



Quality Management for High Performance Homes

DRAFT Quality, Environmental, Health & Safety (QEHS) Management System Requirements v.1

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October 26, 2010

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INTRODUCTION

This set of integrated Quality, Environmental, Health and Safety (QEHS) Management System Requirements has been developed as a proposed restructuring of the NAHB Research Center's National Housing Quality: Quality Management System Requirements for Builders 6/10/08© to include elements of the following:

- ISO9001:2008
- ISO14001:2004
- OHSAS18001:2007
- The Malcolm Baldrige National Quality Award (MBNQA) Criteria for Performance Excellence 2009-2010
- The National Housing Quality Award 2010
- The IBACOS Green BluePrint
- Concepts from Six Sigma as well as concepts from other QEHS tools and approaches.

This QEHS Management System Requirements draws heavily from the NAHB Research Center's National Housing Quality: Quality Management System Requirements for Builders, and if implemented it is anticipated that a builder could receive NHQ Certification.

In this document, wherever QEHS is used it refers to the Quality, Environmental, Health and Safety aspects of the organization's processes. Environmental refers to complying with environmental regulations, reducing environmental impacts as a result of operations, and all the aspects involved in building energy efficient, safe, durable, comfortable, high performing homes. The intent of these requirements is to define the major elements of a practical, effective, and integrated Quality, Environmental, Health and Safety Management System to help home builders achieve superior operational results while efficiently and effectively building high performance homes.

This QEHS works at the tactical level of an organization, below the strategic level helping to manage and coordinate the daily running of the business and each department. The QEHS refers to other documents and operational tools such as checklists that are used in the field each day, to attain the specifications set for the houses to be built. See chart below.



These requirements also fit with the 8 principles of ISO9000:2008 and are developed to align with the philosophies and objectives of most QEHS award programs including the National Housing Quality Award.

- ISO9000:2008 Principles:
 - Customer Focus
 - Leadership
 - Involvement of People
 - Process Approach
 - System Approach to Management
 - Continual Improvement
 - Factual Approach to Decision Making
 - Mutually Beneficial Supplier Relationships

This manual of requirements is organized as follows:

1. General – Describes general organizational information about the company.
2. QEHS Management System Management – Describes how the QEHS management system is controlled and updated within the company.
3. Land Development Operations – Describes the QEHS Policies and Procedures, Ongoing review of the QEHS, and Continual Improvement for the Land Development department of the company
4. Sales Operations - Describes the QEHS Policies and Procedures, Ongoing review of the QEHS, and Continual Improvement for the Sales department of the company.
5. Design Operations - Describes the QEHS Policies and Procedures, Ongoing review of the QEHS, and Continual Improvement for the Design department of the company.
6. Purchasing Operations - Describes the QEHS Policies and Procedures, Ongoing review of the QEHS, and Continual Improvement for the Purchasing (Trade Partner master contract level) department of the company.
7. Estimating Operations - Describes the QEHS Policies and Procedures, Ongoing review of the QEHS, and Continual Improvement for the Estimating (house by house level) department of the company.
8. Construction Operations - Describes the QEHS Policies and Procedures, Ongoing review of the QEHS, and Continual Improvement for the Construction department of the company.
9. Customer Relations Warranty and Service Operations - Describes the QEHS Policies and Procedures, Ongoing review of the QEHS, and Continual Improvement for the Warranty and Service department of the company.
10. Additional Functional Areas - Describes the QEHS Policies and Procedures, Ongoing review of the QEHS, and Continual Improvement for the other functional areas of the company.

These requirements have been broken down into these functional areas, however if a company chooses to combine functions (for example, Design and Purchasing, or Purchasing and Estimating, or Warranty and Service Operations is part of Construction Operations) then these sections can be combined. Sections should also be deleted if they are not applicable to a company (i.e. a company does not undertake Land Development).

It must be emphasized that this document sets forth the requirements that should be integrated into a QEHS Management System Manual. It does not include the actual operational policies and procedures. This document spells out the requirements that the system should include if a builder chooses to get certified (i.e. NAHB Research Center NHQ Certification, ISO certification, etc.) or decides to apply for a quality award such as the Malcolm Baldrige National Quality Award or the National Housing Quality Award.



Quality, Environmental, Health & Safety (QEHS) Management System Requirements

1.0 GENERAL

1.1 Scope

The QEHS manual shall define the scope of the housing products and services provided by the builder and the geographic region served by the company.

1.2 Leadership

Senior management shall provide demonstrated leadership to the company's QEHS, environmental, health and safety (QEHS) initiatives. This shall include setting policy and performance expectations, communicating to the organization the importance of QEHS, the environment, safety and meeting customer expectations, providing resources, and reviewing the effectiveness of the Management System. A fundamental aim of leadership is the full integration of QEHS which inherently includes a focus on integrated design approaches, and applying integrated problem solving, implementation and measurement systems.

1.3 QEHS, Environmental And Safety Statement

There shall be written statement(s) by senior management that describe(s) the company's commitment to QEHS, the environment and safety that also addresses customer's expectations. This should have a direct link to the company vision and mission statement. The statement(s) will commit the entire organization to continuous improvement, achieving measurable business performance metrics, and a safe workplace and shall be communicated to all stakeholders, customers, suppliers, trade partners, and employees.

1.4 QEHS Manual

The company shall develop, document, and maintain a controlled, QEHS Management System that promotes continual improvement. The QEHS Management System shall be defined in a manual. The system shall define or reference the company's policies, processes, procedures, and documents that assure that customer expectations and company standards are met. The company shall provide ready access to the most current versions of the pertinent QEHS Management System documents to those personnel needing them. The QEHS Management System will include the functional areas of land development, sales, design, estimating, purchasing, construction and customer relations/warranty.

1.5 QEHS Responsibilities

QEHS responsibilities shall be established for all employees including accountability for adhering to QEHS Management System policies and procedures. The QEHS Management System manual shall outline the major responsibilities of the senior manager responsible for the company-wide QEHS Management System. Each operating area or functional area included in the QEHS Management System of the company shall have a designated representative with responsibility for managing the QEHS Management System in their area. Management responsibilities shall include



ensuring that all employees have an awareness of the QEHS Management System and the QEHS commitment, are following those portions of the system appropriate to their job, and understand the importance of the system.

1.6 Organization Chart

There shall be a company organization chart showing position titles and names and reporting relationships of all functional positions. The senior manager(s) responsible for QEHS, Environment and Safety shall be identified on the organization chart.

1.7 Competent Personnel

Personnel in each functional area shall be qualified and competent to fill assigned positions. Each functional area shall develop and maintain job descriptions that define the responsibilities and qualification requirements of all positions key to meeting customer expectations and/or the QEHS of the “as built” house and the safety of the jobsite operations. At least one employee who is generally available at the job site shall have completed an approved OSHA 10-Hour Construction Industry Outreach Training.

1.8 Training

A program of training for all personnel involved in meeting new homebuyer expectations shall be implemented. This training shall address new employee orientation/training, functional area orientation/training, and training in the technical requirements of the positions, and operation of the company’s QEHS Management System. Training will also include a focus on basic principles of quality management, tools and techniques.

1.9 Corporate Communications

Procedures shall be implemented to assure communication exists between all areas of the company and the trade partners of the company. This includes identification of and communication to other functional areas to address recurring non-conformances in QEHS. There shall be procedures implemented to communicate with new home buying customers and to manage their expectations.

1.10 Customer Feedback

The company shall establish and implement procedures to evaluate customer satisfaction with the company’s work. This assessment shall be conducted at least annually and shall identify overall satisfaction as well as satisfaction with the functional areas of the company that come in contact with the new home buying customer. This will include move in and one year customer satisfaction scores. These customer satisfaction scores will be shared with all builder employees. The results of this assessment shall be considered in analyzing the effectiveness of the QEHS Management System and initiating changes to the system. These procedures shall be documented and records kept of the customer feedback.

1.11 Performance Measures

The company shall establish performance measures and goals that are indicative of the effectiveness of the QEHS Management System. These shall be defined, documented, and quantified for each functional



area covered by the company's QEHS Management System. Progress towards meeting these goals shall be documented and reported quarterly to the management of the various functional areas.

1.12 Company Process Flow

The company shall define and document a sequence or sequences of activities (process flow) for the overall company and their relationships to each other. Each sequence shall include all major planning, work, and QEHS assurance activities. Flowcharts are recommended where possible to assist with articulating the sequence.



2.0 QEHS MANAGEMENT SYSTEM MANAGEMENT

2.1 QEHS Management Committee

A QEHS management committee shall be established and at a minimum shall consist of the QEHS Manager/coordinator, a representative for each functional area, and a senior management representative. This committee shall meet periodically to review the regular operation of the QEHS Management System, review the results of any internal audits and discuss opportunities for improvement. Minutes of the committee meetings shall be documented.

2.2 Internal Audits

The company shall conduct internal audits at periodic intervals to assess effectiveness of the QEHS Management System. The company QEHS management committee, or similar group, shall provide the oversight of planning, conducting, and reporting results of internal audits of the departments covered under the QEHS Management System to assure that the policies and procedures are being met. The auditor shall be trained and independent of the functional area being audited. Results of these audits shall be documented. Deficiencies in the operation of the QEHS Management System will be identified and actions to correct any nonconformance shall be taken in a timely manner and further documented. Frequency and scope of internal audits shall be sufficient to assure the effectiveness of the QEHS Management System, but shall be conducted at least twice each year.

2.3 Annual Management Review

At least annually the QEHS management committee shall review the operation and effectiveness of their respective systems with the senior management of the company. This annual review shall include a summary of the internal and external audits of the activities of each functional area of the company, performance measures, customer feedback, trade partner and supplier feedback, complaints, and recommendations from the QEHS department representatives. The annual review shall also include assuring compliance with these requirements, setting new annual goals, and addressing needed changes to the management system. Records shall be maintained for each review. The records shall be in sufficient detail to disclose the participants; significant issues; conclusions; recommendations; and planned changes. The aim is to ensure that the QEHS Management System is working to the satisfaction of the leadership and management of the organization, the annual review is the opportunity to make significant changes to make the QEHS Management System and it functioning more effective and efficient.

2.4 Certification

If the builder wishes to gain and sustain Certification of the QEHS management System, then the QEHS Management System shall be evaluated by and approved auditor of the certifying body to assess compliance with its requirements. This evaluation shall occur in accordance with the audit guidelines of the certifying body to verify the continuous effective operation of the QEHS Management System.



2.5 QEHS Management System Changes

The company shall have a documented procedure for approving and incorporating changes and improvements to the QEHS Management System. Individual functional area QEHS Management System changes must be approved and integrated into the overall company QEHS Management System.

2.6 Document Control

The company shall document the procedure for updating and controlling the QEHS Management System documents to assure they are current. The company shall have procedures for assuring that obsolete documents cannot be used. These documents include the QEHS manual, reference documents, and supporting procedures.

2.7 Record Keeping

The company shall establish and document a procedure to define the controls for the retention of records and shall specify which records shall be kept and for how long. Further, it shall specify how records are disposed of once they have matured beyond the retention period. Records shall be maintained at least for a period of time consistent with the state's statute of repose.

2.8 Update Of Referenced Documents

The company shall provide a procedure that assures applicable codes; regulations; industry standards; company standards; or manufacturer's instructions are reviewed for changes, and the references for each in the QEHS program are updated annually at a minimum. The company shall effectively communicate any changes to key personnel and appropriate trade partners. Any such changes are to be incorporated into the builder's QEHS Management System, as needed.



3.0 LAND DEVELOPMENT OPERATIONS

3.1 Land Development Operations QEHS Policies And Procedures

3.1.1 Scope of the Land Development Operations

The Land Development operation shall define the scope of its operations including, whether this is a separate department from Construction Operations. The scope of operations shall also define what conditions must be met to affect “turnover” of developed lots to Construction Operations.

3.1.2 Process Flow

The company shall define and document a sequence or sequences of activities (process flow) for the Land Development Operation of the company. This sequence shall include all major work with agencies, local government as well as interactions with other company departments including construction. The process shall include all necessary checkpoints to assure the finished lots meet the requirements of Construction Operations.

3.1.3 Codes and Regulations

Procedures shall be implemented to assure that all applicable codes, and governmental regulations are identified and complied with. The company shall have access to all applicable codes.

3.1.4 Company Standards

Company standards shall be documented to define the requirements for workmanship, including tolerance requirements, industry standards, construction procedures, and material specifications. These company standards shall be included in scopes of work or other agreed upon document(s). When a conflict exists between local practice and other requirements (e.g., industry standards, manufacturer’s instructions, etc.), there shall be a procedure for allowing exceptions while maintaining QEHS. There shall be a procedure to require that all equipment used in the construction process requiring calibration is properly calibrated and maintained.

3.1.5 Manufacturer’s Product Installation Instructions

The Land Development Operation shall develop, document, and implement procedures for obtaining and maintaining current copies of all installation/application instructions. Land Development Operations shall ensure that all products are properly installed.

3.1.6 Trade Partner and Supplier Contract Documents and Scopes of Work

Procedures shall be implemented to prepare and review the subcontracts and construction documents specific to the work of each trade utilized by the Land Development Operation to assure that builder requirements and typical home buyer expectations will be met. Trade contracts, scopes of work, or other documents shall include mutually agreed upon job ready conditions and procedures to follow when these conditions are not met. Trade contracts shall also include provisions requiring the trade partner to comply with all environmental and safety regulations and provide their accident prevention plan to the company. Trade partners shall be required to periodically report to builder management on non-compliance of job ready conditions at the builder’s various communities.

3.1.7 Land Development Documents

Procedures shall be implemented to review all Land Development documents to assure that the expectations of the agencies, Design Operations and Construction Operations are appropriately defined and managed. These procedures shall assure that these documents and materials are confirmed to be correct at least annually.

3.1.8 Land Development Operation Policy

Procedures shall be developed, documented, and implemented for: soliciting and managing all aspects of Land Development operations and the company's QEHS commitment. This includes negotiating and completing Land Development contracts; defining the approval authority for the various Land Development decisions; confirming any agreements reached; communicating the company's job site safety procedures to the excavation and other relevant trades. The Land Development operation shall maintain current copies of these procedures. These procedures shall be reviewed at least annually and updated as needed.

3.1.9 Scheduling

Procedures shall be established for determining and communicating all schedules and any schedule changes between the agencies, Construction Operations and trades.

3.1.10 Approval and Selection of Trade Partners, Materials, and Other Support Services

Procedures shall be established and implemented for review, approval, selection, and monitoring of:

- 3.1.10.1 Trade partners;*
- 3.1.10.2 Materials and suppliers; and*
- 3.1.10.3 other support services.*

These procedures shall include a review of QEHS performance, warranty history, and their safety record. An approved vendor list shall be maintained of all suppliers, trade partners and support services. This list shall be reviewed at least annually.

3.1.11 Version Control

Procedures shall be established and implemented to assure that the current version of Land Development contracts, warranty documents, and other materials are utilized in the Land Development operation. When more than one version of the company's Land Development documents exists, all Land Development personnel shall understand the proper use of those different versions of the documents.

3.1.12 Confirmation of Land Development Process Completion

There shall be a procedure that secures confirmation that each step in the Land Development process has been completed. This procedure shall address when and under what conditions new information or action is required by Land Development and Construction.



3.2 Land Development Operations QEHS Review

3.2.1 Final Document Review

The Land Development operation shall develop and implement a document review procedure prior to filing a completed Land Development contract or plat. Any non-conformances to the Land Development policy and procedures shall be recorded. Corrections shall be completed and documented in accordance with the Land Development completion policy.

3.2.2 Corrective Preventive Action

Errors or deviations from the Land Development process shall be corrected in a timely fashion and in such a way as to assure the QEHS of the completed work. These deviations and their correction shall be documented. When identified issues have not been eliminated, the plan shall be reassessed and appropriate alternate actions initiated.

3.2.3 Inspections

Various inspections will be conducted by Land Development Operations to ensure construction activities comply with codes, regulations, scopes of work, manufacturer's instructions, and company standards. Consistent with the builder's experience with each trade partner, the frequency and detail of these inspections shall be sufficient to ensure compliance. Construction operations will develop checklists and/or other documentation for recording the inspection results. The inspection criteria shall be consistent with the company standards and scopes of work. Items requiring corrections shall be recorded, corrected, and their status documented. The Land Development Operation shall take steps to ensure any item requiring correction is not covered up before the correction is completed and documented. The QEHS Management System shall document the inspection process, including who performs the inspection; what is inspected; when and where it is inspected; and the process for recording and storing inspection documentation. The personnel conducting inspections will be trained in the inspection and documentation process.

3.2.4 Job Ready Inspection

The Land Development Operations shall ensure the worksite is prepared for the work of the next trade to begin via an inspection consistent with agreed upon job ready requirements. If a trade or support service firm is required to begin work when the job ready conditions are not met, the Land Development Operations will ensure that the proper procedure is followed. Deviations from the job ready conditions shall be recorded on the job ready inspection record.

3.2.5 In-Process Inspections

Activities and work done in the Land Development Operation shall have in-process inspections to assure that the builder's QEHS policy and procedures are being followed. These inspections shall be documented. Items requiring correction shall be documented, corrected, and confirmed prior to the covering or concealment of any trade's completed work. The inspection criteria shall be consistent with the company standards and scopes of work.



(Note: If an NHQ Certified trade contractor provides the builder with a copy of their inspection reports, this will satisfy this requirement for work of that trade provided the builder maintains a copy of this inspection document and periodically verifies the accuracy of the trade contractor's inspection.)

3.2.4 Final Inspection

Each completed house shall have a final inspection. Any non-conformance(s) to the builder's documented standards for completed work shall be recorded. Corrections shall be completed and documented.

3.2.5 Inspection Records

Records shall be maintained of all code compliance, third-party inspections, company QEHS inspections, and the correction of noted non-conformances.

3.2.6 Review Records

The Land Development Operation shall document internal reviews of Land Development contracts in progress and completed Land Development. Records shall be maintained of all Land Development process reviews.

3.3 Land Development Operations Continual Improvement

3.3.1 Preventive Actions

The Land Development Operation shall define and implement on-going actions to eliminate recurring QEHS issues. These documented actions shall include identification, prioritization, root-cause analysis, and development and implementation of an action plan. When appropriate these actions shall include recommendations of changes in Land Development procedures or documents. The effectiveness of the corrective actions shall be evaluated. When identified QEHS issues have not been eliminated, the plan shall be reassessed and additional appropriate actions initiated.

3.3.2 Land Development Operations Training

A program of training for all employees involved in Land Development shall be implemented. This training shall include identified opportunities for improvement that leads to continual improvement on department specific metrics and reducing recurring issues in the Land Development operation. This training shall also include both task specific skills and training in the operation of the company's QEHS Management System. Suggestions for and coordination of the training subjects from other operational areas in the company may be utilized to meet some of the requirements of this section. Land Development operations staff will be trained on the use of approved documents and procedures for assuring a complete and accurate Land Development documentation process that meets the expectations of the new home buying customer. Land Development personnel shall be trained on any different versions of the company's Land Development documents and when those different versions apply. Land Development personnel shall be trained on applicable industry practices and safety regulations.

4.0 SALES OPERATIONS

4.1 Sales Operations QEHS Policies And Procedures

4.1.1 Scope of the Sales Operations

The sales operation shall define the scope of its operations including, whether employees or independent realtors typically perform new home sales functions, when the handover occurs from Sales Operations, Construction Operations, or to the Warranty and Service Operation and also define the customer selections and options process.

4.1.2 Process Flow

The company shall define and document a sequence or sequences of activities (process flow) for the sales operation of the company. This sequence shall include all major outreach, advertising, and external communications needed to develop sales traffic; sales personnel approach to potential home buyers; writing, processing, and approving sales contracts; customer selections, options, and change orders; clearing contingencies, including financing; and communicating details of the new home to the construction operation. The process shall include all necessary QEHS checkpoints to assure a satisfied new home buyer.

4.1.3 Sales Documents

Procedures shall be implemented to review all sales documents and marketing materials documents to assure that the expectations of the new home buyer customers are appropriately defined and managed. These procedures shall assure that these documents and materials are confirmed to be correct at least annually.

4.1.4 Sales Operation Policy

Procedures shall be developed, documented, and implemented for: soliciting and managing sales inquiries; communicating the company's sales offerings and the company's QEHS commitment to the new prospect or new home buyer; negotiating and completing sales contracts; defining the approval authority for the various sales decisions; confirming any agreements reached with new home purchasers; communicating the company's job site safety procedures to the customer; obtaining customer concurrence at prescribed points in the new home construction process; tracking the sales process through contract, selections, contingency removal, home completion, and new home closing; determining the level of prospective customer satisfaction with the marketing and sales process; determining the level of new home buyer satisfaction with the marketing and sales operation; and identifying future steps to improve the marketing and sales process. The sales operation shall maintain current copies of these procedures. These procedures shall be reviewed at least annually and updated as needed to improve customer satisfaction with the sales and marketing process.

4.1.5 Scheduling

Procedures shall be established for determining and communicating all schedules and any schedule changes between the Construction Operation and new home buyer customers.

4.1.6 Version Control



Procedures shall be established and implemented to assure that the current version of sales contracts, warranty documents, and marketing materials are utilized in the sales operation. When more than one version of the company's sales or marketing documents exists, all sales personnel shall understand the proper use of those different versions of the documents. Procedures shall be established to ensure that the most current documents (including options, selections, and change orders) relating to the sale of a specific house are the actual documents available to, and referenced by all employees and trade partners.

4.1.7 Confirmation of Sales Process Completion

There shall be a procedure that secures the home owners confirmation that each step in the sales process has been completed. This procedure shall address when and under what conditions new information or action is required by either the new home buyer customer or any company personnel.

4.2 Sales Operations QEHS Review

4.2.1 Final Document Review

The sales operation shall develop and implement a document review procedure prior to filing a completed sales contract or a completed new home purchase. Any non-conformances to the sales policy and procedures shall be recorded. Corrections shall be completed and documented in accordance with the sales completion policy.

4.2.2 Corrective Preventive Action

Errors or deviations from the sales and marketing process shall be corrected in a timely fashion and in such a way as to assure the QEHS of the completed work and the satisfaction of the new home buyer customer. These deviations and their correction shall be documented. When identified issues have not been eliminated, the plan shall be reassessed and appropriate alternate actions initiated.

4.2.3 Review Records

The sales operation shall document internal reviews of sales contracts in progress and completed sales. Records shall be maintained of all sales process reviews.

4.3 Sales Operations Continual Improvement

4.3.1 Preventive Actions

The sales operation shall define and implement on-going actions to eliminate recurring QEHS issues. These documented actions shall include identification, prioritization, root-cause analysis, and development and implementation of an action plan. When appropriate these actions shall include recommendations of changes in sales and marketing procedures or documents. The effectiveness of the corrective actions shall be evaluated. When identified QEHS issues have not been eliminated, the plan shall be reassessed and additional appropriate actions initiated.

4.3.2 Sales Operations Training



A program of training for all Sales Operations employees and independent realtors involved in meeting new homebuyer sales and marketing expectations shall be implemented. This training shall include identified opportunities for improvement that leads to continual improvement on department specific metrics and reducing recurring issues in the Sales Operation. This training shall also include both task specific skills and training in the operation of the company's QEHS Management System. Suggestions for and coordination of the training subjects from the other operational areas of the company may be utilized to meet some of the requirements of this section. Sales Operations staff will be trained on the use of approved documents and procedures for assuring a complete and accurate sales documentation process that meets the expectations of the new home buying customer. Sales personnel shall be trained on any different versions of the company's sales documents and when those different versions apply. Sales personnel shall be trained on applicable industry practices and safety regulations.

5.0 DESIGN OPERATIONS

5.1 Design Operations QEHS Policies And Procedures

5.1.1 Scope of the Design Operations

The Design operation shall define the scope of its Design operations.

5.1.2 Process Flow

The company shall define and document a sequence or sequences of activities (process flow) for the Design operation of the company. This sequence shall include all major planning, Design phases by trades, interactions with other departments in the company during design and QEHS assurance activities. This can be in list form or any other clear logical sequence. It is recommended that flowcharts are used where possible.

5.1.3 Codes and Regulations

Procedures shall be implemented to assure that all applicable codes, and governmental regulations are identified and complied with. The company shall have access to all applicable codes.

5.1.4 Company Standards

Company standards shall be documented to define the requirements for workmanship, including tolerance requirements, industry standards, design procedures, and material specifications. These company standards shall be included in scopes of work or other agreed upon document(s). When a conflict exists between local practice and other requirements (e.g., industry standards, manufacturer's instructions, etc.), there shall be a procedure for allowing exceptions while maintaining QEHS. All plans will be approved by an Engineer or equivalent for that city/state/region.

5.1.5 Manufacturer's Product Installation Instructions

The Design Operation shall develop, document, and implement procedures for obtaining and maintaining current copies of all installation/application instructions. Design operations shall ensure that all products / components are properly drawn, specified and detailed.

5.1.6 Trade Partner and Supplier Contract Documents and Scopes of Work

Procedures shall be implemented to prepare and review the subcontracts and design documents specific to the work of each support service firm or trade utilized by the Design Operation to assure that builder requirements and typical home buyer expectations will be met. Trade contracts, scopes of work, or other documents shall include mutually agreed upon job ready conditions for design and procedures to follow when these conditions are not met.

5.1.7 Scheduling

Schedules for organizing and completing the work to meet established time requirements shall be documented. Processes to monitor the plan specific work progress shall be established and shall have criteria under which deviations from the time requirements can occur. Procedures shall be established for communicating all schedules as well as any schedule changes to other operational areas, consultants, support service firms, trade partners, suppliers, and new home buyer customers.



5.1.8 Approval and Selection of Trade Partners, Materials, and Other Support Services

Procedures shall be established and implemented for review, approval, selection, and monitoring of:

- 5.1.8.1 Trade partners;
- 5.1.8.2 Materials and suppliers; and
- 5.1.8.3 Consultants and Support Service Firms.

There shall be a procedure for adding and removing suppliers, trade partners or support services firms from the builder's approved vendor list.

5.1.9 Control of Plans, Specifications, and Options

Procedures shall be established and implemented to assure that all plans, details, specifications, and options are updated when changes are made, and that no outdated or obsolete versions of any design document can inadvertently be used.

5.1.10 Job Completion Policy

Senior management shall establish a policy that states the conditions under which a new home can be closed. It shall include a process for how unfinished items or defects are to be completed or corrected after closing or other formal turnover.

5.2 Design Operations Inspections

5.2.1 General

Various inspections will be conducted by Design Operations to ensure Design activities comply with codes, regulations, scopes of work, manufacturer's instructions, and company standards. Design Operations will develop checklists and/or other documentation for recording the inspection results. The inspection criteria shall be consistent with the company standards and scopes of work. Items requiring corrections shall be recorded, corrected, and their status documented. The Design operation shall take steps to ensure any item requiring correction is completed and documented. A list of common design errors should be developed as a checklist to avoid recurring errors. The QEHS Management System shall document the inspection process, including who performs the inspection; what is inspected; when and where it is inspected; and the process for recording and storing inspection documentation. The personnel conducting inspections will be trained in the inspection and documentation process.

5.2.2 Job Ready Inspection

The Design Operations shall ensure that design work is ready via an inspection consistent with agreed upon job ready requirements including a program for the design, and agreed upon input from other operational areas of the company. Deviations from the job ready conditions shall be recorded on the job ready inspection record. Design work shall not commence until all job ready conditions are met.

5.2.3 In-Process Inspections



Activities and work done in the Design Operation shall have in-process inspections to assure that the builder's QEHS policy and procedures are being followed. These inspections shall be documented. The inspection criteria shall be consistent with the company standards and scopes of work.

5.2.4 Final Inspection

Each completed plan shall have a final inspection. Any non-conformance(s) to the builder's documented standards for completed work shall be recorded. Corrections shall be completed and documented.

5.2.5 Inspection Records

Records shall be maintained of all code compliance, engineer, company QEHS inspections, and the correction of noted non-conformances.

5.3 Design Operations Continual Improvement

5.3.1 Corrective and Preventive Actions

The Design operation shall define and implement on-going actions to eliminate recurring QEHS issues. These documented actions shall include identification, prioritization, root-cause analysis, and development and implementation of an action plan. The effectiveness of these actions shall be evaluated. When identified issues have not been eliminated, the plan shall be reassessed and appropriate alternate actions initiated.

5.3.2 Design Operations Training

A program of ongoing training shall be implemented for all Design Operations employees involved in meeting QEHS requirements, and meeting new home buyer customer expectations. This training shall include identified opportunities for improvement that leads to continual improvement on department specific metrics and reducing recurring issues Design Operation. Training of design personnel shall include how to assure that job ready conditions exist for all phases of design work. This training shall include both task specific skills and training in the operation of the Design Operation's QEHS Management System and shall be documented.

5.3.3 Trade Partner QEHS Program Support

The Design Operations QEHS Management System shall support the QEHS programs of trade partners and other material and service providers. Communication shall be established between the Design QEHS representative of the company and the QEHS representatives of the trade partners to support the QEHS initiatives of each other. Feedback shall be periodically provided to the trade partner to enable the trade partner to improve the QEHS and safety of their work. Feedback shall be periodically solicited from the trade partner in order for the company to improve the QEHS and safety of the company's work.

5.3.4 Trade Partner and Consultant QEHS Management Oversight

All critical design activity performed by trade partners or consultants shall be supervised by a documented QEHS Management System.



The effective QEHS management activities to be ensured include code compliance, workmanship standards, compliance with manufacturer's instructions, documented inspections, corrective actions, preventive actions, and training.

6.0 PURCHASING OPERATIONS

6.1 Purchasing Operations QEHS Policies And Procedures

6.1.1 Scope of the Purchasing Operations

The Purchasing Operation shall define the scope of its Purchasing operations.

6.1.2 Process Flow

The company shall define and document a sequence or sequences of activities (process flow) for the Purchasing Operation of the company. This sequence shall include all major planning, Purchasing phases by trade, and QEHS assurance activities. This can be in list form or any other clear logical sequence. It is recommended that flowcharts are used where possible.

6.1.3 Codes and Regulations

Procedures shall be implemented to assure that all applicable codes, and governmental regulations are identified and complied with. The company shall have access to all applicable codes.

6.1.4 Company Standards

Company standards shall be documented to define the requirements for workmanship, including tolerance requirements, industry standards, purchasing procedures, and material specifications. These company standards shall be included in scopes of work and other agreed upon document(s).

6.1.5 Manufacturer's Product Installation Instructions

The Purchasing Operation shall develop, document, and implement procedures for obtaining and maintaining current copies of all installation/application instructions.

6.1.6 Trade Partner and Supplier Contract Documents and Scopes of Work

Procedures shall be implemented to prepare and review the subcontracts and purchasing documents specific to the work of each trade utilized to assure that builder requirements and typical home buyer expectations will be met. Trade contracts, scopes of work, or other documents shall include mutually agreed upon job ready conditions and procedures to follow when these conditions are not met. Trade contracts shall also include provisions requiring the trade partner to comply with all environmental and safety regulations and provide their accident prevention plan to the company. Trade partners shall be required to periodically report to builder management on non-compliance of job ready conditions at the builder's various communities.

6.1.7 Scheduling

Schedules for organizing and completing the purchasing activities to meet established time requirements shall be documented. Processes to monitor specific work progress shall be established and shall have criteria under which deviations from the time requirements can occur. Procedures shall be established for communicating all schedules as well as any schedule changes to other operational areas, trade partners, and suppliers,.

6.1.8 Approval and Selection of Trade Partners, Materials, and Other Support Services

Procedures shall be established and implemented for review, approval, selection, and monitoring of:



- 6.1.8.1 Trade partners;
- 6.1.8.2 Materials and suppliers; and
- 6.1.8.7 Other support services.

These procedures shall include a review of QEHS performance, warranty history, and their safety record. An approved vendor list shall be maintained of all suppliers, trade partners and support services. This list shall be reviewed at least annually.

There shall be a procedure for adding and removing suppliers, trade partners or support services firms from the builder's approved vendor list.

6.1.9 Control of Plans, Specifications, and Options

Procedures shall be established and implemented to assure that all plans, specifications, and options are updated when changes are made, and that no outdated or obsolete versions of any Purchasing document can inadvertently be used.

6.1.10 Job Completion Policy

Senior Management shall establish a job completion policy for key purchasing processes such as contract signing and renewal.

6.2 Purchasing Operations Inspections

6.2.1 General

Various inspections will be conducted by Purchasing Operations to ensure Purchasing activities comply with codes, regulations, scopes of work, manufacturer's instructions, and company standards. The frequency and detail of these inspections shall be sufficient to ensure compliance. Purchasing Operations will develop checklists and/or other documentation for recording the inspection results. The inspection criteria shall be consistent with the company standards and scopes of work. Items requiring corrections shall be recorded, corrected, and their status documented. The personnel conducting inspections will be trained in the inspection and documentation process.

6.2.2 Job Ready Inspection

The Purchasing operations shall ensure the required meetings are scheduled, necessary contracts and agreements templates, and construction documentation are all in place prior to commencing purchasing activities.

6.2.3 In-Process Inspections

Activities done in the Purchasing Operation shall have in-process inspections to assure that the builder's QEHS policy and procedures are being followed. These inspections shall be documented. Items requiring correction shall be documented, corrected, and confirmed prior to continuing the activities. The inspection criteria shall be consistent with the company standards and scopes of work.

6.2.4 Final Inspection



Each completed activity done in the Purchasing Operation shall have a final inspection. Any non-conformance(s) to the builder's documented standards for completed work shall be recorded. Corrections shall be completed and documented.

6.2.5 Inspection Records

Records shall be maintained of all code compliance, third-party inspections, company QEHS inspections, and the correction of noted non-conformances.

6.3 Purchasing Operations Continual Improvement

6.3.1 Corrective and Preventive Actions

The Purchasing Operation shall define and implement on-going actions to eliminate recurring QEHS issues. These documented actions shall include identification, prioritization, root-cause analysis, and development and implementation of an action plan. The effectiveness of these actions shall be evaluated. When identified issues have not been eliminated, the plan shall be reassessed and appropriate alternate actions initiated.

6.3.2 Purchasing Operations Training

A program of ongoing training shall be implemented for all Purchasing Operations employees involved in meeting QEHS requirements, and meeting new home buyer customer expectations. This training shall include identified opportunities for improvement that leads to continual improvement on department specific metrics and reducing recurring issues in the Purchasing Operation. Training of Estimating personnel shall include how to assure that job ready conditions exist for all phases of estimating work and how to maintain a safe workplace. This training shall include both task specific skills and training in the operation of the Purchasing Operation's QEHS Management System and shall be documented.

6.3.3 Trade Partner QEHS Assurance Program Support

The Purchasing Operations QEHS Management System shall support the QEHS, environmental and safety programs of trade partners and other material and service providers. Communication shall be established between the Purchasing QEHS representative of the company and the QEHS representatives of the trade partners to support the QEHS initiatives of each other. Feedback shall be periodically provided to the trade partner to enable the trade partner to improve the QEHS and safety of their work. Feedback shall be periodically solicited from the trade partner in order for the company to improve the QEHS and safety of the company's work.



7.0 ESTIMATING OPERATIONS

7.1 Estimating Operations QEHS Policies And Procedures

7.1.1 Scope of the Estimating Operations

The Estimating Operation shall define the scope of its Estimating operations.

7.1.2 Process Flow

The company shall define and document a sequence or sequences of activities (process flow) for the Estimating Operation of the company. This sequence shall include all major planning, estimating phases by trade, and QEHS assurance activities. This can be in list form or any other clear logical sequence. It is recommended that flowcharts are used where possible.

7.1.3 Codes and Regulations

Procedures shall be implemented to assure that all applicable codes, and governmental regulations are identified and complied with. The company shall have access to all applicable codes.

7.1.4 Company Standards

Company standards shall be documented to define the requirements for workmanship, including tolerance requirements, industry standards, estimating procedures, and material specifications. These company standards shall be included in scopes of work or other agreed upon document(s). When a conflict exists between local practice and other requirements (e.g., industry standards, manufacturer's instructions, etc.), there shall be a procedure for allowing exceptions while maintaining QEHS. There shall be a procedure to require that all equipment used in the estimating process requiring calibration is properly calibrated and maintained.

7.1.5 Manufacturer's Product Installation Instructions

The Estimating Operation shall develop, document, and implement procedures for obtaining and maintaining current copies of all installation/application instructions. Estimating Operations shall ensure that all parties responsible for installation have the appropriate materials / documentation / drawings etc. to enable proper installation of all products.

7.1.6 Trade Partner and Supplier Contract Documents and Scopes of Work

Procedures shall be implemented to prepare and review the subcontracts and estimating documents specific to the work of each trade utilized by the Estimating Operation to assure that builder requirements and typical home buyer expectations will be met. Trade contracts, scopes of work, or other documents shall include mutually agreed upon job ready conditions and procedures to follow when these conditions are not met. Trade contracts shall also include provisions requiring the trade partner to comply with all environmental and safety regulations and provide their accident prevention plan to the company. Trade partners shall be required to periodically report to builder management on non-compliance of job ready conditions at the builder's various communities.

7.1.7 Scheduling



Schedules for organizing and completing the estimating work to meet established time requirements shall be documented. Processes to monitor specific work progress shall be established and shall have criteria under which deviations from the time requirements can occur. Procedures shall be established for communicating all schedules as well as any schedule changes to trade partners, suppliers, and new home buyer customers.

7.1.8 Approval and Selection of Trade Partners, Materials, and Other Support Services

Procedures shall be established and implemented for review, approval, selection, and monitoring of:

- 7.1.8.1 Trade partners;
- 7.1.8.2 Materials and suppliers; and
- 7.1.8.3 Other support services.

These procedures shall include a review of QEHS performance.

An approved vendor list shall be maintained of all suppliers, trade partners and support services. This list shall be reviewed at least annually.

There shall be a procedure for adding and removing suppliers, trade partners or support services firms from the builder's approved vendor list.

7.1.9 Control of Plans, Specifications, and Options

Procedures shall be established and implemented to assure that all plans, specifications, and options are updated when changes are made, and that no outdated or obsolete versions of any Estimating document can inadvertently be used.

7.1.10 Job Completion Policy

Senior management shall establish a job completion policy for key estimating processes prior to turnover to Construction Operations.

7.2 Estimating Operations Inspections

7.2.1 General

Various inspections will be conducted by Estimating Operations to ensure estimating activities comply with codes, regulations, scopes of work, manufacturer's instructions, and company standards. The frequency and detail of these inspections shall be sufficient to ensure compliance. Estimating Operations will develop checklists and/or other documentation for recording the inspection results. The inspection criteria shall be consistent with the company standards and scopes of work. Items requiring corrections shall be recorded, corrected, and their status documented. The Estimating Operation shall take steps to ensure any item requiring correction is completed and documented. The QEHS Management System shall document the inspection process, including who performs the inspection; what is inspected; when and where it is inspected; and the process for recording and storing inspection documentation. The personnel conducting inspections will be trained in the inspection and documentation process.



7.2.2 Job Ready Inspection

The Estimating Operations shall ensure that all work required is completed by any other department prior to beginning estimating activities.

7.2.3 In-Process Inspections

Activities done in the Estimating Operation shall have in-process inspections to assure that the builder's QEHS policy and procedures are being followed. These inspections shall be documented. Items requiring correction shall be documented, corrected, and confirmed prior to continuing the activities. The inspection criteria shall be consistent with the company standards and scopes of work.

7.2.4 Final Inspection

Each completed activity done in the Estimating Operation shall have a final inspection. Any non-conformance(s) to the builder's documented standards for completed work shall be recorded. Corrections shall be completed and documented.

7.2.5 Inspection Records

Records shall be maintained of all code compliance, third-party inspections, company QEHS inspections, and the correction of noted non-conformances.

7.3 Estimating Operations Continual Improvement

7.3.1 Corrective and Preventive Actions

The Estimating Operation shall define and implement on-going actions to eliminate recurring QEHS issues. These documented actions shall include identification, prioritization, root-cause analysis, and development and implementation of an action plan. The effectiveness of these actions shall be evaluated. When identified issues have not been eliminated, the plan shall be reassessed and appropriate alternate actions initiated..

7.3.2 Estimating Operations Training

A program of ongoing training shall be implemented for all Estimating Operations employees involved in meeting QEHS requirements, and meeting new home buyer customer expectations. This training shall include identified opportunities for improvement that leads to continual improvement on department specific metrics and reducing recurring issues in the Estimating Operation. Training of Estimating personnel shall include how to assure that job ready conditions exist for all phases of estimating work and how to maintain a safe workplace. This training shall include both task specific skills and training in the operation of the Estimating Operation's QEHS Management System and shall be documented.

7.3.3 Trade Partner QEHS Program Support

The Estimating Operations QEHS Management System shall support the QEHS, environmental and safety programs of trade partners and other material and service providers. Communication shall be established between the Estimating representative of the company and the representatives of the trade partners to support the QEHS initiatives of each other. Feedback shall be periodically provided to the trade partner to enable the trade partner to improve the QEHS and safety of their work. Feedback shall



be periodically solicited from the trade partner in order for the company to improve the QEHS and safety of the company's work.

8.0 CONSTRUCTION OPERATIONS

8.1 Construction Operations QEHS Policies And Procedures

8.1.1 Scope of the Construction Operations

The Construction Operation shall define the scope of its construction operations.

8.1.2 Process Flow

The company shall define and document a sequence or sequences of activities (process flow) for the Construction Operation of the company. This sequence shall include all major planning, construction phases by trade, and QEHS assurance activities. This can be in list form or any other clear logical sequence. It is recommended that flowcharts are used where possible.

8.1.3 Codes and Regulations

Procedures shall be implemented to assure that all applicable codes, and governmental regulations are identified and complied with. The company shall have access to all applicable codes.

8.1.4 Company Standards

Company standards shall be documented to define the requirements for workmanship, including tolerance requirements, industry standards, construction procedures, and material specifications. These company standards shall be included in scopes of work or other agreed upon document(s). When a conflict exists between local practice and other requirements (e.g., industry standards, manufacturer's instructions, etc.), there shall be a procedure for allowing exceptions while maintaining QEHS. There shall be a procedure to require that all equipment used in the construction process requiring calibration is properly calibrated and maintained.

8.1.5 Manufacturer's Product Installation Instructions

The Construction Operation shall develop, document, and implement procedures for obtaining and maintaining current copies of all installation/application instructions. Construction Operations shall ensure that all products are properly installed.

8.1.6 Trade Partner and Supplier Contract Documents and Scopes of Work

Procedures shall be implemented to prepare and review the subcontracts and construction documents specific to the work of each trade utilized by the Construction Operation to assure that builder requirements and typical home buyer expectations will be met. Trade contracts, scopes of work, or other documents shall include mutually agreed upon job ready conditions and procedures to follow when these conditions are not met. Trade contracts shall also include provisions requiring the trade partner to comply with all environmental and safety regulations and provide their accident prevention plan to the company. Trade partners shall be required to periodically report to builder management on non-compliance of job ready conditions at the builder's various communities.

8.1.7 Scheduling

Schedules for organizing and completing the work to meet established time requirements shall be documented. Processes to monitor the house specific work progress shall be established and shall have criteria under which deviations from the time requirements can occur. Procedures shall be established for



communicating all schedules as well as any schedule changes to trade partners, suppliers, and new home buyer customers.

8.1.8 Approval and Selection of Trade Partners, Materials, and Other Support Services

Procedures shall be established and implemented for review, approval, selection, and monitoring of:

- 8.1.8.1 Trade partners;
- 8.1.8.2 Materials and suppliers; and
- 8.1.8.8 other support services.

These procedures shall include a review of QEHS performance, warranty history, and their safety record. An approved vendor list shall be maintained of all suppliers, trade partners and support services. This list shall be reviewed at least annually.

(This list shall identify trade partners that are NHQ certified, trade partners that are not NHQ certified but have formal QEHS Management Systems implemented audited and verified by the builder, and trades that require QEHS management activities to be conducted by the builder.)

There shall be a procedure for adding and removing suppliers, trade partners or support services firms from the builder's approved vendor list.

8.1.9 Control of Plans, Specifications, and Options

Procedures shall be established and implemented to assure that all plans, specifications, and options are updated when changes are made, and that no outdated or obsolete versions of any construction document can inadvertently be used.

8.1.10 Job Completion Policy

Senior management shall establish a policy that states the conditions under which a new home can be closed. It shall include a process for how unfinished items or defects are to be completed or corrected after closing or other formal turnover.

8.2 Construction Operations Inspections

8.2.1 General

Various inspections will be conducted by Construction Operations to ensure construction activities comply with codes, regulations, scopes of work, manufacturer's instructions, and company standards. Consistent with the builder's experience with each trade partner, the frequency and detail of these inspections shall be sufficient to ensure compliance. Construction operations will develop checklists and/or other documentation for recording the inspection results. The inspection criteria shall be consistent with the company standards and scopes of work. Items requiring corrections shall be recorded, corrected, and their status documented. The Construction Operation shall take steps to ensure any item requiring

correction is not covered up before the correction is completed and documented. The QEHS Management System shall document the inspection process, including who performs the inspection; what is inspected; when and where it is inspected; and the process for recording and storing inspection documentation. The personnel conducting inspections will be trained in the inspection and documentation process.

8.2.2 Job Ready Inspection

The Construction Operations shall ensure the worksite is prepared for the work of the next trade to begin via an inspection consistent with agreed upon job ready requirements. If a trade is required to begin work when the job ready conditions are not met, the Construction Operations will ensure that the proper procedure is followed. Deviations from the job ready conditions shall be recorded on the job ready inspection record.

8.2.3 In-Process Inspections

Activities and work done in the Construction Operation shall have in-process inspections to assure that the builder's QEHS policy and procedures are being followed. These inspections shall be documented. Items requiring correction shall be documented, corrected, and confirmed prior to the covering or concealment of any trade's completed work. The inspection criteria shall be consistent with the company standards and scopes of work.

(Note: If an NHQ Certified trade contractor provides the builder with a copy of their inspection reports, this will satisfy this requirement for work of that trade provided the builder maintains a copy of this inspection document and periodically verifies the accuracy of the trade contractor's inspection.)

8.2.4 Final Inspection

Each completed house shall have a final inspection. Any non-conformance(s) to the builder's documented standards for completed work shall be recorded. Corrections shall be completed and documented.

8.2.5 Inspection Records

Records shall be maintained of all code compliance, third-party inspections, company QEHS inspections, and the correction of noted non-conformances.

8.3 Construction Operations Continual Improvement

8.3.1 Corrective and Preventive Actions

The Construction Operation shall define and implement on-going actions to eliminate recurring QEHS issues. These documented actions shall include identification, prioritization, root-cause analysis, and development and implementation of an action plan. The effectiveness of these actions shall be evaluated. When identified issues have not been eliminated, the plan shall be reassessed and appropriate alternate actions initiated.

8.3.2 Construction Operations Training

A program of ongoing training shall be implemented for all Construction Operations employees involved in meeting QEHS requirements, and meeting new home buyer customer expectations. This training shall include identified opportunities for improvement that leads to continual improvement on department specific metrics and reducing recurring issues in the construction operation. Training of construction personnel shall include how to assure that job ready conditions exist for all phases of construction work and how to maintain a safe jobsite. This training shall include both task specific skills and training in the operation of the construction operation's QEHS Management System and shall be documented.

8.3.3 Trade Partner QEHS Assurance Program Support

The Construction Operations QEHS Management System shall support the QEHS, environmental and safety programs of trade partners and other material and service providers. Communication shall be established between the construction QEHS representative of the company and the QEHS representatives of the trade partners to support the QEHS initiatives of each other. Feedback shall be periodically provided to the trade partner to enable the trade partner to improve the QEHS and safety of their work. Feedback shall be periodically solicited from the trade partner in order for the company to improve the QEHS and safety of the company's work.

8.3.4 Trade Partner QEHS Management Oversight

All critical construction activity shall be supervised by a documented QEHS Management System. The builder shall define a list of critical trades that require formal QEHS Management System oversight. This list shall include at a minimum all trades involved with the building envelope; HVAC; plumbing; electrical; and any work that becomes concealed during the construction process. Trades that have a significant impact on customer satisfaction, as identified by the builder, shall also be considered critical trades.

The effective QEHS management activities to be ensured include code compliance, workmanship standards, compliance with manufacturer's instructions, documented inspections, corrective actions, preventive actions, and training.

(NOTE: for NHQ Certification purposes)

The Construction Operation shall ensure QEHS management supervision of each critical trade by:

- a) Utilizing NHQ Certified trade partners, and/or*
- b) Conducting and documenting periodic QEHS audits sufficient in scope and detail to verify the implementation and effectiveness of the trade partner's QEHS Management System per the NHQ requirements, and/or*
- c) Internally providing all QEHS management activities comparable to the NHQ requirements.*

For small trade partners with three or fewer working crews and where the owner is daily involved with the work on the job site, the builder can meet this NHQ requirement by:

- 1) Conducting and documenting (or accepting the trade's documentation) for appropriate in process and job complete inspections; and*



2) Documenting quarterly review meetings with the owner of the trade partner to discuss recurring issues, needed crew training, workmanship standards, and providing/receiving feedback. The documentation can be brief but should note date, participants, and topics discussed.



9.0 CUSTOMER RELATIONS WARRANTY AND SERVICE OPERATIONS

9.1 Customer Relations Warranty And Service Operations QEHS Policies And Procedures

9.1.1 Scope of the Customer Relations Warranty and Service Operations

The Warranty and Service Operation shall define the scope of its operations including whether employees or trade partners typically do warranty service work in existing homes, and what conditions must be met to affect “turnover” from Construction Operations to Warranty and Service Operations.

9.1.2 Process Flow

The company shall define and document a sequence or sequences of activities (process flow) for the Warranty and Service Operation of the company. This sequence shall include all major communications, service work in existing homes, managing and tracking service requests, and QEHS assurance activities.

9.1.3 Warranty Documents, Repair Procedures, and Installation Manuals

9.1.3.1 Warranty Policy

The company shall have a defined warranty policy that is provided to each home buyer customer. At least annually all warranty documents including performance standards for all items and systems found in a new home shall be reviewed to assure expectations of the new home buyer customer are met.

9.1.3.2 Individual Trade’s Performance Standards

Scopes of work or construction documents for trade partners providing warranty service shall define the warranty service performance requirements expected of the trade partner.

9.1.3.3 Procedures and Manuals

The Warranty and Service Operation will maintain access to current copies of repair procedures and installation manuals for any materials or equipment that requires repair or replacement.

9.1.4 Codes, Standards, Regulations, and Manufacturer’s Instructions

Procedures shall be implemented to assure identification of and compliance with all applicable codes, industry standards, governmental regulations, and manufacturer’s instructions.

9.1.5 Warranty and Service Operations Policies

The Warranty and Service Operations shall have a warranty request completion policy. Procedures shall be developed, documented, and implemented for communicating the company’s warranty and service obligations, procedures, and the company’s customer satisfaction commitment to the new home buyer.

9.1.6 Scheduling

Processes for scheduling and monitoring the warranty service work progress shall be established and shall have criteria under which deviations from the time requirements can occur. Procedures shall be established for communicating all schedules and any schedule changes to trade partners, suppliers, and new home buyer customers.



9.1.7 Selection and Approval of Trade Partners, Materials, and Other Support Services to Complete Warranty Service Work

Procedures shall be established and implemented for review, approval, selection, and monitoring of any trade partner or consultant not already approved by the company.

9.1.8 Version Control

Procedures shall be established and implemented to assure that the records for all new homes covered under the company's warranty documents clearly indicate which version of the company's warranty applies to each new home sold. When more than one version of the company's warranty exists, all warranty and service personnel shall understand the terms and coverage of the warranty as it relates to each specific home.

9.1.9 Confirmation of Completed Warranty and Service Work

There shall be a procedure that obtains the homeowner's confirmation that a warranty or service request has been completed. This procedure shall address when and under what conditions a warranty or service request can "remain open" until some reasonable confirmation that the warranty or service work is, in fact, satisfactory.

9.1.10 Protection of Work

There shall be procedures established to protect all affected areas of a completed home during the warranty or service work by individual trades or other warranty personnel. These procedures shall address the process for correcting any damage that occurs during the performance of this work and the process of authorizing any such correction.

9.2 Warranty And Service Operations Inspections

9.2.1 Confirmation of Needed Warranty or Service Work

There shall be procedures established and implemented to determine the scope of the actual work required for each warranty claim received in accordance with the company's Warranty and Service Operations Policy and who is responsible for the completion of this work.

9.2.2 Final Inspection

The completed warranty and service work shall have a final inspection. All non-conformances to the Warranty and Service Operation's policies and procedures shall be documented. Corrections shall be completed and documented in accordance with the Warranty and Service Operations Policy. Each trade partner shall be required to provide to the builder documented assurance that, their warranty work is complete and meets the builder's requirements.

9.2.3 Inspection Records

Records shall be maintained of all warranty and service inspections.

9.3 Warranty And Service Operations Continual Improvement

9.3.1 Corrective and Preventive Actions

The Warranty and Service Operation shall define and implement on-going actions to eliminate recurring QEHS issues. These documented actions shall include identification, prioritization, root-cause analysis and development and implementation of an action plan. When appropriate these actions shall include recommendations of changes in materials, equipment, trade partners, or company performance standards. The effectiveness of the corrective actions shall be evaluated. When identified issues have not been eliminated, the plan shall be reassessed and appropriate actions initiated.

9.3.2 Warranty Service Training

A program of ongoing training for all Warranty and Service Operations employees and trade partners involved in meeting new home buyer customer expectations shall be implemented. This training shall include identified opportunities for improvement that leads to continual improvement on department specific metrics and reducing recurring issues in the warranty and service operation. This training shall include both task specific skills and training in the operation of the company's QEHS Management System.

Warranty and service operations staff will be trained on required repair and installation procedures for equipment or products used in the warranty and service operation. Warranty and service personnel shall be trained on all current versions of the company's warranty in use and where and when those different versions apply. Warranty and service personnel shall be trained on industry performance standards, company performance standards, and work practices of the company's trade partners.

9.3.3 Trade Partner QEHS Assurance Program Support

Communication shall be established between the warranty QEHS representative of the company and the representatives of the trade partners to support the QEHS initiatives of each other. Where a trade partner QEHS Management System does not exist, the warranty and service QEHS representative will establish necessary procedures for assuring that the QEHS of any trade partner's warranty work meets customer expectations. Feedback shall be periodically provided to the trade partner to enable the trade partner to improve the QEHS of their warranty and service work. Feedback shall be periodically solicited from the trade partner in order for the warranty and service to improve the QEHS of the company's work.



10.0 ADDITIONAL FUNCTIONAL AREAS

At the discretion of the company, additional functional areas beyond those listed above may be included in the company's QEHS Management System. The QEHS Management System for each of the additional functional areas shall include meeting the requirements of the following:

10.1 Functional Area QEHS Policies And Procedures

The functional area will have a plan to understand and meet their customer's expectations. This plan shall also define the scope of the functional area activities and process flow. The plan shall include any internal or external standards that apply, any scheduling / timing, expectations / commitments, training and personnel qualifications, and document / version control.

10.2 QEHS Reviews

Appropriate review and approval points to verify compliance with policies and procedures of the functional area shall be established along with criteria for that review and / or approval. Documentation requirements for these reviews shall also be defined and implemented.

10.3 Continual Improvement

A process shall be defined and implemented for on-going actions to eliminate recurring QEHS issues. These documented actions shall include identification, prioritization, root-cause analysis, and development and implementation of an action plan. The effectiveness of these actions shall be evaluated. When identified issues have not been eliminated, the plan shall be reassessed and appropriate alternate actions initiated.



About IBACOS

Since 1991, IBACOS has helped builders address issues in the field so they can deliver better homes today and has conducted forward-thinking research that leads the industry to great homes tomorrow. The goal is an industry that delivers high performance homes that are designed and built to new standards of quality. For more information, please visit www.ibacos.com.

About the Best Practices Research Alliance

The Best Practices Research Alliance is a research-based community of production homebuilders collaborating with building performance specialists, quality and business management experts, and product and material manufacturers. Its ultimate goal is to identify and share how to deliver high quality, zero energy homes as an everyday part of mainstream America. These homes produce as much energy as they consume, while offering higher levels of comfort, durability, safety, and earth friendliness. The Alliance was created and is operated by IBACOS. For more information, please visit www.theresearchalliance.org.

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