UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated January 2021
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SECTION 01 45 00.00 20

QUALITY CONTROL

11/11, CHG 8: 02/21

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USACE / NAVFAC / AFCEC / NASA	**UFGS-01 45 00.00 20 (November 2011)** **Change 8 - 02/21**
Preparing Activity: NAVFAC	**Superseding** **UFGS-01 45 02 (February 2010)**

UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated January 2021
****

SECTION 01 45 00.00 20

QUALITY CONTROL
11/11, CHG 8: 02/21

****
NOTE: This guide specification covers the preparation and use of Design-Bid-Build (DBB) Quality Control. This guide specification will normally be used for Category One and Category Two projects. It may be also used for smaller, complex projects at the discretion of the Government. This section requires specific editing of the QC requirements. This section, as edited, must be reviewed and approved by the Administering ROICC Office prior to the 100 percent design submission.

Adhere to UFC 1-300-02 Unified Facilities Guide Specifications (UFGS) Format Standard when editing this guide specification or preparing new project specification sections. Edit this guide specification for project specific requirements by adding, deleting, or revising text. For bracketed items, choose applicable item(s) or insert appropriate information.

Remove information and requirements not required in respective project, whether or not brackets are present.

Comments, suggestions and recommended changes for this guide specification are welcome and should be submitted as a Criteria Change Request (CCR).
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NOTE: When this specification is used, it will be in conjunction with Section 01 32 16.00 20 SMALL PROJECT CONSTRUCTION PROGRESS SCHEDULES, or 01 32 17.00 20 COST-LOADED NETWORK ANALYSIS SCHEDULES (NAS).

Additional QC requirements may be included in additional sections of the project. Some of the sections that include QC requirements are: Section 09 97 13.15 LOW VOC POLYSULFIDE INTERIOR COATING OF

WELDED STEEL PETROLEUM FUEL TANKS, Section 09 97 13.17 THREE COAT EPOXY INTERIOR COATING OF WELDED STEEL PETROLEUM FUEL TANKS, Section 09 97 13.16 INTERIOR COATING OF WELDED STEEL WATER TANKS, and Section 09 97 13.27 HIGH PERFORMANCE COATING FOR STEEL STRUCTURES.

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NOTE: Two options for the QC Manager duties have been incorporated into this guide specification. 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 QC for specific areas of work and for a specified frequency. Specify QC Specialists for those areas of work that are of sufficient complexity or size to justify the expense.

Determine whether a full time QC Manager is justified or designate the QC Manager as the Project Superintendent, i.e. to act in a dual role. Refer to Section 01 91 00.15 20 TOTAL BUILDING COMMISSIONING for Commissioning requirements. If the QC Manager and Project Superintendent positions are being filled as a dual role, that person must not be utilized as the Lead Commissioning Specialist (CxC) for projects where the Commissioning Provider is a sub-contractor to the Construction Contractor. Consider:

a. Design and complexity of project.

b. Location of project.

c. Cost and type of Contract.

d. Characteristics of area construction labor market.

e. Amount and type of off-site fabrication.

f. Duration of project.

When requiring the use of a Registered Professional Engineer/Architect or a graduate Engineer/Architect for the QC Manager or QC Specialist(s), keep in mind the additional cost. The over-specifying of expertise for QC personnel should be avoided.

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NOTE: This section has an attachment (titled Contractor Production Report) that can be downloaded at: http://www.wbdg.org/ffc/dod/unified-facilities-guide-specifications-ufgs/forms-graphics-tables

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NOTE: Facility maintenance training has been relocated to Section 01 78 24.00 20 FACILITY ELECTRONIC OPERATION AND MAINTENANCE SUPPORT INFORMATION (eOMSI).

****

PART 1 GENERAL

1.1 REFERENCES

****

NOTE: This paragraph is used to list the publications cited in the text of the guide specification. The publications are referred to in the text by basic designation only and listed in this paragraph by organization, designation, date, and title.

Use the Reference Wizard's Check Reference feature when you add a Reference Identifier (RID) outside of the Section's Reference Article to automatically place the reference in the Reference Article. Also use the Reference Wizard's Check Reference feature to update the issue dates.

References not used in the text will automatically be deleted from this section of the project specification when you choose to reconcile references in the publish print process.

****

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS (ASHRAE)

ASHRAE 52.2	(2012) Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size

ASTM INTERNATIONAL (ASTM)

ASTM D6245	(2012) Using Indoor Carbon Dioxide Concentrations to Evaluate Indoor Air Quality and Ventilation
ASTM D6345	(2010) Standard Guide for Selection of Methods for Active, Integrative Sampling of Volatile Organic Compounds in Air
ASTM E90	(2009; R2016) Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements

SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)

ANSI/SMACNA 008	(2007) IAQ Guidelines for Occupied Buildings Under Construction, 2nd Edition

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2014) Safety and Health Requirements Manual

1.2 SUBMITTALS

****

NOTE: Review Submittal Description (SD) definitions in Section 01 33 00 SUBMITTAL PROCEDURES and edit the following list, and corresponding submittal items in the text, to reflect only the submittals required for the project. The Guide Specification technical editors have classified those items that require Government approval, due to their complexity or criticality, with a "G". Generally, other submittal items can be reviewed by the Contractor's Quality Control System. Only add a "G" to an item if the submittal is sufficiently important or complex in context of the project.

For Army projects, fill in the empty brackets following the "G" classification, with a code of up to three characters to indicate the approving authority. Codes for Army projects using the Resident Management System (RMS) are: "AE" for Architect-Engineer; "DO" for District Office (Engineering Division or other organization in the District Office); "AO" for Area Office; "RO" for Resident Office; and "PO" for Project Office. Codes following the "G" typically are not used for Navy, Air Force, and NASA projects.

The "S" classification indicates submittals required as proof of compliance for sustainability Guiding Principles Validation or Third Party Certification and as described in Section 01 33 00 SUBMITTAL PROCEDURES.

Choose the first bracketed item for Navy, Air Force, and NASA projects, or choose the second bracketed item for Army projects.

****

Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are [for Contractor Quality Control approval.][for information only. When used, a code following the "G" classification identifies the office that will review the submittal for the Government.] Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES.

SD-01 Preconstruction Submittals

****
NOTE: For projects in the NAVFAC PAC Area of Operation, and for the submittal(s) identified as SD-01 Preconstruction Submittals, select the "G" designation requiring Government approval for Construction Quality Control (QC) Plan; Remove the "G" designation for Indoor Air Quality (IAQ) Management Plan.
****

Construction Quality Control (QC) Plan; G[, [_____]]

Indoor Air Quality (IAQ) Management Plan; G[, [_____]]

****
NOTE: Include the following submittal when required by Section 01 33 29 SUSTAINABILITY REQUIREMENTS AND REPORTING, IAQ requirements.
****

[Final IAQ Management Plan; S

]1.3 INFORMATION FOR THE CONTRACTING OFFICER

Prior to commencing work on construction, the Contractor can obtain a single copy set of the current report forms from the Contracting Officer. The report forms will consist of the Contractor Production Report, Contractor Production Report (Continuation Sheet), Contractor Quality Control (CQC) Report, CQC Report (Continuation Sheet), Preparatory Phase Checklist, Initial Phase Checklist, Rework Items List, and Testing Plan and Log.

Deliver the following to the Contracting Officer during Construction:

****
NOTE: Delete the requirement for QC Specialist reports when QC Specialists are not specified.
****

a. CQC Report: [Submit the report electronically] [Mail or hand-carry the original (wet signatures) [and one copy][and [_____] copies]] by 10:00 AM the next working day after each day that work is performed and for every seven consecutive calendar days of no-work.

b. Contractor Production Report: [Submit the report electronically by 10:00 AM the next working day after each day that work is performed and for every seven consecutive calendar days of no-work.][Mail or hand-carry the original (wet signatures) [and one copy][and [_____] copies] by 10:00 AM the next working day after each day that work is performed and for every seven consecutive calendar days of no-work, attached to the CQC Report.]

c. Preparatory Phase Checklist: [Submit the report electronically in the same manner as the CQC Report for each Preparatory Phase held.][Original attached to the original CQC Report and one copy attached to each QC Report copy.]

d. Initial Phase Checklist: [Submit the report electronically in the same manner as the CQC Report for each Initial Phase held.][Original

attached to the original CQC Report and one copy attached to each QC Report copy.]

[e. QC Specialist Reports:[Submit the report electronically by 10:00 AM the next working day after each day that work is performed.][Mail or hand-carry the original (wet signatures) [and one copy][and [_____] copies] by 10:00 AM the next working day after each day that work is performed.]

] f. Field Test Reports: [Within two working days after the test is performed, submit the report as an electronic attachment to the CQC Report.][Mail or hand-carry the original within two working days after the test is performed, attached to the original CQC Report and one copy attached to each QC Report copy.]

g. Monthly Summary Report of Tests: [Submit the report as an electronic attachment to the CQC Report at the end of each month.][Mail or hand-carry the original attached to the last QC Report of the month.]

h. Testing Plan and Log: [Submit the report as an electronic attachment to the CQC Report, at the end of each month. Provide a copy of the final Testing Plan and Log to the preparer of the Operation & Maintenance (O&M) documentation.][Mail or hand-carry the original attached to the last CQC Report of each month and one copy attached to each CQC Report copy. Provide a copy of the final Testing Plan and Log to the preparer of the Operation & Maintenance (O&M) documentation.]

i. Rework Items List: [Submit lists containing new entries daily, in the same manner as the CQC Report.][Mail or hand-carry the original attached to the last CQC Report of each month and one copy attached to each CQC Report copy.]

j. CQC Meeting Minutes: [Within two working days after the meeting is held, submit the report as an electronic attachment to the CQC Report.][Mail or hand-carry the original within two working days after the meeting is held, attached to the original CQC Report and one copy attached to each CQC Report copy.]

k. QC Certifications: As required by the paragraph QC CERTIFICATIONS.

[l. Special Inspection Report: Submit the Special Inspection reports, in the same manner as the CQC Report.

]1.4 QC PROGRAM REQUIREMENTS

Establish and maintain a QC program as described in this section. This QC program is a key element in meeting the objectives of NAVFAC Commissioning. The QC program consists of a QC Organization, QC Plan, QC Plan Meeting(s), a Coordination and Mutual Understanding Meeting, QC meetings, three phases of control, submittal review and approval, testing, completion inspections, QC certifications,[independent Special Inspections in accordance with Section 01 45 35 SPECIAL INSPECTIONS,] and documentation necessary to provide materials, equipment, workmanship, fabrication, construction and operations which comply with the requirements of this Contract. The QC program must cover on-site and off-site work and be keyed to the work sequence. No construction work or testing may be performed unless the QC Manager is on the work site. The QC Manager must report to an officer of the firm and not be subordinate to

the Project Superintendent or the Project Manager. The QC Manager, Project Superintendent and Project Manager must work together effectively. Although the QC Manager is the primary individual responsible for quality control, all individuals will be held responsible for the quality of work on the job.

[1.4.1 Commissioning

****

NOTE: Retain this paragraph when Commissioning Provider is a sub-contractor to the Construction Contractor. Coordinate with Section 01 91 00.15 20 TOTAL BUILDING COMMISSIONING.

****

Commissioning (Cx) is a systematic process of ensuring that all building systems meet the requirements and perform interactively according to the Contract. The QC Program is a key in supporting the objectives of the Cx process, specifically to coordinate, document, and verify compliance with contract requirements. Refer to commissioning requirements in Section 01 91 00.15 20 TOTAL BUILDING COMMISSIONING.

]1.4.2 Acceptance of the Construction Quality Control (QC) Plan

Acceptance of the QC Plan is required prior to the start of construction. The Contracting Officer reserves the right to require changes in the QC Plan and operations as necessary, including removal of personnel, to ensure the specified quality of work. The Contracting Officer reserves the right to interview any member of the QC organization at any time in order to verify the submitted qualifications. All QC organization personnel are subject to acceptance by the Contracting Officer. The Contracting Officer may require the removal of any individual for non-compliance with quality requirements specified in the Contract.

1.4.3 Preliminary Construction Work Authorized Prior to Acceptance

The only construction work that is authorized to proceed prior to the acceptance of the QC Plan is mobilization of storage and office trailers, temporary utilities, and surveying.

1.4.4 Notification of Changes

Notify the Contracting Officer, in writing, of any proposed changes in the QC Plan or changes to the QC organization personnel, a minimum of 10 work days prior to a proposed change. Proposed changes are subject to acceptance by the Contracting Officer.

[1.4.5 Special Inspections

****

NOTE: Special Inspections are required for all projects except the following per IBC:

1. Construction of a minor nature as determined by the designer of record. Where renovation construction does not alter existing gravity or lateral load resisting system, would constitute construction that is minor in nature.

2. Utility and miscellaneous Group U occupancies that are accessories to a residential occupancy.

3. Portions of structures designed and constructed in accordance with the cold-formed steel light-frame construction provisions of Section 2211 of IBC or the conventional light-frame construction provisions of Section 2308 of IBC.

****

Perform all required Special Inspections per Section 01 45 35 SPECIAL INSPECTIONS, the statement of Special Inspections and the Schedule of Special Inspections.

]1.5 QC ORGANIZATION

****

NOTE: Qualifications of members of the QC organization must be approved by the Administering FEAD/ROICC Office and incorporate input. The Project Manager must submit to the FEAD/ROICC a copy of the General Description of the work with the proposed qualifications of members of the QC organization when requesting approval.

****

1.5.1 QC Manager

1.5.1.1 Duties

****

NOTE: Consult with Construction Office to determine if QC Manager may serve as SSHO based on complexity of project. Select the second bracketed item allowing Project Superintendent duties for routine projects. Select the third bracketed item allowing no other duties for large or complex projects.

Remove the bracketed phrases referring to QC Specialists when none are specified.

Use the bracketed sentence for the QC manager to be responsible for coordinating the Special Inspection Activities when a Special Inspector of Record is not required for the project.

Coordinate the last bracketed sentence with paragraph QC FOR [SECURE SPACE][CONTROLLED AREA][SOUND RATED] PERIMETER CONSTRUCTION of this specification.

****

Provide a QC Manager at the work site to implement and manage the QC program[, and to serve as the Site Safety and Health Officer (SSHO) as detailed in Section 01 35 26 GOVERNMENTAL SAFETY REQUIREMENTS]. [In addition to implementing and managing the QC program, the QC Manager may perform the duties of Project Superintendent.][The only duties and

responsibilities of the QC Manager are to manage and implement the QC program on this Contract.]The QC Manager is required to attend the partnering meetings, QC Plan Meetings, Coordination and Mutual Understanding Meeting, conduct the QC meetings, perform the three phases of control [except for those phases of control designated to be performed by QC Specialists], perform submittal review and approval, ensure testing is performed and provide QC certifications and documentation required in this Contract. The QC Manager is responsible for managing and coordinating the three phases of control and documentation performed by [the QC Specialists,] testing laboratory personnel and any other inspection and testing personnel required by this Contract. The QC Manager is the manager of all QC activities. The QC manager is responsible for notifying the [Special Inspector][Special Inspector of Record] of activities which require their review.[The QC manager is responsible for coordinating the Special Inspection activities, see paragraph QUALITY CONTROL MANAGER, in Section 01 45 35 SPECIAL INSPECTIONS.][The QC manager is responsible for the quality control for [Secure Space][Controlled Area][Sound Rated] perimeter construction.]

1.5.1.2 Qualifications

****

NOTE: DOR/Design Manager/Project manager will consult with the construction contracting office to ensure the proper qualifications as well as UFGS are selected to suit the project.

For Category One and Two projects along with selected smaller, complex projects utilize SECTION 01 45 00.00 20 QUALITY CONTROL. Select and edit the first set of bracketed sentences for routine projects. Select and edit the second group of bracketed sentences for large or complex projects. For qualifications in excess of options listed, consult the Administering construction contracting office.

For small construction projects and repair or maintenance work utilize SECTION 01 45 00.10 20 QUALITY CONTROL FOR MINOR CONSTRUCTION. The QC Manager qualifications are less restrictive.

****

[An individual with a minimum of [5][10] years combined experience in the following positions: Project Superintendent, QC Manager, Project Manager, Project Engineer 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 at least two years experience as a QC Manager. The individual must be familiar with the requirements of EM 385-1-1, and have experience in the areas of hazard identification, safety compliance, and sustainability.]

[A graduate of a four year accredited college or university program in one of the following disciplines: Engineering, Architecture, Construction Management, Engineering Technology, Building Construction, or Building Science, with a minimum of 10 years experience as a Project Superintendent, QC Manager, Project Manager, Project Engineer 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 at least two years experience as a QC Manager. The individual must be familiar with the requirements of EM 385-1-1, and have experience in the areas of hazard identification, safety compliance, and sustainability.]

[1.5.2 Lead Commissioning Specialist (CxC)

****
NOTE: Retain this paragraph when the Commissioning Provider is a sub-contractor to the Construction Contractor.
****

Provide the Lead Commissioning Specialist (CxC) as key person for the commissioning requirements in Section 01 91 00.15.20 TOTAL BUILDING COMMISSIONING.

]1.5.3 Construction Quality Management Training

In addition to the above experience and education requirements, the QC Manager must have completed the course entitled "Construction Quality Management (CQM) for Contractors." If the QC Manager does not have a current certification, they must obtain the CQM for Contractors course certification within 90 days of award. This course is periodically offered by the Naval Facilities Engineering Command and the Army Corps of Engineers. Contact the Contracting Officer for information on the next scheduled class.

1.5.4 Alternate QC Manager Duties and Qualifications

Designate an alternate for the QC Manager at the work site to serve in the event of the designated QC Manager's absence. The period of absence may not exceed two weeks at one time, and not more than 30 workdays during a calendar year. The qualification requirements for the Alternate QC Manager must be the same as for the QC Manager.

[1.5.5 Assistant QC Manager Duties and Qualifications

****
NOTE: This option will rarely be used. Consider specifying an Assistant QC Manager only if this is a labor intensive project, a very complex project, a project with multiple work sites, or a project where shifts are worked. Select the first option in most cases. Select and edit the second option when the project involves shift work. Select the qualifications from the QC Manager options.
****

****
NOTE: Delete the words "Assistant QC Manager" throughout this section when this paragraph is not used.
****

[Provide an assistant to the QC Manager at the work site to perform the three phases of control, perform submittal review, ensure testing is performed, and prepare QC certifications and documentation required by this Contract. The qualification requirements for the Assistant QC

Manager must be [FILL IN BASED ON NATURE AND COMPLEXITY OF JOB]. The individual must be familiar with the requirements of EM 385-1-1, and have experience in the areas of hazard identification and safety compliance.]

[Provide an assistant to the QC Manager at the work site to perform the three phases of control, perform submittal review, ensure testing is performed, and prepare QC certifications and documentation required by this Contract. The Assistant QC Manager must be on the work site during supplemental work shifts [beyond the regular shift] and perform the duties of the QC Manager during such supplemental shift work. The qualification requirements for the Assistant QC Manager must be [FILL IN BASED ON NATURE AND COMPLEXITY OF JOB]. The individual must be familiar with the requirements of EM 385-1-1, and have experience in the areas of hazard identification and safety compliance.]

][1.5.6 QC Specialists Duties and Qualifications

****

NOTE: Only specify QC Specialists for those areas of work of sufficient complexity or size where a specialist is required to supplement the QC Manager. The requirement for a QC Specialist must be included in Part 3 of the technical section of the specification were a QC Specialist is needed. The use of Registered Professional Engineers or Architects for QC Specialists may be allowed in special cases, but only after consultation with and approval by the Administering FEAD/ROICC Office. Indicate the specific time and frequency when the QC Specialist must be on the site.

****

****

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

****

Provide a separate QC Specialist at the work site for each of the areas of responsibilities, specified in Part 3, Execution, of the technical sections, who must assist and report to the QC Manager and who [may perform production related duties but must be allowed sufficient time to perform][must have no 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 perform the three phases of control and prepare documentation for each definable feature of work in their area of responsibility[at the frequency specified below].

****

NOTE: The following are examples of QC Specialists duties and qualifications:

Qualification/Experience in Area of Responsibility	Area of Responsibility	Frequency
Roofing Manufacturer's Technical Representative/five years minimum	Installation and testing of roofing systems, Section 07 53 23 ETHYLENE-PROPYLENE-DIENE-MON ROOFING	Full time
Mechanical Inspector, International Code Council (ICC) Certified/five years minimum	Installation and testing of boilers, Section 23 52 49.00 20 STEAM BOILERS AND EQUIPMENT (500,000 - 18,000,000 BTU/HR)	Minimum three times a week during installation and full time during testing
[_____]	[_____]	[_____]

****

]1.5.7 Special Inspector [Special Inspector of Record]

****
NOTE: This paragraph is required if project involves structural or fire protection.
****

****
NOTE: The Special Inspector of Record is required for the following project conditions:

1) Seismic Design Category D, E or F; and assigned to Risk Cat III, IV or V.
2) Seismic Design Category D, E or F; and with a height greater than 22860 mm 75 feet.
3) Seismic Design Category E, assigned to Risk Category I or II and the building is greater than two stories above grade plane.
4) Nominal design wind speed in excess of 49 m/sec 110 mph; and assigned to Risk Cat III, IV or V.
5) Nominal design wind speed in excess of 49 m/sec 110 mph; and with a height greater than 22860 mm75 ft.
****

The Special Inspector (SI) [Special Inspector of Record (SIOR)] must be an independent third party hired directly by the Prime Contractor. The SI [SIOR] must not be a company employee of the Contractor or any

Sub-Contractor performing the work to be inspected. The qualifications of the SI [SIOR] are defined in Section 01 45 35 SPECIAL INSPECTION.

[1.5.8 Registered Fire Protection Engineer

****
NOTE: For projects administered by NAVFAC PAC Division, include the services of a U.S. Registered Fire Protection Engineer for review and approval of all fire protection submittals. For NAVFAC LANT projects retain the requirement if applicable.
****

The U.S. Registered Fire Protection Engineer (FPE) must be an independent third party hired directly by the Prime Contractor as an integral part of the Prime Contractor's Quality Control Organization. This FPE must have no business relationships (owner, partner, operating officer, distributor, salesman, or technical representative) with any subcontractors involved with this project, or with any fire protection equipment device manufacturers, suppliers or installers for any such equipment provided as part of this project. This FPE is responsible for review, approval, and coordination of all fire protection system material submittals, calculations, shop drawings, etc.

][1.5.9 Submittal Reviewer[s] Duties and Qualifications

****
NOTE: Edit as appropriate. Select this paragraph along with one of the three options available when submittal reviewers are desired to assist the QC Manager. Consult with the Administering FEAD/ROICC Office on which option to use. Retain phrase "CxC" when Commissioning Provider is a sub-contractor to the Construction Contractor.
****

Provide [a] Submittal Reviewer[s], other than the QC Manager[or CxC], qualified in the discipline[s] being reviewed, to review and certify that the submittals meet the requirements of this Contract prior to certification or approval by the QC Manager.

****
NOTE: Select this bracketed phrase for routine projects.
****

[Each submittal must be reviewed by an individual with 10 years of construction experience.
]

****
NOTE: Select this bracketed phrase for large or complex projects.
****

[Each submittal must be reviewed by a registered architect or professional engineer.
]

****
NOTE: Select and edit this bracketed group of

phrases and table for projects where [a] submittal reviewer(s) of specific discipline for certain specification sections or submittals are needed.
****

****
NOTE: The following are examples of Submittal Reviewer qualification, duties and experience.

Qualification / Experience in Submittal Discipline	Submittals to be reviewed:	
	Spec Section No	Submittal
Registered Mechanical Engineer	Division 22 & 23	All
Registered Structural Fabrication Engineer, (P.E.)	Section 05 12 00 STRUCTURAL STEEL	Drawings Erection Plan
Certified Industrial Hygienist (CIH)/ Comprehensive practice with five years experience in asbestos	Section 02 82 00 ASBESTOS REMEDIATION	Asbestos Hazard Abatement Plan

****

[Each of the following submittals must be reviewed by [an] individual[s] meeting the qualifications/experience specified below:

Qualification / Experience in Submittal Discipline	Submittals to be reviewed:	
	Section No	Submittal
[_____]	[_____]	[_____]

]][1.5.10 Underwater QC Team

****
NOTE: This paragraph to be used only when the inspection of underwater work is required.
****

Provide Underwater QC (UWQC) Team at the work site to perform underwater surveillance and inspection for the Contractor. The UWQC Team divers must have current commercial diver's license, with a minimum of five (5) years experience with underwater inspection. The personnel make up of the UWQC

team must comply with EM 385-1-1, OSHA and local requirements for Contract diving operations. Comply with all the applicable safety requirements of EM 385-1-1, OSHA and local requirements for Contract diving operations. The UWQC lead diver must be thoroughly familiar with the design plans and specifications to sufficiently understand the engineering aspects of the underwater construction and to be able to recognize and document potential problem areas such as improperly constructed or defective areas. Provide all necessary equipment to conduct surveillance and inspection services, including diver's equipment, dive boat, communication equipment, and photographic/video equipment. Diver(s) must be equipped to maintain two-way communication with QC personnel during diving operations. Prepare and submit a report including photographs and/or videos with the QC report after each dive. Frequency of underwater surveillance and inspection will be [_____] during installation and including final inspection. The UWQC Team must be an independent third party hired directly by the Prime Contractor, and must have no involvement with the design, preparation of Contract, or installation of work.

][1.5.11 QC for [Secure Space][Controlled Area][Sound Rated] Perimeter Construction

****

NOTE: Use this paragraph for wall, ceiling and door assemblies when separation assemblies are required by DoD Unified Facilities Criteria (UFC) or by "IC Tech Spec – for ICD/ICS 705" for the perimeter of secure spaces.

Choose the name of the space in the brackets and coordinate with the drawings; typically use either "Secure Space" or "Controlled Area." Use "sound rated" for spaces that do not have to meet "IC Tech Spec – for ICD/ICS 705." Do not identify spaces as a SCIF or SAPF on contract documents.

Choose the bracketed option to coordinate inspections with appointed Site Security Manager (SSM) when assemblies are required to meet "IC Tech Spec – for ICD/ICS 705".

Coordinate these requirements with Section 09 29 00 GYPSUM BOARD and Section 08 34 73 SOUND CONTROL DOOR ASSEMBLIES.

Include options for electronic security systems, man-bar installation, inspection ports, and TEMPEST countermeasures when these elements are included in the project.

****

1.5.11.1 Periodic (Follow-Up Phase) Inspections

Once construction begins, perform periodic inspections of [Secure Space] [Controlled Area] [Sound Rated Area] identified in the contract drawings at least once every two weeks. Increase frequency to weekly inspections within 30 days of planned acceptance testing.[Coordinate periodic inspections with the appointed government Site Security Manager (SSM) responsible for ensuring the assembly meets the requirements for

accreditation.] Inspections must verify that construction and materials comply with the contract documents, the description of the assembly in the ASTM E90 Factory Report for acoustical testing, and the approved submittals. Focus inspections on the construction of the sound rated assemblies, perimeter penetrations, perimeter doors, [electronic security system] [man-bar installation,][inspection ports,][and TEMPEST countermeasures]. Document periodic inspections in Daily QC Reports.

1.5.11.2 Preliminary Inspection

The Government and QC Manager will perform a joint preliminary inspection of the [Secure Space] [Controlled Area] [Sound Rated Area] after construction of the assembly is complete to verify compliance with the design requirements and other contract documents. The Contracting Officer's Representative[and the appointed government SSM] will participate in the preliminary inspection. Provide the Contracting Officer a minimum [14] [_____] calendar days notification in advance of the preliminary inspection.

As a result of the preliminary inspection, prepare a [Secure Space] [Controlled Area] [Sound Rated Area] punch list with deficiencies identified. Include with the punch list the estimated date by which the deficiencies will be corrected. Document the preliminary inspection in the Daily QC Report and attach the punch list. Notify the Contacting Officer's Representative when deficiencies are corrected. Deficiencies from the Preliminary Inspection must be corrected prior to scheduling the Final Acceptance Inspection.

1.5.11.3 Acceptance Testing for Sound Attenuation

****
NOTE: Coordinate requirements in this paragraph with Section 09 29 00 GYPSUM BOARD and Section 08 34 73 SOUND CONTROL DOOR ASSEMBLIES.
****

Perform acceptance testing for sound transmission loss of sound rated door assemblies as required in Section 08 34 73 SOUND CONTROL DOOR ASSEMBLIES and Section 09 29 00 GYPSUM BOARD for sound rated assemblies. Acceptance testing must be performed during the preliminary inspection. The Contracting Officer's Representative[and the appointed government SSM] must witness acceptance testing. Deficiencies identified during acceptance testing must be included in the [Secure Space] [Controlled Area] [Sound Rated Area] punch list and corrected prior to the final acceptance inspection.

1.5.11.4 Acceptance Testing for Electronic Security Systems

****
NOTE: Coordinate requirements in this paragraph with Section 09 29 00 GYPSUM BOARD, Section 08 34 73 SOUND CONTROL DOOR ASSEMBLIES, Section 28 08 10 ELECTRONIC SECURITY SYSTEM ACCEPTANCE TESTING and Section 28 10 05 ELECTRONIC SECURITY SYSTEMS (ESS).
****

Perform acceptance testing for Electronic Security Systems in accordance with Section 28 08 10 ELECTRONIC SECURITY SYSTEM ACCEPTANCE TESTING. Acceptance testing must be performed during the preliminary inspection.

The Contracting Officer's Representative[and the appointed government SSM] must witness acceptance testing. Deficiencies identified during acceptance testing must be included in the [Secure Space] [Controlled Area] [Sound Rated Area] punch list and corrected prior to the Final Inspection.

1.5.11.5 Final Inspection

Perform a final inspection of the [Secure Space] [Controlled Area] [Sound Rated Area] after required testing has been successfully completed as part of the preliminary inspection and all punch list items corrected. Testing is not permitted during the final inspection. QC Manager and Superintendent must attend the final inspection and Government attendees will include the Contracting Officer's Representative[and appointed government SSM]. Request a final inspection by the Contracting Officer a minimum of 14 calendar days in advance.

]1.6 QUALITY CONTROL (QC) PLAN

1.6.1 Construction Quality Control (QC) Plan

****
NOTE: For projects in the NAVFAC PAC Area of Operation, select the second set of brackets.
****

[Submit a Construction QC Plan prior to start of construction.] [Submit a Construction QC Plan within 30 calendar days of Contract Award. The Accepted QC plan is required prior to start of construction.]

1.6.1.1 Requirements

Provide a Construction QC Plan, prior to start of construction, that includes a table of contents, with major sections identified, with pages numbered sequentially, and that documents the proposed methods and responsibilities for accomplishing quality control during the construction of the project:

a. QC ORGANIZATION: A chart showing the QC organizational structure.

b. NAMES AND QUALIFICATIONS: Names and qualifications, in resume format, for each person in the QC organization. Include the CQM for Contractors course certifications for the QC Manager and Alternate QC Manager as required by the paragraphs CONSTRUCTION QUALITY MANAGEMENT TRAINING and ALTERNATE QC MANAGER DUTIES AND QUALIFICATIONS.

c. DUTIES, RESPONSIBILITY AND AUTHORITY OF QC PERSONNEL: Duties, responsibilities, and authorities of each person in the QC organization.

d. OUTSIDE ORGANIZATIONS: A listing of 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.

e. APPOINTMENT LETTERS: Letters signed by an officer of the firm appointing the QC Manager and Alternate QC Manager and stating that they are responsible for implementing and managing the QC program as described in this Contract. Include in this letter the responsibility

of the QC Manager and Alternate QC Manager to implement and manage the three phases of control, and their authority to stop work which is not in compliance with the Contract. Letters of direction are to be issued by the QC Manager to [the Assistant QC Manager and]all other QC Specialists outlining their duties, authorities, and responsibilities. Include copies of the letters in the QC Plan.

f. SUBMITTAL PROCEDURES AND INITIAL SUBMITTAL REGISTER: Procedures for reviewing, approving, and managing submittals. Provide the name(s) of the person(s) in the QC organization authorized to review and certify submittals prior to approval. Provide the initial submittal of the Submittal Register as specified in Section 01 33 00 SUBMITTAL PROCEDURES.

g. TESTING LABORATORY INFORMATION: Testing laboratory information required by the paragraphs ACCREDITATION REQUIREMENTS, as applicable.

h. TESTING PLAN AND LOG: A Testing Plan and Log that includes the tests required, referenced by the specification paragraph number requiring the test, the frequency, and the person responsible for each test.

i. PROCEDURES TO COMPLETE REWORK ITEMS: Procedures to identify, record, track, and complete rework items.

****
NOTE: Edit last sentence as appropriate.
****

j. LIST OF DEFINABLE FEATURES: A Definable Feature of Work (DFOW) is a task that is separate and distinct from other tasks and has control requirements and work crews unique to that task. A DFOW is identified by different trades or disciplines and is an item or activity on the construction schedule. Include in the list of DFOWs, but not be limited to, all critical path activities on the NAS. Include all activities for which this specification requires QC Specialists or specialty inspection personnel. Provide separate DFOWs in the Network Analysis Schedule for each [design development stage and]submittal package.

k. PROCEDURES FOR PERFORMING THE THREE PHASES OF CONTROL: Identify procedures used to ensure the three phases of control to manage the quality on this project. For each DFOW, a Preparatory and Initial phase checklist will be filled out during the Preparatory and Initial phase meetings. Conduct the Preparatory and Initial Phases and meetings with a view towards obtaining quality construction by planning ahead and identifying potential problems for each DFOW.

****
NOTE: Contact the Administering FEAD/ROICC Office to determine if the following four paragraphs are applicable to the project and edit accordingly. Generally a personnel matrix is only required for extremely large projects like hospitals.
****

l. PERSONNEL MATRIX: [Not Applicable][A personnel matrix showing for each section of the specification who will review and approve submittals, who will perform and document the three phases of control, and who will perform and document the testing.]

m. PROCEDURES FOR COMPLETION INSPECTION: [Not Applicable][Procedures for identifying and documenting the completion inspection process. Include in these procedures the responsible party for punch out inspection, pre-final inspection, and final acceptance inspection.]

n. TRAINING PROCEDURES AND TRAINING LOG: [Not Applicable][Procedures for coordinating and documenting the training of personnel required by the Contract.]

o. ORGANIZATION AND PERSONNEL CERTIFICATIONS LOG: Procedures for coordinating, tracking and documenting all certifications on subcontractors, testing laboratories, suppliers, personnel, etc. QC Manager will ensure that certifications are current, appropriate for the work being performed, and will not lapse during any period of the contract that the work is being performed.

1.7 COORDINATION AND MUTUAL UNDERSTANDING MEETING

After submission of the QC Plan, and prior to Government approval and the start of construction, the QC Manager will meet with the Contracting Officer to present the QC program required by this Contract. When a new QC Manager is appointed, the coordination and mutual understanding meeting must be repeated.

1.7.1 Purpose

****

NOTE: Edit as appropriate. Include bracketed phrase for Cx and line item for Cx when Commissioning Provider is a sub-contractor to the Construction Contractor.

****

The purpose of this meeting is to develop a mutual understanding of the QC details, including documentation, administration for on-site and off-site work, design intent, [Cx in accordance with Section 01 91 00.15 20 TOTAL BUILDING COMMISSIONING,] environmental requirements and procedures, coordination of activities to be performed,[Special Inspections,] and the coordination of the Contractor's management, production, and QC personnel. At the meeting, the Contractor will be required to explain in detail how three phases of control will be implemented for each DFOW, as well as how each DFOW will be affected by each management plan or requirement as listed below:

a. Waste Management Plan.

b. IAQ Management Plan.

c. Procedures for noise and acoustics management.

d. Environmental Protection Plan.

e. Environmental regulatory requirements.

[f. Cx Plan requirements in accordance with Section 01 91 00.15 20 TOTAL BUILDING COMMISSIONING.

][g. Special Inspections.

]1.7.2 Coordination of Activities

Coordinate activities included in various sections to assure efficient and orderly installation of each component. Coordinate operations included under different sections that are dependent on each other for proper installation and operation. Schedule construction operations with consideration for indoor air quality as specified in the IAQ Management Plan.[Coordinate special inspections.]

1.7.3 Attendees

****
NOTE: Edit as appropriate. Include bracketed phrase "CxC" when Commissioning Provider is a sub-contractor to the construction contractor.
****

As a minimum, the Contractor's personnel required to attend include an officer of the firm, the Project Manager, Project Superintendent, QC Manager, Alternate QC Manager,[Assistant QC Manager,][QC Specialists,][Special Inspector,][Special Inspector of Record,][CxC,] Environmental Manager, and subcontractor representatives. Each subcontractor who will be assigned QC responsibilities must 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[, the A/E] and the Contracting Officer. Provide a copy of the signed minutes to all attendees[and include in the QC Plan].

1.8 QC MEETINGS

****
NOTE: Edit as appropriate. Include bracketed phrase "CxC" and Cx line item when Commissioning Provider is a sub-contractor to the Construction Contractor.
****

After the start of construction, conduct [weekly] QC meetings [once every two weeks] by the QC Manager at the work site with the Project Superintendent, [the QC Specialists,][the Special Inspector,][the Special Inspector of Record,][CxC,] and the foremen who are performing the work of the DFOWs. The QC Manager is to prepare the minutes of the meeting and provide a copy to the Contracting Officer within two working days after the meeting. The Contracting Officer may attend these meetings. As a minimum, accomplish the following at each meeting:

a. Review the minutes of the previous meeting.

b. Review the schedule and the status of work and rework.

c. Review the status of submittals.

d. Review the work to be accomplished in the next two weeks and documentation required.

e. Resolve QC and production problems (RFI, etc.).

f. Address items that may require revising the QC Plan.

g. Review Accident Prevention Plan (APP).

h. Review environmental requirements and procedures.

i. Review Waste Management Plan.

j. Review IAQ Management Plan.

k. Review Environmental Management Plan.

l. Review the status of training completion.

[m. Review Cx requirements in accordance with Section 01 91 00.15 20 TOTAL BUILDING COMMISSIONING.

]1.9 THREE PHASES OF CONTROL

Adequately cover both on-site and off-site work with the Three Phases of Control and include the following for each DFOW.

1.9.1 Preparatory Phase

****
NOTE: Edit as appropriate. Include bracketed phrase "CxC" and Cx line item when Commissioning Provider is a sub-contractor to the Construction Contractor.
****

Notify the Contracting Officer at least two work days in advance of each preparatory phase meeting. The meeting will be conducted by the QC Manager and attended by [the QC Specialists,]the Project Superintendent, [the CxC,][the Special Inspector,][the Special Inspector of Record,]and the foreman responsible for the DFOW. When the DFOW will be accomplished by a subcontractor, that subcontractor's foreman must attend the preparatory phase meeting. Document the results of the preparatory phase actions in the [daily Contractor Quality Control Report and in the]Preparatory Phase Checklist. Perform the following prior to beginning work on each DFOW:

a. Review each paragraph of the applicable specification sections.

b. Review the Contract drawings.

c. Verify that field measurements are as indicated on construction and/or shop drawings before confirming product orders, in order to minimize waste due to excessive materials.

d. Verify that appropriate shop drawings and submittals for materials and equipment have been submitted and approved. Verify receipt of approved factory test results, when required.

e. Review the testing plan and ensure that provisions have been made to provide the required QC testing.

[f. Review special inspections required by Section 01 45 35 SPECIAL INSPECTION, the statement of special inspections and the schedule of special inspections.

] g. Examine the work area to ensure that the required preliminary work has been completed.

h. Coordinate the schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.

i. Arrange for the return of shipping/packaging materials, such as wood pallets, where economically feasible.

j. Examine the required materials, equipment and sample work to ensure that they are on hand and conform to the approved shop drawings and submitted data and are properly stored.

k. Discuss specific controls used and construction methods, construction tolerances, workmanship standards, and the approach that will be used to provide quality construction by planning ahead and identifying potential problems for each DFOW.

l. Review the APP and appropriate Activity Hazard Analysis (AHA) to ensure that applicable safety requirements are met, and that required Safety Data Sheets (SDS) are submitted.

[m. Review the Cx requirements in accordance with Section 01 91 00.15 20 TOTAL BUILDING COMMISSIONING.

]1.9.2 Initial Phase

Notify the Contracting Officer at least two work days in advance of each initial phase. When construction crews are ready to start work on a DFOW, conduct the initial phase with [the QC Specialists,]the Project Superintendent, [the Special Inspector,][the Special Inspector of Record,]and the foreman responsible for that DFOW. Observe the initial segment of the DFOW to ensure that the work complies with Contract requirements. Document the results of the initial phase in the [daily CQC Report and in the]Initial Phase 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 DFOW:

a. Establish level of workmanship and verify that it meets the minimum acceptable workmanship standards. Compare with required sample panels as appropriate.

b. Resolve any workmanship issues.

c. Ensure that testing is performed by the approved laboratory.

d. Check work procedures for compliance with the APP and the appropriate AHA to ensure that applicable safety requirements are met.

e. Review project specific work plans (i.e. Cx, HAZMAT Abatement, Stormwater Management) to ensure all preparatory work items have been completed and documented.

[f. Coordinate scheduled work with special inspections required by Section 01 45 35 SPECIAL INSPECTIONS, the statement of special inspections and the schedule of special inspections.

]1.9.3 Follow-Up Phase

****
NOTE: Edit as appropriate. Include bracketed Cx line item when Commissioning Provider is a sub-contractor to the Construction Contractor.
****

Perform the following for on-going work daily, or more frequently as necessary, until the completion of each DFOW and document in the daily CQC Report:

a. Ensure the work is in compliance with Contract requirements.

b. Maintain the quality of workmanship required.

c. Ensure that testing is performed by the approved laboratory.

d. Ensure that rework items are being corrected.

e. Assure manufacturers representatives have performed necessary inspections if required and perform safety inspections.

[f. Review the Cx requirements in accordance with Section 01 91 00.15 20 TOTAL BUILDING COMMISSIONING.

][g. Coordinate scheduled work with special inspections required by Section 01 45 35 SPECIAL INSPECTIONS, the statement of special inspections and the schedule of special inspections.

]1.9.4 Additional Preparatory and Initial Phases

Conduct additional preparatory and initial phases on the same DFOW if the quality of on-going work is unacceptable, if there are changes in the applicable QC organization, if there are changes in the on-site production supervision or work crew, if work on a DFOW is resumed after substantial period of inactivity, or if other problems develop.

1.9.5 Notification of Three Phases of Control for Off-Site Work

Notify the Contracting Officer at least two weeks prior to the start of the preparatory and initial phases.

1.10 SUBMITTAL REVIEW AND APPROVAL

Procedures for submission, review and approval of submittals are described in Section 01 33 00 SUBMITTAL PROCEDURES.

1.11 TESTING

****
NOTE: A check must be made to ensure that all required field and factory tests are listed in each technical section. Use of accredited laboratories overseas, when available, will be implemented at the discretion of the Contracting Officer. Edit the following paragraphs accordingly.
****

Except as stated otherwise in the specification sections, perform sampling and testing required under this Contract.

1.11.1 Accreditation Requirements

Construction materials testing laboratories must be accredited by a laboratory accreditation authority and will be required to submit a copy of the Certificate of Accreditation and Scope of Accreditation. The laboratory's scope of accreditation must include the appropriate ASTM standards (E 329, C 1077, D 3666, D 3740, E 543) listed in the technical sections of the specifications. Laboratories engaged in Hazardous Materials Testing must meet the requirements of OSHA and EPA. The policy applies to the specific laboratory performing the actual testing, not just the Corporate Office.

1.11.2 Laboratory Accreditation Authorities

****
NOTE: Request for listing additional laboratory accreditation programs must be submitted to NAVFACENGCOM EOC/OCR through the Design Manager (DM) of the project.
****

Laboratory Accreditation Authorities include the National Voluntary Laboratory Accreditation Program (NVLAP) administered by the National Institute of Standards and Technology at https://www.nist.gov/nvlap, the American Association of State Highway and Transportation Officials (AASHTO) Accreditation Program at http://www.aashtoresource.org/aap/overview, International Accreditation Services, Inc. (IAS) at http://www.iasonline.org, U.S. Army Corps of Engineers Materials Testing Center (MTC) at http://www.erdc.usace.army.mil/Media/FactSheets/FactSheetArticleView/tabid/9254/Article/476661/materials-testing-center.aspx, the American Association for Laboratory Accreditation (A2LA) program at http://www.a2la.org/, the Washington Association of Building Officials (WABO) at http://www.wabo.org/ (Approval authority for WABO is limited to projects within Washington State), and the Washington Area Council of Engineering Laboratories (WACEL) at https://www.wacel.org/lab-accreditation-and-insp ection-agency-audit-programs/laboratory-accreditation-program/(Approval authority by WACEL is limited to projects within Facilities Engineering Command (FEC) Washington geographical area).

1.11.3 Capability Check

The Contracting Officer retains the right to 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.

1.11.4 Test Results

Cite applicable Contract requirements, tests or analytical procedures used. 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. Conspicuously stamp the cover sheet for each report in large red letters "CONFORMS" or "DOES NOT CONFORM" to the specification requirements,

whichever is applicable. Test results must be signed by a testing laboratory representative authorized to sign certified test reports. Furnish the signed reports, certifications, and other documentation to the Contracting Officer via the QC Manager. Furnish a summary report of field tests at the end of each month, in accordance with paragraph INFORMATION FOR THE CONTRACTING OFFICER.

1.11.5 Test Reports and Monthly Summary Report of Tests

Furnish the signed reports, certifications, and a summary report of field tests at the end of each month to the Contracting Officer. Attach a copy of the summary report to the last daily Contractor Quality Control Report of each month.[Provide a copy of the signed test reports and certifications to the OMSI preparer for inclusion into the OMSI documentation, in accordance with Sections 01 78 23 OPERATION AND MAINTENANCE DATA and 01 78 24.00 20 FACILITY ELECTRONIC OPERATION AND MAINTENANCE SUPPORT INFORMATION (eOMSI).]

1.12 QC CERTIFICATIONS

1.12.1 CQC Report Certification

Contain the following statement within the CQC Report: "On behalf of the Contractor, I certify that this report is complete and correct and equipment and material used and work performed during this reporting period is in compliance with the contract drawings and specifications to the best of my knowledge, except as noted in this report."

1.12.2 Invoice Certification

Furnish a certificate to the Contracting Officer with each payment request, signed by the QC Manager, attesting that as-built drawings are current, coordinated and attesting that the work for which payment is requested, including stored material, is in compliance with Contract requirements.

1.12.3 Completion Certification

Upon completion of work under this Contract, the QC Manager must furnish a certificate to the Contracting Officer attesting that "the work has been completed, inspected, tested and is in compliance with the Contract." Provide a copy of this final QC Certification for completion to the preparer of the Operation & Maintenance (O&M) documentation.

1.13 COMPLETION INSPECTIONS

1.13.1 Punch-Out Inspection

Near the completion of all work or any increment thereof, established by a completion time stated in the Contract Clause entitled "Commencement, Prosecution, and Completion of Work," or stated elsewhere in the specifications, the QC Manager must conduct an inspection of the work and develop a "punch list" of items which do not conform to the approved drawings, specifications and Contract. Include in the punch list any remaining items on the "Rework Items List", which were not corrected prior to the Punch-Out Inspection. Include within the punch list the estimated date by which the deficiencies will be corrected. Provide a copy of the punch list to the Contracting Officer. The QC Manager, or staff, must make follow-on inspections to ascertain that all deficiencies have been

corrected. Once this is accomplished, notify the Government that the facility is ready for the Government "Pre-Final Inspection".

1.13.2 Pre-Final Inspection

The Government and QC Manager will perform this inspection to verify that the facility is complete and ready to be occupied. A Government "Pre-Final Punch List" will be documented by the QC Manager as a result of this inspection. The QC Manager will ensure that all items on this list are corrected prior to notifying the Government that a "Final" inspection with the Client can be scheduled. Any items noted on the "Pre-Final" inspection must be corrected in a timely manner and be accomplished before the contract completion date for the work,or any particular increment thereof, if the project is divided into increments by separate completion dates.

1.13.3 Final Acceptance Inspection

Notify the Contracting Officer at least 14 calendar days prior to the date a final acceptance inspection can be held. State within the notice that all items previously identified on the pre-final punch list will be corrected and acceptable, along with any other unfinished Contract work, by the date of the final acceptance inspection. The Contractor must be represented by the QC Manager, the Project Superintendent and others deemed necessary. Attendees for the Government will include the Contracting Officer, other FEAD/ROICC personnel, and personnel representing the Client. Failure of the Contractor to have all contract work acceptably complete for this inspection will be cause for the Contracting Officer to bill the Contractor for the Government's additional inspection cost in accordance with the Contract Clause entitled "Inspection of Construction."

1.14 DOCUMENTATION

Maintain current and complete records of on-site and off-site QC program operations and activities.

1.14.1 Construction Documentation

Reports are required for each day that work is performed and must be attached to the Contractor Quality Control Report prepared for the same day. Maintain current and complete records of on-site and off-site QC program operations and activities. The forms identified under the paragraph "INFORMATION FOR THE CONTRACTING OFFICER" will be used. Reports are required for each day work is performed. Account for each calendar day throughout the life of the Contract. Every space on the forms must be filled in. Use N/A if nothing can be reported in one of the spaces. The Project Superintendent and the QC Manager must prepare and sign the Contractor Production and CQC Reports, respectively. The reporting of work must be identified by terminology consistent with the construction schedule. In the "remarks" sections of the reports, enter 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, quality control problem areas, deviations from the QC Plan, construction deficiencies encountered, meetings held. For each entry in the report(s), identify the Schedule Activity No. that is associated with the entered remark.

1.14.2 Quality Control Validation

****
NOTE: Edit as appropriate. Include Cx line item when Commissioning Provider is a sub-contractor to the Construction Contractor.
****

Establish and maintain the following in an electronic folder. Divide folder into a series of tabbed sections as shown below. Ensure folder is updated at each required progress meeting.

a. All completed Preparatory and Initial Phase Checklists, arranged by specification section.

b. All milestone inspections, arranged by Activity Number.

c. An up-to-date copy of the Testing Plan and Log with supporting field test reports, arranged by specification section.

d. Copies of all contract modifications, arranged in numerical order. Also include documentation that modified work was accomplished.

e. An up-to-date copy of the Rework Items List.

f. Maintain up-to-date copies of all punch lists issued by the QC staff to the Contractor and Sub-Contractors and all punch lists issued by the Government.

[g. Cx documentation in accordance with Section 01 91 00.15 20 TOTAL BUILDING COMMISSIONING.

][h. Special inspection reports.

][1.14.3 Reports from the QC Specialist(s)

Reports are required for each day that work is performed in their area of responsibility. QC Specialist reports must include the same documentation requirements as the CQC Report for their area of responsibility. QC Specialist reports are to be prepared, signed and dated by the QC Specialists and must be attached to the CQC Report prepared for the same day.

]1.14.4 Testing Plan and Log

As tests are performed, [the CxC][and][the QC Manager] will record on the "Testing Plan and Log" the date the test was performed and the date the test results were forwarded to the Contracting Officer. Attach a copy of the updated "Testing Plan and Log" to the last daily CQC Report of each month, per the paragraph "INFORMATION FOR THE CONTRACTING OFFICER". Provide a copy of the final "Testing Plan and Log" to the preparer of the Operation & Maintenance (O&M) documentation.

1.14.5 Rework Items List

The QC Manager must 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 a rework item that is corrected the same day it is discovered. [Attach a copy of the "Rework Items List" to the last daily CQC Report of each month.]The Contractor is responsible for including those items identified by the Contracting Officer.

1.14.6 As-Built Drawings

The QC Manager is required to ensure the as-built drawings, required by Section 01 78 00 CLOSEOUT SUBMITTALS are kept current on a daily basis and marked to show deviations which have been made from the Contract drawings. Ensure each deviation has been identified with the appropriate modifying documentation (e.g. PC No., Modification No., Request for Information No., etc.). The QC Manager [or QC Specialist assigned to an area of responsibility]must initial each revision. Upon completion of work, the QC Manager will furnish a certificate attesting to the accuracy of the as-built drawings prior to submission to the Contracting Officer.

1.15 NOTIFICATION ON NON-COMPLIANCE

The Contracting Officer will notify the Contractor of any detected non-compliance with the Contract. Take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, is deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders will be made the subject of claim for extension of time for excess costs or damages by the Contractor.

1.16 CONSTRUCTION INDOOR AIR QUALITY (IAQ) MANAGEMENT PLAN

****
NOTE: Preventing indoor air quality problems resulting from the construction process sustains the comfort and health of construction workers and building occupants. Include last bracketed sentence when required by Section 01 33 29 SUSTAINABILITY REQUIREMENTS AND REPORTING, IAQ requirements.
****

****
NOTE: For projects in the NAVFAC PAC Area of Operation, select "45" calendar days, and select "Contract award" in the first sentence.
****

Submit an IAQ Management Plan within [15] [_____] calendar days after [Contract award] [notice to proceed] and not less than 10 calendar days before the preconstruction meeting. Revise and resubmit Plan as required by the Contracting Officer. Make copies of the final plan available to all workers on site. Include provisions in the Plan to meet the requirements specified below and to ensure safe, healthy air for construction workers and building occupants.[Submit Final IAQ Management Plan for inclusion in the Sustainability eNotebook, in accordance with Section 01 33 29SUSTAINABILITY REQUIREMENTS AND REPORTING.]

1.16.1 Requirements During Construction

Provide for evaluation of indoor Carbon Dioxide concentrations in accordance with ASTM D6245. Provide for evaluation of volatile organic compounds (VOCs) in indoor air in accordance with ASTM D6345. Use filters with a Minimum Efficiency Reporting Value (MERV) of 8 in permanently installed air handlers during construction.

1.16.1.1 Control Measures

Meet or exceed the requirements of ANSI/SMACNA 008, Chapter 3, to help minimize contamination of the building from construction activities. The five requirements of this manual which must be adhered to are described below:

a. HVAC protection: Isolate return side of HVAC system from surrounding environment to prevent construction dust and debris from entering the duct work and spaces.

b. Source control: Use low emitting paints and other finishes, sealants, adhesives, and other materials as specified. When available, cleaning products must have a low VOC content and be non-toxic to minimize building contamination. Utilize cleaning techniques that minimize dust generation. Cycle equipment off when not needed. Prohibit idling motor vehicles where emissions could be drawn into building. Designate receiving/storage areas for incoming material that minimize IAQ impacts.

c. Pathway interruption: When pollutants are generated use strategies such as 100 percent outside air ventilation or erection of physical barriers between work and non-work areas to prevent contamination.

d. Housekeeping: Clean frequently to remove construction dust and debris. Promptly clean up spills. Remove accumulated water and keep work areas dry to discourage the growth of mold and bacteria. Take extra measures when hazardous materials are involved.

e. Scheduling: Control the sequence of construction to minimize the absorption of VOCs by other building materials.

1.16.1.2 Moisture Contamination

a. Remove accumulated water and keep work dry.

b. Use dehumidification to remove moist, humid air from a work area.

c. Do not use combustion heaters or generators inside the building.

d. Protect porous materials from exposure to moisture.

e. Remove and replace items which remain damp for more than a few hours.

1.16.2 Requirements after Construction

After construction ends and prior to occupancy, conduct a building flush-out or test the indoor air contaminant levels. Flush-out must be a minimum two-weeks with MERV-13 filtration media as determined by ASHRAE 52.2at 100 percent outside air. Air contamination testing must be consistent with EPA's current Compendium of Methods for the Determination

of Air Pollutants in Indoor Air. After building flush-out or testing and prior to occupancy, replace filtration media. Filtration media must have a MERV of 13 as determined by ASHRAE 52.2.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 PREPARATION

Designate receiving/storage areas for incoming material to be delivered according to installation schedule and to be placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication. Store and handle materials in a manner as to prevent loss from weather and other damage. Keep materials, products, and accessories covered and off the ground, and store in a dry, secure area. Prevent contact with material that may cause corrosion, discoloration, or staining. Protect all materials and installations from damage by the activities of other trades.

-- End of Section --