



5.0 All-Tech Construction, Inc.

"I think our company has always had a reputation for being the best at what we do in our market.... We had achieved a record year in sales and profitability, but we also noticed some trends like our service calls that are increasing disproportionately. We felt that size and volume were creating problems."
Jalsa Urubshurow, President, All-tech Carpentry Contractors

Implementation of the quality assurance system began in June 1999. The quality assurance system became fully operational in May 2000.

On February 1, 2001, All-tech Carpentry Contractors became one of the first three framing contractors to be certified by the NAHB Research Center, Inc.

5.1 Company Profile

Area served	New Jersey, New York, and Pennsylvania
Type of homes	Multi- and single-family homes \$175,000 to more than \$1,000,000
Services	Carpentry contractor
Workforce	70 employees 400–500 carpenters in contracted crews organized by phases of framing
Other	All crews are independent contractors Stick-built construction

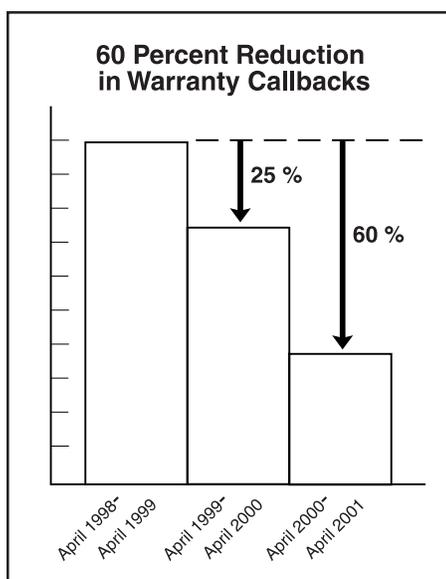
5.2 Benefits and Results

"We're already feeling the success. We've had dramatically improved customer relations."
Jalsa Urubshurow, All-tech Carpentry Contractors

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

Warranty Callback Reduction

All-tech Carpentry Contractors has experienced a 60 percent reduction in warranty callbacks. The warranty items per home were tabulated for one year before implementation of the quality system and for the year after the quality system became operational.



Warranty Reduction

"We've already reduced our service calls by half...so for it to produce that kind of result during its implementation is a pretty amazing thing. The decrease in warranty tickets not only saved on field man hours, it also made fewer administrative hours needed to schedule appointments, and most importantly increased homebuyer satisfaction." Jalsa Urubshurow and Don Perrin, All-tech Carpentry Contractors

Prevention of Quality Problems

Detailed framing inspections revealed a reduction in observed quality problems. Before implementation of the quality system, the project team made a detailed framing inspection of two homes. From the observations, the team identified a baseline of the ten most important quality issues.

One year after implementation, only two of the ten baseline quality issues were observed during detailed framing inspections of two homes in the same community. Eight of the ten original quality issues were not observed.

Builder field inspection records confirm a reduction of the ten baseline quality issues. The NAHB Research Center, Inc., reviewed the builder's framing inspection records for seven homes in the same community. The builder inspections observed only one of the baseline quality issue in two homes. None of the other nine quality issues was evident.

The same builder's corporate quality assurance specialists performed independent inspections of 16 homes in the same community over a period of three weeks. Only one of the original ten quality issues appeared in one home. None of the other nine quality issues was evident.

Improved Productivity

Despite escalating regional labor carpenter costs, contract pricing on renewed bids and profitability remained at current levels. In comparison, most recent U.S. Department of Labor¹¹ cost data for carpenter labor increased by more than 7 percent.

Company management cites improved labor productivity as the main reason for cost containment. Productivity improvements have offset rising labor costs as well as any additional costs of operating the quality system.

¹¹ U.S. Department of Labor, *National Occupational Employment and Wage Statistics*. New Jersey carpenter mean hour rates 1999 and 1998.



Builder Satisfaction

Overall, builder satisfaction survey ratings rose from an average rating of 72 points in 1999 to 86 points in August 2000.

"One of our large customers does composite surveys...they'll survey several projects that we're on and come up with a composite score. Their evaluation of us had dropped before our involvement in the quality initiative with the NAHB Research Center...we had dropped into the mid-70s. This past winter we received 97 percent after we were involved in this program. It was a dramatic change." Jalsa Urubshurow, All-tech Carpentry Contractors

K. Hovnanian, a large national home builder, awarded its 2000 Excellence Award to All-tech Carpentry Contractors for outstanding achievement.



K. Hovnanian Achievement Award

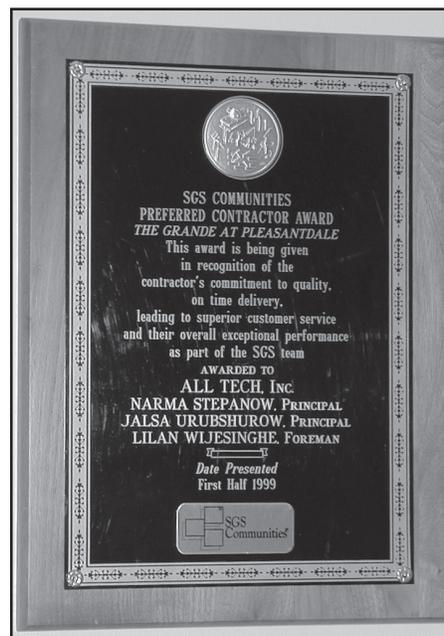
All-tech Carpentry Contractors also received the SGS Communities 1999 Preferred Contractor Award for commitment to quality, delivery, and overall exceptional performance. SGS Communities is a New Jersey division of D.R. Horton, a national builder.

Pulte Delaware Valley Division awarded All-tech Carpentry Contractors its 1999 Contractor-of-the-Year Award. Pulte Corporation is a large national builder.

"We have seen significant improvement from our builder surveys, and our reputation for building a quality house has grown. I now have national home builders pursuing me, and I feel the program has definitely given me a competitive edge." Jalsa Urubshurow, All-tech Carpentry Contractors



Pulte Contractor-of-the-Year Award



SGS Communities Preferred Contractor Award

Workforce Development

"We've got really great, wonderful people. That's how we were able to get to where we are in our market. I think that's a common factor when I look around and see other successful framers and people who do what we do. It's the people. It always is. A lot of companies, I think, forget that." Jalsa Urubshurow, All-tech Carpentry Contractors

There has been more training of field personnel in the last year than ever before. Recent hotspot topics include

- framing details for top plate breaks in bearing walls;
- glue and nail decking for flush girders in TJI floor systems;
- vertical full sheets for exterior corner sheathing;
- tape measuring of the first row of roof sheathing; and
- 12-inch minimum bearing for double rim board over base-ment windows.

"The full effect of the quality program has yet to be realized. Since the certification program was completed on February 1, 2001, it is an ongoing process for which the benefits should continue to grow for us as a company and our builder clients." Jalsa Urubshurow, All-tech Carpentry Contractors



Jobsite Training



5.3 Implementation of the Quality System

Before implementation of the system, All-tech Carpentry Contractors performed many of the activities required by the quality system. Therefore, implementation focused on formalizing the activities, performing them on a regular basis, and documenting results.

To establish the quality assurance system, the All-tech Carpentry Contractors operations manager and vice president of operations, K. Hovnanian (builder), and the NAHB Research Center, Inc., collaborated to provide a detailed quality plan.

A two-person team led the implementation of the quality assurance system. The operations manager adapted the system to the specific needs of the company. The vice president of operations was appointed as the company quality representative and led implementation of the system in field operations.

“We had an operations manager who actually was an ISO 9000 auditor, so that was very helpful. He joined us before this initiative. It is kind of interesting that that happened—it was a coincidence. We had hired this gentleman to be a manager of our operations; this initiative came along so we were able to let him focus on it. Plus one of our vice presidents of operations was assigned to the quality control project to take ownership of our involvement.... So here was a gentleman who knew operations; knew the system; was familiar with ISO 9000, coupled with our 25-year veteran of the industry who kind of led this into the field.”
Jalsa Urubshurow, All-tech Carpentry Contractors

Appointment of a Quality Representative

Overall, the responsibilities of the quality representative did not change substantially. He was responsible for the quality of field operations and was a chief decision maker on field quality issues. He performed job audits on a regular basis as part of his normal duties. Now, field review observations are recorded on a form, whereas they were not documented before system implementation.



All•tech, Inc. Quality Statement

All•tech, Inc.'s quality statement is to be an innovative industry leader, totally committed to customer satisfaction, employee satisfaction, integrity and teamwork. We are committed to the workmanship quality, performance, and durability of all constructed products and strive to build all our homes defect free. To this end, we pledge:

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

Quality is everyone's responsibility. All employees have a personal responsibility to ensure their own safety and the safety of others. All employees have a personal responsibility for the quality of their work and to:

- Use only approved materials and construction procedures.
- Materials or equipment must be in good condition.
- Prevent potential problems that may adversely affect safety or quality.
- Stop work if conditions are unsafe.

Supervisors are responsible 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.

President

Quality Representative

Date

Date

Quality Statement

Among the first activities was formulation of a company quality statement that articulated the importance of quality to the organization and outlined the quality responsibilities of all employees.

The company president introduced the quality policy to area supervisors at a weekly production meeting. The area supervisors then reviewed the quality policy with each field crew at a weekly toolbox talk. The reviews brought together employees as well as independent contractors. Copies of the quality policy were inserted into the pay envelopes of all employees and included with payments to all independent contractors.

Quality Statement



Lists of Qualified Crew Foremen

It was common practice to assign crews to specific phases of framing based on demonstrated capabilities. The process was formalized by listing the names of the foremen and the types of crews they were qualified to lead.

**All•tech Quality Assurance Form
Qualified Employee Crew Leader / Foreman List**

NAME	LAYOUT		FRAMING		ROOF TRUSS		SHEATHING		BLOCKOUT FASCIA	
	Crew Leader	Fore-man	Crew Leader	Fore-man						
Luis A			X				X		X	
Basan B	X		X		X		X		X	
Fernando B	X	X	X	X	X	X	X	X	X	X
Lonny B	X	X	X	X	X	X	X	X	X	X
John C	X	X	X	X	X	X	X	X	X	X
Jeff C	X	X	X	X	X	X	X	X	X	X
John C	X	X	X	X	X	X	X	X	X	X
Rick C	X	X	X	X	X	X	X	X	X	X
Feix G	X		X	X	X	X	X	X	X	X
Patricio G									X	
Fernando G			X	X			X	X	X	X
Tom H	X	X	X	X	X	X	X	X	X	X
Ladislav H	X		X	X	X		X	X	X	X
Khyen I	X	X	X	X	X	X	X	X	X	X

Qualified Foreman List

Lists of Standard Materials

Builder scopes of work and architectural drawings specify most materials. However, some clients do not have well-defined specifications. Accordingly, the quality representative compiled a comprehensive list of approved materials. Approved materials were specified at the lowest level of detail that produces quality results.

**All•tech Quality Assurance Form
Approved Materials List (General)**

Material/ Equipment	Approved Use and Placement	Specification	Installation Method	Source of Requirements
Nail Guns	As Needed	Select make of choice. Guns may not be modified.	Manufacturers use instructions.	
Circular Saws	As Needed	Select make of choice. Saws may not be modified.	Manufacturers use instructions	
Hammers	As Needed	Select hammer of choice.	Standard practice.	
Ladders	As Needed	Type 1 250 pound duty rating.	Manufacturers use instructions affixed to ladder.	
Hardhats	Worn at all times by everyone.	ANSI Z89.1-1997	N/A	
Eye Protection	Worn at all times by everyone when there is potential for flying debris.	High impact protection. ANSI Z94.3/Z87.1	N/A	
Footwear	Worn at all times by everyone.	Hard-soled work boots must be worn. Allowable Exception: Roof sheathers working on the roof and framers walking on tops of trusses and top plates may wear sneakers.	N/A	

Approved Materials List

Regulatory Requirements

The quality assurance system references the applicable sections of the national building codes and the *New Jersey Regulations Governing New Home Warranties*.

Workmanship Performance Tolerances

Before implementation of the system, All-tech Carpentry Contractors relied on an array of important performance tolerances documented in a 17-page publication entitled *All-tech Standard Operating Procedures for the Field*.

The quality representative created a set of workmanship tolerances to supplement the manual.

Unless superseded by builder specifications, the operating manual and the workmanship tolerances serve as default specifications.

Quality Manual

The above items were assembled into the “All-tech Quality Manual.”

“Like any other initiative, you’ve got to have another layer or another tier...or team that will come in and make sure that those checklists are being done properly and that has to be regular. Just like you get certified as a framer, you’ve got to have a review and then people come in and do audits. That’s to make sure that the process continues and is adhered to and continues.” Jalsa Urubshurow, All-tech Carpentry Contractors

10. Marking out plates.

Mark out studs 16” O.C. or 2’ O.C. as specified by the Foreman.

When conventional framing studs must line up with the floor joist below.

Place studs under every 2nd plate break.

Place studs for pt. loads as marked.

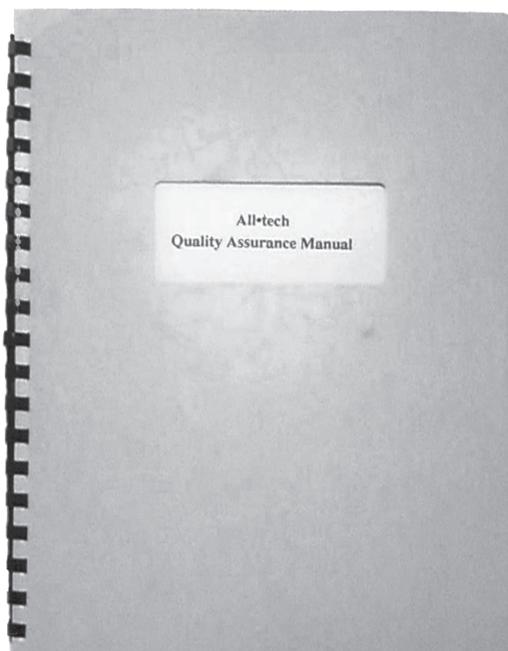
Mark all king studs and liners for door and windows as marked.

Place studs for the medicine cabinets, tub nailers and tub diverters.

Mark out the top of the plates for the floor joist.

In a two or more story building, framers should make all studs, floor beams and ceiling beams line up on top of each other from the ground to the ceiling to the roof.

Standard Operating Procedure



Quality Manual



5.4 Operation of the Quality System

The system became fully operational in May 2000 as verified by a quality assurance system review. In September 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.

Job Inspections

All-tech Carpentry Contractors area supervisors perform inspections on each home. They are responsible for all framing crews working in a community and approve the completion of each phase of framing construction.

“There were no real substantive changes in the true scope of work for our field personnel. It provided a systematic approach to the accomplishment of these duties, and compliance that could be tracked, creating true accountability.” Jalsa Urubshurow, All-tech Carpentry Contractors

An area superintendent performs a foundation condition inspection before framing layout begins. Dimensions, square, flatness, and straightness are verified, as are hotspot problem areas. Problems that arise are documented on the foundation condition report and then reported to the builder’s superintendent. If job-ready conditions are violated, builder or quality representative instructions for proceeding are recorded. Work proceeds only when problems have been resolved.

All•tech

1095 Cranbury-South River Road, Suite 21
Jamesburg, New Jersey 08531
(609) 860-8790 / fax (609) 860-9530

Foundation Condition Report

Builder/Customer _____ Attn: _____
 Community _____ CC: _____
 Tel # _____
 Fax # _____

This document hereby serves to notify you of the deficiencies that All•tech has encountered with regard to the foundation of the building listed below.

As a reminder, All•tech’s scope on foundations is as follows:

All•tech is responsible for squaring and performing a visual inspection of the foundation or slab. All•tech can not determine the levelness of the foundation or slab. All•tech will inform the builder representative of any visual dips, humps or dimensional problems. Upon receipt of this information it is the responsibility of the builder to instruct All•tech on how to proceed.

Date Checked _____ Building/Lot/Unit _____ Model/Elev _____
 Notified _____ Date Notified _____ Mason _____

FOUNDATION PROBLEM(S)

Overall dimension Girder pockets High spot(s) Footings Slab not poured
 Out of square Low spot(s) Piers Not back-filled Garage Slab

Other: _____

All•tech Foreman _____ Date _____

Please respond by checking the appropriate course of:

COURSE OF ACTION

Stop Work All•tech to Repair
 Mason to Repair Issue Work Order

Other: _____

Foundation Condition Report

“It was not an overnight acceptance by any means. It involved a higher level of accountability and more work in some ways—administrative work and checklists and things of that nature.” Jalsa Urubshurow, All-tech Carpentry Contractors



The inspection forms are a modification of the existing production status reporting form. A single form documents inspection results, updates production status, and automatically initiates payment to the independent contractor that performed the work.

"It is more scrutiny and there's more paperwork than the way we were doing it before, which also had paperwork, but not as focused. We revamped our entire billing system. [We] linked the approval of their payments to the quality control checklist. A subcontractor will not get paid unless that supervisor running that project has checked his work."
 Jalsa Urubshurow, All-tech Carpentry Contractors

Initially, crew foremen did not formally inspect their own work. Instead, they were concerned only with repairing problems identified by the supervisor. The process changed, however, when the evaluation of crew performance focused on first-time quality rather than simply on the completion of punch-out items. Under these circumstances, most crews chose to self-inspect in anticipation of the supervisor review.

All•tech
INC.

PROGRESS TRACKING/INSPECTION CHECKLIST

Jobsite _____ Start Date _____
 Lot Number _____ Unit Number _____ Inspected By _____
 Model _____ Elev _____ Foundation _____ Slab _____ Full _____ W/O _____ English _____ Daylight _____
(Circle one)

<p>1ST FLOOR DECK Subcontractor _____</p> <p>Date Completed _____</p> <ul style="list-style-type: none"> <input type="checkbox"/> Joist or Trusses Complete <input type="checkbox"/> Crippers Installed <input type="checkbox"/> Girders Installed Correctly <input type="checkbox"/> Steel Shim's Installed <input type="checkbox"/> Straps Nailed Correctly <input type="checkbox"/> Bolts Installed Correctly <input type="checkbox"/> Sill Seal Installed Correctly <input type="checkbox"/> Decking Nailed & Glued Correctly & Complete <input type="checkbox"/> Stair Well Ribs <input type="checkbox"/> Stair Well Covered <input type="checkbox"/> Safety Rails Installed Correct & Complete <input type="checkbox"/> Strong Backs Nailed & Tied @ End <input type="checkbox"/> Squash Blocks Installed Correctly & Complete <input type="checkbox"/> Post Loads Check <input type="checkbox"/> Bridging Installed Complete <input type="checkbox"/> Joist Hangers Nailed & Complete <input type="checkbox"/> Nailers Installed Complete <input type="checkbox"/> Draft Stops Installed <input type="checkbox"/> Check Frame w/DS Sheet <input type="checkbox"/> Clean-Up Complete <input type="checkbox"/> Hardhats Worn 	<p>2ND FLOOR DECK Subcontractor _____</p> <p>Date Completed _____</p> <ul style="list-style-type: none"> <input type="checkbox"/> Joist or Trusses Complete <input type="checkbox"/> Girders Installed Correctly <input type="checkbox"/> Decking Nailed & Glued Correctly & Complete <input type="checkbox"/> Stair Well Ribs <input type="checkbox"/> Stair Well Covered <input type="checkbox"/> Safety Rails Installed Correct & Complete <input type="checkbox"/> Strong Backs Nailed & Tied @ End <input type="checkbox"/> Squash Blocks Installed Correctly & Complete <input type="checkbox"/> Post Loads Check <input type="checkbox"/> Bridging Installed Complete <input type="checkbox"/> Joist Hangers Nailed & Complete <input type="checkbox"/> Nailers Installed Complete <input type="checkbox"/> Draft Stops Installed <input type="checkbox"/> Check Frame w/DS Sheet <input type="checkbox"/> Clean-Up Complete <input type="checkbox"/> Hardhats Worn 	<p>3RD FLOOR DECK Subcontractor _____</p> <p>Date Completed _____</p> <ul style="list-style-type: none"> <input type="checkbox"/> Joist or Trusses Complete <input type="checkbox"/> Girders Installed Correctly <input type="checkbox"/> Decking Nailed & Glued Correctly & Complete <input type="checkbox"/> Stair Well Ribs <input type="checkbox"/> Stair Well Covered <input type="checkbox"/> Safety Rails Installed Correct & Complete <input type="checkbox"/> Strong Backs Nailed & Tied @ End <input type="checkbox"/> Squash Blocks Installed Correctly & Complete <input type="checkbox"/> Post Loads Check <input type="checkbox"/> Bridging Installed Complete <input type="checkbox"/> Joist Hangers Nailed & Complete <input type="checkbox"/> Nailers Installed Complete <input type="checkbox"/> Draft Stops Installed <input type="checkbox"/> Check Frame w/DS Sheet <input type="checkbox"/> Clean-Up Complete <input type="checkbox"/> Hardhats Worn
<p>1ST FLOOR FRAME Subcontractor _____</p> <p>Date Completed _____</p> <ul style="list-style-type: none"> <input type="checkbox"/> Walls Installed Per Specification <input type="checkbox"/> Headers & Limer Nailed Correctly <input type="checkbox"/> All Openings Installed Per Plan <input type="checkbox"/> Rough Openings Correct <input type="checkbox"/> Walls Braced & Sited Properly <input type="checkbox"/> Nailers Installed Correctly <input type="checkbox"/> Safety Rails <input type="checkbox"/> Clean-Up Complete <input type="checkbox"/> Hardhats Worn 	<p>2ND FLOOR FRAME Subcontractor _____</p> <p>Date Completed _____</p> <ul style="list-style-type: none"> <input type="checkbox"/> Walls Installed Per Specification <input type="checkbox"/> Headers & Limer Nailed Correctly <input type="checkbox"/> All Openings Installed Per Plan <input type="checkbox"/> Rough Openings Correct <input type="checkbox"/> Walls Braced & Sited <input type="checkbox"/> Nailers Installed Correctly <input type="checkbox"/> Safety Rails <input type="checkbox"/> Clean-Up Complete 	
<p>ROOF SYSTEM Subcontractor _____</p> <p>Date Completed _____</p> <ul style="list-style-type: none"> <input type="checkbox"/> Trusses Installed Completely <input type="checkbox"/> Permanent Opening Insulated Completely & Correctly <input type="checkbox"/> Gable End Braced <input type="checkbox"/> Nailers Correct <input type="checkbox"/> Eaves <input type="checkbox"/> Clean-Up Complete 		

Inspection Form

"Anytime someone is held accountable, it can feel uncomfortable, that's just life—that is a normal, human thing to do. The reality is that in time... quickly... compared to what I might have thought it could take, people accepted that responsibility because they ultimately had it anyway. All we were doing is refining the way [we use] systems to identify who is responsible. To some degree a little more under the magnifying glass."
 Jalsa Urubshurow, All-tech Carpentry Contractors



Quality Improvement and Training

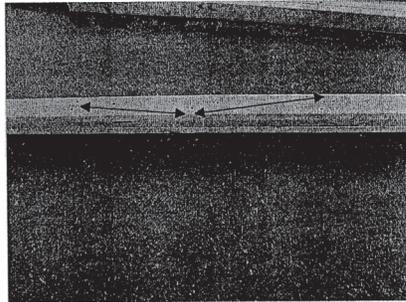
After the review of inspection trend data, hotspot training is introduced as a periodic agenda item at Monday production meetings.

"After reviewing the trend data, we discuss the problem areas with our supervisors. Training sheets are developed for foremen to use when they discuss quality practices in weekly toolbox talks with their crews. The focus on quality is the same as our focus on safety; we take this very seriously, and our end goal is to produce a zero-defect home." Narma Stepanow, vice president, All-tech Carpentry Contractors

In a hotspot session, the vice president of operations leads a discussion on the hotspot and hands out a single-page training sheet. Front and back are identical except that the text is in English on one side and in Spanish on the other. The sheets are produced in-house with the use of a digital camera and Microsoft Word.

Hotspot training requires crews to change what they have been doing to conform to a documented best practice. Most crews have responded well, but some have been reluctant to improve their practices. After several warnings without a response, several crews have been severed from the company.

Double, Triple Stud Nailing



- **Double and triple studs will be nailed on both sides every 16” staggered.**

Hotspot Training Sheet

One area supervisor coined the term “feed and weed,” a twist on a tag line for lawn care products. He explained that hotspot training nourishes good crews, permitting them to grow and get better. At the same time, it weeds out undesirable crews that do not seem to care. Before, they were able to hide, but not anymore.

"This is a good thing. It makes my life easier. I used to have to go back to the same crews for the same things all the time." Area supervisor, All-tech Carpentry Contractors



5.5 Future Plans

All-tech Carpentry Contractors management reports that many of the quality system benefits come from the hotspot quality improvement process. All-tech plans to focus future efforts on increasing the frequency of quality hotspot improvements and related field training.

"Now the greatest challenge is to keep refining it, to sustain it, and to keep people proactive about it." Jalsa Urubshurow, All-tech Carpentry Contractors

5.6 Contact

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