

# 7.0 Schuck and Sons Construction

"We always thought we did a pretty good job, and we know now that we do. This [program] helps us take it to that next level and do it a little better." Craig Steele, Schuck and Sons Construction Company, Inc.

At Schuck and Sons Construction Company, Inc., implementation of the quality assurance system began in June 1999. The system became fully operational in May 2000.

On February 1, 2001, Schuck and Sons Construction Company, Inc. became one of the first three framing contractors to be certified by the NAHB Research Center, Inc.

# 7.1 Company Profile

Area Served	Phoenix, Tuscon, and Prescott, Arizona
Type of homes	Single-family homes \$150,000 to more than \$1,000,000
Services	Carpentry contractor Truss plant Lumber yard Door manufacturer
Workforce	500 framing employees and 950 total employees Crews organized by phases of framing
Other	Employee-owned company All crews are company employees In-house truss plant Stick-built construction

# 7.2 Benefits and Results

The NAHB Research Center, Inc., measured and analyzed business performance before and then one year after implementation of the quality system. The following areas showed significant improvement:

### **Prevention of Quality Defects**

The NAHB Research Center, Inc., measured a 65 percent reduction in the number of quality problems per home during the first year of quality system operation.

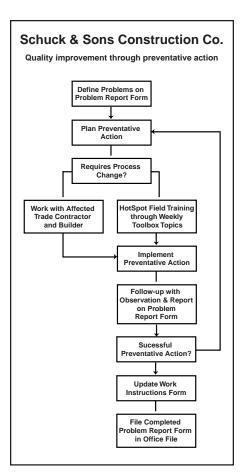
The data is based on job ratings by company area superintendents who perform independent job inspections. They rate the framing quality of every home at one of two levels: meeting expectations or, when problems are encountered, below expectations. Rating data were tabulated in May 2000 through April 2001. During this period, the area superintendents who rated the homes and the rating standards themselves remained unchanged.

"One of the main hurdles in the home building industry is the number of times that people have to go back and do rework, and we fall into that category, too. This program has reduced that dramatically." Craig Steele, Schuck and Sons Construction Company, Inc.

### Improved Productivity

Despite regional carpenter labor wage increases, contract pricing on renewed bids and profitability remained at current levels.

In comparison, the most recent U.S. Department of Labor<sup>12</sup> cost data for carpenter labor increased by more than 12 percent.



Preventative Action Process

<sup>&</sup>lt;sup>12</sup> U.S. Department of Labor, *National Occupational Employment and Wage Statistics*. Arizona carpenter mean hour rates 1999 and 1998.



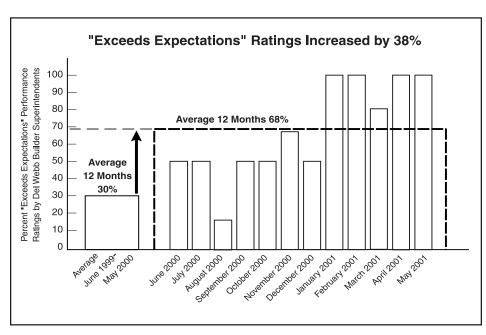
### **Builder Satisfaction**

Builder satisfaction survey ratings from Schuck and Sons Construction Company, Inc.'s largest client, Del Webb's Contracting Services Sun City Grand, have improved to 100 percent. Each of the builder's field superintendents provides monthly satisfaction ratings at three levels: falls short of, meets, or exceeds expectations.

rade Contractor Name: This survey gauges how well our C	ontractors have met Del Webb's exp	Date: March 01  excitations during the last month. Please indicate your resp.	onse to the
following questions by checking the an explanation for your rating in the may have.	appropriate box. If you check "Faile comments section below each ques	d to meet expectations" for any of the questions, you MUS tion. This section can also be used for any positive comm	Tinclude ents you
Please complete the following	ig sentences: (check only on	e response)	
Overall Satisfaction and    Exceeded expectations		☐ Fell Short of expectations	
Comments:			
☐ Exceeded expectations	ricing is retumed in a timely n  Met expectations	☐ Fell Short of expectations	
		ocumentation is completed in a prompt manner	
Exceeded expectations     Comments:		☐ Fell Short of expectations	
improve products and proce	sses.	s and upon request, displays a genuine eagern	ess to
Comments:			

**Builder Satisfaction Survey** 

In 1999, less that 50 percent of the ratings were at the "exceed" level. Ratings trends improved during the implementation period. Ratings are now at the 100 percent "exceeds" level.



Performance Evaluation



### **Workforce Development**

Low workforce turnover is an indication of high employee satisfaction. Throughout the study period, turnover of field superintendents has been less than 5 percent. One foreman was hired in the last two years to replace a foreman who left the company. There has been no turnover among the six field superintendents. Schuck and Son Construction Company, Inc. management attributes the low turnover rates to improved levels of job satisfaction.

"We have an in-house apprenticeship program. Some of the information for the program comes from the [quality hotspot] training for the certified framer program we've incorporated into our apprenticeship training program." Craig Steele, Schuck and Sons Construction Company, Inc.

Schuck and Son Construction Company, Inc. reports that in-house training of field personnel has increased substantially during the study period. The increased activity can be attributed primarily to institutionalizing hotspot training about construction details on a routine basis two to four times every month.

"I found the one thing that we took for granted was that new employees said they had a [skill] level. We just took it at face value until they worked for a while and then they didn't have that level. This gave us a means to track where they really are and improve on their ability. This gives you some tools to say he's probably going to make a good employee, but he's a little deficient in this area. You provide him with the training, and, in most cases, he becomes a good employee. They appreciate the training." Craig Steele, Schuck and Sons Construction Company, Inc.

# 7.3 Implementation of the Quality System

Before implementation of the quality assurance system, Schuck and Son Construction Company, Inc. was already performing many of the activities required by the system. Therefore, during the study period, implementation focused on formalizing activities, performing them on a regular basis, and documenting results.

"We're always looking for things to make us better at what we do...but there's a little bit of tweaking that we needed to do to bring us to another level and this [Quality assurance program] did that." Craig Steele, Schuck and Sons Construction Company, Inc.

To establish the quality assurance system, the general superintendent, the vice president of operations, and the NAHB Research Center, Inc., collaborated to provide details required by the quality plan.



### Appointment of the Quality Representative

The general superintendent had been performing many of the quality representative duties as part of his normal job. The company president formalized the role through a memorandum appointing him as the quality representative with specific quality responsibilities and authority.

The quality representative in turn assumed responsibility for the quality of field operations and served as chief decision maker on field quality issues. The most significant change in his responsibilities was the requirement to tabulate field inspection data.

"The quality representative collects the data from the field and enters it into the computer, so he's got some additional duties. Right now it is handwritten on paper forms and then entered into the computer database. We're currently in the process of developing...paperless electronic inspections and downloading [data] that way." Craig Steele, Schuck and Sons Construction Company, Inc.

# Schuck & Sons Quality

Schuck & Sons Construction is committed to providing our customers with the best quality products and workmanship. We are continually looking for ways to improve the services we provide by staying on the cutting edge of technology, material advancements, and construction process improvements. In so doing, our customers benefit in the form of on-time deliveries, quality construction, reduced cycle times, fewer service requests, and confidence in the structural and aesthetic integrity of their homes. Our customers can offer their homebuyers the assurance that their home is framed and trimmed using the latest materials and methods for lasting durability and value. Schuck & Sons Construction has been instrumental in bringing ISO 9000 standards to the homebuilding industry. Our Quality Representative, Doug Hassinger, is responsible for managing and administering the company's Ouality Plan. His duties are to ensure that the materials and construction procedures we use adhere to strict quality guidelines set forth by senior management in accordance with ISO 9000 standards and all applicable codes and builder specifications.

Craig Steele

President and CEO

Schuck & Sons Construction

**Quality Representative Appointment Letter** 



# **Schuck & Sons Construction Company**

### **Quality Statement**

Our company is committed to the workmanship quality, performance, and durability of the constructed product. To this end, we pledge:

- Compliance with applicable regulations, safety requirements, construction codes, and good workmanship practices.
- · Contract requirements will be fulfilled in their entirety
- . All crews will work under the direction of an on-site qualified Crew Leader
- · QA system policies and procedures will be followed at all times
- · Continual improvement toward the prevention of defects

### Quality Responsibilities

Quality is everyone's responsibility. All employees have a personal responsibility to:

- · Use only approved materials and related construction procedures.
- Never use defective or damaged materials or equipment.
- · Prevent and/or report potential quality and safety problems.
- Stop work in the affected area if continuing work in that area may be unsafe, adversely affect quality results, or cover-up a defect.

The Crew Leaders have additional responsibilities to ensure that:

- · Employees are capable of performing assigned tasks.
- · Work activities comply with approved materials.
- · Only approved materials and equipment are used.
- · Job inspection records accurately record job activity.
- Each job meets good workmanship practices, contract, code, regulatory, and quality system requirements.
- The builder is notified of any unresolved nonconformance remaining at the completion of the job.

Craig Steele, President/CEO

3-15.00

Doug Hassinger, Quality Representative

3-15-00

**Quality Policy** 

### **Quality Policy**

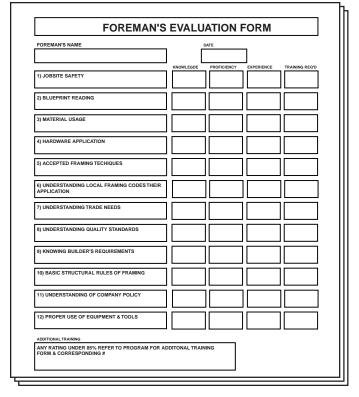
The vice president of operations crafted a company quality policy that was ratified by the senior management team and signed by the president. The quality policy articulates the importance of quality to the organization and defines the quality responsibilities of all employees.

The company president reviewed the quality policy with employees at a series of production meetings and field talks. Poster-sized copies of the quality policy were framed and posted in the company offices. Articles in the quarterly company newsletter reinforced the quality message.



### List of Qualified Crew Foremen

Foremen and superintendents are formally qualified to lead and/or inspect specific types of field crews. A foreman's evaluation form identified 12 criteria ranging from jobsite safety and framing techniques to quality standards.



Foreman's Evaluation Form

Related to foreman qualifications is a required training program. The quality representative checks boxes on a form when the foreman completes training modules.

FOREMAN'S NAME	DATE OF TRAINING
HARDWARE REVIEW APPROPRIATE SECTIONS IN CURRENT SIMPSON BOOD VIEW ANY HELPFUL PICTURES ON APPLICATIONS WALK ANY HOUSE THAT WOULD DEFINE PROBLEM AREAS DISCUSS PROPER HARDWARE APPLICATION AND CODE NAILI	
PLUMB, LEVEL & LINE REVIEW QUALITY MANUAL STANDARDS ON FOLLOWING ARI FRAMING PERFORMANCE GUIDELINES ON: WALLS BEING PLUMB ALL OPENINGS PLUMB & LEVEL (GLASS BLOCK, WI SQUARE WEAPPED OPENINGS & WINDOW OPENINGS STANDARDS ON CEILING STRAIGHTNESS	NDOW, WRAPPED)
HOUSEKEEPING REVIEW SAFETY ISSUES CONSIDER OSHA STANDARDS AND BUILDER'S REQUIREMENT REVIEW WHAT NEEDS TO BE DONE WITH BRACE MATERIAL	rs
MATERIAL USAGE REVIEW GRADE OF MATERIAL TO USE FOR DIFFERENT APPLIC CONSIDER BLUEPRINTS ON STUD, TRIMMER DESIGNATION REVIEW WHY HEADER SIZES ARE IMPORTANT CONSIDER HOW TO KEEP FASCIA STRAIGHT WITH APPROPRIATRUSS STORAGE AND HANDLING	
SAFETY REVIEW COMPANY POLICIES REVIEW SAFETY PROCEDURES VIEW COMPANY'S SAFETY VIDEO CONSIDER MANUFACTURER'S INSTRUCTIONS FOR SAFE EQUI CONDUCT A SAFETY MEETING USING AN APPROPRIATE ITEM COMPANY 12 WEEK TAILGATE SAFETY MEETING PR	FROM
ATTACHMENT/INSTALLATION REVIEW NAILING SCHEDULE FOR SHEAR WALL NAILING REVIEW UBC & SCHUCK STANDARDS ON NAILING CONSIDER WHY A GAP IS NECESSARY ON OBS BHEATHING	

Foreman's Training Evaluation



When a foreman meets all criteria for a specific crew type, the individual's name is entered on the foreman qualification list.

version 2. May 30, 2000

### **FOREMAN QUALIFICATION LIST**

NAME	LAYOUT	EXTERIOR	TRUSS/ROOF	INTERIOR	EXTERIOR
		FRAMING	SET/FRAMING	FRAMING	TRIM
PHIL K	APPRV'D	APPRV'D	N/A	N/A	N/A
JOSE C	APPRV'D	APPRV'D	N/A	APPRV'D	APPRV'D
JAMES D	APPRV'D	APPRV'D	N/A	APPRV'D	APPRV'D
DANIEL T	N/A	APPRV'D	N/A	N/A	APPRV'D
THURMAN B	N/A	N/A	APPRV'D	N/A	APPRV'D
RAPHAEL B	APPRV'D	APPRV'D	APPRV'D	APRRV'D	APPRV'D
CHESTER D	N/A	N/A	APPRV'D	N/A	APPRV'D
ORLANDO P	N/A	N/A	APPRV'D	N/A	APPRV'D
LEONARD B	N/A	APPRV'D	N/A	APPRV'D	APPRV'D
DERRICK H	APPRV'D	APPRV'D	N/A	APPRV'D	APPRV'D
ROBBIE M	APPRV'D	APPRV'D	APPRV'D	APPRV'D	APPRV'D
GEORGE P	APPRV'D	APPRV'D	APPRV'D	APPRV'D	APPRV'D

Foreman Qualification List

### Lists of Standard Materials

Schuck and Sons Construction Company, Inc. listed only those materials not usually specified by their builders. The quality manager also assembled copies of related installation instructions as well as instructions for the array of materials specified by the builders, i.e., the Simpson Strong-tie catalog and NER reports for engineered wood products.

"With this program, you have a huge focus on the manufacturer's installation specifications, and it gave us consistency from crew to crew. So something that one crew was doing really well maybe another crew wasn't in the past and now everybody is on the same sheet of music." Craig Steele, Schuck and Sons Construction Company, Inc.

### SCHUCK & SONS APPROVED MATERIAL LIST

M TERIAL/EQUIPMENT	COMPANY REQUIREMENT	APPROVED USE/PLACEMENT
rail gun	Stantech sequential fire	Nail gun must not be modified
Skilsaw (circular saw)	Skilsaw make	Skilsaw must not be modified. Follow manufacturer's instructions.
Hammer	Must be in good condition	Select hammer of choice
Ladder	Type 1A 300 lbs. Non-conductive Fiberglass extra heavy duty. OSHA Approved ANSI A14.5	Use as needed
Hardhat	Type 1 class E ANSI Z89.1-1997	Worn at all times
Safety glasses	ANSI Z94.3/Z87.1	Worn at all times
Footwear	Hard soled footwear. Sneakers may be worn by roof sheathers	Worn at all times
Measuring tape	25 ft. minimum length	Use as needed
Level	4-ft. minimum length	Must be check for accuracy
Portable electric generator	GFI circuit Grounded 3-conductor electrical cord	Use as needed when temp. Not available
ns ns	Metal gas can with flame arrestor	As needed for portable generators, compressors
Electrical extension cord	3-conductor	As needed for power tools. Only minor repairs To outer casing with shrink sleeving permitted.
Nails	Nominal .131 in. shank or larger	General use for fastening 2x dimensional lumbe As required for hardware application
Blocking	Utility grade lumber or better	For sheathing, wall backing and standard practic

Approved Materials List



FRAMING PERFORMANCE GUIDELINES CON'T		
WALL, STUD SPACING	WALL STUD SPACING VARIATION AS MEASURED FRO CORNER	M 1/2 IN. SCHUCK & SONS
WALL, PLACEMENT	WALL PLACEMENT VARIATION FROM DRAWING AS MEASURED FROM CORNER	1/2 IN. SCHUCK & SONS
WALL, DIMENSIONS	WALL DIMENSION VARIATION FROM DRAWING AS MEASURED FROM CORNER	1/2 IN. SCHUCK & SONS
WALL, OPENING PLACEMENT	WALL OPENING PLACEMENT VARIATION FROM DRAWING AS MEASURED FROM CORNER	1/2 IN. SCHUCK & SONS
WALL, OPENING DIMENSIONS	WALL OPENING DIMENSION VARIATION FROM DRAWING	1/2 IN. SCHUCK & SONS
WALL, PLUMB	WALL PLUMBNESS	1/4 IN. PER 8 FT. DEL WEBB 1/4 IN. FLOOR TO CEILING/AZ REGISTRAR
WALL, BOW	WALL BOW IN THE HORIZONTAL AND VERTICAL DIRECTION	1/4 IN. PER 8 FT. BOTH DIRECTIONS FOR NON- CABINET WALLS, 1/8 IN. PER 8 FT. BOTH DIRECTIONS FOR CABINET WALLS DEL WEBB
WALL, SQUÂRE	WALL SQUARENESS	1/4 IN. DEVIATION IN THE DIAGONAL OF 6-8-10 PER AZ. REGISTRAR
WALL, TOP PLATE LEVEL	WALL TOP PLATE LEVEL	1/4 IN. PER 10 FT. DEL WEBB
WALL, OPENINGS PLUMB	WALL OPENINGS PLUMB	1/8 PER 8 FT. DEL WEBB
WALL, OPENING TWIST	WALL OPENING TWIST	1/8 IN. PER 5 FT. DEL WEBB
WINDOW, SILL LEVEL	WINDOW SILL LEVEL	1/8 IN. PER 8 FT. DEL WEBB
WINDOW OPENING DIMENSION	WINDOW OPENING DIMENSION VARIATION	1/4 IN. SCHUCK & SONS
WINDOW OPENING PLUMB	WINDOW OPENING PLUMB AT TRIMMERS	1/8 IN. PER 8 FT. DEL WEBB
WINDOW OPENING, PLACEMENT	WINDOW OPENING PLACEMENT VARIATION FROM DRAWING AS MEASURED FROM CORNER	1/2 IN. SCHUCK & SONS
WINDOW OPENING, TWIST	WINDOW OPENING TWIST AT TRIMMERS	1/8 IN PER 5 FT. DEL WEBB
WINDOW SILL, TWIST	WINDOW SILL TWIST	1/8 IN. PER 8 FT. DEL WEBB
WINDOW, HEADER LEVEL	WINDOW HEADER LEVEL	1/8 IN. PER 8 FT. DEL WEBB

### Regulatory Requirements

The quality manual references the applicable sections of the 1997 Uniform Building Code and Arizona state warranty regulations.

### Workmanship Performance Tolerances

Schuck and Sons Construction Company, Inc. established internal standards for workmanship tolerances. If builder specifications do not supersede the tolerances, the tolerances serve as default specifications.

### Framing Performance Guidelines

# TITLE PAGE FOR SCHUCK & SONS QUALITY MANUAL CONTROLLED DOCUMENT ISSUED TO: BOBBY LANGTRY REVISION DATE: JUNE 13, 2001

Schuck Quality Manual

### **Quality Manual**

The above items were assembled into the "Schuck & Sons Quality Manual." The manual closely follows the *Quality Assurance System for Wood Framing Contractors.* 14

<sup>&</sup>lt;sup>14</sup> NAHB Research Center, Inc., *Quality Assurance System for Wood Framing Contractors* (NAHBRC, 2000), Upper Marlboro, MD; 800-638-8556.



# 7.4 Operation of the Quality System

The quality assurance system became fully operational in May 2000 as verified by an internal quality system review. In August 2000, the NAHB Research Center, Inc., performed a full-day certification audit of quality records, interviewed employees, and verified jobsite Quality assurance policies and procedures. On February 1, 2001, Schuck and Sons Construction Company, Inc. became one of the first three framing contractors to be certified by the NAHB Research Center, Inc.

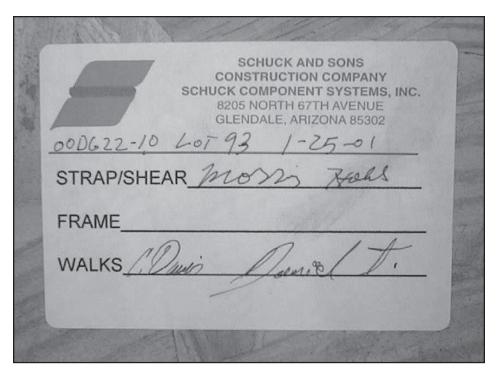
"[There was] resistance to begin with, a lot of resistance for two reasons. One. it was more paperwork and most of the time they don't like paperwork. And the other thing is there was an accountability trail. And when people are held accountable, the first thing they think of is there's going to be retribution or something like that. We didn't want them to feel that this was a tool for punishment or retribution; we wanted it to be viewed as a tool to make their job easier and to reduce the amount of rework that they would have to do and make them better at what they do. It took a while to get that point across, but now it is readily accepted." Craig Steele, Schuck and Sons Construction Company, Inc.

### **Job Inspections**

Schuck and Sons Construction Company, Inc. area superintendents perform inspections on each home, rating each phase of the framing process. Scores indicate the number of quality issues that need correction. The scores are recorded on an inspection form.

"There weren't many changes, not for the field personnel. It did not change the way that they did things; it just gave them kind of a path to make sure that they were doing everything that they were supposed to do." Craig Steele, Schuck and Sons Construction Company, Inc.





Final Inspection Sticker

When the final inspection is completed, an area superintendent affixes a signed sticker to the home.

Completed inspection reports are submitted to the company quality representative. Inspection ratings for each job are entered into a computer database. The quality representative created the database and input form.

### **Quality Improvement and Training**

Every month, a series of computer inspection reports show quality data and trends for each phase of construction and for each foreman. The quality representative identifies quality hotspots that trigger training of the appropriate field personnel. Typically, one type of crew undergoes hotspot training every week. Training rotates among the five crew types.

Training starts during the weekly production meeting when area superintendents review the hotspots and distribute a hotspot training sheet to crew foremen and review the topic in a jobsite toolbox talk.

"Through our data collection, we are able to pinpoint errors and then focus our training where it's needed most. This creates a continuing education and improvement cycle, which ultimately results in reducing callbacks." Frank Serpa, Schuck and Sons Construction Company, Inc.

Recent hotspot training topics include:

- sway brace spacing at gables;
- shear placement per option plans;
- shear transfer—interpretation of details; and
- tightening redheads.



### **Builder Satisfaction Surveys**

Before implementation of the quality system, some builders supplied unsolicited satisfaction ratings. Now, a builder satisfaction survey is sent to every builder. Returned surveys are used as topics of discussion and to identify improvement areas.

### 7.5 Future Plans

Shuck and Sons Construction Company, Inc. is expanding implementation of the quality system to nonframing business operations.

"We're taking [the quality system] from our framing operation into our plant because we have truss assemblers and door assemblers and lumber handlers. We're using the same principles on our own and taking it into the plant." Craig Steele, Schuck and Sons Construction Company, Inc.

# **BUILDER SATISFACTION SURVEY** DATE BUILDER REVIEWER LOCATION PLEASE RATE YOUR RECENT EXPERIENCE IN EACH OF THE FOLLOWING AREAS. MOST QUESTIONS REQUIRE ONLY THAT YOU CIRCLE AN ANSWER. FEEL FREE TO ADD YOUR COMMENTS TO ANY 1) CONTRACT & JOB SPECIFICATIONS ARE CONSISTENTLY MET 2) BUILDING CODES AND REGULATIONS ARE CONSISTENTLY MET 3) SAFETY REGULATIONS ARE CONSISTENTLY MFT. 3 2 1 4) SCHEDULE COMMITMENTS ARE CONSISTENTLY MET 5) BUILDER SPECIFIED MATERIALS ARE ALWAYS USED WHEN SPECIFIED 6) CONTRACTOR SELECTED MATERIALS ARE A GOOD BALANCE OF QUALITY & PRICE 7) THE CRAFTSMEN PRODUCE GOOD QUALITY WORKMANSHIP WITH MINIMAL MISTAKES 8) THE CONSTRUCTION PROCESS USUALLY GOES SMOOTHLY 9) PRODUCTION PROBLEMS, SHOULD THEY OCCUR, ARE CORRECTED QUICKLY AND EFFECTIVELY 10) PROBLEMS ARE PREVENTED FROM RECURRING 10) FRODELING ARE PREVENTED AND MANAGED 11) HECONTRACTOR IS WELL ORGANIZED AND MANAGED 12) HOMEOWNERS ARE SATISFIED WITH THE QUALITY OF THE CONTRACTOR'S WORK 13) OTHER TRADE CONTRACTORS ARE SATISFIED WITH THE QUALITY OF THE 14) OVERALL. THE CONTRACTOR HAS GOOD QUALITY CONTROL 5) OVERALL SATISFACTION WITH THE WORK OF THE CONTRACTOR IS EXCELLENT 6-STRONGLY AGREE 5-AGREE 4-SLIGHTLY AGREE 3-SLIGHTLY DISAGREE 2-DISAGREE 1-STRONGLY DISAGREE

**Builder Satisfaction Survey** 

# 7.6 Contact

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