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.


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

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

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\textsuperscript{12} cost data for carpenter labor increased by more than 12 percent.

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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.

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.

"Exceeds Expectations" Ratings Increased by 38%

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 hot-spot] 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 Quality 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
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.

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

Doug Hassinger
Quality Representative

3-15-00

Quality Policy
## List of Qualified Crew Foremen

Foremen and superintendents are formally qualified to lead and 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

<table>
<thead>
<tr>
<th>FOREMAN'S NAME</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) JOBSITE SAFETY</td>
<td></td>
</tr>
<tr>
<td>2) BLUEPRINT READING</td>
<td></td>
</tr>
<tr>
<td>3) MATERIAL USAGE</td>
<td></td>
</tr>
<tr>
<td>4) HARDWARE APPLICATION</td>
<td></td>
</tr>
<tr>
<td>5) ACCEPTED FRAMING TECHNIQUES</td>
<td></td>
</tr>
<tr>
<td>6) UNDERSTANDING LOCAL FRAMING CODES THEIR APPLICATION</td>
<td></td>
</tr>
<tr>
<td>7) UNDERSTANDING TRADE NEEDS</td>
<td></td>
</tr>
<tr>
<td>8) UNDERSTANDING QUALITY STANDARDS</td>
<td></td>
</tr>
<tr>
<td>9) KNOWING BUILDER'S REQUIREMENTS</td>
<td></td>
</tr>
<tr>
<td>10) BASIC STRUCTURAL RULES OF FRAMING</td>
<td></td>
</tr>
<tr>
<td>11) UNDERSTANDING OF COMPANY POLICY</td>
<td></td>
</tr>
<tr>
<td>12) PROPER USE OF EQUIPMENT &amp; TOOLS</td>
<td></td>
</tr>
</tbody>
</table>

**ADDITIONAL TRAINING**

Any rating under 85% refers to the program for additional training.

### Foreman's Training Evaluation

- **TRAINING PROGRAM ON FOLLOWING CATEGORIES**
  - **HARDWARE**
    - Review appropriate sections in current Simpson book
    - View any helpful pictures on applications
    - Wall, any issue that would define problem areas
    - Discuss proper hardware application and code nailing
  - **PLUMB, LEVEL & LINE**
    - Review quality manual standards on following areas:
      - Framing performance guidelines on walls being plumb
      - All openings plumb & level (glass block, window, wrapped)
      - Square wrapped openings & window openings
      - Standards on ceiling straightness
  - **HOUSEKEEPING**
    - Review safety issues
    - Consider & builder's requirements
    - Review what needs to be done with bracing material
  - **MATERIAL USAGE**
    - Review grade of material to use for different applications
    - Consider blueprints on stud, trimmer designation
    - Review header sizes
    - Consider how to keep fascia straight with appropriate material
  - **SAFETY**
    - Review company policies
    - Review safety procedures
    - View company's safety video
    - Consider manufacturer's instructions for safe equipment usage
    - Conduct a safety meeting using in-appropriate item from company's week tailgate safety meeting program
  - **ATTACHMENT/INSTALLATION**
    - Review nailing schedule for shear wall nailing
    - Review CEC & IBC/IBC standards on nailing
    - Consider why a gap is necessary on OSB sheathing
When a foreman meets all criteria for a specific crew type, the individual’s name is entered on the 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.
Framing Performance Guidelines

<table>
<thead>
<tr>
<th>FRAMING PERFORMANCE GUIDELINES CONT</th>
<th>WALL, STUD SPACING</th>
<th>WALL STUD SPACING VARIATION AS MEASURED FROM CORNER</th>
<th>3/8 IN, SCHUCK &amp; SONS</th>
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</thead>
<tbody>
<tr>
<td>WALL, PLACEMENT</td>
<td>WALL, PLACEMENT VARIATION FROM DRAWING AS MEASURED FROM CORNER</td>
<td>3/8 IN, SCHUCK &amp; SONS</td>
<td></td>
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<tr>
<td>WALL, DIMENSIONS</td>
<td>WALL DIMENSION VARIATION FROM DRAWING AS MEASURED FROM CORNER</td>
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<td>WALL, OPENING PLACEMENT</td>
<td>WALL OPENING PLACEMENT VARIATION FROM DRAWING AS MEASURED FROM CORNER</td>
<td>3/8 IN, SCHUCK &amp; SONS</td>
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<td>WALL OPENING DIMENSION VARIATION FROM DRAWING</td>
<td>3/8 IN, SCHUCK &amp; SONS</td>
<td></td>
</tr>
<tr>
<td>WALL, PLUMB</td>
<td>WALL PLUMB</td>
<td>3/8 IN, PER 8 FT, DEL WEBB</td>
<td></td>
</tr>
<tr>
<td>WALL, OW</td>
<td>WALL OW</td>
<td>3/8 IN, PER 8 FT, BOTH DIRECTIONS FOR NON-CAAB WALLS, 1 3/8 IN, PER 8 FT, BOTH DIRECTIONS FOR CABINET WALLS DEL WEBB</td>
<td></td>
</tr>
<tr>
<td>WALL, SQUARE</td>
<td>WALL SQUARENESS</td>
<td>3/4 IN, DIAGONAL OF 6-6-10 PER AZ, REGISTRAR</td>
<td></td>
</tr>
<tr>
<td>WALL, TOP PLATE LEVEL</td>
<td>WALL TOP PLATE LEVEL</td>
<td>3/4 IN, PER 10 FT, DEL WEBB</td>
<td></td>
</tr>
<tr>
<td>WALL, OPENINGS PLUMB</td>
<td>WALL OPENINGS PLUMB</td>
<td>1/8 IN, PER 8 FT, DEL WEBB</td>
<td></td>
</tr>
<tr>
<td>WINDOW, ALL LEVEL</td>
<td>WINDOW ALL LEVEL</td>
<td>1/8 IN, PER 8 FT, DEL WEBB</td>
<td></td>
</tr>
<tr>
<td>WINDOW OPENING PLUMB</td>
<td>WINDOW OPENING PLUMB AT TRIMMERS</td>
<td>1/8 IN, PER 8 FT, DEL WEBB</td>
<td></td>
</tr>
<tr>
<td>WINDOW OPENING DIMENSION</td>
<td>WINDOW OPENING DIMENSION VARIATION FROM DRAWING AS MEASURED FROM CORNER</td>
<td>1/2 IN, SCHUCK &amp; SONS</td>
<td></td>
</tr>
<tr>
<td>WINDOW OPENING, PLACEMENT</td>
<td>WINDOW OPENING PLACEMENT VARIATION FROM DRAWING AS MEASURED FROM CORNER</td>
<td>1/2 IN, SCHUCK &amp; SONS</td>
<td></td>
</tr>
<tr>
<td>WINDOW OPENING, TWIST</td>
<td>WINDOW OPENING TWIST AT TRIMMERS</td>
<td>1/8 IN, PER 5 FT, DEL WEBB</td>
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</tr>
<tr>
<td>WINDOW SILL, TWIST</td>
<td>WINDOW SILL TWIST</td>
<td>1/8 IN, PER 8 FT, DEL WEBB</td>
<td></td>
</tr>
<tr>
<td>WINDOW, HEADER LEVEL</td>
<td>WINDOW HEADER LEVEL</td>
<td>1/8 IN, PER 8 FT, DEL WEBB</td>
<td></td>
</tr>
</tbody>
</table>

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.

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

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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.
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.

Recent hotspot training topics include:
- sway brace spacing at gables;
- shear placement per option plans;
- shear transfer–interpretation of details; and
- tightening redheads.

“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.
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.

7.6 Contact

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