



CQR-2

CONSTRUCTION MANAGEMENT COMPANY QUALITY REQUIREMENTS for CONSTRUCTION SERVICES Revision Date: 02/01/2018

1.0 SCOPE

This document establishes the minimum quality program requirements for companies providing construction management services (henceforth referred to as Construction Management Company) to Technical and Project Solutions (T&PS). Additionally, this document outlines minimum requirements for the Construction Management Company's program to accept the quality programs of any contractors and subcontractors hired by the Construction Management Company.

2.0 GENERAL

The quality requirements set forth in this document; the Owner's surveys, audits, and surveillances; or the absence, lack of, or deficiency in these requirements shall in no way relieve the Construction Management Company or its contractors and subcontractors of any contractual obligations or responsibilities.

3.0 QUALITY PROGRAM

The Construction Management Company shall establish, document, and maintain a corporate and site-specific quality program that meets or exceeds the requirements of this document, and that provides any additional controls necessary to ensure compliance with the Owner's procurement documents, specifications, and applicable codes and standards. At a minimum, all contractors and subcontractors hired by the Construction Management Company are expected to follow the same requirements as the Construction Management Company. The Construction Management Company's quality program shall include provision for approving its contractors' and subcontractors' quality programs.

The Construction Management Company shall be responsible for ensuring the quality of all equipment or material obtained or service provided, whether self-performed/procured or performed/procured by its contractors and subcontractors, meets the requirements of either the Owner's procurement documents, or the Construction Management Company's requirements, whichever is more stringent. All applicable Owner's requirements must be communicated to all work locations and contractors.

3.1 Quality Program Requirements

The Construction Management Company shall have an updated quality program, reviewed within 2 years of submission, approved and signed by senior management, which contains, but is not limited to, the following:

1. Quality Organization - The quality program shall define the organizational structure of the Construction Management Company, with special emphasis on the quality organization. The quality responsibilities shall be defined, including any project quality requirements. The program shall contain an organizational chart identifying the quality management structure of the Construction Management Company for both Construction and Supplier Quality. This chart shall establish a quality reporting level to a sufficiently high level of autonomous and independent management to ensure quality problems can be resolved without undue influence from the construction or scheduling processes.

2. Construction Management Company Quality Representative(s) - The quality program shall identify the Construction Management Company's representative(s) authorized to resolve quality matters. The Construction Management Company's quality representative(s) shall be personnel other than those performing the work and shall not be reporting directly to management responsible for construction or scheduling. The Construction Management Company shall designate an onsite quality professional who is qualified to properly inspect and evaluate the work being performed. The Construction Management Company's designated quality professional's qualifications shall be submitted to the Owner for review and approval. Owner reserves the right to reject proposed quality professional, and to remove an approved quality professional if it is found they are not properly managing the approved quality program.
3. Quality Personnel Training - The quality program shall provide for, and require the indoctrination and training of, quality personnel performing or managing activities affecting quality. This shall include at a minimum, the quality program, procedures, project-specific technical requirements, and revisions to each as they occur.

The quality program shall identify the activities requiring personnel certification and the requirements for obtaining and maintaining certification.

The Construction Management Company shall generate and maintain documentation to show that quality personnel have completed the training and are familiar with its contents, prior to the start of work activities. The Construction Management Company shall require similar documentation from its contractors and subcontractors be generated and maintained.

4. Procedures - The Construction Management Company shall develop and use procedures, guidelines, related forms, and other documents, as part of the site-specific quality program, to address the processes, actions, and activities necessary for the implementation of the quality activities related to the scope of work. The procedures shall be controlled and available to the employees performing the work. The procedures shall identify activities to be performed as well as responsible parties, and shall provide documentation as objective evidence to verify that controls have been satisfactorily established and performed.

The Construction Management Company shall develop process procedures to include technical criteria as noted in the Owner's specifications for the areas referenced in Item 6, Construction Process Control, as related to the scope of work and conditions of the contract. These process procedures shall contain the following information, as applicable:

- Scope of work covered by the procedure.
- Key personnel involved in the process and their responsibilities.
- Technical criteria and references with applicable acceptance criteria.
- Procedural steps, explained in a logical manner, demonstrating how the process will be accomplished and accepted.
- Special conditions, exceptions, or activities relevant to the scope of work and site conditions.
- Key inspection points and hold points, including interfaces with the Owner.
- Relevant forms and checklists, as they apply to the scope of the procedure, to ensure consistency and a determination of the status (for example, acceptance).
- Documentation requirements for the process and the need for submittal to the Owner.

5. Document Control - The Construction Management Company shall have measures in place to control issuance of, receipt of, and changes to documents affecting quality. All documents, whether Owner-supplied or supplied by another company, including revisions, shall be controlled by the Construction Management Company's organization. The Construction Management Company's system shall maintain traceability, identify proper status, and control transmittal of controlled documents. The Construction Management Company shall ensure that documents are reviewed for adequacy, approved for release by authorized personnel, and distributed to the appropriate work location. The Construction Management Company shall ensure changes to documents receive the same level of authorization as the original documents. All changes shall be processed in writing or electronically, and all obsolete documents shall be removed promptly from all points of issue and use, or be adequately marked to identify their status. Documents shall be easily retrievable, legible, reproducible, and uniquely identified. The Construction Management Company shall require all contractors and subcontractors to have approved document control procedures in place.

6. Construction Process Control - Construction activities affecting quality shall be prescribed by documented instructions, procedures, or drawings of a type appropriate to the circumstances and shall be accomplished in accordance with the applicable documents.

Fabrication, installation, construction, and inspection activities shall be performed in accordance with applicable codes, technical specifications, manufacturer's recommendations, and engineering drawings. Procedures shall address how special conditions will be met, explain key inspection areas and hold points, identify special equipment needs, define acceptance criteria, and include copies of all relevant forms and checklists.

Construction Management Company procedures, including appropriate inspection and testing, shall be provided to the Owner for review for the following work activities, at a minimum, as deemed appropriate by T&PS for the applicable contractual work scope:

- Earthwork operations including soils.
- Concrete operations.
- Caisson operations.
- Piling operations.
- Grouting operations.
- Fit up and installation of structural steel.
- Fit up and installation of ductwork.
- Installation of high-strength bolting.
- Installation of insulation.
- Piping installation.
- Installation of equipment, including rotating equipment.
- Installation of electrical systems.
- Installation of instrumentation.
- Installation and fabrication of fiberglass components to include inspection and testing.
- Application of coatings and paint systems to include surface preparation, inspection, and testing.
- Survey control.
- Material receipt, storage, and handling.

- Document control.

Additional procedures may be required as deemed appropriate by T&PS and as outlined in the contractual scope of work. Owner reserves the right to reject procedures deemed insufficient to properly control or document quality. The Construction Management Company shall ensure all its contractors and subcontractors not working under these approved procedures submit their procedures to the Construction Management Company for review and approval.

7. Control of Special Processes - The Construction Management Company shall control special processes that control or verify quality, such as those used in welding, heat treating, and nondestructive examination. Special processes shall be performed by qualified personnel using qualified procedures in accordance with specified technical requirements. The Construction Management Company shall submit the initial and any subsequent revision of special process procedures for T&PS approval.

The Construction Management Company shall maintain documentation for the certification and/or qualification of personnel, processes, or equipment per the requirements of applicable codes and standards.

The Construction Management Company shall ensure all its contractors and subcontractors control special processes in such a way as to meet or exceed the Construction Management Company's approved process.

8. Control and Calibration of Measuring and Testing Equipment - Measuring and testing equipment (MTE) utilized will be appropriate to the work performed and in good repair and working condition. At prescribed intervals, or prior to each use, all MTE and devices used for inspection or testing shall be calibrated and adjusted against certified equipment having a known valid relationship to nationally recognized standards. When no national standards exist, the basis employed for calibration shall be documented. The Construction Management Company and its contractors and subcontractors shall:

- Identify MTE, whether owned by Construction Management Company its contractors, or its and subcontractors, and provide a tag, sticker, or other suitable means to show the calibration status.
- Ensure contractors and subcontractors maintain calibration records. Calibration documentation shall provide traceability of calibrated equipment by demonstrating an unbroken chain of calibration or comparisons linking them to relevant national standards or physical constants.

If MTE is found to be out of calibration, the equipment and the tests performed with the out-of-calibration equipment shall be evaluated. The equipment shall be tagged and segregated and shall not be used until it has been calibrated, repaired, and found acceptable for use. If it cannot be repaired, the equipment shall be properly dispositioned. If the results of the testing performed with the equipment are not valid, a nonconformance shall be written.

Calibration and control measures are not required for commercial equipment such as rulers, tape measures, and so forth.

9. Inspection and Testing - The Construction Management Company shall have an inspection program that includes receiving, in-process, and final inspections. Procedures used to control inspection shall include characteristics to be inspected, examined, or tested and the acceptance criteria used. Contractors and subcontractors hired by the Construction Management Company shall have inspection programs that are verified to meet or exceed the Construction Management Company's program.

The Construction Management Company shall include, as part of the inspection program, necessary documentation of the inspection activities by use of forms, reports, tags, or other suitable means.

The Construction Management Company shall supply quality representatives in sufficient number to provide the timely and accurate quality inspection of work activities. The Construction Management Company QC representatives must be qualified to inspect and evaluate the work in accordance with contract conditions and technical specifications. The Construction Management Company shall maintain résumés and any other applicable qualifications, or certifications of all quality representatives. These qualifications shall be submitted for review and approval by the Owner, if requested. All QC personnel qualifications are subject to review by the Owner. Owner reserves the right to reject any QC personnel deemed to be unqualified or not properly administering the approved quality program.

In-process inspection shall include necessary verification that procedures for special processes are being used when applicable, and that physical examinations of the material or equipment are being conducted.

Final inspection shall include verification that all required records and documents are complete and that physical examination of the material or equipment has been made. Any documentation created to show that work performed is in accordance with applicable codes, standards, specifications, and drawings, shall be completed in a timely fashion and turned over to the Owner for review within a week of completing the document.

The Construction Management Company shall have a system to indicate the inspection status of each item being inspected by use of stamps, tags, travelers, or other suitable means.

If testing is required, the Construction Management Company or its contractors and subcontractors shall have documented testing procedures and shall perform the tests to ensure the end-product meets the requirements of the contract documents.

If the need arises, the Construction Management Company or its contractors and subcontractors may hire a qualified third-party testing agency to supplement QC staffing requirements. The Construction Management Company shall have a written plan to review and approve qualifications of this agency, along with the qualifications of inspectors or technicians assigned to the construction site. Construction Management Company shall maintain résumés and any other applicable qualifications, or certifications of all third-party quality representatives. These qualifications shall be submitted for review and approval by the Owner, if requested.

10. Material Receipt, Storage, and Handling - The Construction Management Company shall establish and maintain a system for handling, storage, preservation, and traceability of all materials and equipment from the time of receipt through the entire installation process to protect the quality of products and prevent damage, deterioration, or loss. The equipment manufacturer's handling and storage requirements shall be met, or any exceptions shall be noted in writing by the Construction Management Company for the Owner to review. Owner reserves the right to reject requested exceptions.

The system shall include provisions for protection and identification of the product until delivery to the Owner, including provisions for preventive maintenance as required.

The Construction Management Company shall have an inspection program that includes receiving inspections.

Procedures used to control inspection shall include characteristics to be inspected, examined, or tested and the acceptance criteria used.

In the event the Construction Management Company uses contractors or subcontractors to perform material receipt, storage, and handling for the project, the Construction Management Company shall either ensure its contractors and subcontractors work under the Construction Management Company's approved receipt, storage, and handling procedure, or shall require a written procedure from the

company performing such work that must be approved per the Construction Management Company's written approval process.

11. Nonconforming Items and Corrective Action - The Construction Management Company shall have a written procedure for identifying, controlling, and reporting nonconforming items. These measures shall establish personnel responsibilities and authority for disposition of those items, including requirements for any contractors and subcontractors. The Owner shall be notified of all nonconforming items.

The procedure shall establish methods for investigating each nonconformance and initiating corrective action to prevent recurrence. The procedure shall establish methods to verify repair, rework, use-as-is, or disposal of the nonconforming items and subsequent reinspection or re-testing as required to ensure compliance with drawings, specification, and procurement documents.

The procedure shall contain provisions for the issuance of a hold tag or similar measures to isolate nonconforming items from construction use until such a time as the nonconformance has been resolved.

Records shall be maintained to document the nature, extent, and disposition of the nonconforming items and the corrective action to prevent recurrence.

12. Contractor Management - The Construction Management Company shall have written procedures and be responsible for ensuring the quality of all materials and equipment obtained from sub-suppliers, or work performed by its contractors and subcontractors, meets the requirements of this document and the Owner's procurement documents, or the Construction Management Company's requirements, whichever are more stringent.

All applicable requirements of the Owner must be communicated to the suppliers, sub-suppliers, contractors, and subcontractors. The Construction Management Company shall ensure the quality of equipment or services provided by suppliers, sub-suppliers, contractors, and subcontractors meets or exceeds the Owner's requirements or the Construction Management Company's requirements, whichever are more stringent.

The Construction Management Company shall have an Owner approved written process for approving all suppliers, sub-suppliers, contractors, subcontractors, and manufacturers. This process shall include written approval for quality plans of all suppliers, sub-suppliers, contractors, subcontractors, and manufacturers.

13. Quality Records - The Construction Management Company shall adequately define quality records and identify procedures for the care, custody, control, and retention of those records. Any documentation created to show that work performed is in accordance with applicable codes, standards, specifications, and drawings shall be completed in a timely fashion and turned over to the Owner for review within a week of completing the document.

14. Quality Program Evaluations - The Construction Management Company shall routinely monitor the effectiveness of the quality program through inspections, meetings, assessments, or audits and make appropriate adjustments to the quality program to comply with requirements. Additionally, the Construction Management Company shall institute a quality surveillance program, using Predictive Solutions software, that includes quality surveillances performed by construction personnel.

15. Procurement and Off-Site Fabrication - Any equipment or material, other than consumables, procured by the Construction Management Company or its contractors and subcontractors must meet the requirements of the SQAR-1 document. Any material fabricated off-site by the Construction Management Company or its contractors and subcontractors must be fabricated in an approved shop that meets the requirements of SQAR-1. Owner must be notified in writing prior to any equipment or material procurement and any off-site fabrication.

4.0 QUALITY PROGRAM DOCUMENTATION SUBMITTAL AND EVALUATION

4.1 Documentation Required for Qualification and Evaluation

Companies requesting the opportunity to perform Construction Management for T&PS shall submit their application and one uncontrolled copy of their corporate quality program through the BROWZ web-based system.

T&PS shall review the potential Construction Management Company's quality program as a part of the qualification process. Deficiencies noted during the review will be documented and transmitted through BROWZ to the potential company for consideration or correction.

4.2 Documentation Required with Proposal

Companies selected to bid on a Construction Management scope of work shall submit a corporate quality program as part of their bid proposal, as specified in the special conditions of the contract. This quality program shall meet or exceed the requirements of this document. The Owner shall review the program and forward any noted deficiencies to the bid evaluation team for proper consideration and action.

If the company is an unsuccessful bidder, the quality programs may be destroyed after the purchase order has been placed.

4.3 Documentation required for approval prior to start of construction activities

4.3.1 Site-Specific Quality Program

4.3.1.1 *Program Submittal*

Within 5 days of award, the Construction Management Company shall formally submit to the Owner's Construction Quality assurance group, a site-specific quality program that meets or exceeds the requirements of this document. The site-specific quality program must be approved prior to starting any quality related work.

The submitted contractor quality program shall be project-specific and shall encompass all relevant portions of the work to be performed on the project.

4.3.1.2 *Personnel Certification*

The company shall submit to the Owner the qualifications and/or certifications of all Construction Management Company and testing agency personnel performing inspection and tests.

The Owner reserves the right to request personnel be replaced if their qualifications are deemed unacceptable, or they are found to not be properly administering the approved quality program.

The Construction Management Company shall have a full-time, solely dedicated, onsite quality professional who is qualified to properly inspect and evaluate the work being performed. This individual shall be familiar with the scope of work being performed and shall be onsite whenever work is being performed. This individual shall be responsible for interfacing with the Owner regarding the Construction Management Company's quality program to ensure the work performed by the Construction Management Company and its contractors / subcontractors meets or exceeds all quality standards. This individual shall have authority and the autonomy to enforce the approved quality program and ensure the contractors and subcontractors are properly following their respective quality programs.

4.3.1.3 *Program Review*

The Owner's Construction Quality group shall conduct a formal review of the Construction Management Company's site-specific quality program and procedures.

The Owner may conduct an initial pre-construction meeting with the Construction Management Company to clarify, discuss, and review the results of the contractor site-specific quality program evaluation.

The Owner reserves the right to request inspection and test plans and any additional documentation and procedures to supplement and further define the contractor quality program.

4.3.1.4 *Acceptance and Follow-up*

After evaluation by T&PS Construction Quality, results will be submitted to the Construction Management Company.

- Acceptable results are considered accepted for use for work performed by the contractor on the specific project.
- Any deficiencies identified shall be corrected by the Construction Management Company and resubmitted for review and approval.

After corrective actions are taken and satisfactory results are obtained, an T&PS Construction Quality representative shall submit acceptance documentation to the Construction Management Company.

NOTE

If acceptable results are not achieved in a timely manner, T&PS construction management may issue an NCR addressing the nonconforming items.

T&PS reserves the right to perform whatever inspection, testing, and monitoring necessary to ensure quality workmanship and conformance to applicable procedures, project specifications, and drawings.

All revisions, deletions, addendums, or changes to the approved contractor quality program shall be submitted to the Owner for review and approval.

4.4 Other Documentation Required for Approval

4.4.1 Quality Control Documentation List

When required by the procurement documents, the Construction Management Company shall compile and submit for approval a QC documentation list of the specific documents to be generated during erection or installation at the construction site. This documentation shall include, but is not limited to, copies of all forms, checklists, inspection and test plans (ITPs), and so forth to be used to verify QC and conformance to specifications requirements.

5.0 QA SURVEYS, AUDITS, AND SURVEILLANCE

5.1 General

The Construction Management Company's work, as well as any work performed by contractors and subcontractors, are subject to surveys, assessments, and surveillance by the Owner or Owner's authorized representatives to ensure quality standards are met and determine adherence to approved procedures. This surveying, auditing, and surveillance shall in no way relieve the Construction Management Company of any contractual responsibilities.

5.2 Quality Surveillances

The Construction Management Company's quality program shall be subject to surveillance by the Owner and will vary depending on the Construction Management Company's performance, past records, past surveillance results, and other factors. Responses to reports on nonconforming items shall be documented and corrective action accomplished expeditiously.

Construction Management Company contractors and subcontractors are also are subject to surveillance by Owner.