steam, in addition to meeting Fed. Spec. SS-C-621; Type I for load-bearing, and Type II for non-load-bearing.

1- Unless units have been cured in high-pressure steam, furnish test reports by an approved laboratory showing compliance with moisture content requirements for each 25,000 units.

2- Surfaces to be exposed, or to be coated, shall be plain and of uniform texture.

3- Top course of units under all bearing members shall be solid blocks without voids.

8. FLUE LININGS AND THIMBLES, INCLUDING CLEANOUTS

(a) Shall be sound, hard burned, unwarped fire clay flue tile, free from cracks and spalls, of sizes shown. Thimbles shall be cut to fit intersection with flues. Cleanout at base of each flue shall be T.C. thimble, same size as smoke-pipe thimble, with plug of cement-asbestos board, 1/2" thick, fitted to thimbles.

9. CHIMNEY CAPS

(a) Shall be precast or cast-in-place concrete as shown.

10. STRUCTURAL STEEL

(a) Shall conform to Fed. Spec. QQ-S-721a, Class A.

11. REINFORCING STEEL

(a) Shall be deformed; stirrups and ties may be plain.

12. METAL ACCESSORIES

(a) Metal accessories shall include spacers, chairs, ties and other devices necessary for properly placing, spacing, supporting, and fastening reinforcement in place.

13. WIRE MESH

(a) Wire mesh shall be painted, 2" x 2", No. 12 gage.

MASONRY AND CONCRETE

MATERIALS (Cont.)

14. WATERPROOF FELT

- (a) Waterproof felt shall be in accord with Fed. Spec. HH-F-201.

15. FLOOR HARDENER

(a) Hardener shall be dust coat method hardener composed of carefully graded, ground iron oxide, plus an admixture which will increase the density of the cement finish. For every 100 sq. ft. of floor surface, use not less than 30 lbs. of hardener.

(b) Hardener shall be made by one of the following: Helton L. McCann Co., Toch Bros., Master Builders Co., or A. C. Horn Co.

(Note: Art. 15, (a) and (b), does not apply if option of ceramic tile flooring is adopted. See "Tile Flooring (Ceramic)" Division.)

16. STORAGE OF MATERIALS

(a) Handle and store aggregate separately in manner to prevent intrusion of foreign matter or segregation; handle and store finished materials to prevent damage. Store brick and concrete-units under cover permitting circulation of air and preventing absorption of water. Store cements and limes in watertight enclosures with floors above ground.

PROPORTIONING AND MIXING CONCRETE

17. PROPORTIONING

- (a) Grade "A" concrete shall be:

1- A mix of cementitious materials, aggregates, and water of proportions established by approved testing laboratory tests in accord with ASTM Specification C-39-39, to have compressive strength at 28 days of not less than 2,000 pounds per square inch, or:

2- An untested mix of any proportions, using not less than 5 sacks portland cement per cubic yard of concrete.

(b) Grade "B" concrete shall be a mix of any proportions, using not less than 4 sacks of portland cement per cubic yard of concrete.

(c) Portland cement, not in excess of one cubic foot (94 pounds) per cubic yard of concrete, may be replaced by not less than 1-1/4 cubic feet of hydraulic lime (78 pounds). Thoroughly mix hydraulic lime with cement prior to adding water.

18. WATER CONTENT

(a) Water content per sack of cement, including free water contained in aggregates, shall not exceed 7-3/4 gallons for grade "A" and 8-1/4 gallons for grade "B". Slump shall not exceed 5 inches for grade "A" and 6 inches for grade "B". Fine aggregates shall be not less than 1/3 or more than 1/2 of total aggregates. Consistency shall be suitable so that concrete will work readily into place without free water appearing on top surfaces.

MASONRY AND CONCRETE

PROPORTIONING AND MIXING CONCRETE (Cont.)

19. MIXING

- (a) Mix concrete ingredients in power-operated batch mixer after all ingredients are in mixer, not less than one minute for capacity of one cubic yard or less, increased 15 seconds for each cubic yard or fraction thereof additional capacity.
- (b) Ready-dry-batched mixes of cement and aggregates, if used, shall be delivered to site in vehicles having batch compartments of proper size for rated capacity of mixer. Do not add water until batch is deposited in mixer. Deposit in mixer within 1-1/2 hours after portland cement is added to batch and 1/2 hour after high early strength cement is added.
- (c) Ready-mixed concrete shall be transported to site in watertight agitator or mixer trucks loaded not in excess of rated capacities. Discharge at site within 1-1/2 hours after water has been introduced into mixer with portland cement and 1/2 hour when high early strength cement is used.

FORMS AND CENTERING

20. FORMS IN GENERAL

- (a) Construct forms sufficiently tight to prevent leakage, securely brace and shore to prevent displacement, with access panels for cleaning and inspection. Where soil and workmanship permit excavation to accurate dimensional sizes of footings, forms may be omitted when so directed by the Architect, and the contract price shall be adjusted accordingly. See "Excavation and Grading."
- (b) Install sleeves, inserts, anchors, and other fastening devices required for installation and attachment of other work.
- (c) Maintain forms and shores in place until concrete has developed ample strength to support construction loads.

21. FORMS FOR SLABS ON WOOD CONSTRUCTION

- (a) Wood forms for slabs on wood joists will be installed under the "Carpentry" Division. Over forms lay waterproof felt (except omit felt in Shower Rooms and lay over waterproofing as specified under "Waterproofing" Division) with joints lapped and buttered with mastic, and carry same up behind base. Lay wire mesh 1" above felt and secure in place. Secure strip of metal lath to wood filler behind base. Pour concrete to a total thickness of 3-1/4" above wood subflooring, including cement finish.

22. FORMS FOR EXPOSED SURFACES

- (a) Forms for exposed surfaces shall be of materials that will produce concrete surface finishes that are dense, free from honeycombing and air bubbles which expose aggregate, and equal in all respects to surfaces produced by clean surfaced tight lumber forms.

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MASONRY AND CONCRETE

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DEPOSITING CONCRETE

23. PREPARATION FOR DEPOSITING

(a) Remove water and foreign matter from forms and excavations, and, unless otherwise directed, thoroughly wet wood forms, sand and sandy loam just prior to placing concrete.

24. HANDLING

(a) Transport concrete from mixer to place of final deposit as rapidly as practical by methods which prevent separation of ingredients and displacement of reinforcement, and which avoid rehandling.

25. DEPOSITING

(a) Deposit no concrete for foundations on earth backfilled or otherwise disturbed, or on frozen soil. All soil bottom for slabs and footings shall be approved by the Architect before placing concrete. Deposit no partially hardened concrete.

(b) Before depositing concrete adjoining construction joints, pick, brush clean and coat with neat cement grout, surface of joint already in place. Thoroughly rod columns and piers to compact concrete and eliminate subsequent shrinkage and voids.

26. FLOOR SLABS ON EARTH

(a) Floors laid on earth shall be laid over 6 inches of stone or gravel graded from 3/4 to 1-1/2 inch. Wet, tamp and roll bed until thoroughly compacted. See "Excavating and Grading" for earth fills over 1'-0". Lay waterproof kraft paper (Fed. Spec. UU-P-264) over stone or gravel to prevent concrete combining with them. Avoid tearing paper. Seal tightly, with coal-tar pitch, expansion joints and spaces around pipes, bolts, anchors, etc., penetrating floors and walls in contact with the ground or gravel subgrade.

CEMENT FINISHES

27. CEMENT FINISHES FOR EXTERIOR CONCRETE AND BASEMENT FLOORS

(a) Strike off surface of concrete floor slabs, steps and platforms reasonably true at proper level for specified finish. Remove all surface water, laitance, and dirt; apply finish composed of one part cement and two parts fine aggregate thoroughly mixed without water; spread dry to a uniform thickness not exceeding 1/8 inch over the screeded wet slab; then float and steel trowel to dense smooth finish.

(b) In lieu of finish specified in paragraph (a), monolithic finish may be produced by vacuum processing, utilizing approved suction mats which extract from concrete water in excess of that needed for hydration. Apply the suction mats immediately after striking off top of slab. Maintain suction until concrete is hard enough to support a man without appreciable imprint, but not too hard for proper floating. After testing with straightedge, fill depressions with dry mix of one part cement and two parts fine aggregate, float and steel trowel to dense, smooth finish.

MASONRY AND CONCRETE

CEMENT FINISHES (Cont.)

27. CEMENT FINISHES FOR EXTERIOR CONCRETE AND BASEMENT FLOORS (Cont.)

(c) Avoid excessive floating. Delay steel troweling until concrete is sufficiently hard to prevent water working to surface. Bring finish to smooth surface level within tolerance of 1/8 inch in 4 feet, free from defects and blemishes, with the minimum steel troweling possible. Outside steps and platforms shall be float finished.

28. CEMENT FINISHES WHERE SCHEDULE CALLS FOR METALLIC HARDENER

(a) Finishes shall be laid level and true with formed gutters in shower rooms as per detail. Lay screed strips at frequent intervals to proper level to provide a 1 inch thick finish.

(b) Mortar shall be spread on the concrete base slab within thirty minutes after mixing and within thirty minutes of the base slab having been laid, to insure proper bonding, or, option:

(c) Whenever the base slab has hardened, this Contractor shall thoroughly roughen the surface of the slab by picking, and thoroughly clean the surface of all dirt. He shall moisten the surface of slab and brush on a neat cement grout and immediately thereafter shall apply the cement finish coat as herein described.

(d) Mortar shall be worked to a level and true surface by means of wood leveling strips, using a long straight edge, and, when partially set, shall be floated with wood floats and then troweled perfectly smooth by means of metal trowel, without trowel marks or inequalities of any sort. Before troweling finish, sprinkle on floated surface hardener in accord with manufacturer's directions and then trowel as specified above. Hardener shall be evenly distributed. Pitch all floors evenly to drains where same occur. Form curbs and base to detail and finish as floors. (For hardener see Art. 15.)

(e) All surfaces shall finish neatly around all pipes and neatly against columns, walls and bases. Sprinkling of dry cement or the use of dryers will not be permitted.

(f) Scoring: Cement finished surfaces shall be divided into blocks approximately 5 feet square by cutting through the finish. The joints shall be finished with a standard jointing tool forming a sinkage.

(Note: Art. 28, (a) to (f), does not apply if option of ceramic tile flooring is adopted. See "Tile Flooring (Ceramic)" Division.)

CURING AND PROTECTION - CONCRETE AND CEMENT FINISHES

29. TEMPERATURES

(a) Whenever atmospheric temperature is below 40° F., concrete and cement finish shall have a temperature above 70° F. when placed, and shall be maintained above 70° F. for not less than 72 hours, or above 50° F. for not less than 120 hours, if portland cement is used. Reduce maintained periods 1/3 if

MASONRY AND CONCRETE

CURING AND PROTECTION - CONCRETE AND CEMENT FINISHES (Cont.)

29. TEMPERATURES (Cont.)

high early strength cement is used. Reduce respective maintained periods of either cement $1/3$ if a solution of not less than $1-1/2$, nor more than 2, quarts containing one pound calcium chloride crystals per quart, is incorporated in concrete mixes as part of the mixing water per sack of cement.

30. CURING EXPOSED CONCRETE

(a) Exposed surfaces of concrete and cement finish shall be thoroughly cured by being kept continuously wet after finishing, at least 7 days where portland cement is used, or 3 days where high early strength cement is used. Whenever atmospheric temperature is 50° F. or higher, cover concrete slabs with two inches of wet, coarse, clean sand for the first 72 hours of 7-day periods or the first 47 hours of 3-day periods. When atmospheric temperature is 80° F. or higher, cover top of concrete walls with two layers of wet burlap or straw and keep entire wall continuously wet for 72 hours.

or option:

(b) Cement finish floors shall be covered immediately with heavy building paper lapped, and with laps pasted, to remain in place not less than 7 days.

(c) Remove no forms during curing period, unless protection as specified is applied to surfaces from which forms are removed.

(d) If option of ceramic tile flooring is elected (see "Tile Flooring (Ceramic)" Division), no curing of concrete on wood construction shall be required.

MASONRY WORK

31. MASONRY MORTAR

(a) Masonry mortar shall be an approved mix of 1 part cementitious materials, to not less than $2-1/2$ parts nor more than $3-1/2$ parts of sand, and water, having minimum compressive strength in pounds per square inch of 2-inch cube specimens, moist cured, of 400 pounds per square inch at 7 days, and, after suction for 60 seconds, a flow greater than 65% of that measured immediately after mixing. Establish mix by approved testing laboratory tests in accord with methods described in Fed. Spec. SS-C-181b.

(b) Admixtures may be included in mortars provided specified requirements are complied with.

MASONRY AND CONCRETE

MASONRY WORK (Cont.)

31. MASONRY MORTAR (Cont.)

(c) Retemper mortar (as used) to maintain plastic quality. Do not use mortar more than two hours after mixing.

32. MASONRY WORK IN GENERAL

(a) Employ skilled workmen and experienced supervision, and exercise all necessary precautions to provide sound masonry fully complying with all specified requirements.

(b) Brick and clay tile, air dried, absorbing less than 1-1/2 ounces of water per 100 square inches of face area, immersed one minute to depth of 1/8 inch in water, shall be laid dry. Other brick and tile shall be damp when laid, Do not wet concrete units.

(c) Load-bearing piers, where so shown, shall be of solid unit construction, bonded to adjacent masonry. All top courses shall be of solid units.

(d) Build into wall all required items. Leave 1/4" minimum clear space around sides, ends and tops of wood framing members resting on masonry.

(e) Unless otherwise shown, end construction tile or vertical cell unit walls shall have top course of 1-inch thick solid clay tile, whole bricks, or solid concrete units when supporting wood, steel or precast concrete joists, and a layer of reinforced kraft paper, when supporting poured-in-place concrete.

(f) Work plumb, level and true to line, breaking vertical joints except where* otherwise shown or specified. Where necessary to build portions of walls to higher levels than adjacent portions, rack courses back without toothing. Do not lay masonry in freezing weather unless approved adequate means to prevent freezing are employed.

(g) Lay brick, and masonry units, complete with bearing in full beds of mortar. Shove units in place. Before laying, butter sides forming vertical cross joints with sufficient mortar to fill joints except at cells of end construction tile.

33. MASONRY JOINTS

(a) Joints in masonry shall be 1/2" thick, trowel struck, filling all holes and shrinkage cracks. Compact exposed joints above grade with a round tool, after initial set. Where calking is required (see "Calking" Division), rake joints to depth of 3/4" to form clean reglets.

34. FLUES

(a) Set flue linings one section ahead of masonry full height of chimney; stagger adjacent flues. Bed in mortar and strike joints flush on inside. Build in thimbles to neat, completely filled joints, struck flush. Keep flues free from brick and surplus mortar. Set chimney caps to line and level in full beds of mortar, filling voids between top of wall and underside. Rake exposed joints (see "Calking" Division).

MASONRY AND CONCRETE

MASONRY WORK (Cont.)

35. CHASES, ETC.

(a) Form slots, grooves, chases, recesses, pilasters, and other required items; check requirements for other trades in advance to eliminate unnecessary cutting of masonry. Build in all required miscellaneous metal and other items.

36. PROTECTION

(a) Cover top of work at end of each day and protect work against soiling and damage. When directed, remove and replace disturbed, damaged, or defective brick or concrete-units showing in finished surfaces and portions of walls, if same do not conform with requirements.

37. CLEANING

(a) Point and fill holes and cracks in exposed mortar joints with mortar.

(b) If necessary, clean exposed masonry and concrete surfaces that are not to be painted, and leave free from mortar and other stains at completion of work.

(c) Clean masonry surfaces that are to be painted of any mortar or other accumulations that will show through the paint.

END OF DIVISION 4

DURATION DORMITORIES
SHELTER UNITS, MEN AND WOMEN

Division 5
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NATIONAL HOUSING AGENCY
FEDERAL PUBLIC HOUSING AUTHORITY

DAMPPROOFING AND WATERPROOFING

SCOPE

1. WORK INCLUDED

(a) Complete all dampproofing and/or waterproofing and related items shown or specified unless specifically excepted, in general as follows: (See "General Scope.")

(b) Dampproof throughout exterior surfaces of walls enclosing basements and areas from top of footings up to 2 inches below finish grades with asphalt or coal-tar pitch applied either hot or cold.

Note: Dampproofing, as called for in par. (b) above, shall be required only when basement walls and floors are not reinforced, in which case par. (c) below shall not apply.

(c) Waterproof throughout basement floors and interior surfaces of walls enclosing basements, including area walls, floors and steps within same, up to 6 inches above finish grades, with metallic waterproofing.

1- Where metallic waterproofing is used, bond and finish coats specified hereinafter will not be required for any walls except for walls of step areaway and treads and risers.

Note: Waterproofing, as called for in par. (c) above, shall be required only when basement walls and floors are reinforced, in which case par. (b) above shall not apply.

(d) Waterproof wood subfloor under cement finish flooring or tile flooring (ceramic) in Shower Rooms with 3-ply membrane waterproofing.

MATERIALS

2. BASIC ASPHALT AND PRIMER

(a) Basic asphalt and primer shall comply with Fed. Spec. SS-A-666, Type III, or ASTM Spec. D-449-37T.

1- Cut-back asphalt shall contain a minimum of 60% of basic asphalt and not more than 40% of mineral spirits.

2- Emulsified asphalt shall contain a minimum of 60% of basic asphalt and not more than 40% of a liquid containing a stabilizing agent not exceeding 3% (by volume) to keep the mixture in solution and to prevent settling.

DAMP-PROOFING AND WATER-PROOFING

MATERIALS (Cont.)

3. COAL-TAR PITCH

(a) Pitch shall comply with Fed. Spec. R-P-381, Type II, or ASTM Spec. D-450-38T.

1- Cut-back pitch shall contain a minimum of 60% of coal-tar pitch and not more than 40% of mineral spirits.

2- Creosote oil used as a primer for cut-back pitch shall be a pure distillate of coal-gas tar or coke-oven tar.

4. PLASTIC CEMENT

(a) Plastic cement shall be a smooth, uniform mixture (not thickened or livered), composed of inorganic filler, solvent and non-volatile binder (mainly bitumen with organic properties).

5. PAPER

(a) Waterproof paper shall comply with Fed. Spec. UU-P-536, Grade A.

6. FELT

(a) Felt shall be coal-tar pitch saturated, weighing not less than 14 lbs. per 100 square feet, conforming to Fed. Spec. HH-F-201.

7. METALLIC WATER-PROOFING

(a) Metallic waterproofing shall comply with the following requirements:

1- Iron filings shall be finely ground from clean iron castings, mixed with 5% to 7% (by volume) of a chemical oxidizing agent; all shall pass a No. 35 sieve; at least 90% shall pass a No. 40 sieve; not less than 45% nor more than 60% shall pass a No. 100 sieve; and not more than 20% shall pass a No. 200 sieve. Filings shall not contain more than 1% (by weight) of non-ferrous metal and shall contain no foreign substance other than non-ferrous metal in excess of 0.10% (by weight). Deliver materials to the project in sealed containers bearing manufacturer's brand and name.

2- Plastering materials shall comply with applicable requirements of "Masonry and Concrete" Division.

8. AFFIDAVITS

(a) Furnish affidavits from the manufacturers, certifying that the materials delivered to the project conform to the requirements hereinbefore specified.

WORKMANSHIP

9. PREPARATION OF SURFACES

(a) Remove fins, loose materials and foreign matter from masonry surfaces. Fill holes with mortar and clean down as necessary to provide proper surfaces for damp-proofing and/or water-proofing.

DAMPPOOFING AND WATERPROOFING

WORKMANSHIP (Cont.)

9. PREPARATION OF SURFACES (Cont.)

(b) Surfaces shall be dry and the temperature above 45° F. when dampproofing and/or waterproofing is applied.

10. APPLICATION OF ASPHALT OR PITCH DAMPPROOFING ON MASONRY

Note: This applies only when basement walls and floors are not reinforced, in which case Art. 11, (a) and (b), shall not apply.

(a) Employ only workmen skilled in the application of this type of dampproofing.

(b) Make watertight all openings where anchors, dowels, pipes, and other such items penetrate dampproofing by calking with plastic cement or by other approved methods as necessary.

(c) Apply asphalt dampproofing either hot or cold by mopping, spraying or other approved method.

1- Before applying hot asphalt, spray or brush on a primer of cut-back asphalt, using not less than one gallon to each 200 square feet of surface. Allow primer to dry and mop on a uniform coat of not less than 20 pounds of hot asphalt to each 100 square feet of surface; or:

2- If asphalt is applied cold, spray or brush on two uniform coats, of not less than one gallon each, of cut-back asphalt, or not less than two gallons each of emulsified asphalt, to each 100 square feet of surface.

(d) Apply coal-tar pitch dampproofing either hot or cold by mopping, spraying or other approved method.

1- Before applying hot coal-tar pitch, spray or brush on a prime coat of creosote oil, using not less than one gallon to each 200 square feet of surface, and, when sufficiently dry, mop on a uniform coat of not less than 20 pounds of hot coal-tar pitch to each 100 square feet of surface; or:

2- If coal-tar pitch is applied cold, spray or brush on two uniform coats, of not less than one gallon each, of cut-back pitch, to each 100 square feet of surface.

(e) Finished asphalt or coal-tar pitch dampproofing shall provide a lustrous surface, impervious to water. Correct dull or porous spots by applying additional material.

11. APPLICATION OF METALLIC WATERPROOFING ON MASONRY

NOTE: This applies only when basement walls and floors are reinforced, in which case Art. 10, (a) to (e) inclusive, shall not apply.

DAMPPROOFING AND WATERPROOFING

WORKMANSHIP (Cont.)

11. APPLICATION OF METALLIC WATERPROOFING ON MASONRY (Cont.)

(a) Apply metallic waterproofing on walls in the following manner:

- 1- Cut out as necessary and point up joints, holes and cracks with cement mortar composed of 1 part portland cement to 2 parts sand by volume, and not less than 10 pounds of iron filings to each bag of cement.
- 2- Brush Coats: chip and roughen surfaces, wet with water and coat with two heavily brushed-on coats of metallic waterproofing mixed with water, using for each coat not less than 10 pounds of metallic waterproofing to each 100 square feet of wall surface.
- 3- Slush Coat: when surfaces show a dense coating of rust and within 24 hours after application of final brush coat, wet surfaces and brush on a slush coat of thick cement grout composed of 1 part portland cement to 2 parts sand by volume and 15 pounds of metallic waterproofing per sack of cement.
- 4- Bond Coat: before slush coat has set, apply bond coat composed of 1 part portland cement and 2 parts sand by volume. Float with wood trowel and scratch surfaces to provide key for finish coat.
- 5- Finish Coat: after bond coat has set, apply a finish coat composed of 1 part portland cement and 3 parts sand by volume. Finish with a cork float to an even, smooth finish.
- 6- Total thickness of all coats shall be not less than 3/4 inch.

(b) Apply metallic waterproofing on floors in the following manner:

- 1- Chip and roughen both horizontal and vertical concrete surfaces against which floor slabs are to abut, and within the 24 hours preceding the pouring of floor slabs apply two brush and one slush coat as specified on walls.
- 2- Within 48 hours after the rough floor slab has been poured, remove all laitance and foreign matter and apply 2 brush coats and one slush coat as specified on walls.
- 3- Before slush coat has set, spread over floor areas a topping of thick grout, not less than 1 inch thick, composed of 1 part portland cement to 2 parts sand by volume, floated and troweled to true, even surface.
- 4- Metallic waterproofing of floors and walls shall form a continuous unbroken watertight seal.

12. APPLICATION OF MEMBRANE WATERPROOFING

- (a) Subfloor surfaces which are to receive membrane waterproofing shall be smooth and without knotholes or wide cracks at joints. Contractor shall inspect all areas to be membrane-waterproofed, and shall report any defects

DAMPPROOFING AND WATERPROOFING

WORKMANSHIP (Cont.)

12. APPLICATION OF MEMBRANE WATERPROOFING (Cont.)

(a)(Cont.) to Architect who will cause all defects to be corrected. Beginning of work in any area will be taken to mean that surfaces in such areas are satisfactory to this Contractor.

1- Before any work under this Division is commenced, subflooring shall be clean and free from foreign substances.

(b) Over entire area in each space to be waterproofed, one layer of waterproof paper shall be laid with joints lapped 6", and with hot pitch mopped at laps. Paper shall be carried up on all walls and at curbs to height of cement or tile base.

(c) Over paper two plies of felt laid shingle method and imbedded in moppings of hot pitch applied in such manner that felt shall not touch felt or paper. Felt shall extend up on all walls and curbs to height of cement or tile base.

(d) Over entire area covered by felt, including walls and curbs, uniform mopping of hot pitch shall be applied, using not less than 30 lbs. of pitch per 100 square feet.

(e) All openings, where anchors, dowels, pipes, and other items penetrate membrane, shall be made watertight by plastic cement or by other approved methods as necessary and as directed by Architect.

END OF DIVISION 5

NATIONAL HOUSING AGENCY
FEDERAL PUBLIC HOUSING AUTHORITY

CARPENTRY AND MILLWORK

SCOPE

1. WORK INCLUDED

(a) Complete all Rough Carpentry, Rough Hardware, Finished Carpentry and Millwork and related items shown or specified unless specifically excepted, in general as follows:

- 1- See Drawings and "Schedules" on the drawings for extent and for details of work. (See "General Scope.")
- 2- Complete framing of buildings, including all stud partitions as shown on drawings, (except that all Basement partitions are of masonry). Art. 12, 13, 24 to 26, inclusive.
- 3- Hung ceilings to form return heating plenums where shown.
- 4- Furring to form pipe shafts and return heating plenums where shown. Art. 26(f) and (h).
- 5- Framing, nailing strips and blocking as required for work of all trades. Frame carefully to provide heating return flues within partitions and to provide space for installation of heating ducts therein. Wood supports for hot water tank as detailed. Art. 26(d),(e),(f),(h) and 27.
- 6- Forms and subflooring for concrete floors for Wash Rooms, Toilets, Showers, etc., to be poured on wood subflooring. Provide blocking behind cement base and curbs in such spaces. Art. 32.
 - a- Furnish to mason for installation by him all necessary wood reinforcement members for concrete. Longitudinal strips shall be soft-wood, with round hardwood dowels. See Structural drawings.
- 7- Cant strips at intersections of all roofs and vertical surfaces. Continue blocking behind all flashing at exterior frame walls, flush with exterior face of studs, full height of flashing.
- 8- Beveled gravel stop for all roof edges. (Omit same if option for smooth surface roofing is elected.) Art. 29(c).
- 9- Wood subflooring; wood roof sheathing. At the Contractor's option, either of the following materials may be used. Art. 13(b), 29 and 31.
 - a- Wood.
 - b- Plywood. Art. 8.
- 10- Fire retarding of exterior walls: wall sheathing over exterior stud walls, for use only at following locations, (elsewhere sheathing on walls is omitted): on inner courts, 4 sides; on wing end walls and passage walls where same are less than 20'-0" apart, to extent shown on drawings. Art. 39.
 - a- 1/2" thick Gypsum sheathing.
- 11- Building paper:
 - a- Over all subflooring.
 - b- On studs, under all exterior wall finishes.
 - c- Flash over all exterior openings. Art. 33.
 - d- Over interior gypsum board where wall finish is cement-asbestos board.

CARPENTRY AND MILLWORK

SCOPE (Cont.)

1. WORK INCLUDED (Cont.)

- (a) 12- Exterior wall finish. At Contractor's option, any one of the following materials may be used for wall siding. Art. 14(b), 20, 35.
- a- 1/2" Gypsum sheathing; horizontal joints shiplap, vertical joints calked. Art. 20(b), 38.
 - b- 1/2" plywood; horizontal joints shiplap, vertical joints calked. Art. 20(c), 40.
 - c- 3/4" granule-surfaced fiberboard; horizontal joints tongue and grooved, vertical joints calked. Art. 20(a), 37.
 - d- Wood flush siding. Art. 14(b), 35.
 - e- Wood shingles on wood strips. Art. 20(d), 27, 36.
- 13- Exterior wood trim: including window and door trim, cornices (roof vent with insect screen), rake, corner boards. Adjust exterior trim for type of exterior wall finish elected. Art. 14(a).
- 14- Ventilating wood monitors from pipe spaces of 2nd floor Toilets and Shower Rooms, and from 1st floor Office Toilets and Maids' Toilets, through roofs. Provide insect screen at vent openings.
- 15- Wood platforms, balconies, flooring, ladders, posts and railings for fire-escapes at ends of Dormitory wings. Art. 14(c), 43.
- a- Railings at 1st floor platforms where same are more than 3 risers above finished grade.
 - b- Plywood ceiling at 2nd floor exit soffits. Art. 41.
- 16- Main Entrance porch, posts, railing and flooring.
- 17- Entrance platforms, steps.
- a- Railings for platforms and steps where platforms are more than 3 risers above finished grade.
- 18- Frames, including sills, jambs, heads, etc., for: all exterior openings. Art. 14(a), 44, 48.
- 19- Window sash; storm sash. Art. 16(a), 45, 46.
- a- Fresh air intake louvers and frames, covered with insect wire, in Furnace Room.
- 20- Window screens, full length. Art. 16(a), 47.
- 21- Wood doors: See Door Schedule. Art. 15, 49.
- a- Trap doors in floors for access to crawl space. Art. 49(d).
 - b- Vents in foundations complete with frames, sliding asbestos panels, and insect screens. Art. 53.

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SCOPE (Cont.)

1. WORK INCLUDED (Cont.)

- (a) 21- c- Cover for coal chutes to Basement coal space. Art. 52.
 - d- Coal slide doors - coal space to Furnace Room. Art. 49(e).
 - e- Cement-asbestos wallboard covering two sides of doors Type "C", "F" and "G" and on inner surface of all doors to soiled linen chute. Art. 49(f).
 - f- Furnace Room louvered exit door and frame; ladder. Art. 51.
- 22- Weatherstripping of: (Art. 50)
 - a- All exterior doors - 4 sides.
 - b- All bedroom doors - at saddle only.
 - c- Head and jamb of other doors where spring hinges are specified in "Hardware" Division.
- 23- Temporary enclosures and protection. Art. 34.
- 24- Interior door frames and trim; window trim, stools and apron. Art. 14(d).
- 25- Wood base and base-shoe where called for on Schedule of Interior Finishes.
- 26- Heating exhaust opening set in base, with wire grille, where indicated on heating drawings.
- 27- Wood saddles (thresholds); for all bedroom doors and for all doors where change in finish flooring materials occurs.
- 28- Finish wood flooring, for receiving floor covering. See Schedule of Interior Finishes for locations. Art. 9, 17, 66.
- 29- Wood stairs and handrails. Art. 64.
 - a- Wall handrails; brackets for support of same are furnished under "Hardware" Division.
 - b- Handrails for Basement entry steps; brackets furnished as above.
 - c- Well trim, balustrade trim, etc., as detailed.
- 30- Finished walls and ceiling (dry-walls) throughout. See Schedule of Interior Finishes for locations of same. Art. 18, 54.
 - a- Wherever hard-pressed fiber wallboard is specified, the Contractor may at his option use cement-asbestos wallboard in place thereof. Art. 18, 55, 56.
 - b- Where walls and/or ceilings are designated of cement-asbestos board or of hard-pressed fiber board, gypsum board shall be applied under such finishes, with joints of two materials staggered. Art. 55, 56.
 - c- In shower spaces provide asbestos batten strips over joints and set in mastic. Provide base drip of asbestos board as detailed. Art. 55.

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SCOPE (Cont.)

1. WORK INCLUDED (Cont.)

- (a) 31- Wood ladder from furnace room and wood louvered escape door and frame.
- 32- Wood corner molds for all out-corners for all frame partitions and walls in interior finished spaces. Standard Mold #7265.
- 33- Closet equipment for Bedrooms. Art. 58.
 - a- 3/4" plywood end partition, except two for double bedrooms.
 - b- Curtain pole at front of closet, 1-1/4" diameter, with wood escutcheons. Hanging pole, 1" diameter, in closet, one end on strip and one end in escutcheon.
 - c- Two shelves as detailed; lower on hook strip, upper on cleat.
- 34- Other closet equipment, shelving as noted, and shelves of widths shown.
- 35- Wood traverse mold (for black-out curtain); one for each window and one for each exterior glazed door, complete with tapes and sliders. Art. 21.
- 36- Wood strip for towel bars; on all walls of all Wash Rooms, Drying Rooms, Office Toilets, Maids' Toilets, Baths (Women), Toilet Rooms. Art. 59.
- 37- Wood shelf and brackets in Wash Rooms, as detailed. Art. 60.
- 38- Mail boxes at Desk Space. Art. 61.
- 39- Counter, cupboards, drawers, etc., at Desk Space, with counter flap. Art. 63.
- 40- Bathroom (Women), Toilet Room, Shower Room and Drying Room accessories. Art. 65.
- 41- Rough hardware: sill anchor bolts, spikes, screws, nails, connections, etc., as required by work of this Division. Art. 22, 30.
- 42- Bulletin Boards, where shown. Art. 62.
- 43- Wood toilet stalls and stall doors. Wood dressing room enclosures in front of showers. (Women's Unit only). Art. 68.

2. MATERIALS FURNISHED UNDER OTHER DIVISIONS, AND INSTALLED IN THIS DIVISION

- (a) All Builders' and Cabinet hardware as supplied under Division of that title. Art. 67.

3. WORK EXCLUDED FROM THIS DIVISION

- (a) Forms for concrete, except where poured on wood construction. Art. 32.
- (b) Project signs. See "Temporary Construction Facilities."
- (c) Carpentry work included under "Site Improvements."

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MATERIALS

4. SOFTWOOD LUMBER

(a) Softwood lumber shall comply with Fed. Spec. MM-L-751b, as amended.

5. HARDWOOD LUMBER

(a) Hardwood lumber shall comply with Fed. Spec. MM-L-736, as amended.

6. IDENTIFICATION

(a) "Grade Mark," "Trade Mark," and "Mill Identification Mark" of the association having jurisdiction, shall appear on each piece of lumber, or each shipment shall be accompanied by a certificate of inspection.

7. MOLDINGS AND TRIM

(a) Moldings and trim shall conform to "U.S. Department of Commerce Supplement to Simplified Practice Recommendation R16-39-Lumber-Moldings" (softwood), grade "B and Better" or to Commercial Standard CS76-39 (hardwood), grade "B".

8. PLYWOOD

(a) Plywood shall conform to U.S. Department of Commerce, Commercial Standards CS45-40 and shall be branded or stamped with grade.

9. FINISH WOOD FLOORING MATERIAL

(a) Finish wood flooring material, except as otherwise specified, shall comply with grading rules of association under whose jurisdiction flooring is manufactured; each piece or bundle bearing manufacturer's "Trade Mark" and official "Grade Mark" of said association.

10. LUMBER SURFACING

(a) Lumber shall be surfaced 4 sides to standard dimensions or worked to patterns shown or required.

11. MOISTURE CONTENT OF LUMBER

(a) Moisture content of framing lumber when delivered to project shall not exceed 19%. Finish lumber and millwork, when delivered, shall have a moisture content not exceeding 12%. Finish flooring, when delivered, shall have a moisture content of not less than 6% nor more than 9%.

12. SPECIES OF LUMBER

(a) Species of lumber other than those specified for "Rough" and "Finish" lumber may be used provided the material substituted is of equivalent grade and comparable qualities, and approval is obtained before proceeding.

CARPENTRY AND MILLWORK

MATERIALS (Cont.)

13. ROUGH LUMBER - GRADES AND SPECIES

(a) Framing lumber for joists, rafters, lintels, beams, studs, plates, and members stressed in bending, compression or tension, shall be common dimension or better of the following species and grades:

1- No. 2 or better, of the following:

Fir , Douglas	Hemlock , West Coast
, White	, Eastern
Larch, Western	Redwood
Pine , Southern, longleaf	Spruce , Eastern
, Southern, shortleaf	, Sitka
, Norway	Red Cypress

(b) Subflooring and roof sheathing shall be common, of any of the following, or better:

Fir , Douglas (Coastal), No. 2	Hemlock , West Coast, No. 2
, White, No. 4	, Eastern, No. 4
Larch and	Spruce , Eastern, No. 4
Douglas Fir, (Inland Empire), No. 4	, Sitka, No. 2
Pine , Southern, No. 3	Red Cypress, No. 3
, Northern White, No. 4	Cedar , Red, No. 1
, Western (Idaho) White, No. 4	Redwood , No. 2
, Red (Norway) No. 4	Plywood , Sheathing grade
, Sugar, No. 4	
, Ponderosa, No. 4	

1- Material shall be nominally 7/8" x 6", 8", or 10", T & G for roofs; not wider than 6" for subflooring. Plywood: 5/8" thick.

14. FINISH LUMBER - GRADES AND SPECIES

(a) Exterior finish generally, unless otherwise specified, and frames for doors, windows, vents, and louvers shall be of any of the following:

Fir , Douglas C	Cypress, Red (Coast type), D Finish
Pine, Northern White, D Select	Redwood, Grade A
, Western (Idaho) White, D Select	
, Ponderosa, C Select	

(b) Exterior wood siding shall be of any of the following:

Pine , Northern White, D Siding	Cedar , Western Red, Grade A
, White (Idaho), D Select	, Port Orford, Grade A
, Ponderosa, C Siding	Cypress, Red (Coast Type), D
Redwood, Grade A	

CARPENTRY AND MILLWORK

MATERIALS (Cont.)

14. FINISH LUMBER - GRADES AND SPECIES (Cont.)

(c) Exterior wood steps, platform floors, balcony floors and porch floors shall be of any of the following:

Fir , Douglas, C and Better V.G.	Larch , D Select V.G.
Pine, Southern, B and Better V.G.	Cypress, Red (Coast Type) C Flg.
, Northern White, #1 Flg.	Redwood, "Clear Heart" V.G.

1- Material shall be nominally 7/8" x not more than 3-1/4" face, square edge, except that step treads shall be full depth of treads.

(d) Interior trim shall be of any of the following; but only one species shall be used in any one building:

Fir , Douglas, C Finish	Cypress, C Select
Pine, Southern, C Finish	Spruce , Engelmann, D and Better
, White (Northern), D Select	, Sitka, C Finish
, Sugar, D Select	Redwood, Grade A
, Ponderosa, D Select	Cedar , Western Red, C Finish
, Idaho, D	

15. WOOD DOORS

(a) Wood doors shall conform to "Quality No. 3 or better" of National Door Manufacturers' Association, Inc., or "Grade C or better" of Fir Door Institute, except as otherwise specified herein. Bond laminated door panels with "hot press synthetic resin." Panels shall be flat. Glazed doors shall have wood glazing stops. Doors "K" shall have wood louvers in lower panel, as detailed. See "Door Schedule."

1- Exterior doors shall be 1-3/8" thick, fabricated of any of the following:

Fir , Douglas	Pine , Sugar
Pine, Southern	, Ponderosa
, Northern White	Cypress, Red (Coast Type)
, (Idaho) White	Spruce

2- Interior doors shall be 1-3/8" thick, fabricated of any of the following: (Where asbestos facing is required, 1-5/8" thick).

Fir , Douglas	Birch, (unselected for color)
Larch	Gum , Red
Pine , same as for exterior doors	Spruce

16. WINDOW SASH, WINDOW SCREENS AND STORM SASH, LOUVERS

(a) Window sash, window screens and storm sash^{and louvers} shall be fabricated of No. 2 sash cuttings of any of the following:

Pine, Northern White	Pine , Ponderosa
, (Idaho) White	Fir , Douglas
, Sugar	Cypress, Red

CARPENTRY AND MILLWORK

MATERIALS (Cont.)

17. FINISH WOOD FLOORING

(a) Finish wood flooring shall be strips not less than 15/32" actual thickness and not more than 4-1/4" face width:

Side and end matched of

Or, side and end matched, of side matched and plain end, of:

Oak , Red or White, No. 2 Common,	Fir ,Douglas No. 1 Common flat grain
No. 1 Common, Select or Clear	Pine ,Southern " " " "
Pecan, Fourth Grade, Third Grade,	Hemlock,West Coast " " " "
Second Grade or First Grade	Spruce ,Eastern " " " "
Maple, Birch or Beech, Third Grade,	
Second Grade or First Grade	

1- Flooring may be any combination of the above species and grades, bundled separately.

18. WALLBOARD MATERIALS

(a) Cement-asbestos board: shall comply as to composition with Fed. Spec. SS-S-291, and shall have dense, smooth finished surface treated with water-repellant preparation. Material shall be 1/8" or 3/16" thick, and applied in accord with maker's directions. Color shall be stock gray. The board shall not crack, warp or otherwise be harmed when exposed to moisture.

(b) Gypsum: shall comply with Fed. Spec. SS-W-51a, as amended, Type A, 3/8" thick. Edges shall be "recess type". Material shall be applied in accord with maker's directions, and as specified below.

1- On areas of walls and ceilings to be covered with wallboard lining, gypsum wallboard may be in form of lath, 3/8", stock-size sheets. For spaces affected, see "Schedule of Interior Finishes".

(c) Fiber board, hard-pressed: Densest grade of compressed wood-fiber board, conforming to Fed. Spec. LLL-F-311, Class B. Material shall be nominally 1/8" thick, coated one side with waterproof baked-on enamel. Sheets shall be plain, without imitation tile scoring, 4' x 8' size, and shall be applied in accord with maker's directions. Color shall be as selected by Architect from maker's stock colors.

19. BUILDING PAPER

(a) Building paper shall be asphalt-impregnated felt complying with Fed. Spec. UU-P-536, Type A; and shall weigh not less than 14 lbs. per 100 square feet. For exterior studs and underflooring, under finished wood floors.

20. SIDING MATERIALS (Optional, in addition to wood siding materials, specified in par. 14(b) above):

(a) Granule-surfaced siding: shall be composed of cane fiber, coated on all surfaces and edges with asphalt, integrally chemically treated during manu-

CARPENTRY AND MILLWORK

MATERIALS (Cont.)

20. SIDING MATERIALS (Cont.)

facture against fungus and termites. Exterior surface shall be factory-coated with asphalt approximately 1/8" thick. Into this while hot, shall be imbedded mineral granules in colors standard with maker, as selected by Architect. Total finished thickness of material shall be approximately 7/8". Material shall be furnished in sheets 2' x 8', T & G on longer edges, square-edge on shorter edges.

or option:

(b) Gypsum sheathing siding: shall be 1/2" thick, 2' x 8', with longer edges T & G, shorter edges square. Material shall be composed of a core of set gypsum encased in heavy building paper, untreated, white one side.

or option:

(c) Plywood siding: shall be 1/2" thick, exterior type for permanent exposure to weather, concrete-form panels, without oil treatment at mill. Sheets shall be 4' x 8', with longer edges shiplap. Material shall conform to Commercial Standards CS45-40, latest revision.

or option:

(d) Wood shingle siding:

1- Wood shingles laid in single or double courses may be installed in lieu of other wood siding.

2- Wood shingles for siding shall be of Western Red Cedar, Tidewater Red Cypress or California Redwood: No. 1 grade as described in U. S. Department of Commerce Commercial Standard CS31-38; random widths in 16", 18" or 24" lengths with 5/2 butts for 16", 5/2-1/4 for 18", and 4/2 for 24" shingles. Each bundle shall bear manufacturer's label certifying the grade.

21. TRAVERSE MOLD

(a) Traverse mold, curtain tape and sliders shall be similar and equal to the Jiffy Join, Inc. (203 East 18th St., New York City) style No. 10-S, 1-3/8" x 1/2", slotted molding of poplar or birch. Mold shall extend 3" on each side beyond line of outer edge of trim.

(b) Package tape cut in length for each door and window. Sliders 3/4" long spaced 4-1/2" apart; tape 3/8" wide. Length of tape shall allow for correct fullness of curtains.

(c) Ends of traverses shall be closed and traverses shall be unpainted finish.

22. ANCHOR BOLTS

(a) Bolts shall be furnished to mason for him to build-in, as follows:

1- Bolts shall be 5/8" diameter, 12" long, with large washer at lower end, or lower end shall be bent 90°. At top, furnish large washer and nut at each bolt. Anchors shall be not more than 10'-0" apart, not fewer than 2 for each piece of sill, with 2 bolts at each corner. For exterior piers and elsewhere as indicated, provide one anchor bolt for each pier.

(b) No anchors are required for sills on interior bearing walls, except where specifically indicated.

CARPENTRY AND MILLWORK

MATERIALS (Cont.)

23. STORAGE AND PROTECTION

(a) Protect millwork and flooring against dampness during and after delivery. Store under cover in a well-ventilated building and where not exposed to extreme changes of temperature or humidity.

INSTALLATION AND WORKMANSHIP

24. CARPENTRY - GENERAL

(a) Carefully lay out, cut, fit and erect all framing, sheathing, subflooring, bridging, blocking and other items of carpentry.

(b) Do cutting and carpentry work required for building in of work or other trades.

(c) Brace, plumb and level all members and secure with sufficient nails, spikes or bolts to insure rigidity.

(d) See Structural drawings for framing and sizes, and nailing schedule.

25. FLOOR AND ROOF FRAMING

(a) Set plates and sills level and true, wedged with slate or similar material in bed of mortar.

1- Bolt plates and sills to foundations at corners, and at intermediate points approximately 10 feet apart. (Note: bolts, butts and washers furnished under this Division, installed under "Masonry and Concrete" Division.)

(b) Except where otherwise shown, headers and trimmers, and joists under partitions running parallel with joists, shall be doubled.

(c) Lap and spike together joists meeting at beams or bearing partitions. Spike studs to joists resting on ribbon boards or block ends between studs where joists and studs are not in contact. Block between ends of joists for nailing subflooring.

(d) Bridge joists with nominally 1x3 boards. Secure bridging at each end with two 8d nails at each end of each piece.

26. WALL AND PARTITION FRAMING

(a) Unless otherwise shown, studs shall be nominally 2" x 4", spaced not over 16" on centers, doubled at sides of openings, tripled at external corners of buildings, and placed to provide end nailing for siding and wall-board. Truss over openings over 3 feet wide, or frame lintels as shown. See Structural drawings.

CARPENTRY AND MILLWORK

INSTALLATION AND WORKMANSHIP (Cont.)

26. WALL AND PARTITION FRAMING (Cont.)

- (b) Arrange plates to form continuous horizontal ties, splicing single plates, staggering ends of double plates, and securely splicing plates abutting at corners.
- (c) Exterior studs and bearing partition studs shall extend full height from sole on subfloor to plate, (balloon framing) where possible. Install diagonal bracing as shown.
- (d) Install one row (in each story height) of 2 x 4 horizontal blocking between studs in walls and partitions. Omit blocking where heating ducts or heating plenums occur.
- (e) Frame and fur as required for installation and support of plumbing, heating and other items to be concealed.
- (f) Heating return plenums are formed by partition studs, framed accordingly. Frame for heating supply ducts within partitions.
- (g) Form hung plenum for heating return at 2nd floor ceiling and elsewhere as shown.
- (h) Return plenums: at all places where stud spaces are used for heat return plenums, joist and rafter spaces at such returns shall be blocked with rigid material, accurately fitted and securely fastened. Material for this purpose may be any durable rigid material; wood, plywood, gypsum wallboard, non-perforated gypsum lath. 1- Contractor preferably shall fabricate walls and partitions in horizontal position, in sections as large as can be handled, and hoist sections into place with suitable equipment.

27. SHINGLE STRIPS

(NOTE: This requirement applies only in case option of wood siding shingles is elected.)

- (a) Over building paper nail nominally 1" x 2" furring strips horizontally with one 8d nail at each bearing, and at each end of each piece, and with all joints at bearing.
- (b) Strips shall be spaced accurately to line ^{with} shingle courses.

28. SCREEN CLOTH

(a) Cover following openings with screen cloth as specified for window screens, and secure in place with screen mold.

- 1- Cornice vents
- 2- Monitor roof vents
- 3- Louvered basement doors (including doors Type K)
- 4- Foundation wall vents.

CARPENTRY AND MILLWORK

INSTALLATION AND WORKMANSHIP (Cont.)

29. ROOF SHEATHING

(a) Roof sheathing shall be nominally 1" x 6", 8", or 10", dressed and matched, driven up snug; or, option: 3-ply 5/8" sheathing grade plywood.

(b) Face nail each board to each support with at least two 8d nails ^{for} 6" and 8", and three 8d nails for 10" boards.

1- Butt joints of plywood over supports; nail to intermediate supports not over 10" apart, then at edges not over 6" apart. Use 8d cement-coated nails.

(c) Install wood cants and gravel stops at all roof edges, crickets and watersheds as required for installation of roofing materials. (See "Roofing" Division.) Cant shall be installed at all roof intersections with vertical surfaces. Work shall be installed under direction of roofer.

30. ROUGH HARDWARE

(a) Fasten wood grounds, furring, and other engaging woodwork to concrete and masonry with approved metal types of nails, ties or inserts spaced to suit conditions.

(b) Nails, spikes, screws and similar items shall be of approved sizes and types sufficient to draw and rigidly secure members in place.

31. SUBFLOORING

(a) Subflooring shall be nominally 1" x 4" or 6", square edge stock or 5-ply 5/8" "sheathing grade" plywood.

(b) Unless otherwise indicated, lay subflooring (except plywood) at a 45 degree angle with floor joists. In buildings more than one story high, lay subflooring on upper floor at right angles to subflooring on floor below. Stagger end joints over bearings only, with cuts parallel to run of joists. Face-nail each board to each bearing with two 8d nails.

1- Lay plywood with butt joints over supports; provide blocking for cross joints. Nail with 6d nails first to intermediate supports not over 10" apart and then at edges not over 6" apart.

32. FORMS FOR CONCRETE FLOORS ON JOISTS

(a) Install 2 x 8 blocking between studs at all exterior walls and interior partitions, flush with face of studs, throughout spaces which are to have concrete, cement-finish floors (or tile (ceramic); See "Tile Flooring (Ceramic) Option" Division) on joist construction. (Wash Rooms, Drying Rooms and Toilet Rooms in Men's Shelter Units; and corresponding spaces in Women's Shelter Units.) See details. At each door opening between Wash Rooms and Passages, place suitable removable form board at designated position to terminate slab. Drop subflooring at Shower Room gutters as detailed.

CARPENTRY AND MILLWORK

INSTALLATION AND WORKMANSHIP (CONT.)

33. FLASHING

(a) At all exterior openings in frame construction, head shall be flashed with building paper carried out over top of casing and tacked near upper edge of same. Paper shall be same as that used for under flooring.

34. TEMPORARY ENCLOSURES

(a) Provide temporary enclosures where necessary, maintain in good repair, and remove when no longer required.

EXTERIOR WALL FINISHES

35. BUILDING PAPER

(a) Cover exterior wall frame with waterproof paper. Lap 3" at joints. Weather horizontal joints.

(b) Do not apply greater amount of paper than can be immediately covered and apply carefully to avoid tearing.

36. APPLICATION OF WOOD FLUSH-JOINT SIDING AND SHINGLE SIDING

(a) Flush joint siding shall be 25/32" shiplap by any standard width not more than 6" wide.

1- Fit siding tightly at joints, openings and corner boards and nail to each stud with two 8d flat-head siding nails. Arrange bevel siding courses to fit sills and heads of doors and windows.

(b) Arrange shingle courses to fit heads and sills of doors and windows, as directed. Lay shingles in regular horizontal courses to true lines. Apply shingles in single courses not to exceed 7-1/2" exposure for 16", 8-1/2" for 18", and 11" for 24" shingles. In doubled coursing exposure shall not exceed 12" for 16", 14" for 18", and 16" for 24" shingles. Triple first course at bottom if doubled coursing is used. Double first course of shingles at bottom. Lay shingles with not over 1/8" joints; joints in any one course not less than 1-1/2" away from joints in course next below.

(c) Provide 1-5/8" square wood strip S4S at internal corners and 3-1/2" corner boards at external corners. Joint shingles against strips and corner boards.

(d) Secure each shingle in place with two hot-dipped heavily zinc-coated shingle nails. Place nails not more than 3/4" from the side edges of shingles and from 3/4" to 2" above butt line of shingles in next course above. Use 3d for 16" and 18", and 4d for 24" shingles, laid in single courses. Butt nail doubled courses with 5d hot-dipped zinc-coated small flat head nails.

(e) All shingles shall be laid on shingle strips; nail strips twice at each stud with 8d nails.

CARPENTRY AND MILLWORKINSTALLATION AND WORKMANSHIP (Cont.)
EXTERIOR WALL FINISHES (Cont.)

37. APPLICATION OF GRANULE SURFACED SIDING

(a) Application shall be commenced at a corner at bottom of wall to be covered, with tongued edge of board up, accurately leveled. Continue to opposite corner along bottom course, using full-length boards, cut to suit bearing, cutting last board to fit at corner.

(b) Vertical joints shall be staggered, and shall be at center of studs. Material shall be cut to fit closely against frames of windows and doors.

(c) Material shall be cut with clean, sharp tools moistened with kerosene to prevent gumming. Granule and asphalt layers shall be cut through with a roofing knife; cut shall be completed with a razor-blade knife and an unusually sharp roofing knife or a coarse tooth, wide-set saw.

(d) Nailing: After each board has been cut and set against the studs, it shall be nailed, using either of the following two methods:

1- Exposed nails: 2" checkered head, 3/8" diam. maximum, black oxidized steel nails shall be placed 4-1/2" apart vertically at intermediate studs, and along vertical edges of boards, 3/8" in from edge of boards. Heads shall be driven home, flush with granule surface.

or option:

2- Concealed nails: 2" uncoated siding nails shall be used, with heads set, and covered with calking compound, with granules of same color as those used on boards pressed into the compound. Treated areas shall be brought flush with surrounding area by hammer blow.

(e) Calking and Buttering: All joints shall be calked with gum-consistency calking compound. Edges of vertical joints and horizontal tongue shall be buttered thoroughly before succeeding piece is applied. Excess compound which oozes out on surface shall be scraped off, and joint shall be pointed. All edges of boards abutting frames of doors and windows shall be sealed thoroughly, using a generous amount of calking compound.

38. APPLICATION OF GYPSUM SHEATHING SIDING

(a) Material shall be applied to exterior face of studs with longer dimension horizontal, and with tongue up. All vertical joints shall be at bearing, staggered. Surface exposed to weather shall be white.

(b) Sheets shall be nailed with 1-3/4" long, No. 10-1/2 gage, galvanized flat head roofing nails. Nailing shall be 4" apart at all bearings, 3/8" in from ends at vertical joints.

CARPENTRY AND MILLWORK

INSTALLATION AND WORKMANSHIP (Cont.)

EXTERIOR WALL FINISHES (Cont.)

38. APPLICATION OF GYPSUM SHEATHING SIDING (Cont.)

(c) Calking of vertical joints shall be as specified in Art. 37, (e) above. No buttering of horizontal joints.

39. FIRE RETARDING OF EXTERIOR WALLS

(a) If option of Gypsum sheathing siding is elected by Contractor, all exterior wall areas designated in Art.1, (a) 10 - shall have double thickness of this material, with all vertical and horizontal joints staggered, and nailing same as specified in Art. 38 (b) above. In these areas, calking of joints shall be applied at outer ply or thickness of gypsum sheathing siding, with inner ply applied without joint treatment. Surface exposed to weather shall be white. Nails for outer thickness shall be not less than 2" long.

(b) If any of the other options for exterior siding material is elected by Contractor, such other material shall be applied over 2 thicknesses of gypsum sheathing siding, at all exterior wall areas designated in Art.1, (a) 10-. Joints in gypsum at such areas shall be without calking material joint treatment. With use of wood siding in any of the optional forms given, building paper shall be applied throughout over gypsum, and, if wood shingle siding is elected, 1 x 2 nailing strips shall be applied over paper.

40. APPLICATION OF PLYWOOD SIDING

(a) Material shall be applied with longer dimension horizontal, and with shiplap joints weathered. All vertical joints shall be at bearing, staggered.

(b) Nailing shall be as specified in Art. 38(b), above.

(c) Calking and Buttering shall be as specified in Art. 37(e), above.

41. EXIT CEILINGS - SECOND FLOOR

(a) Plywood, same as specified in Art. 20(c), above, shall be applied at soffit of 2nd floor exits from bedroom wings.

(b) Nailing shall be same as specified in Art. 38(b) above. No calking required.

MILLWORK AND TRIM

42. MILLWORK AND TRIM - GENERAL

(a) Carefully erect exterior and interior millwork and finish woodwork with tight joints, blind-nailed where possible. Secure interior trim with finishing nails. Set exposed heads. Carefully fit joints.

(b) Leave wood trim and items of millwork free from defects and blemishes.

CARPENTRY AND MILLWORKINSTALLATION AND WORKMANSHIP (Cont.)
MILLWORK AND TRIM (Cont.)

43. EXTERIOR FIRE ESCAPE PLATFORMS AND LADDERS

- (a) At end of each wing of each Shelter Unit, construct platform on wood uprights, and two ladders, as detailed on Drawing No. A-101. Members of platform and balustrade shall be spiked or nailed together. Ladder rungs shall be bolted through side members with machine bolts, washers, and nuts.
- (b) Ladders shall be secured to wall by means of bolts. 4 x 6 blocks shall be bolted through cats set between studs with nuts on inner side, tightly screwed, and with exposed threads upset, to prevent nut working loose. Ladders shall be attached to 4 x 6 blocks by bolts through 1 x 4 piece, with one bolt through ladder stile, /Exposed threads shall be upset, and burrs filed smooth. and one bolt through block.

44. WINDOW FRAMES

- (a) Plank type double hung window frames shall be not less than 3/4" thick, with sills of clear stock, dressed to finish 1-5/8" thick, beveled as detailed. Frames for hinged sash shall be of 1-5/8" thick material, rabbeted on solid, as detailed. Furnish staff beads for window frames in masonry walls.
- (b) Fabricate and assemble frames in accord with "National Door Manufacturers' Association" or "Fir Door Institute" recommendations. Members shall be rabbeted and mortised, with tight-fitting joints.
- (c) Set window frames plumb and level and properly braced.

45. WOOD SASH AND STORM SASH

- (a) Sash shall be stock "No. 1 Standard Sash Grade," fabricated in accord with standard practice of "Association" or "Institute" governing manufacture. Rebates for glass shall be molded.

1- Window sash (unless otherwise shown) shall be 1-3/8" thick.

- (b) Fit window sash closely and to operate without binding.
- (c) Storm sash shall be 1-1/8" thick with rail at window meeting rails and constructed as sash.

46. PRE-FITTED WOOD WINDOW UNITS

- (a) Pre-fitted wood window units, factory assembled, complete with hardware comparable to that specified in "Hardware" Division, may be furnished if equal to specified requirements for window frames and sash.
- (b) Variation in design of frame, thickness of sash, and method of assembly from that indicated and specified, will be acceptable if variations standard with the manufacturer of pre-fitted window units are approved by Architect.
- (c) Submit shop drawings and sample of pre-fitted type window unit and obtain approval before fabrication.



CARPENTRY AND MILLWORKINSTALLATION AND WORKMANSHIP (Cont.)
MILLWORK AND TRIM (Cont.)

47. WOOD WINDOW SCREENS

- (a) Provide full length window screens having wood frames fabricated of clear stock not less than 25/32" thick with not less than 1-5/8" wide side and top rails and 2-5/8" bottom rails. Mortise and tenon or dowel and glue joints with moisture proof glue in accord with best trade practice for stock screens. Provide one narrow horizontal intermediate cross rail opposite meeting rail of double-hung windows.
- (b) Screen cloth shall conform to Fed. Spec. RR-C-451a, Type H - 16-mesh galvanized steel wire having a diameter of 0.0110 inch. Stretch cloth taut, without warp or buckle, and secure in place with splines in accord with manufacturer's standard practice permitting rescreening.
- (c) Fit accurately and install screens complete. Provide duplicate numbers for screens consisting of die stamped figures at least 3/4" high stamped in the wood of screen and of window frame.

48. DOOR FRAMES

- (a) Fabricate exterior door frames 1-5/8" thick (unless greater thickness is indicated) with rebates as detailed, with staff beads for frames in masonry walls.
- (b) Fabricate interior door frames not less than 3/4" thick with 1/2" stock type applied stops. Heads not required to be dadoed.
- (c) Set frames in exterior masonry walls before masonry is laid (unless otherwise specified or shown) and anchor in place with wood blocking.
- (d) 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.

49. WOOD DOORS

- (a) Fabricate exterior doors (unless otherwise indicated) 1-3/8" thick, of solid stiles and rails, with standard sticking worked from the solid, or applied moldings set in white lead. Make panels flat, as indicated, solid or laminated, of standard stock thickness. Set panels in place without gluing or nailing. Provide loose wood molds for glazing.
- (b) Fabricate interior doors (unless otherwise indicated) 1-3/8" thick, solid or built-up (veneered) on cores of White Pine, Ponderosa Pine, Chestnut, or Douglas Fir. Build up cores of strips not over 2" wide glued together under pressure and then sanded to receive face and edge veneer. Make face veneer for stiles and rails 1/16" thick before sanding; edge veneer strips on vertical stiles 3/4" thick and of same material as face veneer.

CARPENTRY AND MILLWORK

INSTALLATION AND WORKMANSHIP (Cont.)

MILLWORK AND TRIM (Cont.)

49. WOOD DOORS (Cont.)

- (b) 1- Molds may be solid stuck, or loose molded with moldings (of same material as veneer) nailed to stiles and rails only. Panels may be solid or plywood, with both faces of same material as veneer on stiles and rails. Do not glue or nail panels in place.
- (c) Interior doors may be (in lieu of panel doors) hollow core, flush type if bonded throughout with hot press, synthetic resin, and if constructed with stiles 1-1/8" minimum width, rails 2-3/4" minimum width, and lock blocks (both edges) at least 20" long extending back from edge of door at least 4-1/2", all of pine (Northern White, Idaho, Sugar or Ponderosa), Yellow Poplar or Douglas fir; with core strips either of same wood as stiles and rails at least 3/16" thick or of fiber board at least 3/8" thick, in grid pattern spaced not more than 3" center to center; and with both faces of "EXT." grade 3-ply plywood, clear face unselected for color.
- (d) Fabricate trap door and frame of access opening to crawl spaces of sizes shown and in accord with detail drawings.
- (e) Coal slide doors shall have grooved frame with removable planks and removable baffle, as detailed.
- (f) Cement-asbestos covering on doors:
 - 1- On all doors marked "C", "F" and "G" on Schedule, cement-asbestos wallboard, same as specified in Art. 18(a), and as used elsewhere for walls, etc., shall be applied in one sheet on each side of each such door, completely covering door. Material shall be applied with spiral diamond-point nails, not longer than 1-1/4" nor shorter than 1". Nailing shall be continuous along edges, top and bottom, 3/4" in from edge, and 6" apart. Intermediate horizontal nailing shall be 6" apart at center of lock rail. Such door shall be in accord with other doors except for finish.
 - 2- On inner face of all doors at Soiled Linen chutes, same material shall be applied, in same manner as described above, without intermediate nailing.
- (g) See "Hardware." Hang doors with 1/16" clearance at sides and top, and 3/16" clearance at bottom, except that where thresholds are not provided clearance shall be 5/8".

50. FELT WEATHERSTRIPS

- (a) Weatherstrips shall be felted strips, approximately 3/16" x 1-1/2", of cotton or wool fiber or a mixture of both. After painting is complete and dry, tack strip to head and jambs and bottom of all exterior door frames with 2-ounce gimp tacks two inches on center both edges of weatherstrip.
- (b) Same material shall be applied at bottom of all bedroom doors.

CARPENTRY AND MILLWORK

INSTALLATION AND WORKMANSHIP (Cont.)
MILLWORK AND TRIM (Cont.)

51. HEATER ROOM EXIT

- (a) Where shown at Heater Room in each Shelter Unit, construct and install wood ladder as detailed, securely fastened to face of wall, and held away from wall by blocking, as shown.
- (b) At openings directly above ladders furnish and install louvered door and frame, as detailed.

52. COAL CHUTE COVERS

- (a) Coal chute covers shall be of 1-1/6" thick T & G boards with frame as detailed.

53. FOUNDATION VENTS

- (a) Secure frames to masonry; groove frame to house asbestos board slide 3/16" thick. Fix screen on inside of frame. Paraffin slide and attach wood knob. (See "Hardware" Division.) All as detailed.

INTERIOR WALL FINISHES

54. APPLICATION OF GYPSUM WALLBOARD

- (a) Walls and ceilings throughout in finished spaces shall be 3/8" thick gypsum wallboard, 4' x 8', with longer dimension on walls horizontal. On ceilings longer dimension shall be parallel with direction of joists and rafters.
- (NOTE: at wall and ceiling areas on which wallboard lining of fiberboard or cement-asbestos is to be placed, gypsum board may be in lath form, nailed with standard blued diamond point lath nails. See Art. 18(b).)
- (b) Gypsum wallboard for exposed finished walls and ceilings shall be secured with 1-3/8", 4d, 14-gauge cement-coated, 1/4" flat-head nails. All joints shall be at bearing, and shall be broken or staggered so that corners of any four boards do not meet at one point. Joints shall be snug, but not tight.
- (c) Ceilings shall be erected first. Walls shall be erected so that boards fit snugly against ceiling boards, and first board on wall shall be squared against adjacent wall.
- (d) Nails shall be driven "home," straight in with heads slightly below surface without using nail-set. Boards shall be nailed 5" - 7" o.c. on ceilings on all bearings and 6" - 8" on sidewalls; shall be nailed first at edge of adjoining board last applied; then on successive intermediate framing members; finally on remaining side and ends.

CARPENTRY AND MILLWORKINSTALLATION AND WORKMANSHIP (Cont.)
INTERIOR WALL FINISHES (Cont.)

54. APPLICATION OF GYPSUM WALLBOARD (Cont.)

- (e) Joint treatment of exposed surfaces of gypsum wallboard will be done under "Painting" Division.
- (f) At basement ceiling throughout, 3/8" gypsum wallboard shall be applied in three thicknesses, total thickness of applied material 1-1/8". Edges shall be butted, with all joints staggered. No joint treatment required. Nails shall be increased in length 3/8" for each successive layer of material.

55. CEMENT-ASBESTOS WALLBOARD

- (a) At all spaces listed in "Schedule of Interior Finishes", install asbestos cement wallboard over 3/8" gypsum wallboard. Joints shall be at bearings, but in no case over joints in gypsum. Nail in place with 1-1/2" needle pointed nails 6" on center at edges and 10" on center over intermediate supports. Cutting of edges and drilling or punching of holes shall be neat and accurate and no broken pieces shall be used.
- (b) In Shower Rooms material shall be placed with longer dimension of sheets vertical, and at each vertical joint there shall be applied a batten of same material, 3" wide, nailed 6" o.c. and bedded in calking compound. Apply paper on gypsum wallboard under cement-asbestos wallboard in this space.
- (c) At Slop Sink closets, Rubbish chutes, and Soiled Linen chutes, material shall be placed with longer dimension vertical, neatly fitted at corners, with calking compound at all joints. (This applies at water cooler recesses, if Contractor elects to use this material at these spaces in place of fiberboard.)
- (d) At Drying Rooms (Men) and Baths (Women), material shall be placed with longer dimension horizontal, and with calking compound at vertical joints, with no battens at vertical joints. (This applies at Wash Rooms, Toilet Rooms, Office Toilet and Maids' Toilet, if Contractor elects to use this material at these spaces in place of fiberboard.)

56. HARD-PRESSED FIBER WALLBOARD

- (a) This material shall be applied on walls throughout spaces listed in "Schedule of Interior Finishes" (unless Contractor shall elect to use cement-asbestos wallboard in these spaces, as an option).
- (b) If Fiber Wallboard is used, material shall be applied with longer dimension horizontal (except at water cooler recesses, at which spaces longer dimension shall be vertical).
- (c) Application shall be substantially the same as described in Art. 55 above, or, option:
 - 1- Fiber wallboard shall be applied to Gypsum wallboard with adhesive as furnished or recommended by maker of wallboard used, and strictly in accord with maker's directions.

CARPENTRY AND MILLWORKINSTALLATION AND WORKMANSHIP (Cont.)
INTERIOR FINISH

57. IN GENERAL

- (a) Carefully join and rigidly secure joints between jambs and head members of casings. Set casings $1/4$ " back from face edge of jambs and head and nail to finish and to rough jambs.
- (b) Dress window stools to not less than $7/8$ " thickness and rebate over rough sills. Provide apron as shown with neat return cuts at ends.
- (c) Base shall be one member, wood, $1/2$ " x $3-5/8$ ", with wood $1/2$ " x $3/4$ " shoe. With wood floors, nail shoe mold to floor; with other floorings, nail to base. Trim: $1/2$ " x $1-3/4$ ".
 - 1- Heating exhaust openings set in base, with ~~1x1~~ $1/2$ " square japanned or galvanized wire mesh, #16 wire, affixed to back.

58. CLOSET EQUIPMENT AND PARTITIONS

- (a) Install a 4" hook strip around 3 sides of each clothes closet and two shelves approximately 12" wide, lengthwise of closets. Support bottom shelf on hook strips 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 2" cleats. Install 1" round wood clothes hanger pole lengthwise (or as shown) in each clothes closet. Install $1-1/4$ " round wood curtain pole as detailed for each closet having no door and where indicated on the drawings. See "Hardware" for hooks and similar items.
 - 1- In Women's Shower compartments install one $1-1/4$ " diam. curtain pole, in wood sockets.
- (b) Partitions forming all closets in bedrooms shall be $3/4$ " plywood G2S, one piece, 2'-0" wide x height of space, secured to small wood shoe at floor and ceiling; shoe applied both sides of each partition.

59. WOOD STRIP

- (a) Wood strip for hooks and towel bars in spaces listed in Art. 1(a)36-, $1/2$ " x $2-1/2$ ", shall be nailed at approximately 4' above floor, at center of horizontal joint of material used for wainscoting.

60. SHELF IN WASH ROOMS

- (a) Install continuous $3/16$ " cement-asbestos wallboard or plywood shelf, as detailed, securely fastened to wall on wood brackets.

61. MAIL RACK

- (a) Wood mail rack shall be divided into cubicles as detailed. Top, bottom, and sides shall be of $3/4$ " plywood or boards of same species as used for interior trim. Cubicles shall be formed of $3/16$ " plywood G2S, in "eggcrate" construction. Rack shall be $3/16$ " plywood screwed to sides, top, and bottom, and rack shall be secured to wall by screws through the back into studs. Lower portion of rack shall have $3/4$ " shelves, with false floor at level of top of wood base, as detailed.

CARPENTRY AND MILLWORKINSTALLATION AND WORKMANSHIP (Cont.)
INTERIOR FINISH (Cont.)

62. BULLETIN BOARDS

(a) Bulletin boards shall be of ~~1-1/8" x~~ 1/4" battleship linoleum glued to 1/4" plywood back; set in frame of 1-1/8" x 1-3/4" wood, same species as interior trim; and erect on wall as detailed. See drawings for size and location.

63. COUNTER, ETC., AT DESK SPACE

(a) See details. Drawers shall have sides housed into fronts and backs, and bottoms housed into sides. Fronts, sides and backs shall be 3/4" thick; bottoms, 1/4" plywood. Coin and bill section shall be provided in cash drawer.

(b) Cupboard doors shall be 3/4" plywood.

(c) Counter shall be 3/4" plywood, covered with 1/8" plain color linoleum. Linoleum shall be cemented to counter top with minimum of joints. Nosings shall be covered with plastic edging mold. Flap door in counter shall be covered with linoleum with plastic nosing mold at all edges.

(d) Front under counter shall be 3/8" plywood, one piece in each section.

64. FINISH WOOD STAIRS

(a) See "Details" on the drawings for finished wood stairs. Frame carriages cut from nominal 2" x 12" framing lumber and spaced not over 18" apart.

(b) Make treads "Character-marked" Grade hardwood complying with Commercial Standard CS89-40. Rebate treads and risers, block, wedge and securely 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.

(c) Provide, on both walls of all inside stairs and on one wall of Basement steps, wood handrails set on metal brackets (see "Hardware"), rigidly secured in place. Ends of handrails shall be returned to walls and received on wood escutcheons.

65. BATHROOM AND TOILET ROOM ACCESSORIES

(a) For each watercloset, furnish and install one paper holder, having wood roller bar held between heavy spring wire secured to back or base.

(b) In each Bathroom (Women only) and in each Bedroom, furnish and install one 24" long towel bar with posts and 3/4" pyroxylin enamel finished hardwood bar. Bars shall be mounted on inner face of door at each room.

(c) In each Bathroom (Women), furnish and install one plastic or china soap dish attached to wall.

CARPENTRY AND MILLWORKINSTALLATION AND WORKMANSHIP (Cont.)
INTERIOR FINISH (Cont.)

65. BATHROOM AND TOILET ROOM ACCESSORIES (Cont.)

(d) In each Men's Shower Room, furnish and install seven plastic or china soap dishes, attached to wall.

(e) Over each lavatory fixture set one mirror in wood frame.

1- Frame shall have factory-applied enamel finish, with 1/8" plywood or hard-pressed fiber board back housed into frame with concealed fasteners to mount on wall. Mirror shall be DSA window glass, conforming to Fed. Spec. DD-G-451, with silvering protected by waterproof paint. Size of mirror: approximately 12" x 14".

(f) Submit samples and obtain approval.

66. FINISH WOOD FLOORS (to receive Floor Covering. See "Floor Covering" Division)

(a) Clean subfloors, free from rubbish and dust. Inspect subfloors, level uneven or high spots and repair damaged places. Secure any loose subflooring by nailing.

(b) Over wood subfloors lay asphalt saturated felt weighing not less than 14 pounds per 100 square feet. Lap felt at least 3" at joints.

(c) Lay wood flooring square with strips running at 90° to direction of joists, with close joints snugly driven up with hardwood block. Stagger ends to avoid joints close together. Join ends of plain end flooring only over joists. Blind nail flooring with 6d wire flooring or cut steel casing nails spaced not more than 12" apart. Drive nails at angle of 45°. Countersink heads with nail or nail set, not with hatchet or hammer.

(d) Provide beveled wood thresholds (saddles) of any of the species and grades of hardwood specified for finish wood flooring (see Art. 17 above), stock type, 5/8" thick, at the following interior openings, securely nailed:

1- All bedroom doors.

2- At all other openings where finish floor of different materials join.

(e) Fill holes or voids (which sanding will not remove) with plastic wood. Machine sand wood floors to true smooth finish surface. Hand scrape parts of floors which cannot be machine sanded.

(f) Wood finish floors shall be of materials and workmanship specified for wood finish floors or of 5/8" sheathing grade plywood or flat grain matched flooring of any species not over 3-1/4" wide, free from holes over 3/8" diameter or other voids. Sand to a true plane.

CARPENTRY AND MILLWORK

INSTALLATION AND WORKMANSHIP (Cont.)
INTERIOR FINISH (Cont.)

67. APPLICATION OF HARDWARE

- (a) 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 key cabinet at completion of work.
- (b) Fit accurately, apply securely, and adjust carefully all builders' and cabinet hardware. (See "Hardware.") Exercise care not to mar or injure work when applying hardware.
- (c) Center door knobs 38" above floor. Leave all hardware in proper working order, free from defects.

68. TOILET STALLS AND SHOWER DRESSING ROOM ENCLOSURES (WOMEN ONLY)

- (a) Posts 2-5/8" x 2-5/8" with panels of 3/4" plywood G2S built as detailed. Secure posts to framing of ceilings and to concrete floors with pins or 1" hardwood dowels set into slab. 1/2" posts at rear secured to walls only.
- (b) Doors may be either 3/4" plywood, solid or built of rails, stiles and 5/16" plywood panels, with molds to secure panels to rails and stiles.

END OF DIVISION 6

DURATION DORMITORIES
SHELTER UNITS, MEN AND WOMEN

Division 7
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NATIONAL HOUSING AGENCY
FEDERAL PUBLIC HOUSING AUTHORITY

INSULATION

SCOPE

1. WORK INCLUDED

- (a) Complete all insulation and related items shown or specified unless specifically excepted, in general as follows:
- (b) See drawings for extent and for details of work. See "General Scope".
- (c) Insulation shall be batt or blanket type, in sufficient thickness to limit the total thermal conductance through insulating media only (exclusive of air spaces) to not more than the coefficient expressed in B.T.U. per hour per square foot per degree F. temperature difference between the two surfaces of insulation as stated below.
 - 1- Insulate all roofs and all exterior frame walls for .083 B.T.U. coefficient, as above described.
 - 2- Insulate all first floors of frame construction over earth (crawling spaces) for .166 B.T.U. factor, as above described.
- (d) Provide a continuous vapor barrier on warm or underside of roof insulation, on inside of wall insulation, and on top side of floor insulation; either as an integral part of the insulation or as a separate membrane nailed or stapled directly to the underside of rafters, at inside of studs, and at top of floor joists.

MATERIALS

2. INSULATION

- (a) Insulation shall be moisture repellant, resistant to vermin and decay, sufficiently fire-resistant to meet test in Cotton Insulation Specification 6, and shall comply with any one of the following:
 - 1- Batt, or blanket type; vegetable or wood fiber, Fed. Spec. HH-I-571 (no loose fill).
 - 2- Batt, or blanket type, Fed. Spec. HH-I-521b (no loose fill); This type shall be used throughout for exterior walls.
 - 3- Cotton, U.S. Department of Agriculture, Cotton Insulation Specification 6.
 - 4- Batts and/or blankets used in 1st floor shall be completely enclosed on lower sides and edges with kraft paper.

3. VAPOR SEAL MEMBRANE

- (a) Vapor seal membrane shall be asphalt impregnated, glossy surfaced, sheathing paper weighing not less than 50 pounds per 500 square feet, of which at least 20 pounds is asphalt; laminated paper made of two or more sheets of kraft paper cemented together with asphalt, 30-60-30 grade; or other material providing equally effective vapor barrier, if prior approval is obtained.

INSULATION

MATERIALS (Cont.)

3. VAPOR SEAL MEMBRANE (Cont.)

- (a) 1- Water vapor permeability of vapor barrier shall not exceed 2.5 grains per hour per square foot per pound per square inch vapor pressure difference when tested by methods established by the National Bureau of Standards or the Forest Products Laboratory.

4. AFFIDAVIT

- (a) Furnish affidavit from manufacturer, certifying that materials conform to specified requirements.

WORKMANSHIP

5. INSTALLATION

- (a) Install insulation in accord with manufacturer's specific directions.
 - 1- Attach edges of insulation with nailing flanges and edges of vapor barrier to joists and wall studs, and rafters, in such a manner as to form a tight, continuous contact. Effectively seal end joints and joints around electric outlets and pipes penetrating vapor barrier.
 - 2- Floor insulation shall be placed between floor beams directly under rough floor. Coordinate work so that rough flooring will be applied directly after installation of insulation. Provide temporary protection for insulation from damage by rain or snow.
 - 3- Roof insulation shall be installed directly above ceilings, between roof rafters.
 - 4- Wall insulation shall be placed between wall studs.

END OF DIVISION 7

DURATION DORMITORIES
SHELTER UNITS, MEN AND WOMEN

Division 8
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NATIONAL HOUSING AGENCY
FEDERAL PUBLIC HOUSING AUTHORITY

CALKING

SCOPE

1. WORK INCLUDED

- (a) Complete all calking and related items shown or specified unless specifically excepted, in general as follows: (See "General Scope".)
- (b) Completely seal, with calking compound, joints around frames of doors, windows, other openings in exterior masonry walls, where masonry abuts other exterior surface finishes, and other joints indicated to be calked or pointed.
- (c) Calk joints in chimney caps.

2. WORK EXCLUDED FROM THIS DIVISION

- (a) Calking of joints in siding. (See "Carpentry and Millwork" Division.)

MATERIAL

3. CALKING COMPOUND

(a) Calking compound shall be of such plastic composition that it will adhere to adjacent materials and remain sufficiently plastic, adhesive and cohesive to maintain water-tight joints when exposed to weather and subject to ordinary structural movements. It shall not shrink excessively, crack, flow or stain. Within seven days it shall form a tough surface film, suitable for painting, and shall be light in color, or colored to match adjacent work as directed.

1- Shrinkage: a layer of compound $1/8$ " thick on limestone for 15 days shall not shrink more than 17% in volume.

2- Bond: a layer of compound $1/8$ " thick on limestone for 15 days shall adhere so firmly that it cannot be peeled off without leaving a film of material in contact with the stone.

3- Tenacity: a layer of compound $1/8$ " thick, after contact with limestone for 15 days, shall not break or crack when a portion is loosened and folded back and forth 6 times through an angle of 180° .

4- Rate of hardening: compound shall not harden more than 45% in a joint $3/8$ " wide and $1-1/2$ " deep between limestone slabs for 15 days by penetrometer test (ASTM D-5-25, except with 12.5 g. weight).

5- Oil retention: compound shall not stain masonry or other building materials for a distance greater than $1/16$ " either side of joint.

6- Consistency: shall be such that the plastic in a joint $3/8$ " wide and $1-1/2$ " deep between limestone slabs will not flow or slump more than $3/16$ " when the joint is placed in a vertical position for 24 hours at $70^{\circ} + 2^{\circ}$ F., then heated to $120^{\circ} + 2^{\circ}$ F. for 24 hours.

CALKING

MATERIAL (Cont.)

4. AFFIDAVIT

- (a) Furnish affidavit from manufacturer certifying that material delivered to the project conforms to specified requirements.

WORKMANSHIP

5. APPLICATION

- (a) Joints and spaces to be calked shall be clean, free from dust, and dry.
- (b) Pack joints that are more than 3/4" deep with oakum to within 3/4" of surface. (See "Masonry and Concrete" Division.)
- (c) Calk joints before final coat of paint is applied to adjacent work.
- (d) Apply compound with a pressure gun having a nozzle of proper size to fit into joint.
- (e) Joints shall be filled solidly. Remove any excess compound and leave surfaces neat and clean.
- (f) All calked joints shall be watertight.

END OF DIVISION 8

DURATION DORMITORIES
SHELTER UNITS, MEN AND WOMEN

Division 9
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NATIONAL HOUSING AGENCY
FEDERAL PUBLIC HOUSING AUTHORITY

GLASS AND GLAZING

SCOPE

1. WORK INCLUDED

- (a) Contractor shall furnish all labor and materials to complete all glass and glazing as shown or specified, unless specifically excluded, in general as follows: (See "General Scope.")
- (b) All windows and storm sash shall be glazed with "SS-B" clear sheet window glass, except as follows:
 - 1- All windows and glazed doors in toilets, shower rooms, wash rooms, etc., shall be glazed with obscure glass, 1/8" thick.
- (c) All interior glazed doors (other than those at toilets, shower rooms, etc.) shall be glazed with "DS-B" clear sheet window glass.
- (d) All exterior glazed doors (except main entrance door to lounge vestibule and two doors from Passages to Interior Court) shall be glazed with clear wire glass, 1/4" thick.

MATERIALS

2. GLASS

- (a) Glass shall conform to Fed. Spec. DD-G-451; Type B for clear window glass; Type D for obscure glass, ribbed or otherwise cast-figured on one face; Type E for wire glass.
 - 1- Manufacturer's labels showing strength and quality shall be affixed to each pane of glass.

3. PUTTY

- (a) Putty for glazing in wood shall comply with Fed. Spec. TT-P-791a, Type II white lead-whiting putty.

4. AFFIDAVITS

- (a) Manufacturer's affidavits shall be furnished, certifying that glazing materials delivered to site conform to requirements specified herein.

GLASS AND GLAZING

WORKMANSHIP

5. GLAZING

- (a) Rebates shall be clean and dry before glazing is done. No glazing at exterior openings shall be done in damp or dusty weather, nor when air temperature is lower than 40° F.
- (b) In wood windows and storm sash, sash shall be primed before glazing. (See "Painting" Division.) Bed glass in putty, sprig, and apply putty.
- (c) In wood glazed doors, prime rebates before setting glass. (See "Painting" Division) Bed glass in putty and secure with wood beads fastened with brads.
- (d) Putty shall be used as it comes from the container, without adulteration.
- (e) Glass shall be completely bedded in putty. Putty shall be applied with sufficient pressure on knife to ensure complete adhesion to glass and to frame. Excess putty shall be cut off immediately after glass is bedded, leaving full, smooth, accurately formed bevels with clean-cut miters.
- (f) Obscure glass shall be placed with smooth surface toward exterior.

6. CLEANING

- (a) Clean glass on both sides, removing all labels, after putty is painted. (See "Painting" Division.) Acid solution or water containing caustic soap shall not be used. Putty shall not be disturbed by scrapers.
- (b) At completion of contract, all glass shall be left whole, free from rattle, and clean on both sides.

END OF DIVISION 9

DURATION DORMITORIES
SHELTER UNITS, MEN AND WOMEN

Division 10
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NATIONAL HOUSING AGENCY
FEDERAL PUBLIC HOUSING AUTHORITY

ROOFING

SCOPE

1. WORK INCLUDED

- (a) Complete all roofing, sheet metal and related items shown or specified unless specifically excepted, in general as follows: (See "General Scope").
- (b) Cover all roofs with coal-tar pitch or asphalt built-up roofing, with flashing of same material, and metal cap flashing at chimneys and other masonry.
 - 1- Flash at following locations: wood roof ventilators; intersection of all roofs with vertical surfaces; at crickets; elsewhere as shown on drawings.
- (c) Roofing in general shall be 3-ply, built-up, covered with slag or gravel, or:
- (d) Option: Roofing in general shall be built-up, 1-ply and 2-ply, smooth surface.
- (e) Roofing over ventilating monitors shall be mineral surfaced, roll roofing.

2. WORK EXCLUDED FROM THIS DIVISION

- (a) Flashing of pipes projecting through roofs. (See "Plumbing" Division.)
- (b) Heating ducts. (See "Heating" Division.)
- (c) Flashing at head of exterior openings. (See "Carpentry and Millwork" Division.)

MATERIALS

3. SHEET METAL

- (a) Sheet metal cap flashing at masonry shall comply with Fed. Spec. QQ-I-696, Type II, Class D, zinc-coated by electrical process; 1-1/4 ounces per square foot, total coating both sides.

4. SOLDER AND FLUX

- (a) Solder shall be 50% lead - 50% tin (in bars, bearing maker's name and brand), to conform to Fed. Spec. QQ-S-571, Class A.
- (b) Flux shall be non-acid in paste form.

ROOFING

MATERIALS (Cont.)

5. ROOFING FELT

(a) Saturated roofing felt for 3-ply built-up roofing and flashing shall comply with Fed. Spec. HH-F-201, if used with coal-tar pitch; with Fed. Spec. HH-F-191, Type I, if used with asphalt. Material shall be in rolls, 36" wide.

(b) Felts for smooth surface roofing shall be:

1- Base felt: 30 lb. asphalt saturated rag felt to comply with Fed. Spec. HH-F-191.

2- Finishing felt: 15 lb. perforated asbestos felt to comply with U.S. Navy Spec. 7YG.

a- For slope greater than 1/2" per foot, one layer of finishing felt.

b- For slope less than 1/2" per foot, two layers of finishing felt.

(c) Reinforced base flashing for smooth surface roofing shall consist of outer layer of heavy asbestos waterproofing felt over a layer of asphalt-saturated waterproofing fabric, both layers cemented together at factory.

6. COAL-TAR PITCH BITUMEN

(a) Pitch shall be an especially prepared commercial product complying with Fed. Spec. R-P-381, Type I.

7. ASPHALT BITUMEN

(a) Asphalt for 3-ply roofing shall be an especially prepared commercial product complying with Fed. Spec. SS-A-666, Type I.

(b) Asphalt for smooth surface roofing shall be Bonded Filled Asphalt especially prepared by maker of roofing materials used.

8. SURFACING MATERIAL

(a) Slag or gravel, hard, durable, clean, evenly graded from 1/4" to 5/8" diameter.

9. CEMENT

(a) Roofer's Plastic Cement shall comply with Fed. Spec. SS-C-153.

10. MINERAL-SURFACED ROOFING

(a) Roll roofing material, mineral surfaced, shall comply with Fed. Spec. SS-R-511. For roofs over ventilating monitors above pipe spaces at Toilet Rooms and Wash Rooms.

ROOFING

WORKMANSHIP AND INSTALLATION

11. INSPECTION OF SURFACES

(a) All defects found in surfaces prepared by other trades to receive roofing shall be reported to the Architect, who will cause all such defects to be corrected. Commencing of work in any area by this Contractor will be taken to indicate his acceptance of surfaces in such area.

12. LAYING 3-PLY BUILT-UP ROOFING

(a) Over entire area of roof sheathing lay three plies of saturated felt, lapping each sheet 24-2/3 inches over preceding sheet, with laps running at right angles to slope of roof.

(b) Each sheet shall be nailed with barbed uncoated steel roofing nails through flat metal or fiber discs, 15 inches from upper edges of sheet, spaced 1 foot maximum apart. At gravel stops, strips of felt shall be placed under first 36" wide sheet in such manner that 3 plies of felt are installed throughout roof areas. These shall lap up on gravel stop and shall be nailed as above to gravel stop and to sheathing.

(c) Each sheet shall be folded back and hot bitumen shall be mopped onto sheet below for a width approximately of 10 inches measured down from line of nails. As mopping proceeds, each successive sheet shall be returned down and imbedded firmly into the hot mopping. Not less than 50 lbs. of bitumen per 100 square feet of roof shall be applied.

(d) Following the above operation, entire area shall be covered with hot bitumen by means of mopping, using not less than 50 lbs. per 100 square feet of roof. Into this, while hot, spread and imbed dry slag or gravel. If slag is used, not less than 250 lbs. per 100 square feet shall be applied; if gravel is used, not less than 300 lbs. per 100 square feet.

(e) Care shall be taken during application of felt to avoid wrinkles or buckles. Pitch shall not be heated to more than 400 degrees F.

(f) All work shall be weathertight, free from leaks and other defects.

13. LAYING 1-PLY AND 2-PLY BUILT-UP ROOFING, SMOOTH SURFACE

(a) General: All felts shall be turned up 2 inches against all vertical surfaces without being cemented thereto. All nails shall be driven through flat metal or fiber discs. Nails shall be barbed uncoated steel roofing nails.

(b) One thickness of base felt shall be laid with sheets lapped 3 inches horizontally, nailed 6 inches o.c. at center of lap, and 18 inches o.c. horizontally at center of each sheet, in two lines spaced approximately 11 inches apart, nails staggered.

(c) Over base felt one ply of 15 lb. finishing felt shall be applied, lapped 3 inches horizontally, with Bonded Filled Asphalt mopped full width under each sheet. Each sheet shall be 12 inches o.c. at center of lap.

ROOFING

WORKMANSHIP AND INSTALLATION (Cont.)

13. LAYING 1-PLY AND 2-PLY BUILT-UP ROOFING, SMOOTH SURFACE (Cont.)

(d) Edging at eaves and gable rake:

1- Material shall be reinforced asbestos base flashing applied on top of finished roof with Bonded Filled Asphalt, and nailed 6 inches o.c. on inner edge, nailed 2 inches o.c. near lower edge at fascia. Lower nailing shall be in straight line to present neat appearance. Flashing material shall be cut sufficiently wide to cover fascia entirely, and to extend not less than 4 inches out on roof, measured from exterior face of fascia.

2- End joints shall be lapped 3 inches, with laps thoroughly sealed with asphalt, nailed 2 inches o.c. at center of lap.

3- Exposed edge on roof shall be covered with strip of finishing felt 4" wide embedded in and covered with mopping of asphalt.

14. APPLICATION OF MINERAL-SURFACED ROLL ROOFING

(a) Material shall be applied to monitor ventilator roofs in one piece on each slope, secured with broad head 3/4" galvanized barbed roofing nails, 4 inches apart, 1 inch from edge of material. Material shall be cut flush with eaves, ridge, and gables, and nails shall be applied at all edges. Place one horizontal line of nails 12 inches apart at middle of each slope. Cover ridge with strip of same material, not less than 8 inches wide, extending 4 inches each side of ridge, with nails 4 inches apart, 1 inch from each edge.

15. FLASHING

(a) Flashing for 3-ply built-up roofing, in general, shall consist of base flashing of 3 plies of saturated roofing felt, same as specified for roofing, and shall extend up on vertical sheathing and masonry surfaces not less than 6 inches, each ply nailed 1 inch from top edge of sheet with same nails through discs as specified for roofing, not more than 1'-0" apart. Each ply shall be mopped at same time as roof mopping is done. At chimney, felt shall be nailed at nearest joint next above 6 inches above roof.

(b) Flashing for 1-ply and 2-ply built-up roofing shall be installed in strict accord with specifications of maker of roofing materials used.

1- Reinforced base flashing shall be strip approximately 16 inches wide, extending 4 inches on roof, and 12 inches up on vertical surface. Material shall be applied to vertical surfaces and finished roof over mopping of hot asphalt. Strips shall be lapped 3 inches at end joints, nailed 6 inches o.c. through center of laps, and along top edges of strips. Vertical nail lines shall be covered 4 inches wide strip of 15 lb. finishing felt set in a troweling of roofer's cement, with strips covered with additional troweling of same material

(c) At chimneys cap flashing shall be metal as specified above. Flashing shall be built into chimney not less than 3-1/2 inches, with inner edge turned up 1/2 inch, and outer edge shall be turned down over base flashing not less than 3 inches. All joints in metal cap flashing shall be soldered.

SHELTER UNITS

Division 10

Page 5

ROOFING

WORKMANSHIP AND INSTALLATION (Cont.)

15. GUARANTY - WARRANTY

- (a) This^{sub-} Contractor shall furnish a written warranty, countersigned and guaranteed by the General Contractor, stating that all work executed under this Division will be free from defects of materials and workmanship for a period of 5 years from date of acceptance.
- (b) The above parties agree further that they will, at their own expense, repair and replace all such defective work, and all other work damaged thereby, which becomes defective during the term of the Guaranty - Warranty.
- (c) In addition, there shall be provided a surety maintenance bond, effective for a period of five years from the date of acceptance.

END OF DIVISION 10

DURATION DORMITORIES
SHELTER UNITS, MEN AND WOMEN

Division 11
Page 1 of 3

NATIONAL HOUSING AGENCY
FEDERAL PUBLIC HOUSING AUTHORITY

FLOOR COVERING

SCOPE

1. WORK INCLUDED

(a) Complete all Floor Covering and related items shown or specified, unless specifically excepted, in general as follows. See "Schedule of Interior Finishes" and "General Scope."

(b) Contractor has the option of installing any of the following flooring materials (with their related accessory materials):

<u>1-</u>	<u>Trade Name</u>	<u>Manufactured By:</u>
1-	"Sandura Kolorflor" (Tile or Roll)	Sandura Company, Inc. 1700 Walnut St., Phila., Pa.
2-	"Delaware Kolorflor" (Tile or Roll)	Delaware Products Co., Inc. Wilmington, Del.
3-	"Chromalin" - Roll	Bird & Son East Walpole, Mass.
4-	"Chromatile" - Tile	Bird & Son East Walpole, Mass.
5-	"Linoflor" - Roll	Paraffine Companies, Inc. 295 Fifth Ave., New York City Factory, San Francisco, Cal. " Somerville, N.J.
6-	"Linoflor" - Roll	Armstrong Cork Company Lancaster, Pa.
7-	"Linoflor" - Roll	Sloan-Blabon Corp. 295 Fifth Avenue, New York City
8-	"Linoflor" - Roll	Bonafide Mills
9-	"Masticpave" (Tile or Roll)	Paraffine Companies, Inc. 295 Fifth Ave., New York City Factory, San Francisco, Cal. " Somerville, N.J.

(c) Only one of the above optional materials may be used throughout any one Shelter Unit. At Contractor's option any one of the other optional materials may be used throughout any other Shelter Unit.

2. WORK EXCLUDED FROM THIS DIVISION

(a) Waxing of finished floors. (See "Painting" Division.)

FLOOR COVERING

MATERIALS

3. SPECIFICATIONS

(a) Materials listed above, 1(b)1- to 8- inclusive, shall conform to "Proposed Fed. Spec. for Floor Coverings; Felt-Backed," dated March 9, 1942, including all subsequent amendments thereto.

(b) All materials shall be installed in strict accord with printed directives of maker of materials used.

4. FLOOR COVERING

(a) 1/8" thick, or manufacturer's standard gage, standard colors and/or patterns as selected.

5. FELT

(a) Felt shall be impregnated, conforming to Fed. Spec. HH-F-191 for asphalt; HH-F-201 for coal tar. Weight shall be 15 lbs. per 100 square feet in all spaces, except that throughout Halls, Passages, and Corridors, weight shall be 30 lbs. per 100 square feet.

6. ADHESIVE

(a) Adhesive shall be elastic adhesive cement. Material shall be non-waterproof for field of each space; waterproof for 4 inches of width at all walls, and at each side of each joint.

(b) Materials shall be delivered in original containers with seals unbroken, and shall be applied without adulteration.

7. AFFIDAVITS

(a) Contractor shall furnish affidavits from manufacturers, certifying that all materials delivered to the project conform to specified requirements.

INSTALLATION AND WORKMANSHIP

8. LAYING FLOORING

(a) Temperature of at least 70° F. shall be maintained in floor covering storage spaces. In spaces where floor covering is to be laid, same minimum temperature shall be maintained for 48 hours before, and after, floor covering is laid. Floor covering material shall be spread and remain flat in spaces to be covered not less than 12 hours before pasting is done.

(b) Only workmen skilled in laying materials specified shall be employed. Joints shall be cut and fitted accurately, and material shall be fitted neatly at base, posts, etc.

(c) Surfaces to be covered shall be cleaned, and all grease and foreign material shall be removed. Any defects in wood floor surfaces shall be reported to Architect, who will cause all defects to be corrected. Beginning of work in any area will be taken to mean that wood floor surface in such area is satisfactory to this Contractor.

FLOOR COVERING

INSTALLATION AND WORKMANSHIP (Cont.)

8. LAYING FLOORING (Cont.)

(d) On finish wood floor paste one layer of felt, with edges butted. Roll felt after pasting.

(e) Paste floor covering to felt, and roll to obtain complete contact and adhesion.

(f) Finished surfaces shall be smooth and free from waves, buckles, and projecting edges.

(g) Protect all walls and woodwork during laying of floor covering as required to protect from damage or soiling.

(h) Upon completion, floor covering shall be cleaned of spots, stains, or excess paste, and shall be adequately protected from damage.

(i) Wood shoe mold shall be applied (by Carpenter) after floor covering specified above is used.

END OF DIVISION 11

DURATION DORMITORIES
SHELTER UNITS, MEN AND WOMEN

Division 12
Page 1 of 4

NATIONAL HOUSING AGENCY
FEDERAL PUBLIC HOUSING AUTHORITY

TILE FLOORING (CERAMIC)
(OPTION)

(NOTE: Work in this Division may be elected, at Contractor's option, in place of cement finish floor with metallic hardener. See "Masonry and Concrete" Division.)

SCOPE

1. WORK INCLUDED

- (a) Complete all Tile Flooring (Ceramic) and related items shown or specified, unless specifically excepted, in general as follows. (See "General Scope".)
- (b) Laying of setting bed and setting of tile, including base and curbs, throughout on concrete fill, where scheduled.
- (c) Submit samples of all tile, trimmers, and accessories.
- (d) Submit certificate of grade.
- (e) Cleaning finished surfaces.

2. WORK EXCLUDED FROM THIS DIVISION

- (a) Concrete fill on wood subfloor, including forming of contour of gutters in concrete fill. See "Masonry and Concrete" Division.
- (b) Furnishing and setting floor drains and shower receptor drains. See "Plumbing" Division.
- (c) Saddles at doors between Passages and Wash Rooms. See "Carpentry and Millwork" Division.

MATERIALS

3. TILE

- (a) Tile and trimmers shall be unglazed natural clay type ceramic mosaic, oatmeal finish, or other non-slip surface, in pattern as approved by Architect. Base shall be nominally 6" high, coved at bottom, straight at top. Standard base accessories, such as coved internal covers, bullnosed external corners, etc., shall be included.
- (b) Color shall be random medium range of buff, gray or white, as approved by Architect.

TILE FLOORING (CERAMIC)
(OPTION)

MATERIALS (Cont.)

3. TILE (Cont.)

(c) Tile and trimmers shall be "Seconds or better".

1- Before material is delivered for installation, certificate of grade shall be submitted by Contractor to Architect, in form adopted by the Tile Manufacturers' Association, Inc. This certificate shall be signed both by the manufacturer and the Contractor, certifying to grade, type, and quantity of material; and with adequate information of containers in which tile is delivered.

2- Containers shall be branded with, or have sealed within, the shipping marks or other designations corresponding with the information given on the certificate of grade, and shall be subject to inspection by the Architect at all times.

3- Tile shall be in original, unopened, sealed containers. Cements and hydrated lime shall be delivered in original unopened, sealed containers bearing brand and maker's name.

4. MATERIALS IN GENERAL

(a) Specifications for the following materials are in the "Masonry and Concrete" Division, and hereby are made a part of this Division to the same extent as if they were repeated in full herein:

- 1- Water
- 2- Portland Cement
- 3- Lime
- 4- Sand

5. MIX OF SETTING BED

(a) Setting bed mortar; 1 part Portland cement, 3 to 4 parts sand, by volume.

6. GROUTING MIX

(a) Grouting for all joints shall be neat, waterproofed Portland cement, a mixture of neat Portland cement and lime putty, or a mixture of neat Portland cement and integral waterproofing compounds (used in proportions recommended by manufacturer).

(b) Portland cement shall be gray. Grout shall be mixed to consistency of thick cream.

INSTALLATION AND WORKMANSHIP

7. TEMPERATURE

(a) Tile installation shall be done in temperature not lower than 32° F.

TILE FLOORING (CERAMIC)
(OPTION)

INSTALLATION AND WORKMANSHIP (Cont.)

8. SETTING BED

- (a) Mortar setting bed shall be not less than 3/4" thick.
- (b) Mortar shall be spread until surface is true and even in plane, and level. Screed strips shall be set as temporary guides.
- (c) As large an area of setting bed as can be covered with tile before mortar has developed initial set shall be placed in one operation. When more mortar has been placed than can be covered thus, the unfinished portion shall be cut back to clean beveled edge, and removed.
- (d) Secure metal lath to wood blocking behind bases, and form curbs with metal lath reinforcing and mortar to proper contours.

9. SETTING TILE

- (a) Tile shall be soaked in water before setting.
- (b) Dry Portland cement shall be hand-dusted uniformly over surface of mortar setting bed immediately preceding setting of tile. Tile shall be placed upon, and firmly pressed and beaten into, the mortar until they are exactly true and even with finished floor elevations. Special care shall be exercised at shower room gutters and drains.
- (c) Ceramic mosaic sheets shall be laid to straight-edge at regular intervals.
- (d) As soon as mortar bed has set sufficiently, floor and base and curbs tiles shall be washed with clean water, and joints between all tiles shall be grouted or pointed.

10. JOINTS

- (a) Joints between all units of ceramic mosaic, and between abutting sheets, as laid, shall maintain standard mounting width.
- (b) Grout shall be forced into all joints, finished flush. Surplus grout shall be removed before it has set, and face of all tile shall be left clean.

11. REMOVAL OF CONDEMNED TILE

- (a) Prior to final acceptance of work under this Division, Contractor shall, at his expense, remove all condemned tile, and replace this with sound material.

12. CLEANING

- (a) Upon completion of the various portions of his work, the Contractor shall remove all unused materials, rubbish, etc., which have accumulated as a result of his work.

SHELTER UNITS

Division 12

Page 4

TILE FLOORING (CERAMIC)
(OPTION)

INSTALLATION AND WORKMANSHIP (Cont.)

12. CLEANING (Cont.)

(b) After grouting and pointing has set sufficiently, all tile work shall be cleaned thoroughly in approved manner.

END OF DIVISION 12

DURATION DORMITORIES
SHELTER UNITS, MEN AND WOMEN

Division 13
Page 1 of 9

NATIONAL HOUSING AGENCY
FEDERAL PUBLIC HOUSING AUTHORITY

PAINTING

SCOPE

1. WORK INCLUDED

(a) Complete all painting and related items shown or specified unless specifically excluded. See "General Scope."

2. EXTERIOR WORK, in general as follows:

(a) The painting herein specified is in addition to any previous coats specified in other Divisions.

<u>Item</u>	<u>No. of Coats</u>	<u>Material</u>
1- Metal chimney cap flashing.....	2	Lead-in-oil
(Gypsum Siding.....	3	Lead-in-oil
2- Exterior wall finishes (Wood Siding.....	2	Exterior Stain
(Options) (Wood Shingles.....	2	Exterior Stain
(Plywood Siding.....	3	Lead-in-oil
3- Horizontal, exposed-to-view, wood surfaces of: platforms, porches, steps, balconies.....	3	Deck Paint
(Prime 1 coat all hidden-to-view surfaces of the above, including supporting framing.)		
4- Louvers, doors, sash, window screens and storm sash, painted both sides, (tops, bottoms and edges to be painted 2 coats after fitting, but before erection).....	3	Lead-in-oil
5- Frames, sills, etc., for all exterior openings, (primed on all surfaces before erection), after erection painted on all surfaces both inside and outside.....	3	Lead-in-oil
6- All other exterior woodwork and trim, including all exposed wood such as: roof rafters, soffit of roof boards, roof vents, framing, etc., of porches, balconies and roofs.....	3	Lead-in-oil
7- Pulley stiles.....	2	Boiled linseed oil
8- Basement entrance stair handrail brackets..	2	Lead-in-oil
9- On exterior face of top rail of main entrance door, paint in 3" high letters "Shelter Unit No. ____" (number of not over 2 digits to be as directed), in color as selected by Architect.....	-	Coach enamel

PAINTING

SCOPE (Cont.)

3. INTERIOR WORK, in general as follows:

(a) The painting herein specified is in addition to any previous coats specified in other divisions.

(b) See Schedule of Interior Finishes for locations of finishes. (Abbreviations refer to Schedule.)

(c)	<u>Item</u>	No. of Coats	<u>Material</u>
1-	Floor covering.....	1	Wax
2-	Cement floor finish (W.G.) (Basement only)...	2	Water glass (W.G.)
3-	Gypsum board (Gyp.B.).....	2	*Casein (Cas.)
4-	" " "	3	*Lead-in-oil (ceilings
	*Including filling of joints, nail holes and taping joints.		
5-	Stairs:		
	Handrails.....	(2 1)	Stain-wax Wax
	Treads and risers.....	2	Stain-wax
6-	All window stools and aprons throughout.....	(2 1)	Stain-wax Wax
7-	Interior woodwork and doors where only called for on Schedule **.....	3	Lead-in-oil
8-	Base and shoe mold, throughout; stair strings	2	Black paint
9-	Closet shelves in all closets except none for Bedroom closets.....	2	Lead-in-oil, top and front edge only
10-	Masonry wall paint.....	2	Cement paint
11-	Interior metal including unfinished hardware (to match adjacent work in color).....	3	Lead-in-oil
12-	Mechanical work: Paint all exposed-to-view work including: plumbing piping, traps, fittings, registers, grilles and frames, front of bathtubs. (No paint on ducts.)	3	Lead-in-oil

**NOTE: Interior of sash, doors, louvers, screens, storm sash and frames is specified under Art. 2, EXTERIOR WORK.

PAINTING

SCOPE (Cont.)

3. INTERIOR WORK (Cont.)

(c) 13- On exterior face of top rail of all bedroom doors paint numerals 3" high, numbered consecutively in each Shelter Unit from one digit to three digits in accord with Schedule prepared by Architect.....Coach enamel

14- On exterior face of top rail of each service room or closet in Passages paint single letter 3" high, in accord with Schedule prepared by Architect.....Coach enamel

15- On exterior face of top rail of doors to following spaces, paint name 3" high, as follows:

- a- Wash Rooms = WASH ROOM
- b- Bath Rooms (Women) = BATH
- c- Manager = MANAGER
- d- Office = OFFICE
- e- Maids' Locker Room = MAIDS'
- f- Refuse Chutes = REFUSE

All of the above.....Coach enamel

(d) Where Schedule calls for paint on woodwork, doors in such spaces shall be likewise painted, one side.

(e) Plywood closet partitions and shelving in Bedrooms shall be unfinished.

4. WORK IN GENERAL

(a) Protection and cleaning.

(b) Painting of samples.

5. WORK EXCLUDED FROM CONTRACT - Painting of the following:

(a) Exterior masonry.

(b) Granule-surfaced siding.

(c) Cement-asbestos interior finish.

(d) Hard-pressed wallboard interior finish.

(e) Interior woodwork, doors and trim, except where specifically included.

(f) Heating ducts.

PAINTING

MATERIALS

6. MATERIALS IN GENERAL

(a) Basic component materials entering into manufacture of paints, etc., herein specified, shall conform to applicable Federal Specifications; white lead, TT-W-251a, Type B.

(b) Primers, undercoats, etc., herein specified, may be either mixed on the Project or delivered factory-mixed.

1- Thin factory-mixed paints only in accord with manufacturer's printed directions.

2- When prepared from paste on Project, mix paints not less than 24 hours before using; cover containers during this period and strain before using. Add some thinner and all of the driers just before application.

3- White lead and zinc oxide (paste-in-oil) shall be factory ground.

4- Except where specifically stated otherwise, paint formulas herein are based on the use of soft paste. Heavy paste may be used, provided quantity of turpentine as given in each formula is increased by 1/4 gallon.

5- Volatile mineral spirits, or a mixture of turpentine and volatile mineral spirits, may be substituted for turpentine except in primer coats.

(c) Paint shall not settle badly in containers and when ready for application shall be well mixed. Paints after being broken up with a paddle shall be smooth, uniform, and of good brushing consistency.

1- After application, paint shall not run or sag and, unless otherwise specified, shall dry to touch within 18 hours.

(d) Color pigments shall be color stable, finely ground substances.

1- Colors for tinting of paints applied on ~~plaster~~ masonry, and concrete surfaces shall be limeproof colors.

(e) Furnish affidavits from manufacturers certifying that materials delivered to the Project conform to requirements herein specified.

1- Deliver paint materials and factory prepared paints in manufacturer's sealed containers labeled with formula of contents.

7. PAINT - EXTERIOR LEAD-IN-OIL

(a) Lead-in-oil paint for exterior work shall be thoroughly mixed in the following proportions:

PAINTING

MATERIALS (Cont.)

7. PAINT - EXTERIOR LEAD-IN-OIL

- (a) 1- Priming coat - 16 pounds minimum net weight per gallon: To each 100 pounds of white-lead paste (88% dry pigment), add vehicle consisting of 4 gallons of raw linseed oil, 1-3/4 gallons of turpentine, and 1 pint of drier.
- 2- Second coat - 21 pounds minimum net weight per gallon: To each 100 pounds of white-lead paste (88% dry pigment), add vehicle consisting of 1-1/2 gallons of raw linseed oil, 1-1/4 gallons of turpentine, and 1 pint of drier.
- 3- Third coat - 20 pounds minimum net weight per gallon: To each 100 pounds of white-lead paste (88% dry pigment), add vehicle consisting of 3 gallons of raw linseed oil, and 1 pint of drier.
- (b) Prepared paint shall be factory mixed only, and as follows:
- 1- Priming, second and third coats shall comply with Fed. Spec. TT-P-101a.

8. DECK PAINT (Factory mixed only)

- (a) Floor and deck paint for all coats shall consist of a high grade phenolic resin base, quick drying spar varnish; containing not less than 30% pigment. Pigment shall be made upon a titanium barium base and shall contain suitable colors.

9. EXTERIOR STAIN FOR WOOD SIDING AND WOOD SIDING SHINGLES

- (a) Stain for exterior wood siding and siding shingles shall consist of creosote or preservative oil stain, factory prepared and delivered to the Project in factory sealed containers bearing the manufacturer's name and brand, and:
- 1- Stain shall be standard product (equal to Cabot's, Creodipt or Permastain) that has been in commercial use giving satisfactory service more than 5 years.
- 2- Material shall be applied in saturating coats in strict accord with manufacturer's printed directions.
- 3- Submit sample and obtain approval before proceeding.

10. CEMENT PAINT

- (a) Cement water paint shall be a hydraulic base paint delivered in powder form ready for use with the addition of water only. Lime proof pigment shall be factory mixed to required shades. Paint shall be in accord with Fed. Spec. TT-P-21; 1st coat Type 1, Class B, 2nd coat Type 1, Class A. When hardened and cured, the paint shall form a dampproof film that will not powder, chip, peel, or rub off, and that may be washed repeatedly without damage to the film. Mix powder with water in accord with the manufacturer's directions.

PAINTING

MATERIALS (Cont.)

11. PAINT - INTERIOR LEAD-IN-OIL

(a) Lead-in-oil paint for interior woodwork shall be thoroughly mixed in the following proportions:

- 1- Priming coat - 17 pounds minimum net weight per gallon: To each 100 pounds of white-lead paste (88% dry pigment), add vehicle consisting of 2-1/2 gallons of raw linseed oil, 2 gallons of turpentine, and 1 pint of drier.
- 2- Second coat - 18-1/2 pounds minimum net weight per gallon: To each 100 pounds of white-lead paste (88% dry pigment), add vehicle consisting of 1-1/2 gallons of raw linseed oil, 2 gallons of turpentine, and 1 pint of drier.
- 3- Third coat, semi-gloss finish - 21 pounds minimum net weight per gallon: To each 100 pounds of white-lead paste (88% dry pigment), add vehicle consisting of 1-1/4 gallons of interior varnish, 1 gallon of turpentine and 1/2 pint of drier.

(b) Prepared paint shall be factory mixed only, and as follows:

- 1- Priming coat shall comply with Fed. Spec. TT-P-56.
- 2- Second coat shall be mixed in proportions of 2 gallons of paint (Fed. Spec. TT-P-51a) to 1 gallon of interior varnish (Fed. Spec. TT-V-71a).
- 3- Third coat, semi-gloss, shall be mixed, equal parts, of paints conforming to Fed. Spec. TT-P-51a and TT-E-506a, Type A. Reduce TT-P-51a and increase TT-E-506a, Type A, as directed.

(c) Black paint for base shoe shall be in accord with Fed. Spec. TT-P-61 (ready-mixed only).

12. STAIN-WAX

(a) Stain-wax shall be a two-coat sealer treatment, subject to the Architect's approval.

- 1- The material shall be factory prepared and delivered to the project in factory sealed containers bearing the manufacturer's name and brand.
- 2- It shall be a composition that has been in commercial use, giving satisfactory service more than five years, and shall have given satisfactory service and economical maintenance results on large scale housing project.
- 3- It shall be composed of drying oils, vegetable or synthetic gums and waxes with mineral spirits with or without permanent coloring matter, containing no aniline dye.

PAINTING

MATERIALS (Cont.)

12. STAIN-WAX (Cont.)

- (a) 4- It shall not raise grain or show laps and shall produce a finish which after wear may be patched or touched up without showing visible laps.
- 5- The materials shall be applied in saturating coats, according to manufacturer's instructions, and produce a hard, tough, wear resisting, water resistant, non-staining surface which shall be buffed with fine steel wool to a polish satisfactory to the Architect.

13. CASEIN PAINT

- (a) First and second coats shall be factory prepared only and comply with Fed. Spec. TT-P-23, Type 2. Mixing and application shall be in accord with manufacturer's printed directions.

14. FLOOR WAX (Water Emulsion)

- (a) Material shall comply with Fed. Spec. P-W-151, and shall be applied in 1 coat on floor covering in accord with manufacturer's directions.

15. WATER GLASS - SODIUM SILICATE

- (a) Apply 1 heavy coat of Sodium Silicate without dilution, mopped on to fill all pores of cement finish.

APPLICATION AND WORKMANSHIP

16. SAMPLES

- (a) Paint large samples in completed buildings of all shades and types of finish, as required to obtain approval.
- (b) Finish spaces of building to show selected approved shades and types of finishes, materials and workmanship. After approval, such spaces shall be preserved to serve as standards.
- (c) Provide 6 sets of samples of each kind and shade of approved finish, properly identified with number, formula, manufacturer's name, address and use.

17. COLORS

- (a) Exterior Work: A maximum of 4 different colors and/or shades will be required.
- (b) Interior Work: A maximum of 6 different colors and/or shades will be required.

PAINTING

APPLICATION AND WORKMANSHIP (Cont.)

18. APPLICATION

- (a) Finish all edges of exterior doors after fitting same as faces, except that tops and bottoms should be left with at least one good coat of paint or varnish.
- (b) Just prior to application of wax, remove all dust, dirt, etc. from floors.
 - 1- Adequately protect finished surface by restricting passage or by protection with heavy glued-together kraft paper until work has been accepted.
- (c) Before painting, brush and remove all dirt, dust, etc. from surfaces.
- (d) Spaces shall be clean and free from dust and rubbish before applying any paint.
- (e) No exterior paint shall be applied in damp, rainy weather, or when temperature is below 50° F.
- (f) Paint shall be well brushed on, evenly worked out, and allowed to dry before subsequent coat is applied.
- (g) All paint shall be applied with brushes. The use of pneumatic tools or sprays will not be permitted unless specifically authorized in writing by Government.
- (h) Store materials where directed. Oily rags, waste and empty cans shall be removed from site every night, and under no circumstances left in un-ventilated rooms or allowed to accumulate.
- (i) Furnish and lay drop cloths where necessary and protect floor and adjacent work from damage.
- (j) Surfaces to be primed shall be dry, smooth and adequately protected from dampness.
- (k) After priming, shellac pitch pockets, streaks and knots.
- (l) Putty nail and similar holes or defects with white lead and whiting putty. Wax or compound putty for stained woodwork shall be colored to match finished work.
- (m) Sand and clean surfaces as necessary prior to application of each coat of paint.
- (n) Each coat of paint shall be slightly different tints from preceding coat to prevent skipping; well brushed on and evenly worked out and allowed to dry before subsequent coat is applied.

PAINTING

APPLICATION AND WORKMANSHIP (Cont.)

18. APPLICATION (Cont.)

(o) All work shall be done in a neat, workmanlike manner by skilled mechanics and shall be uniform in appearance, of approved color, smooth and free from runs, sags, defective brushing and clogging of lines and angles. Edges of paint adjoining other materials or other colors shall be sharp and clean without overlapping. Should workmanship of painted finish be found defective in any respect, the Contractor shall, after proper preparatory work, apply such additional coats necessary to give a finish in accord with the specifications and color samples.

(p) Surfaces that have been cut for fitting of other material or for other reasons shall be finished and of same color as surface immediately adjacent.

19. PREPARATION FOR PAINTING GYPSUM BOARD, INTERIOR WALL FINISH

(a) Fill recessed edges and joints including internal angles and intersections of walls and ceilings with cement (Material as recommended by board manufacturer), using a putty knife. Extend cement 1/2" beyond edge of recess. Apply perforated tape (material as recommended by manufacturer of board) immediately over cement and press into place with putty knife so as to force cement through the perforations. Smooth cement with putty knife and allow to dry. Apply thin coating of cement to completely hide the tape, feather out edges to smooth surface and allow to dry. Fill all nail heads to smooth even flush finish, with cement. Sand joints and nail heads first with coarse and then with fine sand paper. (Not required where cement-asbestos wallboard or fiber wallboard is to be applied over gypsum.)

20. CLEANING

(a) Remove any paint spots, oil and stain from floors, woodwork, glass, hardware and other similar items.

(b) At completion, touch up and restore finish where damaged or defaced and leave in first-class condition.

DURATION DORMITORIES
SHELTER UNITS, MEN AND WOMEN

Division 14
Page 1 of 9

NATIONAL HOUSING AGENCY
FEDERAL PUBLIC HOUSING AUTHORITY

HARDWARE
(Builders' and Cabinet)

SCOPE

1. WORK INCLUDED

(a) Furnish, delivered to site, all Builders' and Cabinet hardware and related items necessary to complete the work shown or specified unless specifically excepted, in general as follows: (See "General Scope").

1- Door hardware and door stops.

- a- Self-closing doors for Refuse and Linen chutes
- b- Coal chute door

2- Window hardware and storm sash hardware.

3- Window screen hardware.

4- Wood knobs for vents to crawl spaces.

5- Coat hooks.

6- Key control system and key cabinet for each Shelter Unit.

7- Handrail brackets at exterior stairs to Basement and all interior stairs.

8- Toilet Stall door hardware.

9- Cupboard hardware at Office Counter.

(b) Where size or shape of members to be equipped with hardware prevents or makes unsuitable the use of exact type specified, furnish a suitable type of adequate size for the service to which the individual item of hardware will be subjected in course of normal usage and as nearly as practicable the same in operation and quality as the type specified.

(c) Should items of hardware not definitely specified be required for completion of the work, furnish such items of type and quality suitable to the service required and comparable to adjacent hardware.

2. WORK EXCLUDED FROM THIS DIVISION

(a) All installation of hardware. (See "Carpentry and Millwork" Division.)

(b) Rough hardware for carpentry. (See "Carpentry and Millwork" Division.)

(c) Hardware for Mechanical Trades. (See Divisions applying to respective trades.)

(d) Telephone Booth hardware.

HARDWARE
(Builders' and Cabinet)

MATERIALS

3. GENERAL

(a) Builders' and Cabinet hardware shall conform to requirements of the following Federal Specifications as amended to date and as modified herein. The type numbers specified shall govern form and function, but the materials used shall conform to the following specifications and to the current Defense Housing Critical List. In case of conflict the Critical List shall govern.

Padlocks	FF-P-101a
Locks and Lock Trim.....	FF-H-106
Shelf and Misc.	FF-H-111
Hinges	FF-H-116b
Door Closers	FF-H-121a

(b) Finishes shall conform to schedules in Federal Specifications and shall be as follows:

Exterior	US 18A
Interior	US 18A
Cylinders (exterior only) ..	US3 or US4 lacquered

All hardware noted to be painted shall be finished in US 18A.

(c) Builders' and Cabinet hardware shall have parts of steel or iron only, except as follows:

- 1- Cylinders, pin tumbler assemblies and keys for cylinders shall be brass.
- 2- Push plates, kick plates, drawer and other pulls shall be of annealed glass, plastic of approved composition, or other non-metallic material subject to approval by the Architect.
- 3- Die castings for tubular lock cases. Die castings shall meet all requirements for die castings in the effective issue of Emergency Alternate Federal Specification E-FF-G-106.

4. MANUFACTURERS' HARDWARE SCHEDULE

(a) Before fabrication of hardware, Contractor shall submit for approval a full and complete schedule of hardware, in triplicate, indicating type, number, location, and finish of each item required. Approval of this schedule does not relieve the Contractor of responsibility for furnishing all necessary builders' hardware items.

5. SAMPLES

(a) Submit one sample of each item of hardware for approval. No hardware shall be delivered until prior approval of samples is obtained.

HARDWARE

(Builders' and Cabinet)

MATERIALS (Cont.)

5. SAMPLES (Cont.)

(b) Sample items will be retained until other hardware has been applied; then turned over to the Contractor for installation.

6. PACKING AND MARKING

(a) All items of hardware and each lock set shall be packaged separately in its individual container and shall be complete with necessary screws, keys, instructions and installation template for spotting mortising tools.

(b) Each individual container shall be marked with an item number corresponding to number shown on schedule.

7. LOCKS

(a) Cylinder locks throughout entire project shall be the product of one manufacturer and shall have fronts secured to cases by machine screws.

(b) Cylinders shall be supplied with cylinder rings of proper size to fit door thickness.

(c) Locks in the following "Lock Schedule," where noted by letter, refer to lock group scheduled herein according to function. Locks shall be complete with escutcheons, knobs, roses and similar items as required and hereinbefore specified. Numbers in schedule are Federal Specification numbers. In lieu of locks specified by Federal Specification number, locks of manufacturers' stock design, similar in quality and function, may be used, subject to approval.

Type A 136 with 28 or 150 or 161.

B 28 or 151 or 162, all with stop inside and emergency entrance from outside.

C 28 or 150 or 161.

8. LOCK SCHEDULE

(a) Exterior doors, single and double	Type A
(b) Bedroom doors	" A
(c) Toilet Room, Shower Room, Drying Room, Wash Room.	" C
(d) Blankets.	" A
(e) Porter.	" A
(f) Storage	" A
(g) Maid.	" A
(h) Clean Linen	" A

SHELTER UNITS

Division 14

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HARDWARE

(Builders' and Cabinet)

MATERIALS (Cont.)

8. LOCK SCHEDULE (Cont.)

(i) Slop Sink	Type C
(j) Soiled Linen	" A
(k) Manager	" A
(l) Office	" A
(m) Manager's Toilet.	" B
(n) Maids' Toilet	" B
(o) Maids' Locker	" A
(p) Clean Linen Storage	" A
(q) Manager's Coat Closet.	" A
(r) Rubbish.	" C
(s) Infested mattresses.	" C
(t) Basement Storage.	" C
(u) Basement Locker Room.	" A
(v) Doors from Corridors to Passages.	" C
(w) Doors from Passages to Hall	" C
(x) All others, except as itemed for other hardware	" C

9. ESCUTCHEONS

(a) Furnish, for exterior and interior of all doors, escutcheons of type required for proper operation of locks and latches. Except as otherwise required by lock or latch specified, escutcheons shall be Type 300, 301 or 302, or plastic or other non-metallic material as approved by Architect, to suit conditions.

1- Tubular locks and latches may have Rose Type 330, modified as required.

2- Cylindrical locks and latches shall have roses of type and size recommended by manufacturer.

(b) In lieu of the above escutcheons, designs other than shown in Federal Specifications may be used, subject to approval. Such escutcheons shall be of sizes sufficient to span the lock, and of material and finish herein specified.

HARDWARE
(Builders¹ and Cabinet)

MATERIALS (Cont.)

10. KNOBS

(a) Door knobs and spindles shall comply with requirements of Federal Specification and shall be of type and size herein specified. Knobs of design other than shown in the Federal Specification, of approximate size specified, may be used if approved.

(b) Outside knobs shall be pinned fast to spindles.

(c) Knobs shall be as follows: Steel, finish US 18A, or pottery, or black plastic, exterior. Annealed glass, plastic or steel on interior. Wrought steel shank on glass knobs.

1- Exterior doors, except as otherwise specified, size 2" diameter, Type 221A.

2- Note: All exterior doors leading from corridors or passages (except first floor doors from passages to inner courts) shall have no outside knobs.

3- Interior doors, except as otherwise specified, size 2" diameter, both sides Type 205 or Type 221. Closet doors shall have spindle with thumb turn on inside.

11. KEYS AND KEYING

(a) Cylinder locks of different changes shall be furnished with two keys each.

(b) Where locks are specified to be keyed alike in any one system or set, only one key need be furnished with each lock, with a minimum of three keys for each set.

(c) Each key shall be die stamped with the number of lock change.

(d) Padlocks shall be provided with two keys each.

(e) Cylinder locks shall be master keyed unless specifically excepted. Obtain specific master key directions from the Architect. Furnish six master keys for each series of cylinder locks. No grand master keys system will be required. Master keys shall be delivered to the Government by the Contractor, and after delivery the Contractor shall not be held responsible for same.

12. KEY CONTROL SYSTEM AND KEY CABINET

(a) Furnish as herein described a visible key control system providing a central unit for control of all keys for locks required throughout each Shelter Unit Building.

(b) Furnish, for installation where directed by the Architect, an approved wall-type cabinet having a sufficient number of combination hook and label pockets for all locks. Construct cabinet of hardwood, stained and varnished. Provide an approved cylinder cabinet lock.

HARDWARE
(Builders' and Cabinet)

MATERIALS (Cont.)

12. KEY CONTROL SYSTEM AND KEY CABINET (Cont.)

(c) The cabinet shall have approved label sheets, consecutively numbered, for insertion in label pockets. Furnish for each hook in cabinet one key tag of a permanent locking type; this tag shall be made of vulcanized fiber as approved by the Architect, and shall be octagonal in shape, approximately 1-1/4" in diameter and red in color. Tags shall bear the legend "Federal Public Housing Authority" and the P.O. address of Project and room number of lock that key operates, and be die-stamped with consecutive numerals to correspond with labels in hook pockets. Cabinet shall also contain one metal or fiber receipt holder for each hook therein and a sufficient number of receipt forms for records of all current keys, together with a cross index for listing keys alphabetically, numerically, and by lock serial number.

13. DOOR BOLTS

(a) Provide head bolt Type 1060A, 6" in length, and foot bolt Type 1049B, 6" in length, for the inactive leaf of pairs of doors.

14. SPRING HINGES

(a) Single acting spring hinges Type 2331A, 7" long flanges, one pair to each door as listed below:

- 1- All exterior single doors.
- 2- Doors between halls and wash rooms, Door Type K.
- 3- Doors between Drying Rooms and Shower Rooms.
- 4- Doors between Passages and Corridors, Door Type C.
- 5- Doors between Passages and Hall, Door Type K.

15. DOOR STOPS

(a) Door stops shall be provided for all exterior and interior doors where swing of door will permit knob to strike wall. Door stops shall be Type A1336. Provide screws for securing to wood, and suitable expansion shield for securing to materials other than wood.

16. BUTT HINGES

(a) Doors in exterior openings which open outward shall have butt hinges with pins so arranged that they cannot be withdrawn when the door is in a closed position.

(b) Door butt-hinges, except as hereinafter specified, shall be Type 2014-1/2P, except that these hinges shall be furnished prime coated at the factory for painting.

(c) Hinges for 1-3/8" thick doors shall be 3-1/2" x 3-1/2"; provide one pair for each door.

Option:

(d) At the Contractor's option, wooden hinges may be used instead of metal hinges for all interior doors (except where spring hinges are required). Wooden hinges shall be equal and similar to the Whitehouse Research Bureau's (101 Park Avenue, N.Y.C.) wooden hinge. Erect in strict accord with manufacturers' directions. No paint required.

SHELTER UNITS

Division 14

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HARDWARE

(Builders' and Cabinet)

MATERIALS (Cont.)

17. HINGED WINDOWS (each window):

- (a) One pair butts, 3-1/2" x 3-1/2", Type 2014-1/2P.
- (b) One transom chain, Type 1120A, 15" long.
- (c) One casement fastener, Type 1131A, mortise strike.

18. WOOD DOUBLE-HUNG WINDOWS

- (a) Sash fasteners, Type 1139A; 1 each window.
- (b) Window screens: Hangers, Type 1825, or 1825B, as required; one pair each screen. Hook and Eye, Type 1601C, size 1-1/2"; two each screen.
- (c) Storm sash: eye plate only, Type 1825 or 1825B, as required; one pair each sash. Hook, Type 1601C, 1-1/2"; two each storm sash.

19. HANDRAIL BRACKETS (WOOD HANDRAILS)

- (a) Provide 4 brackets similar to Type 1064A for each wood handrail at each interior stair, and for exterior stair to Basement, spaced 3'-0" apart.

20. COAT HOOKS

- (a) Provide Coat Hooks, Type All62 standard stock finish, in each space listed as follows:

1- One hook in each of the following:

- a- Toilet Stall
- b- Porter's Room
- c- Maids' Room
- d- Slop Sink
- e- Manager's Toilet
- f- Maids' Toilet

2- Two hooks in each of the following:

- a- Shower Stall (Women)
- b- Bath Room "

SHELTER UNITS
HARDWARE
(Builders' and Cabinet)

Division 14
Page 8

MATERIALS (Cont.)

20. COAT HOOKS (Cont.)

- (a) 3- Four hooks in each closet in Bedrooms.
- 4- Twenty hooks in each washroom and each men's drying room.

21. CONTROL OF OPERATION OF DOUBLE-HUNG SASH

(a) Window Spring Bolts:

- 1- Provide at each sash of each double-hung window one pair of window spring bolts, Type A1060 (Fed. Spec. FF-H-111); or, option:

(b) Window Control Springs:

- 1- Provide at each sash of each double-hung window one pair of window control springs, similar and equal to Jiffy Springs, as made by Leidgen Specialty Company and distributed by Dodge Sales Company, Madison, Wis.
- 2- Springs shall be formed of spring steel, .018" thick, 1-1/4" wide, and approximately 6" long, zinc electroplated. Springs shall be so shaped that, when they are applied to sash in accord with maker's directions, they develop suitable friction at jambs to control movement of sash.

22. TOILET STALL DOORS (each door):

- (a) One pair spring hinges, Type 2301, full surface, adjusted to hold door open at 80°.
- (b) One barrel bolt, Type 1019B.

23. COUNTER AT OFFICE (See details):

- (a) Cash drawer: 1 drawer pull, Type 1296; 1 lock, Type 656A.
- (b) Other drawers: each: 1 drawer pull, Type 1296.
- (c) Cupboard doors: each: 1 pr. butts, 2-1/2" x 2-1/2", Type 2014-1/2P; 1 cupboard catch, Type 1082C.
- (d) Counter Flap: 1 pair plywood type hinges, 1-1/2", finish US3.

24. LINEN CHUTE DOORS

- (a) At top: each door: 1 pr. spring hinges, full surface, Type 2301, adjusted to hold door closed.
- (b) At bottom: each door: 1 pr. spring hinges, half surface, Type 2302, adjusted to hold door closed; 1 door pull, Type 1269B, 4-7/8".

SHELTER UNITS

Division 14

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HARDWARE
(Builders' and Cabinet)

MATERIALS (Cont.)

25. REFUSE CHUTE DOORS (1st and 2nd floors and basement) each door:

- (a) One pair spring hinges, half-surface, Type 2302, adjusted to hold door closed; 1 door pull, Type 1269B, 4-7/8".

26. FOUNDATION VENTS

- (a) Sliding panel at each vent: 1 wood knob, 1-1/4" diameter.

27. COAL CHUTE DOORS (each door):

- (a) 1 pr. Tee hinges, 6", Type 2203; flat head unslotted carriage or machine bolts, 2-1/4" long, with washers and nuts.
- (b) 1 hasp, Type 1420, 4-1/2", with flat head unslotted carriage or machine bolts, 2-1/4", with washers and nuts.
- (c) 1 padlock, Type 1a, size 1-1/2"; keyed alike.

28. LOUVERED HEATER ROOM EXITS (each):

- (a) 1 pr. butts, 3-1/2" x 3-1/2", Type 2014-1/2P.
- (b) 1 casement fastener, Type 1131A, mortise strike.

END OF DIVISION 14

DURATION DORMITORIES
SHELTER UNITS, MEN AND WOMEN

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NATIONAL HOUSING AGENCY
FEDERAL PUBLIC HOUSING AUTHORITY

SHADES

SCOPE

1. WORK INCLUDED

(a) Furnish and install all shades and related items shown or specified unless specifically excepted, in general as follows:

(b) Window shades for windows in:

- 1- All Bedrooms
- 2- Lounge
- 3- Manager
- 4- Office and Toilet adjacent
- 5- Maids' Rest Room and Toilet adjacent, and Maids' Locker Room
- 6- Hall

(c) Furnish and install shade brackets for all shades.

MATERIALS AND MANUFACTURE

2. SHADES, ROLLERS, SLATS, CORDS AND ACCESSORIES

(a) Shall comply with Fed. Spec. DDD-S-251, and be equipped with crocheted ring pull.

(b) Brackets shall be ivory finish.

3. SHADE CLOTH

(a) Shade cloth shall comply with Fed. Spec. CCC-C-521a for Type III pyroxylin impregnated, and be of approved color, selected from manufacturer's standard commercial colors, with dark color on inside and light color on outside.

- 1- Window shades shall be mounted between jambs; width of cloth shall be not more than 1-1/2" narrower than measurement between jamb stops.

4. AFFIDAVIT

(a) Furnish affidavit from manufacturer certifying that shades and accessories conform to specified requirements.

INSTALLATION

5. INSTALLATION

(a) Mount brackets securely. Install shades and brackets for rods level and leave in perfect working condition, free from defects.

DURATION DORMITORIES
SHELTER UNITS, MEN AND WOMEN

Division 16
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NATIONAL HOUSING AGENCY
FEDERAL PUBLIC HOUSING AUTHORITY

PLUMBING

SCOPE

1. WORK INCLUDED

(a) Plumbing and related items necessary to provide a complete installation as specified or shown unless specifically excepted. (See General Scope).

(b) In general, plumbing includes, but is not limited to, the following for each Shelter Unit:

1- Drainage system within buildings including house sewers to point 5'0" beyond building lines.

2- Hot and cold water supply system within buildings including cold water service pipe from point 5'0" beyond building lines.

3- Water and drainage connections as required to all equipment and fixtures.

4- Plumbing fixtures and fittings as hereinafter specified, shall be furnished, set, and connected by the Contractor.

(c) Connect house sewer and water service pipes to line fittings in outside lines.

2. WORK EXCLUDED FROM THIS DIVISION

(a) Outside water and sanitary sewer lines beyond a point 5'0" beyond building line.

(b) Storm water drainage. (See "Utilities" Division).

(c) Hot water heater supports. (See "Carpentry and Millwork" Division).

(d) Chimney and breeching thimble. (See "Masonry and Concrete" Division).

(e) Cutting and patching of work of other Divisions is specified in such Divisions.

(f) Temporary plumbing - See Part I.

PLUMBING

SCOPE (Cont.)

3. GENERAL REQUIREMENTS

(a) Eligible materials and quantities are limited to those necessary to meet minimum requirements of the "Emergency Plumbing Standards for Defense Housing".

(b) Layout of equipment, accessories and piping systems under this division is generally diagrammatic unless specifically dimensioned. Check project drawings and details for interferences as governed by structural or other conditions before installing work. The right is reserved to make any reasonable change in location of the plumbing equipment and piping system shown on drawings prior to roughing-in without involving additional expense, in order to conform with the architectural design as shown on drawings. The Contractor shall, at his own expense, make such changes in his work as directed to permit the architectural design to be followed.

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Government

MATERIALS

IMPORTANT NOTE

THE "DEFENSE HOUSING CRITICAL LIST" ISSUED BY FEDERAL AGENCY CONTROLLING PRIORITIES AND REVISED AT PERIODIC INTERVALS CONTAINING A LIST OF CRITICAL MATERIALS, GIVING LIMITATIONS OF THEIR USE, SHOULD GUIDE CONTRACTOR IN SELECTION OF MATERIALS. PRIORITY AID WILL BE CONSIDERED ONLY ON MATERIALS WHICH APPEAR ON THE "DEFENSE HOUSING CRITICAL LIST".

4. DRAINAGE

(a) Interior pipe and fittings and to not less than 5'0" outside of building wall, cast iron soil pipe.

(b) Cast iron soil pipe and fittings (caulked joints) for building (house) drain. Standard weight cast iron soil pipe and fittings (caulked joints) for soil, waste and vent piping 2" and over in diameter and installed above the ground. Vitrified tile pipe for building (house) sewer -SS-P-361.

(c) Cast iron soil pipe and fittings may be coated or uncoated.

(d) Waste and vent piping 2 inches and smaller - above ground.
Galvanized steel pipe-----WW-P-403a
Galvanized W.I. pipe-----WW-P-441a
Lead waste pipe "D"-----C. S. 95-41

PLUMBINGMATERIALS (Cont.)

4. DRAINAGE (cont.)

- (e) Waste fittings WW-P-491 - black recessed drainage fittings; lead pipe.
- (f) Vent fittings
 - Galvanized malleable-----WW-P-521a
 - Black cast iron, threaded fittings-----WW-P-501a

Any of the above materials that may be available shall be used on the drainage system.

5. WATER SUPPLY

- (a) Piping
 - Galvanized W.I.pipe-----WW-P-441a
- (b) Fittings
 - Galvanized malleable fittings for
unlined ferrous piping) WW-P-521a
 - Galvanized cast iron for unlined
ferrous piping) WW-P-501a

6. VALVES

- (a) Iron body, brass gate, stem and seat - 2" and larger.
Brass body, brass gate, stem and seat - 1 1/2" and smaller.
- (b) Service valve or main control to be provided with integral waste or separate drip.

7. UNIONS

- (a) Malleable iron - commercial 125 pounds per square inch.

8. MISCELLANEOUS STANDARDS

- (a) Screwed fittings - American National
taper pipe thread) GGG-P-351
- (b) Lead - drawn pipe of the minimum weight
per lineal foot known in the trades as) C.S.95-41
"D" weight for drainage)
- (c) Sheet lead - weight 4 lb./sq. for
flashings at roof. Other flashings) QQ-L-201
3 lb./sq.ft.)

PLUMBING

MATERIALS (Cont.)

8. MISCELLANEOUS STANDARDS (cont.)

- (d) Caulking lead) QQ-L-156
- (e) Packing - for hub and spigot joints,) HH-P-117
or packing of hemp or oakum) Commercial
- (f) Sheet iron - black steel (commercial weight)
- (g) Caulking ferrules 2" - 1 lb. 3" - 1 lb.
12 oz. 4" - 2 lbs. 8 oz. to be used in connection
with wiped joints on lead.
- (h) Soldering bushing - commercial weight.
- (i) Soldering nipples 1 1/4" - 6 oz. - commercial weight.
1 1/2" - 8 oz. 2" - 14 oz.
- (j) Setting compound - for connection fixtures to floor
flanges - HH-C-563.
- (k) Gaskets - for connecting fixtures to floor flanges -
HH-G-116.
- (l) Miscellaneous, compressed asbestos sheet - HH-P-46.
- (m) Floor flanges (cast iron preferred) brass - commercial
weight.
- (n) Sillcocks - brass 1/2" with 3/4" hose end, wall flange
or shoulder shank.
- (o) Traps - "P" or drum type - 20 gage tubular "P" trap,
cast iron "P" trap or lead.
- (p) Pipe cleanouts - cast iron with C.I. plugs or screwed
fittings with C.I. plugs. Commercial weight.
- (q) Floor drains (no chromium plating, use iron body) shower
drains, brass strainer iron body, other drains galvanized
strainer.
- (r) Nipples - same material and composition as the pipe employed
on the system. Extra heavy weight, when unthreaded section
is less than 1". Running thread nipples prohibited.
- (s) Sleeves - constructed of No. 28 gage black sheet iron.

PLUMBING

MATERIALS (Cont.)

8. MISCELLANEOUS STANDARDS (Cont.)

(t) Sleeves in foundation walls shall be of standard weight pipe made water tight with caulking compound. No sleeves required at wood floors or partitions. Sleeves through foundation walls shall be furnished under this Division, but installed under "Masonry and Concrete" Division.

(u) Chromium plating - none permitted. Use non-metallic coating. Either gun metal or emery finish for painting or lacquering is suggested.

(v) Hangers - either split cast ring with fastening device or adjustable clevis type hanger. Hanger rods machine threaded. Brackets of approved type may be used along walls. Wire is prohibited. Commercial type.

9. EXCAVATION AND BACKFILL

(a) For rules of measurement to be used in computing changes in quantities of excavation, etc. (extra or omitted) which may be ordered, see "Excavating & Grading" Division, which rules shall apply to this Division.

(b) Excavate trenches for underground pipes to required depths. Provide bell holes to insure uniform bearing. Where rock is encountered, excavate to a grade 3" below the lowermost part of the pipe. Refill excavation below pipe grade with sand or gravel. Sheath, brace, pump or bail as necessary. After pipe lines have been tested and approved, backfill trenches to grade with approved material, tamped or puddled compactly in place. Unless otherwise directed, install all underground piping below frost line.

10. AREA DRAIN

(a) Heavy removable cast iron strainer 10" x 10" and angle frame set in concrete.

11. HOT WATER HEATER

(a) Cast iron sectional boiler with grates for coal firing with minimum capacity as called for on the drawing. Boilers shall be tested for 300#/sq.in. pressure and shall be complete with relief valve, circulating piping, damper regulator, firing tools, drain cock and smoke pipe damper.

PLUMBING

MATERIALS (Cont.)

12. HOT WATER STORAGE TANK

(a) Black steel tank designed for working pressure of 85#/sq.in. and tested to a pressure of 127 1/2 lbs. per square inch. Tank shall be provided with pressure relief valve, float type air relief valve, thermometer, manhole, and necessary outlet tapplings and cradles. Supports will be provided under ~~xxxxxxxxxxxx~~ "Carpentry and Millwork" Division.

13. SMOKE PIPE

(a) No. 28 gauge black sheet iron pipe.

14. PLUMBING FIXTURES

(a) As required, and as hereinafter described, - shall be in accordance with Federal Specifications.WW-P-541a and WW-P-542.

15. SHOWER DRAINS

(a) Cast iron body double drainage flange and weepholes, with brass adjustable strainers 17" long by 5" wide, with 3" inside caulked outlet with clamping device, similar and equal to Josam Mfg. Co's 3843-C.

16. INSULATION

(a) Insulate hot and cold water piping exposed at ceiling of first floor, and hot water piping in Furnace Room and Coal Room, with 3/4" thick sectional covering with canvas jacket, banded - wool felt for cold water and air cell for hot water. Fittings shall be insulated with asbestos cement, with canvas pasted on.

(b) Insulate exposed traps in crawl space with 1" ~~inch~~ thick layer of hair felt protected with asphaltum impregnated felt secured with wire.

(c) Insulate hot water heater and hot water Storage Tank in Furnace Room with 1 1/2" thick insulating blocks similar and equal to Zonolite, properly wired on, finished with two (2) coats of asbestos cement, the outer coat finished smooth and hard by mixing with ~~blocks~~ portland cement.

(d) Treat paste with one tablespoon of bluestone per gallon of paste.

PLUMBING

WORKMANSHIP

17. BUILDING DRAINS

(a) Where outside sewer lines (provided under another Division) are installed before building drainage system is completed, the work of this Division shall include removal of plugs in outside lines and connecting up the building (house) drain and building house sewer to these existing outlets, 5'0" from the building line. In the event that the outside sewer lines have not been installed when the building drainage system has been completed, the Contractor shall plug/lines 5'0" from the building line.
building sewer

18. SOIL, WASTE AND VENT LINES

(a) Erect soil, waste and vent stacks of sizes as shown and extend above roof.

(b) Branch soil, waste and vent connections shall be run to the soil stack, waste stack, building drain or vent stacks as shown or required.

(c) Vent from any fixture when connected to a vent line serving other fixtures shall be extended at least 6" above the topmost plane of fixtures on which the vent is to be connected.

(d) Installation of piping: Horizontal drainage piping shall be run in practical alignment and shall be supported at intervals not exceeding ten feet. The minimum slopes shall be as follows: not less than 1/4" ~~inch~~ fall per foot for 1-1/2" ~~inch~~ diameters inclusive; not less than 1/8" ~~inch~~ fall per foot for 2-1/2" to 6" ~~inch~~ diameters, inclusive. Stacks shall be supported at their bases, and shall be rigidly secured. Piping shall be installed without undue stresses or strains and provision made for expansion, contraction and structural settlement. No structural member shall be weakened or impaired beyond a safe limit by cutting, notching or otherwise, unless provision is made for carrying the structural load.

(e) ~~Changes in direction of drainage~~ Changes in direction of drainage piping shall be made by the appropriate use of 45 degrees wyes, half wyes, long sweep quarter bends, sixth, eighth, or sixteenth bends, or by combination of these fittings, or by use of equivalent fittings, or their combinations; except that sanitary tees may be used in vertical sections of drains or stacks, and short quarter bends may be used in drainage lines where the change in direction of flow is from the horizontal to the vertical.

PLUMBING

WORKMANSHIP (Cont.)

18. SOIL, WASTE AND VENT LINES (cont.)

(e) cont.

Tees and crosses may be used in vent pipes and in water distributing pipes. No change in direction greater than 90 degrees in a single turn shall be made in drainage pipes.

(f) Prohibited Fittings: No double hub, or double tee branch, shall be used on soil or waste lines. The drilling and tapping of building drains, soil, waste, or vent pipes, and the use of saddle hubs or bands are prohibited. Any fitting or connection which has an enlargement, chamber or recess with a ledge, shoulder or reduction of the pipe area, that offers an obstruction to flow through the drain, is prohibited, except for the use of 4" x 3" water closet connection.

(g) Prohibited Connections: No fixture, device or construction shall be installed which will provide a backflow connection between a distributing system of water for drinking and domestic purposes and a drainage system, soil or waste pipe so as to permit or make possible the backflow of sewage or waste into water supply system.

(h) Protection of Pipes: Pipes passing under or through walls shall be protected from breakage. Pipes passing through or under cinder, concrete or any other corrosive material shall be protected against external corrosion. No soil or waste stack shall be installed or permitted outside of a building or in an exterior wall, unless adequate provision is made to protect it from freezing.

(i) Protection of Electric Machinery: No water or drainage piping shall be located over electrical machinery or equipment unless adequate protection is provided against drip caused by condensation on the piping.

19. JOINTS AND CONNECTIONS

(a) Tightness: All joints and connections shall be made gas and water tight. All exposed threads on ferrous pipe shall be given a coat of acid resisting paint.

(b) Caulked Joints: All caulked joints shall be firmly packed with oakum or hemp and shall be secured only with molten caulking lead, not less than 1" deep, well caulked. No paint, varnish or putty shall be permitted on the jointing material, until after the joint has been tested.

PLUMBING

19. JOINTS AND WORKMANSHIP (Cont.)
CONNECTIONS (cont.)

(c) Screw Joints: All screw joints shall be American Standard. All burrs or cuttings shall be removed. Pipe shall be reamed or filed out to the original bore.

(d) Wiped Joints: Wiped joints, in lead pipe or between lead pipe and ferrous pipes, ferrules, soldering nipples, or traps, in all cases on the sewer side of the trap and in concealed joints in the inlet side of the trap, shall be full wiped joints, with an exposed surface of the solder on each side of the joint not less than 3/4 inch and a minimum thickness at thickest part of joints of not less than 3/8 inch, where a round joint is made. An exposed surface of not less than 3/8 inch for bushings and flange joints shall be provided.

(e) Joints in Lead Pipe: Lead burned joints between lead pipes and between lead pipe and fittings are permitted.

(f) Hot Poured Joints: Material for hot poured joints (concrete or tile pipe) shall not soften sufficiently to destroy the effectiveness of the joint when subjected to a temperature of 150 degrees, nor be soluble in any of the wastes carried by drainage system.

(g) Slip Joints and Unions: Slip joints, other than expansion joints, may be used only in trap seal, or on inlet side of trap. Unions on sewer side of a trap shall be ground faced and shall not be concealed or enclosed. Running thread nipples are prohibited.

(h) Joints in vitrified clay and concrete pipe, or between such pipe and metals, shall be hot poured or cemented joints. Hot poured joints shall be packed with approved packing and filled with an approved jointing compound at one pouring.

(i) Cast iron pipe joints shall be caulked.

(j) Joints between wrought iron, steel pipe, and cast iron pipe shall be either caulked or screwed joints.

(k) Joints between lead and cast iron, wrought iron or steel pipe shall be made by means of caulking ferrules, soldering nipples or bushings.

(l) Floor connections for water closets and other fixtures shall be made by means of an approved brass or cast iron floor flange soldered securely or caulked to the drain pipe. The joint between the fixture and floor flange shall be made tight by means of an approved fixture setting or gasket.
compound

PLUMBING

WORKMANSHIP (Cont.)

19. JOINTS AND CONNECTIONS (cont.)

(m) Where different sizes of drainage pipe or pipes and fittings are to be connected, proper sizes of standard increasers and reducers shall be employed. Reduction of sizes of drain pipes in the direction of flow is prohibited, except for a 3 x 4 water closet bend and a 3 x 4 TY for water closets.

20. TRAPS AND CLEANOUTS

(a) Every trap shall be self cleaning, shall be of the same nominal size as the drain to which it is connected, and shall conform to accepted standards. Only "P" or drum traps are permitted. The diameter of the drum trap shall not exceed 4" ~~inches~~

(b) The minimum size (nominal inside diameter) of trap and fixture drain for a given fixture shall be not less than shown on the following tables:

<u>Fixtures</u>	<u>Size of Trap and Fixture Drain (Inches)</u>
Bath tubs (Women's Shelter Units)	1-1/2
Combination fixtures	1-1/2
Lavatories	1-1/4
Shower stalls	2
Sinks, service	2 or 3
Wall hung urinals (Men's Shelter Units)	2"
Water Cooler	1-1/4"
Laundry Trays (Women's Shelter Units)	1-1/2"

(c) For water closets and other fixtures with integral traps, fixture drains shall be not smaller than fixture trap outlet.

(d) Each fixture shall be separately trapped by an approved trap placed as near to the fixture as possible or integral therewith, except that a set of not more than three fixtures, such as lavatories, may connect with a single trap provided they are not more than 3" apart, for three fixtures, trap to be centrally located.

PLUMBING

WORKMANSHIP (Cont.)

21. ESCUTCHEONS

(a) Fit and firmly secure escutcheons to ^{all} ~~the~~ pipes, passing through finished floors, walls and ceilings. Escutcheons shall be of sufficient outside diameter to amply cover the sleeved openings and inside diameter to fit snug around pipe installed.

(b) Escutcheons for finished fixtures, connections and fixture trimmings are specified under plumbing fixtures.

22. OPEN ENDS

(a) Ends of pipes, including those extending above roof, drains, water and fixture outlets, shall be kept closed during construction.

23. HANGERS, INSERTS, ANCHORS

(a) Support piping installed above the ground from the building structures by means of hangers to maintain required grading and pitching of lines/ to prevent vibration.
and

(b) Clean and paint hangers, inserts and supports with one (1) coat of black asphaltum varnish.

24. FLASHINGS

(a) Joints at the roof shall be made water tight by use of 4 pound lead, flashing or cast iron plates. Lead flashing shall extend about 10" above roof and lead shall be turned over and down into the pipe.

25. WATER SUPPLY

(a) Where outside water service line (provided under another Division) has been installed up to 5'0" from the building line, the work of this Division shall include the removal of plugs, in this existing line, and the connecting up with the building water main. In the event that the outside water distribution line has not been installed when the building water lines have been completed, the Contractor shall plug ^{building} main 5'0" from building line.

(b) Provide stop and waste valve as shown on drawing.

(c) Provide all connections to risers or fixtures from top of mains unless otherwise indicated, with all branches and mains arranged so that entire system can be drained at low point or points. Provide accessible plug for draining at each low point.

PLUMBING

WORKMANSHIP (Cont.)

25. WATER SUPPLY (cont.)

- (d) Rough fixture branches from wall, centered to fixture outlets.
- (e) Locate sill cocks approximately 12" from grade and arrange piping to drain these sill cocks.
- (f) Water piping in ground shall be below frost line.
- (g) Schedule of pipe sizes for water connections to fixtures:

	<u>Cold Water</u> <u>(Minimum)</u>	<u>Hot Water</u> <u>(Minimum)</u>
Water closets (low down tank)	3/8"	-
Lavatories	3/8"	3/8"
Bath tubs, and showers	1/2"	1/2"
Sinks and combinations	1/2"	1/2"
Hose bibbs (as shown)	1/2"	-
Urinals	3/8"	-
Water Cooler	3/8"	-
Laundry Trays	1/2"	1/2"

- (h) Provide hot water supply to fixtures except for water closets.
- (i) No plumbing fixture, device or construction shall be installed which will provide a cross connection between a distributing supply for drinking and domestic purposes and a polluted supply, such as a drainage system, a soil or waste pipe, so as to permit or make possible the backflow of sewage, polluted water or waste into the water supply system.

26. SMOKE PIPE

- (a) Furnish and install from opening in building ^{hot water heating} flue to/equipment sheet iron pipe not less than 28 gage with necessary elbows, connect to equipment with tee fitting and cleanout.
- (b) Sheet iron pipe shall clear combustible material by 18"; or 9", if material is protected by a facing of incombustible materials.
- (c) Smoke pipe shall be painted with two (2) coats of approved heat resisting asphaltum paint.

27. PLUMBING FIXTURES

- (a) Contractor is referred to architectural and mechanical drawings for the quantities of fixtures to be roughed and set complete.
- (b) Secure fixtures to partitions by means of wood or metal supports. Secure hangers by means of wood screws or bolts.

SHELTER UNITS

Division 16

PLUMBING

Page 13

WORKMANSHIP (CONT.)

27. PLUMBING FIXTURES (CONT.)

(c) All fixtures requiring hot and cold water shall have cold water faucet on right side and hot water faucet on left side of fixture.

(d) Water closet - wash down low tank water closet combination, each with flushing trimmings, flush pipe and seat, without cover. Contractor shall connect tank and bowl, install flushing mechanism and set in place, with seat. Contractor shall furnish and install floor flange with closet bolts and compound and make outlet connection complete. Also furnish and install 3/8" water supply without stop.

(e) Lavatories - wall hung lavatory approximately 20" x 18", each with combination supply fitting, chain and stopper; waste with plug tail piece P-trap, nipple, concealed wall hanger. Contractor shall install the necessary battens for hanging lavatory, install hangers with wood screws and hang lavatory. Set supply fittings and connect with 3/8" hot and cold water supplies. Set waste fittings and connect with 1-1/4" waste pipe to roughings. Provide combination wastes for groups of lavatories as shown on the drawings.

(f) Service Sinks - furnish and install 24 inch by 20 inch rectangular service sink with hanger, 1/2 inch hot and cold water, compression supply faucets and strainer. Sink shall be cast iron or form metal steel, with roll rim and integral back, and with space behind back for supplies. Sink shall be not less than 12 inches deep and shall be enameled inside and over rim and back. Contractor shall furnish waste (size as shown on drawings) if 3 inch with adjustable trap standard, if 2 inch "P" trap to wall and with cleanout plug.

(g) Urinals - Vitreous glazed earthenware, wall type outfit, flushing rim siphon jet, with trap molded in ware. Bowl shall have 2" outlet and exposed inlet for flushing valve. Bowls shall be properly supported on an approved hanger. All urinal outfits shall have 3/4" flushing valves with back flow preventer.

Note: Contractor has option of using for each two urinal outfits, the following: Vitreous glazed earthenware urinal trough 36" long with perforated flush pipe, wall brackets and supporting bolts, and 2" waste fitting, 3 gallon vitreous china tank with concealed hanger, automatic siphon valve and top supply automatic float valve.

(h) Bathtubs (Women's Shelter Units Only) - recess pattern 60" tub, each with combination over rim supply fitting, 1/2" hot and cold water connections, and with a combined concealed waste and overflow provided with washers at tub and with chain and stopper. Outlet tee 1-1/2" threaded. Contractor shall set tub and fittings. Supply fittings shall be securely set at end of tub above rim of tub. Make 1/2" hot and cold water connections without stops to supply fitting. Set and connect the combined overflow and waste and make 1-1/2" drain connection complete.

(i) Showers (Gang- Men Shelter Units Only) - concealed combination supply fitting hot and cold water compression valves, with escutcheons for valves and shower head arm, plastic shower head.

PLUMBING

WORKMANSHIP (cont.)

27. PLUMBING FIXTURES (cont.)

(j) Shower Enclosures -

1- Shower compartments shall be fabricated of non-metallic walls and receptors. The compartments shall have nominal overall dimensions of thirty-two by thirty-two inches by seventy-five inches high. Receptors shall be pre-cast, reinforced, non-absorbent and non-slip. Walls shall be of hard-pressed treated fibre-board conforming to Federal Specification LLL-F-311, Class B., and shall be coated on the surfaces exposed to water with blue or gray enamel. Metallic assembly pieces and protective strips shall be galvanized. The wall assemblies shall provide a water-proof, rigid, and durable installation. Reinforcement shall be provided where shower valve fitting and soap dish is attached to side wall. Drain shall be cast iron with brass strainer. Shop drawings of the non-metallic shower compartments shall be submitted for approval.

2- Shower shall be provided with the following under this Division, - shower head with individual hot and cold water supply valves with handles and escutcheons, pre-shrunk 10-1/4 ounce white duck curtain not less than 36" x 70" complete with eyelets and curtain hook rings, and curtain rod.

3- Shower fixtures shall be located on side of enclosure and drain shall be provided with a 2" "P" traps

(k) Laundry Trays-Cement (Women's Shelter Units)

1- Trays shall be two compartment 24" by 48" long constructed with dense concrete. The concrete shall consist of portland cement, fine and coarse mineral aggregate and water. Fine aggregate shall consist of sand, stone or slag screenings or other inert material with similar characteristics, shall be well graded and shall pass a 1/4" screen. Coarse aggregate shall consist of crushed stone, gravel, slag or other inert materials with similar characteristics and shall pass a 3/8" screen but be retained on a 1/8" screen. Bottom and sides of tub shall be reinforced with galvanized steel reinforcing rods or wire mesh reinforcement. The minimum size of reinforcing shall be not less than #14 gage wire or its equivalent. The ~~maximum~~ maximum spacing of reinforcement shall be 4" on centers in either direction and the minimum area of openings shall be not less than 2 square inches. The total quantity of water in the concrete mix, including the surface water

PLUMBING

WORKMANSHIP (cont.)

27. PLUMBING FIXTURES (cont.)

(k) Laundry Trays Cement (Women's Shelter Units) (cont.)

1- (cont.)

carried by the aggregate shall not exceed 5-1/2 gallons per sack of cement. The mix shall be placed in steel molds and vibrated for maximum strength and smooth stone like finish. The tub shall be molded in one piece with rounded corners inside and outside and the top shall have rounded, cornered nonferrous metallic rim.

2- The supply fixture shall be 1/2" quick compression double faucet with swing spout, hose connection, unions and necessary clamps for fastening faucet to tub. Tub shall be equipped with twin waste, strainers, chains, chain stays, tail piece, coupling nuts, rubber stoppers, and cast iron "P" pattern trap with cleanout.

3- The supports shall be constructed of wood and shall be continuous under the compartment and shall be braced to provide rigidity.

28. PROTECTION OFFIXTURES

(a) Contractor shall be responsible for protecting against injury from building materials, acids, tools and equipment, all plumbing fixtures and fittings. The cost of replacing and repairing plumbing fixtures and fittings made necessary by failure of contractor to provide suitable protection shall be paid by Contractor.

29. CLEANING UP

(a) After all fixtures have been set and ready for use, Contractor shall thoroughly clean all fixtures, removing all stickers, labels, rust stains, and other foreign matter or discoloration on fixtures, leaving every part in acceptable condition and ready for use.

30. PRIOR TESTS

~~xxx~~

(a) Concealed work shall remain uncovered until required tests have been completed, but in the event that the project construction schedule requires it, Contractor shall make arrangement for prior tests on portions of the plumbing work involved.

PLUMBING

WORKMANSHIP (cont.)

30. PRIOR TESTS (cont.)

(b) Bath tub test: After bath tubs have been installed and prior to concealing waste connections, each bath tub shall be tested for leaks at waste and overflow connection.

31. LABOR AND EQUIPMENT FOR TESTS

(a) Equipment, material, power and labor necessary for the inspection and test shall be furnished by plumber.

32. TESTS OF DRAINAGE SYSTEM

(a) A water test shall be applied to the system in its entirety or in sections. If applied to the entire system, all openings in the piping shall be tightly closed, except the highest opening and the system filled with water to the point of overflow. The water level shall remain constant without any further addition for sufficient time to inspect the entire section under test but in no case less than 15 minutes.

(b) When there is danger of water freezing, an air test may be applied in lieu of water test as follows: With all openings tightly closed, air shall be forced into the system until there is a uniform pressure sufficient to balance a column of mercury 10 inches in height (or 5 pounds per square inch) on the entire system or section under test. The air pressure shall be maintained on the system or section without any further addition of air for a sufficient time to determine tightness but in no case for less than 15 minutes.

33. TESTS OF WATER SUPPLY SYSTEM

(a) Water supply system shall be tested in its entirety by filling entire system with water under a pressure of at least 100 pounds per square inch or (where there is danger of water freezing) by applying air pressure of at least 35 pounds per square inch (70 inches of mercury column). The test in either case shall be applied for sufficient time to determine tightness.

34. DEFECTIVE WORK

(a) If inspection or test shows defects, such defective work or material shall be replaced and inspection and the test repeated.

(b) All repairs to piping shall be made with new material, no caulking of screwed joints, cracks or holes will be acceptable.

PLUMBING

END OF/DIVISION 16

DURATION DORMITORIES
SHELTER UNITS, MEN AND WOMEN

Division 17
Page 1 of 7

NATIONAL HOUSING AGENCY
FEDERAL PUBLIC HOUSING AUTHORITY

HEATING

SCOPE

1. WORK INCLUDED

(a) Complete all heating and related items shown or specified, unless specifically excepted, for each Shelter Unit in general as follows: (See General Scope).

(b) System is of the forced warm air "blow thru" type. Air is heated in coal fired furnaces. The heated air is directed from furnace to a plenum, distributed to the various rooms thru ducts, and returned to furnaces as shown on the drawings.

2. WORK EXCLUDED FROM THIS DIVISION

(a) Return plenums at ceiling of 2nd fl., stud spaces arranged for return ducts, and shafts arranged for return ducts. (See "Carpentry & Millwork" Division).

(b) Return grilles in Bedrooms.

(c) Roof vents for Toilet and Shower Rooms. (See "Carpentry & Millwork" Division).

(d) Chimneys and thimbles for breeching connections. (See "Masonry and Concrete" Division).

(e) Temporary heating - See Part I.

(f) Cutting and patching of work of other Divisions is specified in such Divisions.

3. GENERAL REQUIREMENTS

(a) Layout of equipment, accessories and duct system under this Division is generally diagrammatic unless specifically dimensioned. Check construction drawings and details for interferences as governed by structural or other conditions before installing work. The right is reserved to make any reasonable change in location of heating equipment, accessories and duct system prior to roughing-in without involving additional expense to the Government. Should any work installed under this Division interfere with the architectural design as shown on drawings, Contractor shall at his own expense make such changes in his work under the supervision of, and as directed by, Architect to permit architectural design to be followed.

(b) Perform all necessary cutting of structural work only where approved by Architect and as directed.

HEATING

MATERIALS

IMPORTANT NOTE

THE "DEFENSE HOUSING CRITICAL LIST" ISSUED BY FEDERAL AGENCY CONTROLLING PRIORITIES AND REVISED AT PERIODIC INTERVALS CONTAINING A LIST OF CRITICAL MATERIALS, GIVING LIMITATIONS OF THEIR USE, SHOULD GUIDE CONTRACTOR IN SELECTION OF MATERIALS. PRIORITY AID WILL BE CONSIDERED ONLY ON MATERIALS WHICH APPEAR ON THE "DEFENSE HOUSING CRITICAL LIST."

4. METAL DUCTS

- Ducts shall
- (a) ~~(for furnace plenums)~~ and wherever else noted: ~~to be of metal~~ ~~shall be constructed~~ of black iron, and shall be (a) standard prefabricated type, or (b) sheet metal shop manufactured type, or (c) combination of both types. Sizes shown on the drawings are approximate and shapes shown may be changed, provided they fit construction.
- (b) Thicknesses shall be as follows:
- 1- Trunk ducts - No. 26 U.S. Standard Gauge. Ducts shall be considered as trunks when they supply more than one air outlet.
 - 2- Branch ducts - No. 30 U.S. Standard Gauge. Ducts shall be considered as branches when they supply one air outlet only.
- (c) Supply Ducts shall be insulated with air cell wired on, with joints cemented with asbestos cement.
- (d) Thickness of insulation shall be as follows:
- 1- Trunk supply ducts 1" thick.
 - 2- Branch supply ducts 1/2" thick.

5. COMPOSITION DUCTS

(a) Unless otherwise called for on the drawings, ducts shall be made of a solid asbestos core installed inside of an outer shell, composed of multiple layers of asbestos similar and equal to "Careyduct". Total thickness of duct shall be as follows:

- 1- Trunk Supply - 1" thick
- 2- Branch Supply - 1/2" thick
- 3- Return Ducts - 1/2" thick

HEATING

MATERIALS (CONT.)

5. COMPOSITION DUCTS (CONT.)

(b) Fittings, joints and branches shall be constructed in accord with manufacturer's instructions.

(c) Materials other than specified may be proposed for the air distribution system provided the material is fireproof, impervious to moisture, can be installed in the allotted spaces, is provided with insulation equivalent to that specified for metal or asbestos ducts, and results in an equivalent installation.

(d) Filter and furnace blower casings shall be made of No. 26 U.S. Standard Gauge black steel reinforced with angle iron, or of cement asbestos sheets 3/8" thick properly assembled with angle iron.

(e) Supports for ducts to building construction shall be by means of braces, ties, angles, or approved equivalent, all suitable for the service intended.

6. DAMPERS

(a) Unless otherwise specified or shown, shall be No. 26 black iron. Provide damper behind each supply register and wherever else shown on the drawings.

(b) Fire dampers, where called for on the drawings, shall meet requirements of National Board of Fire Underwriters.

7. REGISTERS

(a) Supply registers thruout shall be of steel and have suitable shut-off valve for completely closing off air supply; shall have provision for adjustment of air flow for right or left deflection or combination of both by means of adjustable vertical bars, and shall also have provision for downward adjustment of air deflection by means of adjustable horizontal louvers or bars. The closing of shut-off valve noted above may be accomplished by movement of the adjustable horizontal louvers. All adjustment of air deflection shall be made from face of register and without removing same. Adjustment may be by key operation or torsional movement of bars by special tool. Equip each register with gasket for proper sealing.

(b) Frames for securing supply register to duct or building construction shall be of steel.

1- In masonry, frame shall be of type set inside duct opening or stack head, with duct or stack head flanges secured to frame

HEATING

MATERIALS (CONT.)

7. REGISTERS (CONT.)

1- (cont.)

by means of rivets or sheet metal screws. Frames shall have suitable tapped lugs for fastening registers.

2- In wood construction, frame shall be of such type and length to permit securing to wood studs, and proper connection to duct or stack head between studs. Frame shall have means to permit duct or stack head flanges to be bent backward over it, and tapped lugs for fastening register.

(c) Return registers for bedrooms will be provided under "Carpentry & Millwork" Division. Return grilles and wherever else grilles are called for, shall be flat stamped steel at least 60% free open area, and not thinner than No. 16 U.S. Standard gauge.

(d) Return registers for outdoor exhaust from Toilet Rooms and Shower Rooms shall be of steel with non-adjustable horizontal bars, and with tight shut-off louvers or damper blade behind. Provide each register with gasket for proper sealing.

8. SMOKE PIPES

(a) Shall be constructed of No. 26 U. S. Standard gauge black iron.

9. FURNACES

(a) Similar and equal to Lennox Furnace Co's "Heavy Duty Torrid Zone Furnace", complete with steel heater, casing, plenum, blower, motor, drive, blower casing and controls, capable of delivering bonnet capacities called for on the drawings when fired with anthracite coal and when used in conjunction with an enclosed blower having capacities called for on the drawings. The outlet velocity of the blower shall be not more than 1400 ft. per minute. Motor sizes shall be as called for on the drawings. Each furnace shall be provided with a plenum for suitable supply connections, as shown on the drawings.

(b) Each blower shall be enclosed in a sheet metal or cement-asbestos sheet enclosure provided with suitable access door and openings for return duct connections. Motor shall be wound for current available at the building.

(c) The furnace fire shall be controlled by means of a manually adjustable draft regulator consisting of chains, levers, manual

HEATING

MATERIALS (CONT.)

9. FURNACES (CONT.)

(c) (cont.)

adjustor mounted on wall, together with all necessary accessories to maintain the proper position of check and draft dampers in accord with the firing rate selected. The blower shall be under control of a thermostat, furnished and installed under this Division, located in the warm air plenum. Provide and install a limit thermostat in return duct to stop blower motor if return air rises to a predetermined temperature of approximately 120° F. The thermostats shall be wired to the motor starting equipment under the Electric Division.

(d) Filters shall be grouped as shown on the drawings and shall be similar and equal to American Air Filter Co's "Re-Nu" Design No. 1513-A.

WORKMANSHIP

10. DUCTS

(a) Assemble and erect furnace plenums, cut necessary openings therein and connect supply ducts thereto as indicated. Rigidly secure supports for ducts to building construction, spacing not over 60" apart. Make all joints air tight, with slip joints, where used, arranged in the direction of air flow.

(b) Submit shop drawings of supply and return ducts for each building, showing dimensions and details. Include all necessary items such as supports and dampers. Verify dimensions and correlate with adjoining work. Obtain approval of shop drawings before proceeding.

11. REGISTERS AND GRILLES

(a) Rigidly install all registers and grilles of sizes indicated (except return registers in Bed Rooms) and properly seal to preclude air leakage. Prime coat all registers and grilles at the factory.

HEATING

WORKMANSHIP (CONT.)

12. DAMPERS

(a) Provide adjustable volume dampers in each branch duct where shown and as necessary to properly balance system to deliver air quantities required. Each damper shall be equipped with locking device easily accessible for making required adjustments. Dampers in main trunks (as hereinbefore defined) shall be of the quadrant or splitter type. Damper in each branch duct shall be of the quadrant type.

(b) Provide access panels in ducts for access to fire dampers in ducts.

13. SMOKE PIPE

(a) Erect smoke pipe to insure minimum friction, fit joints accurately and make smoke and gas tight. Secure each joint with minimum of two sheet metal screws. Extend smoke pipe to inner face of flue. Annular space between smoke pipe and wall or thimble shall be completely filled with heat resisting cement. Size of smoke pipe shall be as indicated on the drawings, or if not indicated, shall be same as flue outlet on furnace. Smoke pipe shall not be installed within 6" of a combustible material. Paint smoke pipe with two (2) coats of approved heat resisting asphaltum paint.

14. FURNACE EQUIPMENT

(a) Set and assemble each furnace and blower motor unit, where and as shown on the drawings, making all airtight joints and connections for return air in blower and furnace casings. Rigidly secure blower and motor to building construction.

(b) Filters shall be set in non-combustible framework to form groups called for on the drawings.

(c) Install all controls for the furnaces and blower motors in accord with manufacturer's directions.

15. ELECTRIC WIRING

(a) Electric wiring and connections to each furnace blower is provided for under the "Interior Wiring-Electrical" Division of the Specification.

HEATING

WORKMANSHIP (CONT.)

16. CODES

(a) Complete installation shall comply with applicable regulations of the National Board of Fire Underwriters.

17. SAMPLES

(a) Submit samples and obtain approval of registers, grilles and frames; insulating board and hard fabric duct shapes used in connection with ducts as hereinbefore specified.

18. ADJUSTMENTS AND TESTS

(a) Set all controls requiring adjustment in accordance with recommendations of manufacturers. Adjust vertical deflecting bars of supply registers as indicated on drawings; adjust register bars for horizontal deflection as recommended by manufacturer for proper air distribution within room.

(b) Adjust pulley at each blower-motor unit to deliver total quantity of air required.

(c) Adjust each damper in each system to deliver air quantity required at supply outlets, and lock in place.

(d) One half of building selected by ~~the Government~~ ^{Architect} shall be heated about 35°F above outside temperature, but not less than 70°F inside, and air distribution shall be so adjusted that temperature of rooms, measured in the center of ~~the~~ ^{each} room and 5'0" above the floor, shall where practical, not vary by more than 3° F. from other similar room temperatures. In all other units of the same type, damper shall be similarly adjusted.

(e) Furnish all labor, fuel, electric energy, instruments and all other incidental apparatus required in the performance of adjustments and tests stipulated hereinbefore.

19. INSTRUCTIONS

Architect (a) Permanently affix in Furnace Room where directed by ~~the~~ ^{Government}, operation instructions and wiring diagrams furnished by Contractor.

HEATING

DURATION DORMITORIES
SHELTER UNITS, MEN AND WOMEN

Division 18
Page 1 of 13

NATIONAL HOUSING AGENCY
FEDERAL PUBLIC HOUSING AUTHORITY

ELECTRIC

SCOPE

1. WORK INCLUDED

(a) Complete all interior wiring, lighting fixtures and related items shown or specified, unless specifically excepted, for each Shelter Unit, in general as follows: (See General Scope).

2. WORK EXCLUDED FROM THIS DIVISION

(a) Outside Electrical Distribution including service connection to the building. (See "Utilities" Division).

(b) Telephone wiring.

(c) Cutting and patching of work of other Divisions is specified in such Divisions.

(d) For temporary light and power - see Part I.

3. GENERAL REQUIREMENTS

IMPORTANT NOTE

SIZES OF MATERIALS AND EQUIPMENT SHOWN OR SPECIFIED ARE MINIMUM. USE LARGER SIZES IF PROGRESS IS LIKELY TO BE RETARDED DUE TO DELAY IN OBTAINING SIZES INDICATED.

(a) Electrical system layouts indicated on drawings are generally diagrammatic and locations of outlets and equipment are approximate; exact routine of raceways, cables and wiring, locations of outlets and equipment shall be governed by structural conditions and obstructions. Locate and install equipment requiring maintenance and operation so it will be readily accessible.

(b) The right is reserved to make any reasonable change in location of outlets and equipment prior to roughing-in, without involving additional expense to the Government.

ELECTRIC

SCOPE (Cont.)

4. CODES

(a) Comply with rules and regulations of the latest edition of National Electrical Code bearing on the conduct of the work as drawn and specified. If the contractor observes that drawings and specifications are at variance therewith, he shall promptly notify the Authority, in writing. If the contractor performs work contrary to above referred to rules and regulations and without such notice to the Authority, he shall bear all costs arising therefrom.

5. TYPES OF WIRING

IMPORTANT NOTE

THE FOLLOWING TYPES OF WIRING ARE RECOGNIZED IN NATIONAL ELECTRICAL CODE. ANY ONE OR ALL OF THESE TYPES WILL BE ACCEPTABLE IN THE CONSTRUCTION OF THE WORK, PROVIDED THE TYPE IS APPLICABLE AND ACCEPTABLE UNDER THE CODE REQUIREMENTS. IN THE INTEREST OF CONSERVATION OF CRITICAL MATERIALS, INSTALL WHEREVER PRACTICAL A SYSTEM OF WIRING USING THE LEAST AMOUNT OF METALS.

(a) From point of service pickup at each building, extend service entrance conductors to service equipment, using service entrance cable, or wire in conduit, as required.

(b) For all wiring inside building, use knob and tube wiring, covered neutral cable, non-metallic sheathed cable, armored cable, flexible metal conduit, electrical metallic tubing, or rigid metal conduit. Be governed by type of construction in selecting wiring system.

MATERIALS

IMPORTANT NOTE

The "DEFENSE HOUSING CRITICAL LIST" ISSUED BY FEDERAL AGENCY CONTROLLING PRIORITIES AND REVISED AT PERIODIC INTERVALS CONTAINING A LIST OF CRITICAL MATERIALS, GIVING LIMITATIONS OF THEIR USE, SHOULD GUIDE CONTRACTOR IN SELECTION OF MATERIALS. PRIORITY AID WILL BE CONSIDERED ONLY ON MATERIALS WHICH APPEAR ON THE "DEFENSE HOUSING CRITICAL LIST".

WHERE SEVERAL TYPES OR QUALITIES OF MATERIALS ARE LISTED, CONTRACTOR HAS OPTION TO USE ANY ONE OR ALL. INsofar AS POSSIBLE, USE ONE TYPE OR QUALITY. IF PROGRESS IS LIKELY TO BE RETARDED DUE TO DELAY

ELECTRIC

MATERIALS (Cont.)

IN OBTAINING THE PARTICULAR TYPE OR QUALITY SELECTED, PROVIDE SUCH OF THE OTHER SPECIFIED MATERIALS AS MAY BE APPLICABLE TO THE CONSTRUCTION.

6. ELECTRICAL MATERIAL AND APPLIANCES

of types, for which there are Underwriters' Laboratories standard requirements, listing or labels, shall have listing of Underwriters' Laboratories and be so labeled, or shall conform to their requirements in which case certified statements to that effect shall be furnished, if requested. Use new materials and appliances. The latest amendments to Federal Specifications and the latest issues of Underwriters' Laboratories Standards shall apply.

7. RACEWAYS AND FITTINGS:

- | | |
|---|---|
| (a) Rigid metal conduit
(zinc coated) | * Fed. Spec. E-WW-C-581a
June 30, 1941 |
| (b) Flexible metal conduit,
single strip, galvanized | * Fed. Spec. E-WW-C-566
December 9, 1941 |
| (c) Electrical metallic tubing | * Fed. Spec. E-WW-T-806a
June 30, 1941 |
| (d) Fittings | * Fed. Spec. E-WF-406
May 23, 1941 |
| (e) Rigid metal conduit (enameled) | Fed. Spec. WW-C-571 |

8. BOXES AND COVERS:

(a) Interior Work

Cadmium or zinc coated

* Fed. Spec. E-WO-821a
May 23, 1941

Enameled

Underwriters' Lab.

*Emergency alternate specifications have been issued to the Federal Specifications in the interest of conservation of strategic materials. Copies of these "emergency alternate specifications" may be obtained upon request.

ELECTRIC

MATERIALS (Cont.)

8. BOXES AND COVERS (Cont.)

Non-metallic

Underwriters' Lab.

(b) Exterior Work

Exposed - weatherproof (galvanized or cadmium plated)
conduit or tube fittings with suitable covers.

9. WIRES AND CABLES

- | | |
|---|--|
| (a) Code graded, Type R | Underwriters' Lab. (June 1940) or
* Fed.Spec. E-JC-103 (12-24-41) |
| (b) Moisture resistant
Type RW | Underwriters' Lab. (June 1940) or
* Fed.Spec. E-JC-103 (12-24-41) |
| (c) Covered neutral cable
- permitted by Trial Procedure of National Fire Protective
Association. | Underwriters' Lab. |
| (d) Non-metallic sheathed
cable | Type R Insulation
Underwriters' Lab. |
| (e) Armored bushed type | Type R Insulation
* Fed.Spec. E-JC-71
July 29, 1941 |
| (f) Heat resistant or
rubber covered
fixture | Underwriters' Lab. |

Provide lead covering on wires and cables where required.

10. WIRING DEVICES

- (a) Flush duplex receptacles (15 ampere, 125 volt).
- (b) Flush tumbler switches ("T" rating - not less than 5 ampere,
125 volts.)

* Emergency alternate specifications have been issued to the Federal Specifications in the interest of conservation of strategic materials. Copies of these "emergency alternate specifications" may be obtained upon request.

ELECTRIC

MATERIALS (Cont.)

10. WIRING DEVICES (Cont.)

- (c) Combination of devices shall be in single gang mounting wherever practical. Compliance with Federal Specifications WR-151, WS-893 or WS-896, except use of plaster ears optional.

11. PLATES AND FINISHES

for switches, receptacles, and other outlets requiring plates shall be non-metallic material. Provide corrosion resisting coating on plates for exposed raceway fittings.

12. SERVICE EQUIPMENT

shall comply with regulations of local utility company.

13. FEEDER PANELS AND BRANCH CIRCUIT PANELS

shall consist of required number of protective devices, as called for on the drawings. Provide disconnects where required, and as shown on the drawings.

14. PROTECTIVE EQUIPMENT

- (a) Circuit breaker panel shall conform to Federal Specification *E-W-P-131a (Class 2) ~~December 17, 1941~~ Feb. 27, 1942.

- (b) Fuse panels shall conform to Federal Specification *E-W-P-146, Feb. 27, 1942 ~~May 25, 1941~~, dead front type, with interchangeable, non-combustible, insulating base fuse section.

15. CABINETS

shall consist of sheet steel, code gage; for surface or flush mounting as indicated.

- (a) Interior - Flush mounted boxes shall be (a) unpainted

* Emergency alternate specifications have been issued to the Federal Specifications in the interest of conservation of strategic materials. Copies of these "emergency alternate specifications" may be obtained upon request.

ELECTRIC

MATERIALS (Cont.)

15. CABINETS (Cont.)

galvanized steel or (b) bonderized or otherwise treated to resist rusting, applying prime shop coat. Covers, trims, and doors shall be bonderized or otherwise treated to resist rusting; apply prime shop coat, finish with one coat of baked enamel, standard finish.

16. FUSES

- | | |
|--|--------------------|
| (a) Cartridge, non-renewable | Fed.Spec.WF-791 |
| (b) Plug fuses, standard | Underwriters' Lab. |
| (c) Plug fuses, Type S, non-tamperable,
with adapters for screw base. | Underwriters' Lab. |

17. TAPES

- | | |
|--------------|--|
| (a) Friction | * Fed.Spec.E-HH-T-101a
January 30, 1942 |
| (b) Rubber | * Fed.Spec.E-HH-T-111a
January 30, 1942 |

18. LAMP BULBS - INCANDESCENT

* Fed.Spec.E-W-L-101d
January 17, 1942

19. LIGHTING FIXTURES

shall be as hereinafter specified:-

DESCRIPTIONLOCATION

White porcelain lampholder with locking device for lamp, similar and equal to Pass & Seymour AL-2107 Shurlock

Dormitory Corridors, Passages to Dormitory Corridors.

*Emergency alternate specifications have been issued to the Federal Specifications in the interest of conservation of strategic materials. Copies of these "emergency alternate specifications" may be obtained upon request.

ELECTRIC

MATERIALS (Cont.)

19. LIGHTING FIXTURES (Cont.)

<u>DESCRIPTION</u>	<u>LOCATION</u>
White porcelain lampholder, similar and equal to Pass and Seymour AL-2106 and AL-2107, pull or keyless type as required	Throughout for outlets where no other fixture type has been specifically called for.
14" diameter globe fixture with 6" porcelain fitter and lampholders, similar and equal to Pass and Seymour No. AL-2429, designed to accommodate 300 watt lamp.	First Floor - Lounge, Manager Office. First & Second Floors - Drying Rooms, Main Toilet Rooms, Wash Rooms (ceiling)
12" diameter globe fixture with 6" porcelain fitter and lampholder, similar and equal to Pass and Seymour No. AL-2428, designed to accommodate 200 watt lamp.	First Floor - Desk.
8-1/2" diameter globe fixture with 4" porcelain fitter and lampholder, similar and equal to Pass and Seymour No. AL-2425, designed to accommodate 100 watt lamp.	First Floor - Hall.
White porcelain exterior type lighting fixture, keyless type, with glass, similar and equal to Pass and Seymour No. AL-3130.	Exterior entrances.
Watertight fixture, screw bowl type, 12" diameter, designed for 3-100 watt lamps - similar to Russell & Stoll #2464, but with cast iron body instead of brass.	First and Second Floors Shower Shower Rooms.
White porcelain bracket fixture with lampholder, glass shade, and integral receptacle, pull type, similar and equal to Pass and Seymour No. AL-990-G.	First and Second Floors Wash Rooms.

ELECTRIC

WORKMANSHIP

IMPORTANT NOTES

MATERIALS AND WORKMANSHIP SHALL RESULT IN AN INSTALLATION FREE FROM DEFECTS AND WHICH WILL RENDER SATISFACTORY PERFORMANCE. CONTRACTOR SHALL REPAIR OR REPLACE ANY MATERIAL, PARTS OR EQUIPMENT WHICH DEVELOP DEFECTS WITHIN A PERIOD OF ONE YEAR AT NO EXPENSE TO THE GOVERNMENT. ALL LABOR NECESSARY TO MAKE REPAIRS OR REPLACEMENTS SHALL BE PROVIDED. IN THE EVENT THAT A REPETITION OF ANY ONE DEFECT OCCURS, INDICATING THE PROBABILITY OF FURTHER FAILURES WHICH CAN BE TRACED TO FAULTY DESIGN, MATERIAL OR METHOD OF INSTALLATION, CONTRACTOR SHALL NOT CONTINUE TO REPLACE WITH SAME MATERIAL OR PART BUT SHALL TAKE STEPS TO REMEDY THE FAULT THROUGH REDESIGN.

20. INSTALLATION OF RACEWAYS

- (a) Conceal raceways from view. In non-fireproof floor and roof construction, run raceways parallel to and between joists wherever practical. In crossing joists, notch underside within 2 feet of either bearing; upper side of joists may be notched, provided 10 gage steel plate is installed over raceway to prevent penetration of flooring nails. Cutting of vertical studs not permitted in outside walls. Interior partition studs may be cut or notched where absolutely necessary and then only to minimum depth.
- (b) In structural slabs, run raceways at least 1-1/2" below top and above reinforcing steel.
- (c) Keep raceways clear of partitions at ends of bath tubs permitting of future cutting of partitions to remove tub without disturbing electrical systems.
- (d) Raceways in floor slabs directly on ground or located directly over crawl spaces used for pipes, etc., shall not be trapped unless necessary; if trapped, use bleeder boxes, locating so access to boxes is practicable.
- (e) Raceway systems shall be capped during course of construction; clean inside of raceway before installing conductors.
- (f) All threaded and slip joints shall be made up tight. Wherever threads are left exposed or where protective coatings have been removed in handling, such places shall be painted with one coat of lead and oil of color to match raceway finish.

ELECTRIC

WORKMANSHIP (Cont.)

21. INSTALLATION OF ARMORED CABLE AND NON-METALLIC SHEATHED CABLE

(a) Conceal wiring from view. In non-fireproof floor and roof construction, run parallel to and between joists wherever practical. Cutting of vertical studs not permitted in outside walls. Interior partition studs may be drilled, cut or notched where absolutely necessary and then only to a minimum.

(b) Keep wiring clear of partitions at ends of bath tubs, permitting of future cutting of partitions to remove tub without disturbing electrical systems.

22. INSTALLATION OF COVERED NEUTRAL CABLE

(a) Installation shall comply with the "Tial Installation Resolution" of the National Fire Protective Association.

23. INSTALLATION OF OUTLET BOXES, COVERS, DEVICES AND PLATES

(a) Boxes shall be of size and type to accommodate (1) structural conditions, (2) size and number of raceways and conductors or cables entering and (3) device or fixture for which required.

extension

(b) Mount outlets flush; provide ~~extension covers~~ covers where required on boxes.

(c) Install 3/8" fixture studs in lighting fixture outlet boxes, as may be required.

(d) Center outlets in paneling or in other architectural features; clear trims and corners by 4 inches. Locate switch outlets adjacent to door openings on strike side of door except where shown otherwise.

(e) Height of outlets unless otherwise noted shall be as follows: (height given is from finished floor to center of outlet);

1- Switch	4'0"
2- Combination switch and receptacle	4'0"
3- Insertion receptacle	1'0"
4- Wall brackets	6'6"

ELECTRIC

WORKMANSHIP (Cont.)

23. INSTALLATION OF OUTLET BOXES, COVERS, DEVICES AND PLATES (cont.)

(f) If contractor elects to use wiring devices without plaster ears, care should be exercised in pulling "wiring devices" up for alignment on plates.

(g) Check with Architectural details for exact location of outlets.

24. 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 fittings.

(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% 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 #6 and larger wire by means of brass or copper mechanical connectors applied after wire has been cleaned, make tight and fully insulate as specified in paragraph No. 3

25. SERVICE CONNECTIONS

(a) Overhead supply: The electrical system covered by this division of the specification shall commence at the overhead point of service contact on exterior of building. From this point of contact, extend wiring to service equipment and thence to outlets. At service contact, leave slack cable or conductors for connecting service loop; provide and install adequate anchorage in building wall to receive service loop.

26. INSTALLATION OF SERVICE EQUIPMENT

(a) Install service equipment (grounded as required by NEC), and branch circuit protective devices as indicated on the drawings.

ELECTRIC

WORKMANSHIP (Cont.)

27. INSTALLATION OF LOAD CENTERS

(a) Load centers shall have the number of branch circuit breakers or fuses indicated on drawings.

(b) If contractor elects to use circuit breaker load centers, such equipment shall also be used in feeder protection; likewise, with respect to fuses. The protective devices in a circuit shall be so coordinated as to cause the protective device nearest the load to open first in case of fault.

28. WIRING CONNECTIONS (GENERAL)

(a) Provide required number of branch circuits. Balance loads as closely as practical.

(b) Where terminals permit, connections for wire #8 and larger to switches, panel boards, 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) Where three wire panels are provided, balance load as nearly as possible.

(d) Where service enters overhead, locate service head fitting above point of service loop attachment on building.

29. INSTALLATION OF LIGHTING FIXTURES AND LAMP BULBS

(a) Install all fixtures as hereinbefore specified. Provide, and install when directed, lamp bulbs in sockets of fixtures.

30. INSTALLATION OF FUSES

(a) All branch lighting and appliance circuits, unless otherwise specified, shall be fused at 15 ampere.

(b) Furnish and install at the completion of the work, after all testing has been done, one complete set of fuses for all switches and cutouts requiring same. Furnish one complete duplicate set in original carton to ~~XXXXXX~~ the Government.

(c) Provide typed index of circuit numbers and area or lights controlled by the circuit fuses. Index shall be mounted on inside of panel box cover.

ELECTRIC

WORKMANSHIP (CONT.)

31. ELECTRICAL CONNECTION OF EQUIPMENT

(a) Overcurrent protection and disconnecting means as required by the NEC shall be provided for motors. Motor driven equipment specified under "Heating" Division, may be factory wired complete with controllers and motor disconnects, therefore, Contractor should check equipment purchased under that Division, so as to avoid duplication of protective and disconnecting means.

(b) Connect ready for operation, motors and control apparatus specified under other Divisions, unless specifically mentioned as being connected under such Divisions.

(c) All electrically operated equipment shall be connected, ready for operation, except as hereinafter specifically omitted and if specifically mentioned as being connected under "Heating" Division of the specifications.

(d) The electrical supply wiring for furnaces equipped with blowers shall be provided under this Division of specification.

(e) The supply wiring for each furnace blower shall consist of a circuit from the load center to an externally operable fused knife switch, magnetic starter with overload coils and relay, low voltage release. The starter shall be under control of the temperature controllers in plenum and in return air duct furnished and installed under the Heating Division. The work of this Division shall include the wiring between the temperature controllers and the motor starter.

32. GROUNDING

(a) Where knob and tube wiring and/or non-metallic sheathed cable is used in ~~conjunction~~ conjunction with armored cable and/or metallic raceway, the grounding requirements are of special importance. Runs of armored cable or metallic raceway less than 25 feet need not be grounded, provided "they are free from probable contact with ground or grounded metal and which, if within reach from grounded surfaces, are guarded against contact by persons." Runs of greater length should be grounded.

ELECTRIC

WORKMANSHIP (Cont.)

33. FINAL INSPECTION AND TESTS

(a) Prior to test, feeders and branches 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 3018, NEC 1940. Provide testing equipment necessary and conduct test in presence of Government's authorized representative.

END OF ELECTRIC DIVISION 18