

TG 01400 v10.02
Summary of Changes

To reinstate the old TG01400 with a few minor corrections. The reason for bringing it back is to improve enforcement of the quality control sections within technical specifications.

Quality Requirements
TECHNICAL GUIDE

TG 01400

1. COORDINATION ISSUES:

- 1.1 The information contained in and required by this section has serious contract implications. Ensure there are no errors in the final specification section.
- 1.2 Make sure requirements in the other technical sections are addressed and requirements coordinated with this section.

2. DESIGN ISSUES: (Not Used)

3. DRAWING NOTES:

- 3.1 Mockups: If one or more technical sections of the specification call for a mockup or if there is a general assembly mockup required for the project, retain the mockup article in attached Section 01400, and if it is a field mockup, indicate location, size, and other details of specific mockups on Drawings.

4. STANDARD DRAWINGS: (Not Used)

5. SPECIFICATION NOTES:

- 5.1 Delegated Design: The architect or engineer may decide to delegate the design of a building system or subassembly to a supplier or subcontractor to the General Contractor. Thus, this engineering work would fall under the General Contractor. Confirm requirements with the Project Coordinator.
 - 5.1.1 Delegated design may be appropriate for conditions when the character of the components, such as aluminum extrusions, are known only to the manufacturer or the manufacturer of the subassembly is not known until after the Contract is signed.
 - 5.1.2 Examples where delegated design might be needed are pre-cast concrete, custom skylights, curtain walls, and aluminum guardrails.

6. GUIDE SPECIFICATION:

- 6.1 **Section 01400 Quality Requirements:** Add this section for all projects.

SPECIFIER'S NOTE: *Blue colored texts are Notes to the Specifier and should be completely deleted from the final text. Where [red colored italicized text in parentheses] is shown in this specification section, insert wording, numbers, etc. as appropriate and delete parentheses. Where <Red colored text in brackets> is shown, choice is indicated. Make the appropriate choice and delete the brackets. Maintain footer notation in italics with the current version used.*

For multiple projects, if there is more than one DAGS Job Number for the project, include all DAGS Job Numbers in the footer. Do not include the Project Name (etc.) line in the footer. Use the following format for the specification footer.

TG01400 v03-0610.02
Job No. [00-00-0000]
[00-00-0000]

Quality Requirements
Page [2]

End Footer Sample

SPECIFIER NOTES: Add Section 01400 for all projects. Edit for major projects (over \$25M) and minor projects (from \$25K to \$25M). This Section 01400 is written for minor projects (\$25K up to \$25M). For major Projects, implement the Contractor Quality Control (CQC) Program and include appropriate articles and paragraphs labeled with "CQC Program" into this section. Consult with ~~and obtain~~ DAGS Public Works, ~~Quality Control Branch (QCB)~~ Technical Services Office approval and the appropriate requirements prior to use. ~~Quality Control Branch Technical Service Office~~ shall ~~approve~~ review the completed section prior to the Final design submission.

For CQC Program: Determine whether a full time QC Manager is justified or to allow the Project Superintendent to also act as the QC Manager. Consider design and complexity of the project, location of project, cost and type of Contract, amount and type of off-site fabrication and duration of project to justify expenses.

Two options for the QC Manager's duties are included. The first option allows the QC Manager to perform production related duties and the second option does not. Both options can include the use of QC Specialists responsible for performing quality control for specific areas of work, durations and frequency. Require QC Specialists when work is sufficiently complex or of a size that justifies the expense. Make sure to delete the words "QC Specialists" throughout this section when the QC Specialists is not used.

When requiring the use of a Registered Professional Engineer or Architect or a graduate Engineer or Architect for the QC Manager or QC Specialists, keep in mind the additional cost. Avoid over-specifying the expertise needed for QC personnel.

SECTION 01400 - QUALITY REQUIREMENTS

PART 1 – GENERAL

1.01 SUMMARY

- A. This Section includes administrative and procedural requirements for quality assurance and for Contractor's Quality Control *[(CQC) Program,]* responsibilities and duties.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specific quality-control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
 - 2. Specified tests, inspections, and related actions do not limit Contractor's quality-control procedures that facilitate compliance with the Contract Document requirements.
 - 3. Requirements of this section or by the Department or authorities having jurisdiction, do not limit the Contractor's responsibility to provide quality-control services.
- C. Related Sections include the following:
 - 1. Section 01210 "Allowances" for testing and inspecting allowances.

SPECIFIER'S NOTE: CQC Program - Delete paragraph 1.01.D if not providing a CQC Program and Plan.

[D. Contractor's Quality Control Program, consisting of a Quality Control Plan and related documents are required to be in place prior to the start of onsite construction.]

1.02 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and ensure that proposed construction complies with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that completed construction complies with requirements. Services do not include contract enforcement activities performed by ~~Engineer~~Contracting Officer.
- C. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

SPECIFIER'S NOTE: Delete paragraph 1.02.D if Project does not require mockups.

[D. Mockups: Full-size, physical example assemblies to illustrate finishes and materials. Mockups are used to verify selections made under Sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and

execution, and to review construction, coordination, testing, or operation; they are not Samples. Mockups establish the standard by which the Work will be judged.]

SPECIFIER'S NOTE: If requiring a portion of the design to be delegated to the Contractor, retain paragraph 1.03, otherwise delete. Make sure the respective Delegated Design paragraph 1.04.B under "Submittal" article is also retained or deleted.

[1.03 DELEGATED DESIGN

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

- 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Contracting Officer.]**

1.04 SUBMITTALS

A. Qualification Data: For QC Manager (alternate QC Manager), inspection and testing agencies, furnish evidence to demonstrate their capabilities and experience. Include proof of qualifications in the form of education, certifications, and license. For the testing agencies, include a recent report on the inspection of the testing agency by a recognized authority.

- 1. The Contracting Officer may disapprove any QC Manager (alternate QC Manager), inspection or testing agency or individual employed by the agency when the Contracting Officer determines it is in the best interest of the State. The Contractor is not entitled to any claim or cost increase or time extension due to the Contracting Officer's disapproval of an agency or individual.**

SPECIFIER'S NOTE: Retain paragraph 1.04.B when maintaining "Delegated Design" article.

[B. Delegated-Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit a statement, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional. Indicate that the products and systems are in compliance with performance and design criteria required. Include list of codes, loads, and other factors used in performing these services.]

C. Reports: Prepare and submit certified written reports that include the following:

- 1. Date of issue.**
- 2. Project title and number.**
- 3. Name, address, and telephone number of testing agency.**
- 4. Dates and locations of samples and tests or inspections.**
- 5. Names of individuals making tests and inspections.**

6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Ambient conditions at time of sample taking and testing and inspecting.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspectng.

SPECIFIER'S NOTE: CQC Program - Delete subparagraph 1.04.C.14 when requiring a CQC Program.

[14. Combined Contractor Production and Contractor Quality Control Report, (one sheet): By [10:00 AM] the next working day after each day that work is performed.]

- D. Permits, Licenses, and Certificates: Submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

SPECIFIER'S NOTE: CQC Program - Retain paragraph 1.04.E and subparagraphs for CQC Program. If a CQC checklist will be used, modify subparagraphs 1.04.E.1 and 1.04.E.2 accordingly. Adjust the number of days the QC Plan is due. The 30-day and 90-day durations are standard, adjust durations if needed.

[E. Quality Control (QC) Plan: Submit a QC Plan within [30] calendar days after receipt of Notice of Award.

1. *The QC Plan shall include a preliminary submittal of the list of definable features of work [and the Quality Control Checklist] that covers the first [90] days of construction.*
2. *Submit the completed list of definable features of work [and the Quality Control Checklist] in conjunction with the completed Construction Schedule or CPM schedule.]*

SPECIFIER'S NOTE: CQC Program - Retain paragraph 1.04.F for CQC Program.

[F. Any approval by the Department of the QC Plan is considered an "approved as noted, resubmittal required" and will be in effect only until the completed list of definable work features are received and approved. If the completed list of definable work features and completed Construction Schedule are not received within the time indicated, the QC Plan will be disapproved and all work will stop, except for work authorized in article 1.09 in the paragraph entitled "Preliminary Work Authorized Prior to Approval."]

SPECIFIER'S NOTE: CQC Program - Retain paragraph 1.05 under standard and CQC program. Edit or modify the paragraphs to meet the Project requirements. Use the first subparagraph 1.05.A.1. for small or routine projects. Use the second subparagraph 1.05.A.1. for large or complex projects. Delete the requirement for QC Specialist reports in subparagraph 1.05.A2 when QC specialists are not specified.

1.05 SCHEDULE FOR SUBMITTING INFORMATION AND REPORTS

- A. Deliver the original and two copies each of the following to the Department:
- [1. Combined Contractor Production and Contractor Quality Control Report, (one sheet): By [10:00 AM] the next working day after each day that work is performed.*
 - OR**
 - 1. Contractor Quality Control Report (1 sheet) and Contractor Production Report (one sheet): By [10:00 AM] the next working day after each day that work is performed.]*
 2. QC Specialist Reports: By **[10:00 AM]** the next working day after each day that work is performed, attached to the Contractor Quality Control Report;
 3. Field Test Reports: Within two working days after the test is performed, attached to the Contractor Quality Control Report;
 4. Monthly Summary Report of Tests: 2 copies attached to the Contractor Quality Control Report;
 5. Testing Plan and Log: 2 copies, at the end of each month;
 6. Rework Items List: 2 copies, by the last working day of the month;
 7. Quality Control meeting minutes: 2 copies, within 2 working days after the meeting and;
 8. Quality Control Certifications: As required by the paragraph titled "Quality Control Certifications.

1.06 QUALITY ASSURANCE

- A. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- B. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

SPECIFIER'S NOTE: Modify this paragraph 1.06.C and insert qualifications of other design professionals that are required by other technical sections.

- C. Professional Architect or Engineer Qualifications: A professional architect or engineer who is legally qualified to practice in jurisdiction where Project is located

and who is experienced in providing architect or engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar to those indicated for this Project in material, design, and extent.

- D. Inspection and Testing Agency Qualifications: An agency with the experience and capability to conduct testing and inspecting indicated, as documented by ASTM E-548, and that specializes in types of tests and inspections to be performed.

SPECIFIER'S NOTE: Delete paragraph 1.06.E and subparagraphs if no pre-construction testing is required. Indicate in individual technical sections whether DAGS or Contractor engages the testing agency. Normally the contractor will be responsible to hire and provide independent testing and inspection agencies.

[E. Pre-construction Testing: Testing agency shall perform pre-construction testing for compliance with specified requirements for performance and test methods.

1. *Contractor responsibilities include the following:*
 - a. *Provide test specimens and assemblies representative of proposed materials and construction. Provide sizes and configurations of assemblies to adequately demonstrate capability of product to comply with performance requirements.*
 - b. *Submit specimens with sufficient time for testing and analyzing results to prevent delaying the Work.*
 - c. *Fabricate and install test assemblies using installers who will perform the same tasks for Project.*
 - d. *Remove assemblies when testing is complete. Do not reuse materials on Project.*
2. *Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to the Department with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.]*

- F. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
1. Build mockups in location and of size indicated or, if not indicated, as directed by Contracting Officer.
 2. Notify Contracting Officer *[seven]* days in advance of dates and times when mockups will be constructed.
 3. Demonstrate the proposed range of aesthetic effects and workmanship.
 4. Obtain Contracting Officer's approval of mockups before starting work, fabrication, or construction.
 5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed work.

6. Demolish and remove mockups when directed, unless otherwise indicated.

SPECIFIER'S NOTE: CQC Program - Include "QC Plan phrase" in subparagraph 1.07.A.1 if applicable.

1.07 QUALITY CONTROL

- A. Contractor Responsibilities: Unless otherwise indicated, provide quality-control services specified and required by authorities having jurisdiction.
1. Engage qualified inspection or testing agencies to perform quality-control services *[and implement the Quality Control Plan]*, unless services are indicated as the Department's responsibility.
 2. Notify Contracting Officer and the inspection or testing agencies at least *[24]* hours in advance of time when Work that requires testing or inspecting will be performed.
 3. Submit certified written reports of each quality-control service.
 4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

SPECIFIER'S NOTE: Confirm special inspection requirements with Project Coordinator. For most minor projects, generally DAGS' staff will provide the Special Inspection; however, if the minor project warrants, require the Contractor to provide independent special inspectors. ~~Obtain approval from~~ Consult with ~~Quality Control Branch~~ DAGS Technical Service Office, as required. Delete paragraph 1.07.B if not required.

SPECIFIER'S NOTE: CQC Program - Require the Contractor to provide independent special inspectors.

[B. Special Inspections:

1. *[The State will][Contractor shall] employ independent Special Inspectors to perform inspections on various elements of the work as required by the Building Code as locally adopted. During the course of the work under inspection, each Special Inspector shall submit detailed reports relative to progress and conditions of the Work, including deviations from specified requirements and stipulating dates, times and location. Special Inspectors shall submit a final report to the Contracting Officer and local code officials. Cooperate fully with the Special Inspectors.]*

- C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing.
- D. Retesting and Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including

retesting and reinspecting, for construction that revised or replaced Work that failed to comply with requirements established by the Contract Documents.

- E. Testing Agency Responsibilities: Cooperate with the Department and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify the Contracting Officer and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 2. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
 3. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
 4. Do not release, revoke, alter, or increase requirements of the Contract Documents or approve or accept any portion of the Work.
 5. Do not perform any duties of Contractor.
- F. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
 4. Facilities for storage and field-curing of test samples.
 5. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 6. Security and protection for samples and for testing and inspecting equipment at Project site.
- G. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.

SPECIFIER'S NOTE: CQC Program – Include paragraph 1.07.H “Approval of QC Plan” paragraph. Require the Contractor to provide independent special inspectors.

[H. Approval of the QC Plan: Obtain approval of the QC plan prior to the start of construction. The Contracting Officer may require changes in the QC Plan and operations as necessary, including removal of personnel, to ensure the specified quality of work is achieved.]

SPECIFIER'S NOTE: For minor (small or routine) projects the Superintendent should also perform the duties of the QC Manager. For CQC Program requirements in major (very large or complex) projects, separate individuals should perform the duties of a QC Manager and a superintendent. However, for major projects that are not complicated, consider allowing a single individual to act as both the Superintendent and the QC Manager.

Use first paragraph 1.08.A to select an individual to act as both the Superintendent and the QC Manager. Use second optional paragraph 1.08.A to select a separate individual to act as the QC Manager. Edit and remove the bracketed phrase when a QC Plan Meeting is not specified or when QC Specialists are not specified.

1.08 QUALITY CONTROL MANAGER

[A. Duties: Provide a Quality Control Manager at the work site to implement and manage the QC Program. In addition to implementing and managing the QC Program, the QC Manager may perform the duties of the Project Superintendent. The QC Manager is required to; [attend the Coordination and Mutual Understanding Meeting,] conduct the QC meetings, perform submittal review, ensure testing is performed and provide QC certifications and documentation required in this Contact. The QC Manager is responsible for managing and coordinating [the QC specialists,] Testing Laboratory personnel and any other inspection and testing personnel required by this Contract.

OPTION

A. Duties: Provide a Quality Control Manager at the work site to implement and manage the QC Program. The only duties and responsibilities of the QC Manager are to manage and implement the QC Program on this contract. The QC Manager shall not be designated as the safety competent person. The QC Manager is required to; [attend the QC Plan Meeting,] [attend the Coordination and Mutual Understanding Meeting,] conduct the QC meetings, perform submittal review, ensure testing is performed and provide QC certifications and documentation required in this Contact. The QC Manager is responsible for managing and coordinating [the QC specialists,] Testing Laboratory personnel and any other inspection and testing personnel required by this Contract.]

SPECIFIER'S NOTE: For minor (small or routine) projects or when an individual is acting as both the QC Manager and superintendent, select the first paragraph 1.08.B. This individual should have 10 years experience as a minimum standard. Edit and include the appropriate job qualifications.

For CQC Program requirements in major (very large or complex) projects, select the second optional paragraph 1.08.B. The individual should have 10 years experience as a minimum standard. Edit and include the appropriate job qualifications. For qualifications in excess of options listed, consult with **Quality Control Branch DAGS Technical Service Office.**

[B. Qualifications: An individual with a minimum of [10] years experience as [a superintendent, inspector, QC Manager, project manager, or construction manager] on similar size and type construction contracts which included the major trades that are part of this Contract. The individual must have experience in the areas of hazard identification and safety compliance. It is desirable that the QC Manager completed the course "Construction Quality Management for Contractors" offered by the Navy or the Army Corps of Engineers or other similar course.

OPTION

B. Qualifications: A graduate of a four year accredited college program in one of the following disciplines: [Engineering,] [Architecture,] [Construction Management,] [Engineering Technology,] [Building Construction,] or [Building Science], or a high school graduate with proven, expertise and experience. Individual shall have a minimum of [10] years as a superintendent, inspector, QC Manager, project manager, or construction manager on similar size and type construction contracts which included the major trades that are part of this Contract. The individual must have experience in the areas of hazard identification and safety compliance. It is desirable that the QC Manager completed the course "Construction Quality Management for Contractors" offered by the Navy or the Army Corps of Engineers or other similar course, except that a high school graduate QC Manager shall have completed the course "Construction Quality Management for Contractors" offered by the Navy or the Army Corps of Engineers or other similar course.]

C. Approval: QC Manager shall be subject to the approval of the Contracting Officer. Unless the Contractor has a QC Manager on staff, the Contractor shall provide the names of at least three individuals, and shall rank the individuals based on the Contractor's preference to work with or hire. The Contracting Officer may approve all or any one of the individuals. If any individual is presently working for the Contractor as a QC Manager, the Contractor may choose to submit only one individual, and that individual is subject to approval.

1. Furnish evidence showing the individual(s) meets the qualifications, experience, training and other criteria required by this section.

~~2. The QC Manager shall be compensated a minimum monthly salary equivalent to a State Engineer V of \$64,000 plus fringe benefits.~~

SPECIFIER'S NOTE: CQC Program - The following articles 1.09 through 1.18 are the requirements and provisions for Contractor's Quality Control Program. Under the CQC Program some items such as "QC Plan Meeting," "QC Specialist" may not be used depending on the Project. Edit accordingly.

START CQC PROGRAM PORTION

1.09 QUALITY CONTROL PROGRAM REQUIREMENTS

A. Establish and maintain a Quality Control (QC) Program consisting of:

1. Quality Control organization,
2. QC Plan, *[and QC Plan meeting]*
3. Testing,

4. Completion inspections,
 5. Quality Control meetings, [*and Coordination and mutual understanding meeting*]
 6. Submittal review and approval, and
 7. Quality Control certifications and documentation necessary to provide materials, equipment, workmanship, fabrication, construction and operations, which comply with the requirements of this Contract.
- B. The QC Program shall cover on-site and off-site work and shall be keyed to the work sequence.
- C. No work or testing may be performed unless the Quality Control Manager is on the work site.
- D. Unless the QC Manager and Project Superintendent are the same individual, the QC Manager shall report to the Project Superintendent as the Project Superintendent will be held responsible for the quality of work on the job and with quality requirements specified in the contract. Besides the requirements of the General Conditions, the Project Superintendent is charged with the responsibility for the overall management of the project including quality and production.
- E. Preliminary Work Authorized Prior to Approval: The only work that is authorized to proceed prior to the approval of the QC Plan is mobilization of storage and office trailers, temporary utilities and surveying, unless otherwise directed by the Contracting Officer.
- F. Notification of Changes: Notify the Contracting Officer of any proposed QC Plan change, including changes in the Quality Control organization personnel. Send written notification a minimum of seven days prior to a proposed change. Proposed changes are subject to acceptance by the Contracting Officer.

1.10 QUALITY CONTROL ORGANIZATION

- A. Quality Control Manager: Meet the qualifications and duties required by this section. 01400.
- B. Alternate QC Manager Duties and Qualification: Designate an alternate for the QC Manager at the work site to serve in the event of the designated QC Manager's absence. Limit the time the QC Manager is absent to a period not exceed a single duration of two consecutive weeks, and in aggregate not more than 45 days during a calendar year. The qualification requirements for the Alternate QC Manager shall be the same as for the QC Manager.

SPECIFIER'S NOTE: Require a QC Specialists when work is sufficiently complex or of a size (scope) that justifies the expense. Make sure to delete the words "QC Specialists" throughout this section when the QC Specialists is not used. Edit paragraph 1.10.C and table for major (large or complex) projects. In special cases using licensed Engineers or Architects for QC Specialists is allowed; consult with

and obtain ~~Quality Control Branch's~~ DAGS Technical Service Office's approval. When QC Specialists are required for specific periods of time, edit the "Frequency" column in the table.

NOTE: Delete the words "QC specialists" throughout this section when the following paragraph is not used.

C. QC Specialists Duties and Qualifications: Provide a separate QC specialist at the work site for each of the areas of responsibilities, specified below, who shall assist and report to the QC Manager and who ~~<may perform production related duties but must be allowed sufficient time to perform>~~ ~~<shall not have duties other than>~~ their assigned quality control duties. QC specialists are required to attend the [Coordination and Mutual Understanding Meeting,] QC meetings and be physically present at the construction site to prepare documentation for each definable feature of work in their area of responsibility [at the frequency specified below.]

SPECIFIER'S NOTE: The following are examples of QC Specialists duties and qualifications. Edit to meet project requirements.

1. Qualification and Experience in Area of Responsibility	Area of Responsibility	Frequency
[_____]	[_____]	[_____]
Roofing Manufacturer's Technical Representative 5 years minimum	Installation and testing roofing systems, Section_____	Full time
Diesel Electric Technical Manufacturer's Representative 5 years minimum	Section_____	Minimum three times during installation and testing.
Registered Structural Engineer, (P.E)	Erection of structural steel	Minimum twice a week

SPECIFIER'S NOTE: Specify a Safety Specialist only for very large or complex projects.

D. Safety Specialist: Provide a Safety Specialist at the work site to perform safety management, surveillance, inspections and safety enforcement for the contractor. The Safety Specialist shall be at the work site at all times whenever work or testing is being performed, shall conduct daily safety inspections and shall have no other duties other than safety management, inspections, and safety enforcement on this Contract.

SPECIFIER'S NOTE: Normally use paragraph 1.10E. for a project requiring a large volume of submittals. Delete otherwise.

- E. QC Assistant: Provide an Administrative Assistant(s) at the work site until the Project is accepted. The QC Assistant's primary duties are to assist the QC Manager to process submittals, maintain files, prepare reports and distribute meeting notes. The QC Assistant may perform other duties provided the other duties do not interfere with the primary duties.

1.11 QUALITY CONTROL (QC) PLAN

- A. Requirements: Provide a QC Plan covering both on-site and off-site work. Bind the Plan in a 3-ring binder with pages numbered sequentially, and provide an electronic version of the plan in MS Word (or PDF) format.
- B. Table of Contents (TOC): List and identify the major sections identified with tabs. Format the TOC in the order of the following paragraphs.
- C. QC Organization: A chart showing the Quality Control organizational structure.
- D. Names and Qualifications: In resume format, for each person in the Quality Control organization.
- E. Duties, Responsibility and Authority of QC Personnel: List duties, responsibilities and authorities of each person in the quality control organization.
- F. Outside Organizations: List outside organizations such as, architectural and consulting engineering firms that will be employed by the Contractor and a description of the services these firms will provide.
- G. Appointment Letters: Signed by an officer of the firm appointing the Quality Control Manager and Alternate Quality Control Manager and stating that they are responsible for implementing and managing the QC Program. Include in this letter the responsibility of the Quality Control Manager and Alternate Quality Control Manager and authority to stop work which is not in compliance with the contract. Also, provide letters from the Quality Control Manager to all other Quality Control specialists outlining their duties, authorities, and responsibilities.
- H. Submittal Procedures and Initial Submittal Register: Detail the procedures for reviewing, approving and managing submittals. Provide the name(s) of the person(s) in the Quality Control organization authorized to review and certify submittals prior to approval. Provide the initial submittal of the Submittal Register.
- I. Testing Laboratory Information: Include applicable testing laboratory information required by this Section.
- J. Testing Plan and Log: Include the tests required, referenced by the specification section and paragraph number requiring the test, the frequency, and the person responsible for each test.
- K. Procedures to Complete Rework Items: Detail the procedures to identify, record, track and complete rework items.

- L. Documentation Procedures: Establish documentation procedures, including proposed report formats.

SPECIFIER'S NOTE: Use the bracketed phrase in subparagraph 1.11.M.1, to ensure specific definable features are included in the QC plan. Consult with Quality Control Branch-DAGS Technical Service Office on whether to include specific definable features of work.

M. Definable Features of Work: List the definable features of work as a checklist. A definable feature of work (DFOW) is a task, which is separate and distinct from other tasks and requires separate quality control requirements. DFOW could be identified by different trades or disciplines or by an item or activity on the construction schedule. Although each specification section could be considered a DFOW there frequently are more than one DFOW under a particular section. Cross-reference the list to the Construction Schedule and the specification sections.

1. Include all activities that require a QC Specialists or a Specialty Inspection Personnel, and any DFOW *[including the following:]*
 - (a) [_____]

SPECIFIER'S NOTE: Consult with DAGS Quality Control Branch Technical Service Office on whether to include paragraph 1.11.N, when a more detailed Quality Control checklist is desired. Paragraphs 1.11.N and 1.11.O should only be used for very large projects or technically demanding projects.

N. Quality Control Checklists: For each definable feature of work, develop a list of quality control activities broken down by preparatory, initial and follow-up phases. Each list shall include a breakdown of quality checks that will be used when performing the quality control functions, inspections, and tests required by the contract. Develop Quality Control Checklists to obtain quality construction by planning ahead and identifying potential problems for each definable feature of work.

O. Personnel Matrix: For each section of the specification, show the person(s) who reviews and approve submittals, and who performs and document the testing.

SPECIFIER'S NOTE: Consult with DAGS Quality Control Branch Technical Service Office on whether to include paragraph 1.12 and a QC Plan Meeting. *If so, include this paragraph.*

1.12 QUALITY CONTROL (QC) PLAN MEETING

- A. Prior to submission of the QC Plan, meet with the Department's representatives to discuss the QC Plan requirements of the Contract. The purpose of this meeting is to develop mutual understanding of the QC Plan requirements prior to plan development and submission.

SPECIFIER'S NOTE: Edit paragraph 1.13 to include QC specialists or the Consultant if their services are provided. Edit when not required to attend.

1.13 COORDINATION AND MUTUAL UNDERSTANDING MEETING

- A. After submission of the QC Plan, and prior to the start of construction, meet with the Department's Representatives to present the QC Program. The purpose of this meeting is to develop a mutual understanding of the quality control details, including documentation, administration for on-site and off-site work, and

coordination of the Contractor's management, production and quality control personnel. At the meeting, the Contractor will be required to explain in detail the quality control for each definable feature of work. As a minimum, the Contractor's personnel required to attend shall include an officer of the firm, the project manager, project superintendent, Quality Control Manager, Alternate Quality Control Manager, *[QC Specialists,] [Consultant,]* and subcontractor representatives. Each subcontractor who will be assigned quality control responsibilities shall have a principal of the firm at the meeting. Minutes of the meeting will be prepared by the QC Manager and signed by the Contractor, *[Consultant]*, and the Department's Representative. The Contractor shall provide a copy of the signed minutes to all attendees. Repeat the coordination and mutual understanding meeting if a new QC Manager is appointed.

SPECIFIER'S NOTE: Edit paragraph 1.14 as appropriate. For very large or complex projects, weekly meetings are appropriate. In subparagraph 1.14 A.4 a three-week review is standard. Consult with Quality Control Branch-DAGS Technical Service Office to increase or decrease this time period.

1.14 QUALITY CONTROL MEETINGS

- A. QC Manager shall conduct Quality Control (QC) Meetings at least *<weekly><once every two weeks>* at the work site with the Project Superintendent *[and QC Specialists]*. Notify the Department's Representative at least 48 hours in advance of each meeting to allow their attendance at these meetings. As a minimum, accomplish the following at each meeting:
1. Review the minutes of the previous meeting.
 2. Review the schedule and the status of work since the last meeting, including; work or testing accomplished, rework items identified and rework items completed.
 3. Review the status of submittals. Address reviewed and approved submittals and submittals required in the near future
 4. Review the work to be accomplished in the next *[three]* weeks and the documentation required including the status of off-site work or testing. Establish completion dates for rework items.
 5. Update the schedule showing planned and actual dates of the preparatory, initial and follow-up phases, including testing and any other inspection required by this contract.
 6. Discuss construction methods and the approach that will be used to provide quality construction by planning ahead and identifying potential problems for each definable feature of work.
 7. Resolve quality control and production problems, including assisting in resolving Request for Information (RFI) issues.
 8. Address items that may require revising the QC Plan such as changes in quality control organization personnel or changes in procedures.

9. Review health and safety plan. Discuss upcoming activities that create or disturb hazardous materials.

1.15 PHASES OF CONTROL

- A. Three Phases are used to ensure quality control measures are provided for each definable feature of work, which includes both on-site and off-site work. Notify the Engineer at least 4 days prior to each phase.

SPECIFIER'S NOTE: Edit paragraph 1.15.B as appropriate.

- B. Preparatory Phase – Includes a meeting conducted by the QC Manager and attended by *[the QC specialists,]* the superintendent, and the foreman responsible for the definable feature. Document the results of the preparatory phase actions in the daily Contractor Quality Control Report *[and in the Quality Control Checklist]*. Perform the following prior to beginning work on each definable feature of work:
 1. Review the contract drawing and each paragraph of the applicable specification sections.
 2. Verify that shop drawings and submittals for materials and equipment are submitted and approved. Verify receipt of approved factory test results, when required.
 3. Review the testing plan. Ensure that the required quality control testing provisions are made.
 4. Examine the work area. Ensure that the required preliminary work is completed.
 5. Examine and ensure the required materials, equipment, and sample work conforms to the approved shop drawings and submitted data. Ensure that the materials and equipment are available at the jobsite.
 6. Discuss construction methods, construction tolerances, workmanship standards, and the approach that will be used to provide quality construction. Plan ahead and identify potential problems for each definable feature of work.
 7. Review the safety plan and appropriate activity hazard analysis to ensure that applicable safety requirements are met, and that required Material Safety Data Sheets (MSDS) are submitted.

SPECIFIER'S NOTE: Edit paragraph 1.15.C as appropriate.

- C. Initial Phase – The initial phase starts when construction crews are ready to start work on a definable feature of work. Meet with *[the QC specialists]*, the superintendent, and the foreman responsible for that definable feature of work. Observe the initial segment of the definable feature of work to ensure that the work complies with Contract requirements. Document the results of the initial phase in the daily Contractor Quality control Report *[and in the Quality Control Checklist]*. Repeat the initial phase for each new crew to work on-site, or when acceptable levels of specified quality are not being met. Perform the following for each definable feature of work:

1. Establish the quality of workmanship required.
 2. Resolve conflicts.
 3. Ensure that testing is performed *[by the approved laboratory]*.
 4. Check work procedures for compliance with the Safety Plan and the appropriate activity hazard analysis to ensure that applicable safety requirements are met.
- D. Follow-Up Phase – For on-going work, perform the following activities daily, or more frequently if necessary, until the completion of each definable feature of work. Document the work in the daily Contractor Quality Control Report *[and in the Quality Control Checklist]*:
1. Ensure that the work is in compliance with Contract requirements.
 2. Maintain the quality of workmanship required.
 3. Ensure that testing is performed *[by the approved laboratory]*.
 4. Ensure that rework items are being corrected.
 5. Perform safety inspections.
- E. Conduct additional Preparatory and Initial Phases on the same definable features of work if the quality of on-going work is unacceptable, or if there are changes in the applicable quality control organization, or if work on a definable feature is resumed after substantial period of inactivity, or if other problems develop.
- F. For Off-Site Work – Notify the Engineer at least two weeks prior to the start of the preparatory and initial phases.

SPECIFIER'S NOTE: Check each technical section to ensure that all required Field and Factory Tests are listed in each respective technical section.

1.16 TESTING

- A. Perform sampling and testing required in this section and as otherwise required by these specification.
- B. Testing Laboratory Requirements:
 1. Inspection of Testing Laboratories: Prior to approving a non-accredited laboratory, the Department may conduct an inspection of the proposed testing laboratory records and facilities. Records subject to inspection include; equipment inventory, equipment calibration dates and procedures, library of test procedures, audit and inspection reports by agencies conducting laboratory evaluations and certifications, testing and management personnel qualifications, test report forms, and the internal quality control procedures.
 2. Capability Check: The Department may check laboratory equipment in the proposed laboratory and the laboratory technician's testing procedures,

techniques, and other items pertinent to testing, for compliance with the standards set forth in this contract.

3. Test Results:
 - a. Cite applicable contract requirements, tests or analytical procedures used.
 - b. Provide actual results and include a statement that the item tested or analyzed conforms or fails to conform to specified requirements. If the item fails to conform, notify the Contracting Officer immediately.
 - c. Conspicuously stamp the cover sheet for each report in large red letters "CONFORMS" or "DOES NOT CONFORM" to the specifications and contract requirements. Indicate the applicable specification section.
 - d. The authorized testing laboratory representative shall sign and certify the test results and reports.
 - e. Furnish the signed reports, certifications, and other documentation to the Contracting Officer via the QC Manager.
4. Test Reports and Monthly Summary Report of Tests - The QC Manager shall furnish the signed reports, certifications and a monthly summary report of field tests. Attach a copy of the summary report to the last daily Contractor Quality Control Report of each month.

1.17 COMPLETION INSPECTIONS

- A. Pre-Final Inspection: Near completion of the Work or any increment Work, the QC Manager shall conduct an inspection to identify items, which do not conform to the contract requirements. Include any remaining items on the "Rework Items List" which were not corrected. The QC Manager shall make follow-on inspections to ascertain that all deficiencies have been corrected.
- B. Final Inspection: Comply with the General Conditions section titled "SUBSTANTIAL COMPLETION AND FINAL INSPECTION." Verify that the facility is substantially complete and ready for final inspection. The QC Manager *[the QC Specialists, the superintendent or other primary contractor management personnel]* shall ensure that all deficient items are corrected prior to notifying the Department for a final inspection.

1.18 DOCUMENTATION

- A. Maintain current and complete records of on-site and off-site activities.
- B. A Contractor Production Report is required for each day that work is performed and shall be attached to the Contractor Quality Control Report prepared for the same day. Account for each calendar day throughout the life of the Contract. Use terminology consistent with the construction schedule to report the work. The Contractor Production Report is to be prepared, signed and dated by the project superintendent and shall contain the following information:
 1. Report date, report number, contractor's name, project title, DAGS job number, project location and superintendent present.

2. Weather conditions in the morning and in the afternoon including; maximum and minimum temperatures, durations and estimated rainfall, and prevailing wind directions and speed.
 3. Identify work performed by corresponding schedule activity number, post contract number, change order number, and other items.
 4. A list of Contractor and subcontractor personnel on the work site. Include their trades, work location, description of work performed, hours worked by trade, daily total work hours on work site, and total work hours from start of construction.
 5. A list of job safety actions taken and safety inspections conducted. Indicate that safety requirements have been met including the results, and address the following:
 - a. Was a job safety meeting held? If yes, attach a copy of the meeting minutes.
 - b. Were there any lost time accidents? If yes, attach a copy of the completed OSHA report and the Department's "Contractor Significant Incident Report".
 - c. Was any crane, trenching, scaffold, high voltage electrical, or high work done? If yes, attach a statement or checklist showing inspection(s) performed.
 - d. Were there hazardous material(s) or waste released into the environment? If yes, attach descriptions, accident reports, notifications required and made.
 - e. List safety actions taken today and safety inspections conducted.
 6. A list of equipment or material received each day that is incorporated into the job.
 7. A list of equipment and plant equipment on the work site including the number of hours used, idle and down for repair.
 8. Include a "remarks" section in this report. Address pertinent information including directions received, problems encountered during construction, work progress and delays, conflicts or errors in the drawings or specifications, field changes, safety hazards encountered, instructions given and corrective actions taken, delays encountered and a record of visitors to the work site.
- C. A Contractor Quality Control Report is required for each day that work is performed and for every seven consecutive calendar days of no-work period and on the last day of a no-work period. Account for each calendar day throughout the life of the Contract. Use terminology consistent with the construction schedule to report the work. The Contractor Quality Control Report is prepared, signed and dated by the QC Manager and shall contain the following information:
1. Identify the control phase and the definable feature of work.
 2. Results of the Preparatory Phase meetings held including the location of the definable feature of work and a list of personnel present at the meeting.

Indicate in the report that for this definable feature of work, the drawings and specifications have been reviewed, submittals approved, materials comply with approved submittals, materials are stored properly, preliminary work is done correctly, the testing plan was reviewed, work methods and schedule were discussed, and that safety and hazard analysis were addressed.

3. Results of the Initial Phase meetings held including the location of the definable feature of work and a list of personnel present at the meeting. Indicate in the report that for this definable feature of work the preliminary work was done correctly, samples were prepared and approved, the workmanship is satisfactory, test results are acceptable, work is in compliance with the Contract, work complies with safety requirements, and the required testing was performed including a list of who performed the tests.
4. Results of the Follow-Up Phase inspections held including the location of the definable feature of work. Indicate in the report for this definable feature of work that the work complies with the Contract as approved in the Initial Phase, work complies with safety requirements, and that required testing was performed including a list of who performed the tests.
5. Results of the Phases of Control for off-site work, if applicable, including action taken.
6. List the rework items identified, but not corrected by close of the day's work.
7. List the rework items corrected from the rework items list along with the corrective action taken.
8. Include a "remarks" section in this report. Address pertinent information including directions received, quality control problem areas, deviations from the QC plan, construction deficiencies encountered, QC meetings held, acknowledgment that as-built drawings have been updated, corrective direction given by the QC organization and corrective action taken by the Contractor.
9. Provide Contractor Quality Control Report certification.

SPECIFIER'S NOTE: Delete paragraph 1.18.D if there are no requirements for a quality control checklist in the QC Plan.

- D. Quality Control Checklist: Maintain a Quality Control Checklist for each definable feature of work. Each control check should indicate whether or not the work performed complies with contract requirements. Work performed that does not comply with contract requirements shall be noted in the Rework Items List.

SPECIFIER'S NOTE: Delete paragraph 1.18.E if there are no requirements for QC Specialists

- E. Reports from the QC Specialist(s): Reports are required for each day that work is performed in their area of responsibility. QC Specialist reports shall include the same documentation requirements in the Contractor Quality Control Report

for their area of responsibility. QC Specialist reports are to be prepared, signed and dated by the QC Specialists and shall be attached to the Contractor Quality Control Report prepared for the same day.

- F. Testing Plan and Log: As tests are performed, the QC Manager shall record on the "Testing Plan and Log" the date the test was conducted, the date the test results were forwarded to the Department remarks and acknowledgment that an accredited or approved testing laboratory was used. Attach a copy of the updated "Testing Plan and Log" to the last daily Contractor Quality Control Report of each month.
- G. Rework Items List: The QC Manager shall maintain a list of work that does not comply with the Contract, identifying what items need to be reworked, the date the item was originally discovered, the date the item will be corrected by, and the date the item was corrected. There is no requirement to report rework item that is corrected the same day it is discovered. Attach a copy of the "Rework Items List" to the last daily Contractor Quality Control Report of each month. The Contractor shall be responsible for including on this list items needing rework including those identified by DAGS.
- H. Report Forms: Furnish the proposed forms to be used to the Contracting Officer for review and approval.
 - 1. Contractor Production Report and Contractor Quality Control Report, with separate continuation sheet. These forms may be combined.
 - 2. Testing Plan and Log.
 - 3. Rework Items List.

END CQC PROGRAM PORTION

SPECIFIER'S NOTE: Include the QC Specialist if applicable

1.19 RECORD (As-Builts) DRAWINGS

- A. The QC Manager is required to ensure the record drawings and jobsite record sets are kept current on a daily basis in accordance with Section 01770 – Closeout Procedures.

1.20 NOTIFICATION OF NON-COMPLIANCE

- A. Contractor will be notified of any detected non-compliance items. Take immediate corrective action after receipt of such notice.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 REPAIR AND PROTECTION

- A. General: On completion testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
 - 1. Provide materials and comply with installation requirements specified in other Sections of these Specifications. Restore patched areas and extend

restoration into adjoining areas in a manner that eliminates evidence of patching.

- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

3.02 DEPARTMENT'S AUTHORITY

- A. Review and removal of Quality Control Personnel:
 - 1. All Quality Control organization personnel are subject to review by Contracting Officer; and the Contracting Officer may interview any member of the Quality Control organization at any time in order to verify the submitted qualifications.
 - 2. The Contracting Officer has the authority to have the QC Manager replaced at any time for cause. Justifications may include, but are not limited to: not being on site when QC Manager's duties are required, or wrongfully approving substandard and noncompliant work.
 - 3. The Contractor is not entitled to any claim or cost increase or time extension due to the Contracting Officer's disapproval of an agency or individual.

END QUALITY REQUIREMENTS SECTION