



*National Housing Quality
Trade Contractor
Quality Assurance System
Requirements*

INTRODUCTION

These quality system requirements were developed based on ISO 9000 quality principles and adapted to trade contractor business practices. These requirements do not meet all of the ISO 9000 requirements but this system could be augmented to comply with ISO 9000:2000 if a trade contractor choose to do that. These requirements, in some instances, are more prescriptive than ISO 9000 based on experience gained working with trade contractors.

As with any good quality system, this set of requirements is continually subject to improvements. As experience is gained on the effectiveness of this type of quality assurance system with trade contractors, it may be changed and improved. The overall intent is to provide a system that will provide effective quality assurance and continual improvement.

Safety management is a customer expectation and meeting that expectation is included in this quality management program. The safety requirements presented here are not a substitute for federal and state regulations. Safety provisions and plans are generally provided in a separate volume for jobsite implementation.

The quality assurance system requirements apply to all trade contracting organizations in residential construction.

NOTES

The following notes may be used to clarify these requirements:

- The intent of these requirements is to define the major elements of a practical quality assurance system for residential trade contractors.
- Considerable latitude is allowed for the contractor to develop and implement a quality assurance system customized to its organization's needs. The structure/format of the quality manual does not need to follow the structure of these requirements; however, a compliant system shall cover all the applicable clauses of these requirements. If a substantially different structure is used, the company should provide a cross reference matrix to correlate sections of these requirements to sections of their quality manual.
- The terms "effective" or "adequate" should be interpreted to mean that evidence is available to show that the intent of the quality plan is being fulfilled.
- Undocumented procedures are acceptable in many situations but personnel in the organization needing to use them should clearly and uniformly understand them. Flow charts and brief process outlines are encouraged wherever practical. These requirements explicitly state when a retrievable document is required by the use of the terms *document*, *defined in*, *record*, or *written*.
- These requirements are intended to cover original work as well as customer service work. Customer service is defined as work done after the job has been completed and turned over to the builder. This would include work to repair original defects, damage by other trades, changes by the customer, and warranty items (poor workmanship or materials).
- Some sections of these requirements apply only to those trade contractors that fabricate assemblies/products away from the job site. Examples of applicable fabrication include construction of trusses, wall panel, countertops, pre-assembly of fixtures to sinks, etc.

1.0 GENERAL

- 1.1 SCOPE - The trade contractor shall have a written definition in its quality manual of the scope of the services and/or products provided by the company (or division of the company) and governed by the quality system defined in the quality manual. The scope shall define the types of trades/services/products offered and the geographic region served by the company. (Note: the implementation of the quality management system must cover all residential construction work for all builders the contractor does work for.)
- 1.2 QUALITY STATEMENT - The trade contractor shall have a written statement by senior management that describes the company's commitment to quality, safety, and to meeting customer's requirements. The quality statement will commit the company to safely achieving quality results and shall involve the entire organization. It shall be communicated to all company workers.
- 1.3 QUALITY RESPONSIBILITIES - All employees shall be responsible for adhering to the quality system policies and procedures. Specific quality responsibilities shall be defined and documented for key positions affecting quality. These positions include company management, the manager with overall responsibility for the quality system, safety officer, design personnel, supervisory personnel, and inspectors.
 - 1.3.1 SENIOR MANAGEMENT - Management responsibilities shall include demonstrating commitment to quality, providing resources to support the operation of the quality system, and ensuring that all employees are aware of the quality system and quality commitment and are effectively following those portions of the system appropriate to their job.
 - 1.3.2 QUALITY REPRESENTATIVE - The company shall appoint a quality representative (however titled), who shall be a senior manager with the overall responsibility for management and operation of the quality system. The quality representative shall be responsible for the overall operation, effectiveness, and continual improvement of the quality system.
 - 1.3.3 SUPERVISORS - Personnel with supervisory responsibilities shall also be responsible for ensuring compliance with applicable quality assurance system requirements and procedures by those under their supervision.
 - 1.3.4 INSPECTORS - Inspectors' responsibilities include conducting complete and accurate inspections according to the quality plan, documenting significant non-conformances, verifying these non-conformances have been corrected, and insuring each job complies with the applicable codes/regulations and meets the builder requirements and company quality standards. (Note: inspectors are defined as any person inspecting/reviewing work to verify conformance with various parts of the quality plan, regardless of job title.)
 - 1.3.5 CREW LEADERS - Personnel, generally working on the jobsite and with immediate responsibility for construction activities of crew members, shall be responsible for ensuring that crew members are capable of performing the assigned tasks, and that each job complies with the applicable codes/regulations and meets the builder requirements and company quality standards.
- 1.4 WORK FLOW - The trade contractor shall document the sequence of activities including all major activities related to determining customer requirements, planning, construction, inspections and other quality assurance involved in a project from inception to successful completion. The sequence shall also identify the appropriate function, department, or crew responsible for each activity.
- 1.5 ORGANIZATION CHART - The company shall maintain a documented company organization chart that shows reporting/connecting relationships between various position titles.

2.0 QUALITY ASSURANCE PLAN

- 2.1 **CODES, REGULATIONS, & INDUSTRY STANDARDS** - The trade contractor shall ensure compliance with building codes, governmental/jurisdictional regulations, safety regulations and industry standards that pertain to the trade or service provided by the contractor. The quality manual will reference the applicable sections of the codes, regulations, and industry standards and the company shall have access to those documents. The contractor shall have a process for keeping current on these codes, regulations, and standards (see Section 5.4).
- 2.2 **BUILDER/CUSTOMER REQUIREMENTS** - The trade contractor shall ensure that the builder requirements are clearly understood and communicated. The trade contractor shall implement a review process to assure the job requirements are completely understood. That review will verify that the trade contractor is competent and capable to complete the job. The trade contractor shall ensure that all changes to the customer requirements are appropriately negotiated, reviewed, and approved. The contractor shall implement a process for ensuring that only the most current drawings and specifications are used for construction activities. When applicable, these drawings shall be approved by the appropriate jurisdiction.
- 2.3 **TRADE CONTRACTOR STANDARDS**
- 2.3.1 **WORKMANSHIP** - The trade contractor shall document their company workmanship practices, tolerances, and construction standards to be used on all jobs unless otherwise specified by the builder. These standards, practices, and specifications shall, at a minimum, meet generally accepted industry practices, industry standards, and manufacturer's instructions. When a conflict exists between the trade contractor's practices and other requirements (e.g., manufacturer's instructions, industry standards, etc.), the trade contractor shall implement a process for validating the practice or standard or specification to be used and communicating it to the builder.
- 2.3.2 **MATERIALS** - The contractor shall implement a process for evaluating and approving all materials affecting the quality of the finished work and not explicitly specified or supplied by the builder. The trade contractor shall ensure these materials are appropriate for the intended use and meet the customer's requirements. When appropriate, the trade contractor shall ensure that the materials are properly graded, approved, certified, or rated. The approved materials will be documented. The contractor shall have a process to ensure that only approved or builder specified materials are used on the job. The contractor shall have a process for providing feedback to the builder on builder-supplied/specified materials that are found to negatively impact the quality of the finished product.
- 2.3.3 **PURCHASING** - When the quality of the completed job can be affected by selection of the supplier, the trade contractor shall implement a procedure for selecting, approving, and using only suppliers that have been approved for specific products. The approved suppliers shall be documented. The trade contractor shall implement procedures to ensure that only materials meeting the builder's requirements, where specified, or trade contractor's standards are purchased and used on the job.
- 2.3.4 **EQUIPMENT** - The trade contractor shall ensure that proper equipment, including safety equipment and personal protective equipment (fit for purpose, appropriately maintained, and in good working condition) is available for use at the job site. The trade contractor shall be responsible for providing personnel that are properly trained in the use of the equipment and ensuring that the equipment is used properly. (Note: this requirement pertains only to equipment that impacts the quality of the finished work.)

- 2.3.5 **JOB READY** - The trade contractor shall document the requirements related to job readiness, including safe conditions, which are required before work can begin. The trade contractor shall define and implement policies and procedures for dealing with partially ready jobs including appropriate communications with the builder. The trade contractor will notify each builder (customer) of the job ready conditions and policy. (Note: when a trade involves multiple phases with other trades performing work between the phases, job ready conditions and policies need to be defined for each phase.)
- 2.3.6 **PROTECTION OF COMPLETED WORK** - The trade contractor shall document the protection necessary for protecting its work once it is completed. The trade contractor shall provide appropriate protection (per the scope of work) of their work once it is completed. The trade contractor shall notify the builder of completed work protection expectations. The trade contractor shall respect the work of previous trades and shall establish appropriate training, supervision, and policies to assure this. (Note: for some trades protective measures may not be applicable.)
- 2.3.7 **CUSTOMER SERVICE** - The contractor shall have a process for responding to customer service requests that occur after completion of the job. Satisfactory completion of each request shall be verified and recorded. At least quarterly, the cause and frequency of customer service requests shall be considered in the identification of recurring defects (see Section 4.1).
- 2.4 **CALIBRATIONS & MAINTENANCE** - When equipment, instruments and/or measuring devices critical to providing a quality product/service and which requires regular maintenance and/or calibration are used, the trade contractor shall ensure the devices are properly maintained and/or calibrated according to manufacture's instructions and appropriate records of this maintenance/calibration are kept.
- 2.5 **TRAINING AND PERSONNEL QUALIFICATIONS** - The trade contractor shall document the training and qualifications required for key positions. This shall include crew leaders, supervisory personnel, inspectors, positions requiring professional licensure, and trainers. The trade contractor shall document those persons qualified for each key position. The trade contractor shall ensure that only competent personnel perform each activity. Records of qualified personnel shall be kept for key positions. Training/qualifications for positions requiring professional licenses, certificates, or other specialized training shall be documented.
- 2.6 **SAFETY** - The company shall have an active safety program. (Note: If the company has a separate safety program meeting these requirements, the quality manual only needs to reference that safety program.)
- 2.6.1 **SAFETY RESPONSIBILITIES** - Safety responsibilities shall be established for all employees regarding adherence to the safety program. Management responsibilities shall include ensuring that all employees have an awareness of the safety commitment, the safety program, and the application of safe work procedures and accident prevention procedures to their work activities. The company shall appoint a safety officer responsible for the overall effectiveness of the safety program.
- 2.6.2 **COMPETENT PERSONNEL** - At least one person employed by the trade contractor and generally available at each jobsite shall be competent in the applicable safety procedures for the current work activities. The trade contractor shall assure that personnel have appropriate training and certification to meet safety requirements with its work activities. Regular safety training will be conducted for all jobsite personnel.
- 2.6.3 **MANAGEMENT REVIEW** - Management shall periodically conduct a review of the effectiveness of the safety program. A record of this review shall be kept.
- 2.6.4 **WORKSITE INSPECTIONS** - Prior to starting work, each work site will be inspected for known safety hazards. The contractor shall have a procedure for mitigating any hazards before beginning work.

- 2.6.5 SAFETY INSPECTIONS - Documented periodic safety inspections will be made at each worksite. Non-conformances to the safety program will be corrected immediately. Safety defects found will be addressed in jobsite training.
- 2.6.6 RECORD KEEPING - Appropriate records relating to safety inspections, equipment, training, meetings, and incident occurrence shall be kept.
- 2.7 FABRICATION (when applicable)
 - 2.7.1 The contractor shall have appropriate fabricating processes and supporting logistics to produce the required product/assembly to customer requirements for on-time delivery.
 - 2.7.2 The contractor shall establish fabricating standards that details the specific materials, tolerances, features, and workmanship of the products/assemblies they fabricate.
 - 2.7.3 When necessary the contractor shall provide appropriate installation instructions for the proper installation of the fabricated assemblies/products by their construction crews.

3.0 JOBSITE INSPECTIONS

3.1 GENERAL

- 3.1.1 INSPECTION PROCESS - The quality assurance system shall define the inspection procedures, criteria, documentation, and timing necessary to ensure the quality of the work performed. Training shall be implemented to ensure that inspection documentation forms are consistently completed.
- 3.1.2 CORRECTIVE ACTION (HOT SPOT) COMPLIANCE - When applicable, each inspection procedure shall document the verification of compliance regarding any current corrective action training issue (see Section 4.2).
- 3.1.3 CORRECTION ITEMS - Non-conformances subject to being covered up shall be marked or identified to prevent inadvertent cover up. Significant correction items and verification of the correction shall be recorded on an inspection record even if it is immediately corrected.

3.2 JOB READY - A job ready inspection (assessment) shall be conducted to document the readiness of each job prior to beginning construction activity at each phase of the job. Construction on partially ready jobs will be in accordance with the trade contractor's procedures for partially ready jobs. The job ready inspection process shall also verify that materials and equipment are not defective, damaged, unapproved, or otherwise unacceptable for use on the job. When unacceptable materials or equipment are found steps shall be taken to ensure that they are not used on the job unless specifically directed to do so by builder.

3.3 IN-PROCESS INSPECTIONS - The trade contractor shall determine and implement in-process inspections adequate to ensure the quality of the completed job. Work that will be covered up and cannot be subsequently inspected shall be inspected prior to cover up.

3.4 JOB COMPLETION/FINAL INSPECTION - The trade contractor shall conduct a documented final inspection on each house that documents that the job, at the time it is completed, meets builder requirements and company standards.

3.5 SELF-INSPECTED JOBS - When inspection and verification of completed work is performed by the tradesperson doing the work, this person shall be competent to perform the inspection (see Section 2.5). The contractor shall implement a process for reviewing self-inspection reports to ensure their accuracy. The contractor shall maintain a record of these independent reviews.

3.6 PRODUCTION INSPECTIONS (applicable to fabrication operations)

3.6.1 IN-PROCESS INSPECTIONS - The contractor shall implement in-process inspections of component parts and assemblies to verify that the fabricating process is operating within acceptable tolerances to meet customer requirements. Any item requiring inspection that will be covered up during a subsequent fabricating step shall be inspected prior to cover up.

3.6.2 FINAL INSPECTION - The contractor shall implement a final inspection of the finished product to verify it will meet all customer specifications and requirements.

3.6.3 INSPECTION DATA - The fabrication inspection process shall gather and document data and information that can be used to identify trends in the production process quality and provide information leading to process and product improvements. (Note: Inspection of every part or assembly is only required when it is dictated by the customer, code, or industry standard but any inspection process that does not inspect 100 percent shall be based on a valid approach to verify that the customer requirements are consistently met.)

3.6.4 CORRECTIVE ACTION - When the inspection process identifies fabricated product that does not meet specifications, corrective action must be taken and recorded.

4.0 CONTINUOUS IMPROVEMENT

- 4.1 **RECURRING DEFECTS** - The trade contractor shall implement procedures for identifying recurring defects and/or continuous improvement opportunities, assessing their significance, and prioritizing training initiatives and/or process improvements. This identification, assessment, and prioritization shall be done at least once per quarter and the resulting prioritized initiatives shall be documented.
- 4.2 **CONTINUOUS IMPROVEMENT/CORRECTIVE ACTION TRAINING** - A corrective action process shall be documented and implemented. Corrective action training or remedial action initiatives shall be conducted at least once per month to address at least one of the recurring defects that have been identified through the, at least quarterly, analysis of recurring defects or continuous improvement opportunities (see Section 4.1). When applicable, corrective action training shall cover both construction activity and fabrication. Records of this training and/or remedial actions taken shall be kept. The trade contractor shall implement procedures for verifying the effectiveness of the corrective action training. The effectiveness of the corrective action training/remedial actions shall be evaluated and documented. When the corrective action training has not substantially eliminated the problem, adjustments shall be made to the training frequency and/or approach to the problem.
- 4.3 **TRAINING ON NEW PRODUCTS/METHODS** - A training process shall be documented and implemented to ensure new products, materials, technologies, equipment, updated manufacturer's instructions, or changes in codes or standards are properly introduced to the organization. This training shall be conducted as needed. Records of this training shall be kept. The trade contractor shall implement procedures for verifying the effectiveness of this training.
- 4.4 **BUILDER FEEDBACK** - The trade contractor shall implement procedures to evaluate customer satisfaction with their work (including customer service). This assessment shall be conducted at least annually to include all builders for whom the trade contractor works. This assessment shall identify overall satisfaction as well as specific issues. The results of this assessment shall be considered in analyzing the effectiveness of the quality system and initiating changes to the system. Significant issues identified from the feedback shall be addressed and documented.
- 4.5 **PERFORMANCE STATISTICS** - The trade contractor shall define and track key quality performance statistics indicative of the overall quality of its work. The trade contractor's quality performance statistics shall be calculated, documented, and distributed to management at least once a quarter.

5.0 QUALITY ASSURANCE SYSTEM MANAGEMENT

- 5.1 INDEPENDENT JOB SITE QUALITY ASSURANCE SYSTEM AUDITS - The trade contractor shall, at least once a month, conduct a random independent audit of at least one jobsite to verify the implementation and effectiveness of the quality system and safety program on the job site. When the contractor has fabrication operations, a review shall also cover a key fabrication process. These reviews shall be documented. Appropriate corrective actions shall be initiated. When quality system non-conformances are found which call into question the implementation or effectiveness of the quality system, the frequency of the independent job site audits must be increased until the effectiveness of the system is assured. During the course of one year, these audits shall be sufficient in number to generally cover the trade contractor's scope of operation. These audits shall be conducted by individuals who do not have immediate supervisory responsibility for the jobsite being audited. (Note: In small organizations where this independent review is not practical and where the owners / senior management are on the job, face to face with crews on a frequent basis, this monthly recorded assessment of the quality system may be done in the office, and include documenting observations about the quality system from daily observations made on the jobsites throughout the month.)
- 5.2 ANNUAL MANAGEMENT REVIEW - At least annually the senior management shall review the operation and effectiveness of the quality system and safety program. This review shall include the issues noted in the independent job site quality assurance system audits, customer feedback, complaints/call backs, and customer service. The annual review shall also include assuring compliance with these requirements, assessing quality performance statistics and trends, setting goals, and addressing needed changes to the system. Quality system improvement opportunities shall be identified and appropriate action initiated. Records shall be maintained for each review. The records shall be in sufficient detail to disclose the participants, significant issues, conclusions, improvement opportunities, and planned changes.
- 5.3 QUALITY MANUAL - The quality manual shall describe or reference all the trade contractor's top-level policies, processes, procedures, and documents that assure that these NHQ requirements, customer requirements, and trade contractor company standards are met. The quality manual shall make reference to appropriate supporting documents when applicable.
- 5.4 DOCUMENT CONTROL - The trade contractor shall implement procedures for periodically updating the documents of the quality system to ensure they are current. The trade contractor shall implement procedures for ensuring that obsolete documents cannot be inadvertently used. These documents include the quality manual, referenced/related procedures, customer specifications, drawings, and manufacturer's instructions. The trade contractor shall provide ready access to the most current versions of the pertinent quality system documents to those personnel needing them.
- 5.5 RECORD RETENTION - The trade contractor shall maintain appropriate records to provide evidence that the processes and procedures of the quality system are being followed. The trade contractor shall document and adopt a policy for record retention. This policy shall specify which records shall be kept and for how long. Records reflecting customer requirements, quality assurance (e.g., inspection records), training records, and reviews shall be kept for at least three years. Safety records shall be retained for the period required by federal and state safety agencies.