



Construction Quality Management Program

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NAVFAC P-445

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND

January 2000



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FOREWORD

This publication states the Naval Facilities Engineering Command's (NAVFAC) policy for construction quality management and outlines the concepts, requirements, and procedures to be followed in the execution of the NAVFAC Construction Quality Management (CQM) Program. This Program implements the Contractor's Quality Control (QC) and the Government's Quality Assurance (QA) Systems for managing the quality of construction and environmental restoration projects.

Compliance with the requirements and procedures outlined in this manual is required on all NAVFAC construction contracts in the United States and its Territories. Engineering Field Divisions (EFDs) and Engineering Field Activities (EFAs) are authorized to use the CQM Program in overseas areas as appropriate.

Recommendations or suggestions that will improve this publication and facilitate its use are invited, and should be submitted to:

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Upon review and approval by NAVFAC Quality Management Task Force Members, changes to this publication will be forwarded to:

Commander, Naval Facilities Engineering Command
Washington Navy Yard
1322 Patterson Avenue, SE Suite 1000
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This publication cancels and supersedes NAVFAC P-445 dated January 1988. Changes are made to bring this manual and NFGS 01450 *Quality Control* into agreement. This publication has been produced in accordance with the policies outlined in NAVFACINST 5600.2G and meets the requirements outlined therein. With incorporation of Technical personnel in the Acquisition workforce, this manual will be updated to include certification requirements for Engineers and QA Representatives.

INTRODUCTION

NAVFAC plans, procures, executes and maintains billions of dollars of construction per year for our Navy, Marine Corps and DOD clients. Construction is NAVFAC's largest and most visible product that we deliver. Each construction project represents a major investment that our clients made in a time of severe budget constraints. Our clients need a quality project and expect their NAVFAC team to deliver! I expect our NAVFAC team to excel!

Every NAVFAC Field Office provides our clients an Integrated Product Team (IPT) on their base to deliver proactive construction management services to successfully execute their construction workload. I expect each member of our NAVFAC Field Office team to have a positive, proactive construction management mindset to enable NAVFAC to be a valued member of our clients' teams. **Our Construction Management mission is: Deliver our clients' projects on or ahead of schedule; deliver it at the specified quality that meets or exceeds their quality expectations; ensure the construction site is always safe and secure; deliver it at a fair and reasonable cost; and constantly communicate with all of the project's share holders.**

P-445 is NAVFAC's Quality Management doctrine. This doctrine provides the government the skills and processes to deliver our construction projects "at the specified quality that meets or exceeds our clients' quality expectations." The Resident Officer in Charge of Construction (ROICC) is tasked to "train and certify" each member of the Field Office team in this doctrine to ensure that the NAVFAC Field Office team is focused on providing quality assurance. There is no place in any NAVFAC Field Office for inspectors. Inspectors are only focused at finding problems after they have occurred. This is an unsatisfactory result for our clients. Every NAVFAC Field Office associate must be an active member of NAVFAC's quality assurance team partnering with the contractor's quality control team to prevent problems from occurring and building quality into each project. I hold each ROICC who is privileged to lead a NAVFAC Field Office personally accountable to ensure that the contractors working for NAVFAC build their projects right the first time and that Quality Control (QC) and Quality Assurance (QA) teams ensure that quality is built into every project for our clients.

NAVFAC has developed many new acquisition tools to be able to meet our clients' needs. Today, our NAVFAC Contracting Officers award new construction contracts using best value source selections, in many cases, in lieu of sealed-bid contracts awarded to the low, responsive, responsible contractor. Additionally, they may use design-build contracts in lieu of awarding separate contracts for the design of a full set of plans and specs and another contract for construction. And finally, they have also put into place many multiple award construction contracts (MACCs) for our smaller projects instead of awarding separate contracts for each project. These are significant changes, which have dramatically improved our responsiveness and the quality of the contractors on our jobs.

We must now concentrate on improving the post-award administration of our construction projects to continuously improve our performance. Quality Management (QM) as outlined in P-445 defines how we will execute QC and QA.

Effective quality management is essential to delivering a project on schedule. Our Project Managers must ensure that the QC, QA and safety programs are directly linked to the contractor's schedule. We must use our construction management skills to drive issues to timely resolution and analyze the contractor's schedule to ensure that the project is adequately staffed with the right trades and materials. Additionally, we must find innovative solutions to problems which is key to our ability to "complete a project on or ahead of schedule". Effective QC + QA is the key to building the project right the first time. The contractor's team and the NAVFAC Field Office team must be committed to this objective for NAVFAC to successfully execute its mission for our clients.

CQC has not been totally effective in the past because many of our contractors did not fully embrace CQC as a part of their management practices. We did not have the contracting tools to select contractors who had a demonstrated track record of past performance and a proven quality management team. Low bid drove all decisions and we needed experienced inspectors. But, today we have dramatically changed the way we do business. Our Contracting Officers should only be awarding contracts to firms with proven track records of excellence that have an effective quality management team. Our NAVFAC Field Office associates must now embrace these new skills to be proactive Project Managers. Our NAVFAC Project Managers, engineers, and QA Representatives must make the transition from being reactive inspectors to being proactive quality assurance representatives. Discovering problems after the fact is no longer acceptable. We must use our construction expertise and quality assurance skills to prevent quality problems from ever adversely impacting a project's schedule or our client.

NAVFAC has endorsed partnering with our suppliers, both individually and through associations, for years. This year I am proud to report that NAVFAC and a major contractor association has committed to first time quality as one of our common goals. I am confident that with your professional commitment and dedication that we will succeed.

L. M. SMITH
Rear Admiral, Civil Engineer Corps, U. S. Navy
Commander
Naval Facilities Engineering Command

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Executive Summary

It is Naval Facilities Engineering Command (NAVFAC) policy that the quality of construction projects shall be properly managed to assure that the requirements are being met. To meet this objective, it is NAVFAC's policy to implement the Construction Quality Management (CQM) Program for all NAVFAC construction work.

The CQM Program is designed to:

- Properly assign responsibilities for the management of quality on construction projects.
- Support construction projects across the entire spectrum of size, complexity, scope and acquisition strategy.
- Tailor a particular project to ensure appropriate level of monitoring is provided.

The following points are fundamental to the CQM Program:

- The Government is not responsible for controlling the quality of the contractor's work.
- Contractors have always been implicitly responsible for the quality of their work; under the CQM Program, the Contractor is contractually assigned QC responsibilities. The Contractor controls the quality of the work.
- The level of quality is established by the contract requirements in the specifications and drawings.
- FAR Contract Clause 52.246-12 "*Inspection of Construction*" indicates that all work is subject to inspection by the Government, i.e.; the Government has the right to inspect (For fixed price contracts, which exceed the simplified acquisition threshold).
- The Government must assure that construction work conforms to contract requirements by ensuring that the Contractor's Quality Control (QC) System is properly functioning. This is the role of NAVFAC's Quality Assurance (QA) System.
- QC requirements expedite the work by reducing delays associated with Government inspections, submittal approvals, and testing. The accomplishment of submittal approvals, inspection, and testing through construction contractors promotes unified administration in comparison to accomplishing these functions through other arrangements.

- CQM prevents deficiencies and the removal of defective work. Through the Three Phases of Control, the Contractor can establish the correct quality at the beginning of each feature of work and monitor the work through completion to ensure that quality requirements are met. Quality is built-in from the beginning.
- Deleting QC requirements from the contract removes the contractual responsibilities for controlling the quality of work from the Contractor.
- The Contractor controls Quality and the Government assures Quality is being built. When the Contractor fails to meet quality requirements or carry out their contractual QC responsibilities, the QA System is designed to establish that fact. The CQM Program ensures proper recourse mechanisms are placed into all construction contracts to correct these kinds of deficiencies.
- Proper planning is an important part of a successful QC System for any project. Each project requires careful consideration from conception through contract award and execution of the work. The Government is responsible for including proper QC requirements in the contract during the acquisition planning and formation phases. After award, the Contractor is responsible for developing a detailed QC Plan for controlling the quality of the work. Based upon the contract plans and specifications and the Contractor's QC Plan, the Government develops a QA Plan for monitoring the progress and quality of the work and the Contractor's QC System.

Chapter 1. CONSTRUCTION QUALITY MANAGEMENT (CQM) PROGRAM

1.1 Purpose.

This publication states the principles of the Naval Facilities Engineering Command's (NAVFAC's) Construction Quality Management (CQM) Program. The Program is composed of the Contractor's Quality Control (QC) System and the Government's Quality Assurance (QA) System. The principles set forth encourage a mutual effort on the part of the Contractor and the Government to produce a quality product, on time, and in compliance with the terms of the contract. The level of effort required to properly implement these systems will vary for each contract, depending upon the type of work, duration, and complexity.

The procedures established in this manual shall be used for all construction contracts except those below the Simplified Acquisition threshold¹. Acquisitions valued at less than the Simplified Acquisition threshold may incorporate these procedures if they are determined to be in the Government's interest. The Engineering Field Division/Engineering Field Activity Commander/Commanding Officer, Independent OIC, or their designated representative must approve any deviation from these procedures. Unless specifically authorized to the contrary by the EFD, the Contractor Quality Control (QC) System will also be used at overseas locations. The CQM Program is applicable to both Type I and Type II construction work, regardless of acquisition vehicle². NAVFAC policy is that the quality of construction projects shall be properly managed to assure that the requirements of construction contracts are being met. Therefore, the CQM Program will be the norm for all NAVFAC construction work, regardless of acquisition vehicle or dollar threshold.

This document shall not be considered a waiver of any requirements of the FAR/DFAR, Environmental Laws, Acts, Codes, etc.

1.2 Cancellation.

This publication, NAVFAC P-445, *Construction Quality Management Program* cancels and supersedes NAVFAC P-445, dated January 1988.

¹ FAR 46.312

² NAVFAC Letter dated 31 December 1998, see Appendix L

1.3 Terminology.

The following terms are generally accepted and used throughout NAVFAC, and have been coordinated with the *NAVFAC Contracting Manual*³. However, since some variation does exist, it is important to verify the meaning of these and other terms in the context of each EFD/EFA.

NAVFACHQ

- **HEAD OF THE CONTRACTING ACTIVITY (HCA)** - For NAVFACENGCOM, the Commander, NAVFACENGCOM and by delegation, the Acquisition Proponent Director.

EFD/EFA/PWO or OICC

- **CHIEF OF CONTRACTING OFFICE (CCO)** - For EFDs/EFAs/PWCs and NAVFACCO, the Contracts Office Head, for field contracts offices, the OIC/OICC/ROICC or equivalent.
- **CONSTRUCTION QUALITY MANAGEMENT (CQM) STAFF** – Position(s) whose duties include the coordination of project quality control requirements and provides consultation to both the Design Staff and ROICC Field Offices on Quality Control and Quality Assurance.
- **CONTRACTING OFFICER'S AUTHORIZED REPRESENTATIVE (COAR) FOR CONSTRUCTION CONTRACTS** - An individual appointed in writing by the EFD/EFA CCO to act with specific authority on behalf of the contracting officer. Generally this term is used when a Project Manager is given the authority to negotiate modifications. A COAR has the authority to negotiate in-scope changes to the contract up to a designated amount per modification. The COAR does not have the authority to change contract scope, completion schedule, contract price, or any other terms and conditions of the contract. Finalization of the change is subject to the approval of the contracting officer.
- **CONTRACTING OFFICER'S TECHNICAL REPRESENTATIVE (COTR)** - An individual appointed to act on behalf of the contracting officer in technical matters. Only one COTR may be appointed per contract. However, an "Alternate COTR" may be appointed to act in the absence of the COTR. The COTR is generally responsible for coordinating all government technical interfaces with the Contractor, monitoring compliance with contract and safety requirements, and inspection and acceptance of the services performed. Within NAVFAC this term is primarily used to refer to individuals assigned technical oversight of A-E contracts; and cost-reimbursement contract vehicles such as Remedial Action Contracts (RAC); Comprehensive Long-term Environmental Assessment, Navy (CLEAN); and Construction Capabilities (CONCAP) contracts.

³ P-68 Parts 1.602-1 (*NAPS*) Authority, and 2.101 *Definitions*.

- **FIELD TEAM ADVOCATE** – The ROICC’s primary advocate and point of contact for construction support and resource management. A technical position in the Construction Division or Operations Department that provides consultation on construction, contract management, safety, ROICC staffing, budget, training, office logistics, assistance on quality issues (QC & QA), and specialty inspections (fire protection, elevators, cathodic protection, HVAC balancing, etc.). This position may also be titled ROICC Advocate, Construction Manager (CM), or Construction Area Manager (CAM).
- **HEAD OF CONSTRUCTION** – Senior military or civilian that provides leadership to the senior ROICC Office management and management to the technical and quality functions of construction programs in the EFD/EFA. This position may also be titled 05 or Operations Director.
- **INTEGRATED PRODUCT TEAM** – A contingent of individuals, that collectively represents all the engineering disciplines and skills necessary to provide our customers the products and services they need. This team may also be titled Area Focus Team (AFT) or Capital Improvements.
- **NAVY TECHNICAL REPRESENTATIVE (NTR)** - Unless otherwise identified, NTRs may perform all duties assigned to the COTR. An NTR is a “subordinate” position (in the contractual chain of authority) to a COTR; the assigned COTR is responsible for the performance of all functions. NTRs do not have the authority to provide any technical direction or clarification directly to the Contractor or to approve and accept resulting work without the COTR’s approval.
- **ORDERING OFFICER** – An individual designated in writing by a contracting officer as an ordering officer for specific contract actions. The authority of ordering officers is stated in the contract or in a letter of appointment.
- **PROCURING CONTRACTING OFFICER (PCO)** – An individual appointed by warrant and given the authority to execute contractual documents that obligate the Government within the authority of their warrant. PCO functions are performed during the Pre-Award and Award stages of the contracts. This position can on occasion be located in the ROICC Office. See Appendix L.
- **PROJECT LEADER (PL)** – Individual with responsibility of design oversight and program management for the project. This position may also be titled Engineer In Charge (EIC), Design Manager (DM), Project Manager (PM) (at the EFD/EFA level), Project Design Manager (PDM).
- **PUBLIC WORKS OFFICER (PWO)** - A Civil Engineer Corps (CEC) officer who has responsibility for the leadership of the field contracts office and public works forces, including engineering, shops, and in-house forces.

Resident Officer in Charge of Construction (ROICC)

- **ADMINISTERING CONTRACTING OFFICER (ACO)** – An individual appointed by warrant and given the authority to execute contractual documents that obligate the Government within the authority of their warrant. ACO functions are performed during the Post-Award stage of the contracts.
- **PROJECT ENGINEER (PE)** – Individual in the ROICC Field Office that is responsible for the technical administration and management of assigned projects. This position may also be titled Construction Management Engineer (CME).
- **PROJECT MANAGER (PM)** – Individual in the ROICC Field Office that is responsible for the Administrative Contracting Office that performs the duties of contract administration and management. This position may also be titled Assistant Resident Engineer in Charge (AREIC), Assistant Resident Engineer in Charge of Construction (AREICC), Assistant Resident Officer in Charge (AROIC), Assistant Resident Officer in Charge of Construction (AROICC), Contracting Officer's Authorized Representative (COAR).
- **QUALITY ASSURANCE REPRESENTATIVE (QA REP)** – Individual in the ROICC Field Office that is the primary point of contact at the jobsite level between the Contractor, Client, User and the ROICC. This position may also be titled Construction Representative, Engineering Technician, Construction Management Technician, Quality Assurance Evaluator, Quality Management Representative, Construction Surveillance Representative.
- **RESIDENT OFFICER IN CHARGE (ROIC)/RESIDENT OFFICER IN CHARGE OF CONSTRUCTION (ROICC)** - A Civil Engineer Corps (CEC) officer who has responsibility for the overall management of a field contracts office, including the execution and administration of construction, architect-engineer, engineering services, or facilities support contracts.
- **ROICC CONSTRUCTION MANAGEMENT TEAM** – A team consisting of the Project Manager (Administering Contracting Officer), Project Engineer, and Quality Assurance Representative.
- **SENIOR AROICC** – Ranking CEC Officer under the ROICC that provides leadership over Project Managers in the office.
- **SUPERVISORY CONTRACT SPECIALIST (SCS)** – Position that provides supervision over warranted Contract Specialist.
- **SUPERVISORY GENERAL ENGINEER (SGE)** – A senior civilian engineer position in the ROICC Field Office that is in the supervisory role over Project Engineers and Quality Assurance Representatives. This position may also be titled Resident Engineer.

The NAVFAC Field Office Structure (ROICC Field Office Model) is included in Appendix L.

To avoid conflicts with differing terminology by geographic region, throughout this manual certain conventions are followed. Certain identical terms are used with different meaning in different geographic

regions, and some terms are used uniquely to mean specific things in different regions. The reader should review the job descriptions provided above for clarification. The term “field office” is used to refer to the NAFAC subordinate unit at the Base or Station level that is typically responsible for execution and administration of construction and other contracts. The term “ROICC” is used to designate the head of a Field Office, typically a CEC Officer. The term “AROICC or AREICC” is used to designate an engineer or architect assigned specific project management duties in-line with the definitions listed above. When referring to the Federal Government, in general, the word “Government” is used. The term “NAVFAC” generally refers to the entire NAVFAC command structure including all subordinate commands. The term Project Engineer is used to refer to the individual with responsibility for design oversight and program management for the project. “He” is used generically, without regard to gender.

1.4 Definitions.

- **Quality** is defined as conformance to properly developed requirements. In the case of construction contracts, the contract specifications and drawings establish the requirements.
- **Construction Quality Management (CQM)** is defined as quality control and assurance activities instituted to achieve the quality levels established by the contract requirements.
- **Quality Control (QC)** is defined as the Construction Contractor's system in place during execution to manage and control and document his own, his supplier's and his subcontractor's activities in order to comply with contract requirements.
- **Quality Assurance (QA)** is defined as the Government's system in place to monitor the Quality Control efforts of the Construction Contractor.

$$\mathbf{CQM = QC + QA}$$

1.5 Contractor Quality Control.

A contractor inspection system is required by the Federal Acquisition Regulation (FAR), Clause 52.246-12 “Inspection of Construction.” This clause is included in all NAVFACENGCOM construction contracts over the Simplified Acquisition Threshold⁴. Incorporation of NAVFAC's specific requirements into the contract is generally accomplished through the Guide Specification NFGS-01450, *Quality Control*. For smaller, routine, or less complex acquisitions, the Short Form of NFGS-01450 (NFGS-01450SF) is also authorized for use. The EFD/EFA CQM Staff shall be consulted regarding the appropriate editing and use of the guide specifications for Quality Control. A short discussion of how these requirements relate to different contract methods and types is included in Chapter 2.

⁴ FAR 46.312

The Contractor has the responsibility to control the quality of the work⁵. The primary emphasis of the QC System is on controlling the work to prevent quality problems, rather than inspection to discover problems after they occur. The QC System, including the *Three Phases of Control*, which are discussed further in Chapter 2, is the baseline program that contractors will use to control the quality of the work. Significant control and inspection of the work, as well as documentation that the work meets the requirements of the contract, is required of the Contractor under the QC System.

1.6 NAVFAC Quality Assurance.

1.6.1 Policy on Construction Quality

Project Quality has been simply defined as “...*conformance to adequately developed requirements*”. We, as an organization, need to look beyond this definition to the dictionary definition of “*a degree of excellence - superior of its kind*”, and we must rise to that degree of excellence, to a level that will make us the construction agency of choice for our clients.

Our clients measure the quality of what they receive not only in terms of the physical appearance, but also in terms of on-time delivery, within project budget, and meeting their specific operational requirements. We must have a well-established quality management program to meet these expectations.

The Program, as set forth in this manual, encourages the mutual effort on the part of the Government, the Construction Contractor and his quality control organization to achieve a quality end product as specified.

Personnel at all NAVFAC offices shall use procedures and guidelines established herein. By implementing the following guidelines you will be able to effectively and successfully administer construction contracts.

1.6.2 NAVFAC’s Responsibility

NAVFAC is responsible for evaluating all construction prior to final acceptance and payment to determine compliance with the contract documents⁶. The authority to monitor the Contractor’s performance and inspect the work if necessary, is contained in the “Inspection of Construction” clause. During construction, quality assurance is the means by which NAVFAC fulfills its’ responsibility of verifying that the QC System is functioning properly. Through reviews, surveillance, and tests the Government assures the completed product complies with the contract requirements.

⁵ FAR Part 46.105

⁶ FAR Part 46.104

The requirement for NAVFAC quality assurance is independent of any quality control effort of the Contractor. Government QA efforts focus on evaluating the Contractor's QC System rather than inspection of specific items of work. Effective QA involvement at the Preparatory and Initial Phases and the ROICC Office's management support for the preparation of QA Plans in their office is essential to the QA System. Automated search engines available in Electronic Bid Solicitations (EBS) and the ability to define Definable Features of Work during design are both aids in the development of QA Plans. A properly implemented Contractor QC System is also necessary to produce a quality project. However, some items of work can be so critical to the project as to need specific detailed inspection. Under the contract, the Government has the right to inspect, while the Contractor has the responsibility to inspect⁷.

⁷ FAR Clause 52.246-12 *Inspection of Construction*

Chapter 2. QUALITY CONTROL (QC) SYSTEM

2.1 Applicability

This Chapter outlines procedures, requirements and application of the Contractor's Quality Control (QC) System for construction contracts.

This policy applies to all construction work, regardless of acquisition (contract) vehicle, size, scope etc. However, it is important to recognize that the amount of effort that can be expended in controlling the work does depend on the individual project. The ROICC is required to develop the realistic requirements for each project, based upon the complexity and operational requirements of the project. The policies outlined in this chapter shall be incorporated during the development of the contract documents. The ROICC should ensure that the specification is tailored for the particular project and ensure that the Contractor's QC System and prior experience is a key element in any source selection plan. This is the most important contribution the ROICC can make during pre-award too positively control the success of the project. Experienced field office personnel, and EFD/EFA CQM personnel shall be consulted in tailoring the quality control requirements to the specific acquisition.

2.2 Contract Requirements.

Plans and specifications comprise the requirements of a contract. These documents must be included and must clearly state what is required. The Contractor must know what is expected and required to prepare a reasonable proposal. He cannot be required to perform work that is not included in the contract drawings and specifications. When the proper contract clauses and specifications are included in the contract for the CQM Program, the Contractor is fully responsible for the quality of his work.

The success of NAVFAC's CQM Program depends on established construction standards, quality of plans and specifications, and how well the field offices enforce the contract requirements.

2.3 Submission of the Quality Control Plan

The Contractor is required to provide the Contracting Officer a tailored QC Plan that meets the specific project quality control requirements. Generally, this submittal is required within [20] calendar days after receipt of Notice of Award.

The completed list of definable features of work must be coordinated with the construction schedule. Critical submittals and tests should be identified in the schedule as distinct actions.

No construction work will be allowed at the site prior to the approval of the QC Plan. Exception may be made for mobilization work, which includes surveying for location of Contractor's offices, laydown areas and temporary utilities, and installation of temporary utilities. The only exception to this requirement is work approved under an "Approved As Noted" submittal of the QC Plan. Any exceptions must be personally

authorized in writing by the ROICC. There are three (3) circumstances in which an “Approved as Noted” approval may be appropriate.

1. First 90 Days: The QC Plan is a preliminary submittal and lists the definable features of work to cover the first ninety (90) days of construction. This option may be used in some cases to allow a Contractor to start without a complete plan. It is not always practical to delay the start of construction until a complete QC Plan is submitted and approved. The Project Engineer, with ROICC approval, may approve a QC Plan which covers the few activities at the very beginning of the project using the “Approved as Noted” approval method. This will permit the Contractor to start work. However, the Contractor's operation must be limited to the definable features of work covered by the “Approved as Noted” plan. The ROICC must stop the work if an acceptable plan has not been submitted upon completion of the authorized work.

2. Phased Project: It is permissible to allow the Contractor to proceed with an acceptable QC Plan covering each particular phase.

3. Minor Changes: It is permissible to approve the QC Plan with minor changes or additions with ROICC/REICC concurrence. The Project Engineer may use an “Approved as Noted” approval to grant permission to start work if the Contractor agrees in writing to correct the plan by a specified date. The Project Engineer must not allow the Contractor to continue work beyond the specified date if a corrected plan has not been approved.

It is important for the Government to closely monitor the submission of the final plan. The ROICC (through the Contracting Officer) has the responsibility to stop the work under the authority of the contract, if a final, acceptable plan is not submitted and approved within 90 days of the contract award.

2.4 Overview of NFGS 01450 Quality Control

Specification Section 01450 describes the QC System the Contractor is required to establish and maintain. Per Specification Section 01450, “The QC System consists of a QC Organization, a QC Plan, a Coordination and Mutual Understanding Meeting, QC meetings, three phases of control, submittal review and approval, testing, completion inspections, and QC certifications and documentation necessary to provide materials, equipment, workmanship, fabrication, construction and operations which comply with the requirements of this Contract.” These requirements are discussed in detail in the remainder of this chapter.

2.5 QC Reporting Requirements

A QC Manager's duties and responsibilities will be defined in Specification Section 01450. Dependent on the complexity of the project, the QC Manager may be dual hatted to include the duties of a project superintendent or have his duties restricted to only those related to quality. The Contractor's reporting requirements may be slightly different depending on the scope of the QC Manager's responsibilities.

- A. Smaller Projects: (Using NFGS 01450SF)
- *Contractor Production Report and Contractor Quality Control Report.* This is the daily record of operations on the job-site and must be kept current. Daily Reports will be submitted the next working day after each day that work is performed and must be current. Combined reporting shall be used if the QC Manager performs the duties of the superintendent. Entries on all reports must be keyed to the Schedule Activity IDs.
- B. Large/Complex Projects: (Using NFGS 01450)
- *Contractor Quality Control Report.* Submitted daily by the QC Manager. This report will include the reports from each subcontractor working on the site to address the quality aspects of the project that is being performed by the subcontractor. Entries on all reports must be keyed to the Schedule Activity IDs.
 - *Contractor Production Report.* This form is submitted daily by the Project Superintendent and must specifically be tied to the Schedule Activity IDs and address the staffing of the project. Entries on all reports must be keyed to the Schedule Activity IDs. The report is given to the QC Manager to include with his report package and then submitted to the government.

These and other required reports are covered in greater detail in section 2.15.

2.6 QC System Requirements

The FAR requires that "...the Contractor shall maintain an adequate inspection system and perform such inspections as will ensure that the work called for by this contract conforms to contract requirements. The Contractor shall maintain complete inspection records and make them available to the Government."⁸

Quality Control is the Contractor's system in place during execution to manage, control and document his own, his supplier's and his subcontractor's activities in order to comply with contract requirements. The CQM Program places full responsibility on the Contractor for producing the quality work prescribed in the contract plans and specifications.

The Contractor is required to establish and maintain a QC System as described in the specification and tied to the Contractor's schedule. The QC System covers on-site and off-site work and shall be keyed to the work sequence and the construction schedule.

No work or testing may be performed unless the QC Manager, the Alternate QC Manager or in the case of after hours work, the Assistant QC Manager is on the work site. The project superintendent will be held responsible for the quality of work on the job and is subject to removal by the Contracting Officer for

⁸ FAR Clause 52.246-12 *Inspection of Construction*

non-compliance with quality requirements specified in the contract. The project superintendent, as used in this context, shall mean the individual with the responsibility for the overall management of the project including quality and production.

2.7 Quality Control Organization

2.7.1 Personnel

The people involved in Quality Control range from the laborers and mechanics performing the work, through the on-site supervision and up to the management of the construction firm. Some of the positions with specific Quality Control responsibilities are:

- Project Superintendent
- Subcontractor Foreman
- Quality Control Manager
- Alternate Quality Control Manager
- Assistant Quality Control Manager
- Registered Fire Protection Engineer
- Submittal Reviewer(s)
- QC Specialist(s)

Collectively, these individuals are responsible for carrying out the requirements of the QC System. When required, some or all of these positions and their duties and responsibilities will be included in the contract requirements.

2.7.1.1 Duties and Responsibilities of the QC Manager.

The QC Manager implements and manages the QC System, and is directly responsible to management. The QC Manager must attend the QC Plan meeting, attend the Coordination and Mutual Understanding Meeting, and conduct the periodic QC meetings. The Manager is also responsible for the performance of the Three Phases of Control (except for any phases of control designated to be performed by QC specialists), perform submittal review and approval, ensure testing is performed and provide required QC certifications and documentation. The QC Manager manages and coordinates the Three Phases of Control and documentation performed by the QC specialists, designated Testing Laboratory personnel and any other inspection and testing personnel required by this Contract. The NFGS outlines the QC procedures that must be followed, including the "Three Phases of Control". Responsibilities of the QC Manager include:

- Access to references called for in the contract.
- Ensure all submittals are prepared and approved in a timely manner to avoid project delays.
- Coordinate changes or substitution requests made by the Contractor to the Project Manager; however, he does not have the authority to approve them.
- Inspect all work for compliance and maintain a Rework Items List on all nonconforming work⁹.
- Coordinate all testing required to maintain the schedule.
- Must ensure that As-Built Drawings and As-Built Record of Materials are kept current and on-site.

Constructing a quality facility and making a profit requires proper planning of all Definable Features of Work (DFOW) to prevent deficiencies with costly tear out and replacement. The QC Manager should focus on the preparatory and initial phases of control in order to minimize or prevent rework. He is required to obtain assistance from the QC staff or an outside consultant for any discipline(s) where the QC Manager lacks proficiency. The QC Manager must have the authority to correct any deficiency even though it might result in stopping work on a particular segment of the project.

The QC Manager shall work through the Government QA Representative assigned to the project for administrative and construction related matters.

The QC Manager shall not perform any duties such as layout work, time keeping, etc. Obviously this restriction does not apply in circumstances where the particular contract allows the QC Manager to be “double-hatted” as the Project Superintendent. The Contractor may request to assign construction site safety related duties with the approval of the Project Manager and the concurrence of the OIC. This exception would apply to only on very small jobs as an exception from the norm (i.e.; where the owner of the company is the on-site Superintendent and the QC Manager). The QC Manager is always responsible for observing the work and monitoring safe work practices during the normal course of his jobsite duties, but as a rule is not assigned as the safety competent person as defined in the COE EM-385-1-1.

The qualifications and training/education requirements for QC Managers are fairly intensive. 1. The QC specification requires an individual with significant experience as a superintendent, inspector, QC Manager, project manager, or construction manager on similar size and type construction contracts that include the major trades that are part of the Contract. 2. The individual must be familiar with the requirements of COE EM-385-1-1 “Safety and Health Requirements Manual”, and have experience in the areas of hazard identification and safety compliance. 3. On large or complex projects, he may be required to

⁹ NFGS 01450 *Quality Control*

be a graduate of a four year accredited college program in one of the main engineering or architecture disciplines. 4. The QC Manager shall have completed the course entitled "Construction Quality Management for Contractors", offered by both NAVFAC and the Army Corps of Engineers.

2.7.1.2 Alternate QC Manager Duties and Qualifications

The Contractor is required to 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 generally exceed two weeks at one time, and not more than 30 workdays during a calendar year. The qualification requirements for the Alternate QC Manager shall be the same as for the QC manager.

2.7.1.3 Assistant QC Manager Duties and Qualifications

In specific cases, the Contractor may be required to 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 the Contract. The qualification requirements for the Assistant QC Manager will be specified in the contract, and will generally be somewhat less than those for the QC Manager. The Assistant QC Manager may also be used on the work site during supplemental work shifts (beyond the regular shift) to perform the duties of the QC Manager during such work.

2.7.1.4 QC Specialists Duties and Qualifications

The Contractor may be required to provide a separate QC specialist at the work site for each of the specific areas of responsibility in cases where specific portions of the work are complex or demanding. These individuals shall assist and report to the QC Manager. Dependent on the editing of the project specification; QC Specialists may perform production related duties but must be allowed sufficient time to perform their assigned quality control duties or they may be restricted to assigned quality control duties. QC specialists are required to attend the Coordination and Mutual Understanding Meeting, QC meetings, and be 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 in the contract. They shall prepare specific sections of the Contractor Quality Control reports to specifically cover the work performed by the subcontractor/vendors performing the work.

2.7.1.5 Registered Fire Protection Engineer

A U.S. Registered Fire Protection Engineer (FPE) may be specified. This individual shall be an independent third party hired directly by the Prime Construction Contractor as an integral part of the Prime's CQC Organization. This FPE shall be responsible for review, approval, and coordination of all fire protection system submittals, calculations, shop drawings, etc.

2.7.1.6 *Submittal Reviewer[s] Duties and Qualifications*

The Contractor may be required to provide a Submittal Reviewer(s) on large complex projects. These reviewers will be in addition to the QC Manager, qualified in the discipline(s) being reviewed, to review and certify that the submittals meet the requirements of the Contract prior to certification or approval by the QC Manager. Some submittals require review by a registered professional, qualified in the appropriate discipline. Though project specifications will specifically identify the qualifications of the reviewer, examples are; 1) A Registered Mechanical Engineer to review portions of, or all of Division 15 submittals, 2) A Registered Structural Engineer to review Section 05120 calculations and shop drawings, etc. The Contractor cannot retain the Government's own A/E to accomplish this work.

2.7.1.7 *QC Assistant*

The Contractor may be required provide an Administrative Assistant at the work site on projects requiring a large volume of submittals, until the work has been accepted. Their primary duty shall be to assist the QC Manager in processing and maintaining files for submittals, preparing and publishing reports and meeting minutes. After primary duties are accomplished, other duties may be assigned.

2.7.1.8 *Manufacture's Representatives, Factory Representatives, etc.*

The technical specifications may also require the presence of manufacture or factory technical representative(s) to be on-site prior to, during installation and/or testing of material/equipment to ensure compliance with installation recommendations, etc. The representative(s) shall be considered an extension of the QC System during their presence on-site or off-site, as the case maybe.

2.8 Quality Control Plan

The Government must approve a QC Plan before the Contractor starts work. The plan outlines and describes the people and the process that the Contractor will use to carry out the requirements of the QC System, and identifies the Definable Features of Work (DFOW) for the project.

The Contractor QC System requires the Contractor to submit a QC Plan within a specified number of calendar days after receipt of the notice of award. This plan must detail the procedures, instructions, and reports the Contractor will use during the project. It will contain as a minimum the requirements listed in the specification section used in the contract, NFGS 01450 or NFGS 01450SF. Table 1., included in Appendix C, should be used as a reference describing the individual requirements for each element of the QC Plan.

2.8.1 Changes To The Quality Control Plan After Approval

If the Contractor elects to make any changes to the QC Plan, including any personnel, the Contractor must notify the Contracting Officer a minimum of seven calendar days prior to the proposed change. The

Contracting Officer also reserves the right to make changes to the QC Plan, including interviewing QC Personnel to verify submitted qualifications and if necessary, to have personnel replaced.

2.9 Meetings

2.9.1 Preconstruction Conference

The Preconstruction Conference or “Precon” is an important meeting required on all construction contracts for discussion of the administrative procedures for the contract. During the conference, ground rules are established and understandings reached that will affect relationships throughout the contract.

This is also an opportunity to emphasize the importance of the QC organization to the Construction Contractor. An extensive discussion of the CQM Program is best reserved for the *QC Plan* and *Coordination and Mutual Understanding* Meetings. However, discussion of the QC System requirements and their due dates should definitely be included. Where practical, the Preconstruction Conference and QC Plan Meeting (if required) may be scheduled for the same day, provided that the two agendas are properly separated.

2.9.2 QC Plan Meeting

The first meeting specifically relating to CQM is the *QC Plan Meeting*. This meeting is an excellent communication forum to ensure the QC Plan and Program is quickly and efficiently instituted. It is recommended that the ROICC ensure this meeting is included in each project specification. The purpose for meeting is to develop a mutual understanding of the QC Plan requirements. All QC requirements from section 01450 (or equivalent), and the requirements included in specification Sections 01110 (*Summary of Work*), and 01330 (*Submittal Procedures*) should be discussed.

2.9.3 Coordination and Mutual Understanding Meeting

The Contractor, their QC Manager, and the ROICC Construction Management Team shall meet to discuss quality control requirements after the QC Plan is submitted and prior to the start of construction¹⁰. The Project Engineer sets the time and place and prepares the agenda. The agenda must require the Contractor to present the QC System in its' entirety. The agenda and length of this meeting depends upon the Contractor's familiarity with the QC requirements. The purpose of this meeting is to establish a mutual understanding of the QC and QA requirements for the contract. The ROICC Construction Management Team should thoroughly review the proposed QC Plan before the meeting. As a minimum, the Contractor's QC Manager, Project Manager, Superintendent and the ROICC's Project Manager and the QA Representative should attend this meeting. Each subcontractor who will be assigned QC responsibilities

¹⁰ NFGS 01450, *Quality Control*

shall have a principal of the firm at the meeting. Every detail of the contractual requirements relative to QC should be discussed. The relationships of the QC Manager to the superintendent and to the Government representatives should be discussed. The basic philosophy of the CQM Program should be discussed.

The Contractor is required to explain in detail how three phases of control will be implemented for each definable feature of work. Minutes of the meeting will be prepared by the QC Manager and signed by the Contractor, the Architectural Engineer (optional) and the Contracting Officer. The Contractor shall provide a copy of the signed minutes to all attendees. The coordination and mutual understanding meeting must be repeated when a new QC Manager is appointed.

The Contractor is required to provide a room acceptable to the Contracting Officer for the one-day meeting. The room may need to be equipped with VCR and monitor equipment, overhead projector or other equipment, depending upon the complexity of the presentations.

2.9.4 Partnering Workshop

Partnering is a method of contract execution and management which strives to draw on the strengths of the Government, the Contractor, the designer and customer in an effort to achieve a quality project done right the first time, within budget, and on schedule. It is a communication tool to be used as a mechanism to resolve conflicts in the plans and specifications or QC/QA interpretations, at the lowest possible level. Partnering relationships are based upon trust, dedication to common goals and an understanding of individual expectations and values. Partnering efforts will vary from an informal introduction to partnering concepts at the Precon, to formal two or three-day training facilitated by an outside consultant. The level of effort will vary based on the Contractor's experience, the complexity of the project, and cost. If formal partnering is accepted, the terms of the partnering arrangement must be negotiated and agreed upon by all concerned. A modification to the contract incorporating the requirements and sharing of costs will usually be required. *Partnering should not be interpreted as a means to open the door to the compromise of contract requirements* established in the plans and specifications. The quality of the project is established by those requirements and the Contractor is bound to provide the level of quality specified.

2.9.5 QC Meetings

These meetings shall be held as required by the specification or as agreed to during the mutual understanding meeting. They should be used to reinforce the philosophy of the CQM Program. The QC Manager develops the agenda, conducts the meeting, and prepares the minutes. All problems or questions should be directed to him. Subcontractor QC personnel should also attend the meetings to discuss approaches to upcoming phases of work and correction of any deficiencies. Agendas for these meetings include items such as:

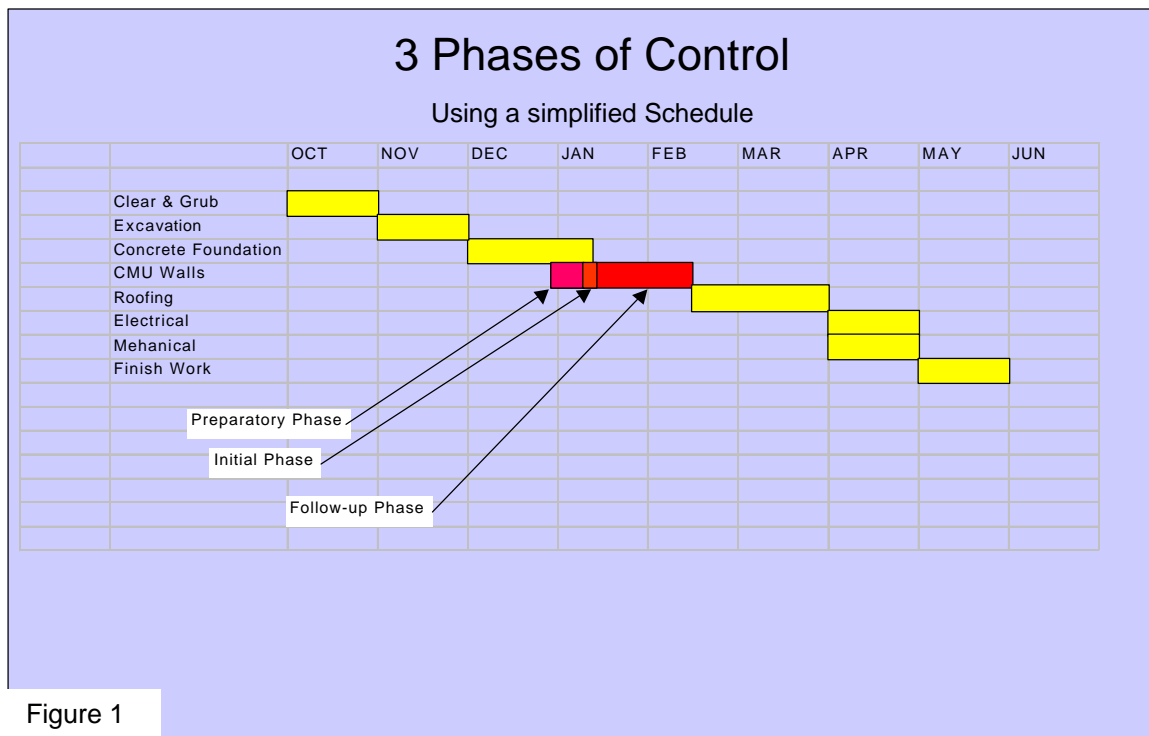
- Status of submittals;

- Review test reports for deficiencies and results;
- Review Construction Schedules to see which phases of control, tests or inspections are scheduled for upcoming definable features; and
- Review outstanding problems from minutes of last meeting.

The QC Manager shall be required to address how the Contractor intends to correct problems. As part of the documentation of the project, the QC Manager must keep minutes of the meeting and distribute them to attendees. These minutes become part of the official contract file.

2.10 Three Phases of Control

The Three Phases of Control, Preparatory, Initial and Follow up, is the backbone of the Contractor's Quality Control System. Figures 1 through 3 represent, in graphic form, the timing, who is involved and scope of the three phases of control.



3 Phases - What is involved?

Preparatory Phase:

- Review Plans and Specs
- Verify submittal approval
- Review test plan
- Check preliminary work
- Examine materials
- Discuss construction methods
- Review Safety

Initial Phase:

- Establish quality required
- Resolve conflicts
- Ensure testing is performed
- Review Safety

Follow-up Phase:

- Ensure contract compliance
- Maintain quality
- Ensure testing report is submitted
- Ensure rework is completed



Figure 2

3 Phases - Who is involved?

Preparatory Phase:

- QC Manager
- QC Specialists
- Superintendent
- Subcontractor Foreman
- QA Representative

Initial Phase:

- QC Manager
- QC Specialists
- Superintendent
- Subcontractor Foreman
- QA Representative

Follow-up Phase:

- QC Manager
- QC Specialist
- Superintendent
- Subcontractor Foreman
- QA Representative

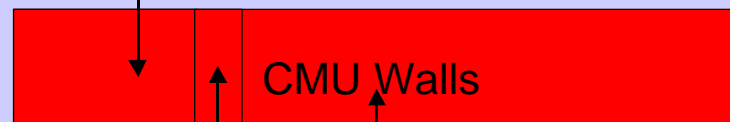


Figure 3

The Three Phases of Control shall adequately cover both on-site and off-site work and shall include the following for each definable feature of work. A Definable Feature of Work is a task that is separate and distinct from other tasks and requires separate quality control requirements. A DFOW is identified by different trades or disciplines and is an item or activity on the construction schedule. Each specification section could be considered a definable feature of work. But, there frequently is more than one definable feature of work under a particular section.

2.10.1 Preparatory Phase (Prior to beginning work on each DFOW)

The Contractor is required to notify the Contracting Officer at least 2 workdays in advance of each preparatory phase. This phase shall include a meeting conducted by the QC Manager and attended by the QC specialists, the superintendent, and the foreman responsible for the definable feature. The results of the preparatory phase actions must be documented in the daily CQC Report and/or in the Preparatory Phase Checklist. The following functions must be performed prior to beginning work on each definable feature of work:

- Review each paragraph of the applicable specification sections;
- Review the Contract drawings;
- Verify that appropriate shop drawings and submittals for materials and equipment have been submitted and certified by the QC Manager, and approved. Verify receipt of approved factory test results, when required;
- Review the testing plan and ensure that provisions have been made to provide the required QC testing;
- Examine the work area to ensure that the required preliminary work has been completed;
- 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;
- Discuss 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 definable feature of work; and
- 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.

2.10.2 Initial Phase (Once work begins for each DFW)

The Contractor must also notify the Contracting Officer at least 2 workdays in advance of each initial phase. The QC Manager conducts the initial phase with the QC Specialists, the superintendent, and the foreman responsible for that definable feature of work when construction crews are ready to start work on a definable feature of work. The QC Manager observes the initial segment of the definable feature of work to ensure that the work complies with Contract requirements. The results of the initial phase must be documented in the daily CQC Report and in the initial phase checklist. The initial phase must be repeated 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:

- Establish the quality of workmanship required;
- Resolve conflicts;
- Ensure that testing is performed [by the approved laboratory];
- Check work procedures for compliance with the Safety Plan and the appropriate activity hazard analysis to ensure that applicable safety requirements are met; and
- Prime and subcontractor foremen document all Initial Phase Checklists and include with the CQC Report.

2.10.3 Follow-up Phase (Performed daily)

The follow up phase is performed on each activity of work identified on the schedule for on-going work daily, or more frequently as necessary until the completion of each definable feature of work and documented in the daily CQC Report. The follow up includes checks on the following:

- Ensure the work for each activity is in compliance with Contract requirements;
- Maintain the quality of workmanship required;
- Ensure that testing is performed [by the approved laboratory];
- Ensure that rework items are being corrected;
- Perform safety inspections; and
- Prime and Subcontractors document follow-up phase for each activity using the CQC Report and the Contractor Production Report.

2.10.4 Additional Preparatory and Initial Phases

Additional Preparatory and Initial Phases shall be conducted on the same definable feature of work if:

- The quality of on-going work is unacceptable;
- There are changes in the applicable QC organization;
- There are changes in the on-site production supervision or work crew;
- Work on a definable feature is resumed after substantial period of inactivity; or,
- Other problems develop.

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

When the contract consists of off-site work, the Contractor must notify the Contracting Officer at least two weeks prior to the start of the preparatory and initial phases for the off-site work.

2.11 Submittals

One of the most important responsibilities of the QC Manager is to ensure that the Contractor, subcontractors, vendors, etc. submit their submittals in a timely manner to ensure the project schedule can proceed without any adverse impact. Critical submittals and long lead-time materials must be identified as separate activities on the schedule. The QC Manager must ensure that the submittal packages are complete so that valuable time is not wasted and effort lost on a resubmittal. Submittal status should be the lead off agenda item of the weekly QC Meeting. The QC Manager, Submittal Reviewer(s) and ROICC team must partner on this effort and look far enough ahead (2-3 months) to ensure that the submittals are submitted soon enough to be approved by the QC Managers or the Government. Timely submittal, review, and approval will enable the materials to be ordered and delivered to keep the project successfully, proceeding on or ahead of schedule.

Delays to the project schedule due to lack of diligence on submittals is unacceptable and should be viewed as a failure of the QC Manager and the ROICC Construction Management Team.

There are only two approval authorities for submittals, the Government (or their duly authorized representatives) and the QC Manager. The QC Manager has specific responsibilities regarding submittals:

- Coordinate all submittal actions
- Maintain necessary submittal records in an organized fashion
- Review and certify all submittals for compliance
- Approve all submittals except those designated to be approved by the Government

- Check all material and equipment delivered to the project for compliance with the contract.

All submittals, shop drawings, catalog cuts, samples, etc., unless otherwise specifically noted, must be approved and certified by the Contractor as conforming to the drawings and specifications.¹¹ In most cases, the contract documents will include NFGS Section 01330, *Submittals*, which will state the proper procedures for handling submittals.

2.11.1 Government Approved

Any submittal, which requires Government approval, should be clearly indicated in the technical sections of the specification. Submittals for items that are extremely critical or complex, or are considered an extension of the design, should be for Government Approval. These submittals still require review for conformance, and certification by the QC Manager. This includes instances where the approver would require knowledge of the design assumptions and calculations. Only a minor percentage of submittals should fall in this category. When submittals are Government approved, they may be reviewed by the designer, a separate A/E, or by an in-house NAVFAC expert. The ROICC Construction Management Team should review which specification sections require Government approval during the constructibility review. This is the opportunity to tailor the specification to ensure the high-risk areas receive Government approval.

2.11.2 Contractor Approved

The intent of having the Contractor approve submittals under the QC System is to assign maximum compliance responsibility to the Contractor. The Project Engineer, in-house engineer or designer should spot check the approved submittals, although the Contractor is required to approve submittals under the QC System. The design A/E is not retained to review all Contractor-approved submittals. The designer must use care in preparing documents and ensure that the Contractor will have sufficient information for each item to properly decide what item(s) will meet the requirement. Design calculations should not be necessary to make approvals. The submittal should most likely be Government approved as described above, in the event that such calculations are required. If the Contractor is required to submit design calculations for review, a licensed professional must prepare those calculations. An evaluation of the entire QC effort must be initiated and immediate corrective action taken if it is found the QC Manager is approving items that do not meet contract requirements.

Some contractors will not have the in-house capability to approve all shop drawings and submittals. In such instances, they should retain the services of outside organizations such as A/E firms, consulting

¹¹ FAR Clause 52.236-5 *Materials and Workmanship*

engineering firms, or independent testing laboratories to assist them. NAVFAC policy does not allow the Contractor to retain the services of the designer of record due to the potential conflict of interest.

Other contractors may expect their on-site QC Manager to review and approve all shop drawings. This is an unrealistic expectation. Very few individuals are sufficiently qualified in all the disciplines required for a particular project. Therefore, NAVFAC's suggested procedure is for the Contractor to have reviews made by qualified contractor staff personnel, or outside consultants, and forwarded to the on-site QC Manager for approval based on their recommendations. The ROICC Construction Management Team should identify those specification sections during the constructibility review so that the Contractor can retain outside professional service to properly review and coordinate submittals.

2.11.3 Variations (sometimes called "Deviations")

Submittals are intended to document that materials and methods used, and/or tests conducted meet the requirements of the contract. A submittal is a "variation" in those cases where a Contractor proposes an item or procedure that is different in any material way from the requirements specified. Variations to contract requirements must be submitted, reviewed and approved by the Government, prior to the work being done. In no case is a Contractor's QC Organization allowed to approve a submittal that constitutes a variation, regardless of whether they have approval authority over the submittal for the specified item. In addition, any submittal forwarded to the Government for approval that is a variation must be in writing, separate from the drawings and clearly marked as such. Failure to call attention to the variation is generally sufficient grounds for the Government to recover costs in the event that a non-conforming variation must be later corrected.

When the Contractor submits for a variation, they will include (but not limited to) the following:

- The reason for the variation;
- A warrant that the proposed variation is compatible with all other aspects of the contract work;
- Substantiated change in cost, if applicable, either plus or minus (if resulting in a cost reduction, it should be submitted as a VECP); and,
- Any change in the time required to perform the work.

Under the Design-Build approach to design, the Contractor-A/E partnership cannot approve variations to the approved design even if the variations are "technically sufficient". The Government must approve these variations.

2.12 Testing

Tests shall be identified as specific activities on the schedule. The ROICC Construction Management Team shall identify critical tests (e.g.; fire protection, elevators, TABs, high voltage electrical, etc.) that must be included as construction schedule activities, during the constructibility review. The ROICC

Team will coordinate the inclusion of this listing with the EFD/EFA Project Leader so the importance of these tests is clearly conveyed to the contractor. By listing these tests, it must also be communicated that this listing is not to preclude the incorporation of other testing activities, but is provided to emphasize the importance of specific tests. The Contractor is still required to perform any sampling and testing required under the contract.

2.12.1 Accreditation Requirements

In accordance with NAVFAC Memo dated 19 Dec 97 "Construction Materials Testing Laboratory Accreditation" (Appendix B), construction materials testing laboratories performing work for Navy construction contracts will be required to submit one of the following:

- A copy of the Certificate of Accreditation and Scope of Accreditation by an acceptable laboratory accreditation authority, or
- An acknowledgment letter from one of the laboratory accreditation authorities indicating that the application for accreditation has been received and the accreditation process has started.

As of December 1, 1999, construction materials testing laboratories performing work for Navy construction contracts must be accredited by one of the laboratory accreditation authorities. The laboratory's scope of accreditation must include the ASTM standards listed in the paragraph titled "Construction Materials Testing Laboratory Requirements" as appropriate to the testing field. The policy applies to the specific laboratory performing the actual testing, not just the "Corporate Office".

2.12.2 Construction Materials Testing Laboratory Requirements

The Contractor has to provide an independent construction materials testing laboratory, or in some cases establish a laboratory, accredited by an acceptable laboratory accreditation authority to perform sampling and tests required by the contract. Testing laboratories that have obtained accreditation by an acceptable laboratory accreditation authority listed in the paragraph titled "Laboratory Accreditation Authorities" should submit to the Contracting Officer, a copy of the Certificate of Accreditation and Scope of Accreditation. The scope of the laboratory's accreditation must include the test methods required by the particular contract. Testing laboratories that have not yet obtained accreditation by a listed acceptable laboratory accreditation authority must submit an acknowledgment letter from one of the laboratory accreditation authorities indicating that the application for accreditation has been received and the accreditation process has started. Certified statements, signed by an official of the testing laboratory attesting that the proposed laboratory, meets or conforms to the ASTM standards listed in the contract must be submitted to the Contracting Officer for approval.

2.12.3 Laboratory Accreditation Authorities

Laboratory Accreditation Authorities are:

- The National Voluntary Laboratory Accreditation Program (NVLAP) administered by the National Institute of Standards and Technology
- The American Association of State Highway and Transportation Officials (AASHTO) program
- The American Association for Laboratory Accreditation (A2LA) program
- The Washington Association of Building Officials (WABO) (Approval authority for WABO is limited to projects within Washington State)
- The Washington Area Council of Engineering Laboratories (WACEL) (Approval authority by WACEL is limited to projects within the Chesapeake Division and Public Works Center Washington geographical area)

2.12.4 Capability Check

The Government has 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 the Contract.

2.12.5 Test Results

The Contractor must cite applicable contract requirements, tests or analytical procedures used. He must provide actual results and include a statement that the item tested or analyzed conforms or fails to conform to specified requirements. The Contractor must notify the Government immediately if the item fails to conform. The cover sheet for each report must be stamped in large red letters "CONFORMS" or "DOES NOT CONFORM" to the specification requirements, whichever is applicable. A testing laboratory representative authorized to sign certified test reports shall sign test results. The Contractor must furnish the signed reports, certifications, and other documentation to the Contracting Officer via the QC Manager. A summary report of field tests is required at the end of each month.

2.12.6 Test Reports and Monthly Summary Report of Tests

The QC Manager is required to furnish the signed reports, certifications, and a summary report of field tests at the end of each month to the Government, and attach a copy of the summary report to the last daily CQC Report of each month.

2.13 Quality Control Certifications

2.13.1 Contractor Quality Control Report Certification

Each Contractor Quality Control Report that the Contractor submits shall contain the following statement:

"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."

2.13.2 Invoice Certification

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

2.13.3 Completion Certification

Upon completion of the work, or a specific portion thereof, the QC Manager shall furnish a certificate to the Government attesting that "the work has been completed, inspected, tested and is in compliance with the Contract."

2.14 Completion Inspections

The basic premise of the "completion inspections" required under the contract is that the Contractor certifies the work as completed in accordance with the contract before the finished project is presented to the Government for acceptance. There should be no surprises for the Contractor during the pre-final inspection, and no surprises to the client during the final walk through.

2.14.1 Punch-Out Inspection

Punch-Out Inspections may occur near the completion of all work or any portion thereof established by a completion time stated in the FAR clause entitled "Commencement, Prosecution, and Completion of Work," or stated elsewhere in the specifications. The QC Manager shall conduct an inspection of the work and develop a "punch list" of items that do not conform to the approved drawings and specifications. He shall include in the punch list any remaining items on the "Rework Items List" which were not corrected prior to the Punch-Out Inspection. The punch list shall include the estimated date by which the deficiencies will be corrected. A copy of the punch list shall be provided to the Government. The QC Manager or staff shall make follow-on inspections to ascertain that all deficiencies have been corrected. Once this is accomplished

the Contractor shall notify the Government that the facility is ready for the Government "Pre-Final Inspection."

2.14.2 Pre-Final Inspection

The Government will perform a pre-final inspection to verify that the facility is complete and ready to be occupied. The ROICC Construction Management Team should be sure to include members from Public Works and the end user of the facility to conduct the Pre-Final Inspection. A Government "Pre-Final Punch List" may be developed as a result of this inspection. Each deficiency noted in the punch list shall reference the applicable reference (NEC, specification paragraph, Drawing No., etc.) that the deficiency stems from. The QC Manager shall ensure that all items on this list are corrected prior to notifying the Government that a "Final" inspection with the customer can be scheduled. Any items noted on the "Pre-Final" inspection shall be corrected in timely manner and shall be accomplished within the time slated for completion of the entire work, or any particular increment thereof if the project is divided into increments by separate completion dates.

2.14.3 Final Acceptance Inspection

The QC Manager, the QC specialists, the superintendent or other primary contractor management personnel, and Government representatives will be in attendance at this inspection. Other Government personnel may be in attendance. The Government based upon results of the "Pre-Final" inspection will formally schedule the final acceptance inspection. Notice is given to the Contracting Officer at least 14 days prior to the final inspection. The notice shall state that all specific items previously identified to the Contractor as being unacceptable, along with all the remaining work performed under the contract, will be complete and acceptable by the date scheduled for the final acceptance inspection. Failure of the Contractor to have all contract work acceptably complete for this inspection will be cause for the Government to bill the Contractor for the Government's additional inspection cost in accordance with the Contract Clause entitled "Inspection of Construction."

Some contractors are notorious of proceeding well to the 99% stage and are not effective in getting their subcontractors to remobilize to knock out the punch list in a timely manner. The ROICC should consider punch list execution as one of the key elements of past performance in future source selections. This will provide the QC Manager and superintendent with the necessary motivation to execute the work expediently to deliver the project on/ahead of schedule.

2.15 Documentation

The CQM Program requires the Contractor to control quality and document that control. Site Safety inspections and environmental concerns are an integral part of construction quality and are therefore also

included on these reports. As noted in Chapter 1, this involves a significant effort on the part of the Contractor.

The Contractor's reports in conjunction with the Government's reports (discussed in Chapter 3) provide the written record of job progress, control inspections, and tests. It is therefore critical that the Contractor's reports are correct and timely. These reports are the official record of work performance and compliance with drawings and specifications. The QA Representative must obtain and review the Contractor's reports daily for accuracy and completeness. Any area(s) of disagreement must be resolved at the field level that day if possible. The Project Manager should review these reports and ensure the QC/QA process is working. The originals of these reports should be retained in the contract files for at least 1 year after final payment. They should then be forwarded as appropriate to the archives along with the other contract files.

The documentation that is generated by the QC System must be maintained in an orderly fashion. NFGS 01450 requires the QC Manager to maintain a series of 3-Ring binders for ready reference. These shall be arranged by specification section, and tabbed to include the following items:

- Reports for preparatory and initial phases of control for each definable feature of work
- Milestone inspections arranged by Activity/Event Number for inspections conducted by the Contractor such as:
 - ✓ Pre-closure inspections for walls/ceilings
 - ✓ Mechanical/Electrical Room inspections
 - ✓ Punch-out Inspections
- Pre-final and Final Inspection results
- Rework Items Lists
- Test Results
- Contract Modifications arranged in numerical order

The ROICC Construction Management Team shall tailor the specification on larger projects to ensure that there is a comprehensive documentation process.

2.15.1 Daily Reporting Requirements.

The Contractor must submit daily reports to the Government. The Contractor is required to submit their Contractor Production Report and a Contractor Quality Control Report to the Government on a daily basis. These reports are to be delivered to the Quality Assurance Representative no later than 1000 the following workday.

2.15.1.1 *Contractor Production Report*

The Contractor Production Report is not specifically a Quality Control report. Rather it is documentation of the efforts expended and progresses made on a daily basis. The Superintendent or Contractor's Project Manager, rather than the QC Manager prepare these reports. A sample of this report and the associated continuation sheet, which is used when the report lacks sufficient space, are included in Appendix E. Each entry in the Contractor Production Report must tie to the activity underway on the Contractor's schedule and clearly identify the labor support on site for each subcontractor.

2.15.1.2 *Contractor Quality Control Report*

The Contractor Quality Control Report is specifically intended to address the Quality Control System as it occurs on the project site. Space is included for documenting actions on all three phases of control, as well as rework. It is primarily intended to document the "follow-up" phase controls of the ongoing work and be clearly tied to the activities on the Contractor's schedule. Additional reports, discussed below are available to provide detailed documentation of the "preparatory" and "initial" phases.

The QC Manager prepares these reports. A certification by the QC Manager that the work is in compliance with the contract, except as noted in the report, is included. A sample of this report and the associated continuation sheet, which is used when the report lacks sufficient space, are included in Appendix F.

2.15.1.3 *Preparatory Phase Checklist*

Appendix G contains a checklist of activities that can be used to document the results of the required preparatory phase control meeting. All the items included on this checklist must be accomplished during the preparatory phase for each definable feature of work. This checklist provides a simple means of documenting that the meeting occurred on a particular DFOW and that the QC Manager may now proceed to the Initial Phase. It should aid the QC Manager in effectively accomplishing the preparatory phase of control.

2.15.1.4 *Initial Phase Checklist*

Similar to the Preparatory Phase Checklist, Appendix H contains a checklist that can be used to document the results of the required initial phase of control meeting. All items included on this checklist must be accomplished during the initial phase for each definable feature of work. Work shall be clearly tied to the applicable specification section and paragraph, and submittal being reviewed. Also identify any particular phasing or workmanship issues that must be followed, particularly addressing safety aspects of the installation. The Initial Phase should clearly capture and anticipate how the Contractor's team will build quality/safety in this phase of construction and how information will be clearly conveyed to the crews

conducting the work. The checklist provides a simple means of documenting that the meeting occurred and what the results were and will aid the QC Manager in effectively accomplishing the initial phase of control.

After preparatory and initial phase control meetings/checklist are completed, Daily reports (Production & QC) must fully document the work-in-place, test results, dimensional checks, equipment and material checks. If tests are not reported, it must be assumed that none were performed.

The use of these sample report formats is mandatory. Any other format must be approved by the ROICC and include the same information as shown on the samples. It is important that the reports be factual and complete as they provide a complete record of the contract.

2.15.2 Other Contractor Reports & Documentation

There are a number of other records and schedules required of the Contractor, in addition to the daily reports. They are a critical part of the overall written record of the contract.

2.15.2.1 Progress Schedule & Monthly Progress Report

The Contractor is required to provide an update of the approved progress schedule for the contract, and a report reflecting the progress to date with each invoice. These items are used in determining the valuation of the Contractor's progress payment. The Contractor is required to certify that he is invoicing only for work that meets the requirements of the contract.

2.15.2.2 Submittal Status Log

The submittal status log is a key part of the Contractor's QC System. The log shows the status of all shop drawings, certifications, and other submissions shall be maintained at the project site¹². The log should be prepared on a standard computer spreadsheet or database. It shall show the specification paragraphs requiring the particular submittal, a description of the submittal, the early start date, whether it is Contractor approved or Government approved, and actual submission and approval dates on all actions. This allows the QC Manager to track the current status as well as pending or planned actions required by the Contractor or the Government can be tracked. The Submittal Status Log is generated automatically by the SPECSINTAC program (included as part of the Construction Criteria Base CD-ROM set). If SPECSINTAC is not used to generate the specification documents, the Contracting Officer should make a determination what submittals are required and who will generate the Log.

¹² NFGS 01330 *Submittal Procedures*

2.15.2.3 *Testing Plan and Log*

The Contractor is required to prepare and maintain a Testing Plan and Log as part of the quality control documentation for the QC System¹³. The plan should show the specification requirements, definable feature of work, required tests, sampling/testing by, test location and frequency. With this information the planned and current status of all required testing can be monitored by both the QC Manager and the QA Representative. A sample Testing Plan and Log Form is provided as Appendix J.

2.15.2.4 *Schedule of Prices*

The Schedule of Prices is a document that is used to estimate progress payments. It is a Payment tool only, and is not to be used as a firm basis in estimating change orders. The schedule of prices may be deleted from the specifications when a cost-loaded network schedule is required by the contract or selected by the Contractor¹⁴.

2.15.2.5 *Contractor's Invoice and Performance Statement*

The Contractor is required to submit, generally monthly, an Invoice including all supporting documentation required under Sections 01450 and 01200 "*Price and Payment Procedures*".

2.15.2.6 *As-built Record of Materials Used in Buildings*

The QC Manager is required to maintain an accurate record of the materials incorporated into the facility¹⁵. Upon completion of construction the records must be submitted to the Government for record purposes.

2.15.2.7 *As-built Record Drawings*

Two, full size sets of drawings must be maintained on site and updated on a daily basis¹⁶, showing all deviations made from the contract drawings, including buried or enclosed utilities and conditions revealed during construction. Upon completion of construction the As-Built Drawings must be certified as accurate by the QC Manager and submitted to the Government for record purposes. The Quality Assurance

¹³ NFGS 01450 *Quality Control*

¹⁴ NFGS 01321A, *Network Analysis Schedules*, ¶ 1.5.7

¹⁵ NFGS 01770 *Closeout Procedures*

¹⁶ NFGS 01450 *Quality Control*

Representative must check the As-Builts each month. No progress payments should be made unless the As-Builts are certified to be up to date.

2.15.2.8 Rework Items List

The list should indicate the date identified, description of each deficiency, contract requirement, action taken, resolution and the date corrected. The QC Manager should establish an agenda item to review the progress of actions to correct the items identified on the rework list. The QC Manager should not be required to record a deficiency that is corrected on the same day it is discovered. The QC Manager should not allow the adding to, building upon or enclosing of, nonconforming work. A sample format for a Rework Items List is shown in Appendix K.

2.16 Non-Compliance

Specific actions are required on the part of the QC Organization in instances where non-compliance is encountered. The primary focus of the QC System is prevention. When this fails and non-compliance is encountered, the QC organization must identify, document, and correct the non-compliance.

The QA Representative must take decisive actions if the Contractor's QC Organization is not effective and an unacceptable number of non-compliance issues are identified.

Chapter 3. QUALITY ASSURANCE (QA) SYSTEM

3.1 Application.

This chapter addresses how to implement the Quality Assurance System for contracts over the Simplified Acquisition Threshold. These procedures form an effective, systematic approach to monitoring the Contractor's performance. The ROICC Team can assure that the project delivered to the client meets the requirements of the contract by monitoring and evaluating the Contractor's QC System, addressing shortcomings in the system as they occur and when necessary or required, by accomplishing detailed inspections on specific items of work.

A Field Team Advocate's most important contribution to the client is his team's efforts prior to the award of a project. We must ensure the needs of our client(s) (including the end user, the Public Works organization, and the major claimant) are satisfied. There is no point completing a contract to the exact requirements if the contract does not properly address the client's need. This client liaison begins during the acquisition-planning phase and continues through the entire life of the project, including design, solicitation, construction, turnover and warranty. Every member of the ROICC project team must participate in this process to meet the client's needs.

Quality Assurance, or QA, is the system by which the Government verifies that the Contractor's System of Quality Control (QC) is working effectively and construction complies with the contract requirements. The QA process starts well before construction. Proper Construction Quality Management involves a proactive approach beginning with the *Acquisition Planning* phase, through the *Contract Formation* and *Contract Administration* phases.

3.2 Implementation of Quality Assurance.

3.2.1 Role of the EFD/EFA

The EFD/EFA is responsible for issuing guidance to their subordinate field offices and ensuring that field office personnel are properly trained and certified as indicated in this manual. A primary function of the EFD/EFA CQM personnel is to provide training and guidance for both Field Office and contractor personnel in the implementation of the Construction Quality Management (CQM) Program. The Field Team Advocate shall ensure that field office personnel have a clear understanding of QA and QC responsibilities. A listing of training requirements¹⁷ for construction quality assurance personnel is provided in Appendix N. The P-445 certification process for all Project Engineers (T) and Con Reps (Q) is provided in Appendix N.

¹⁷ RADM Kubic's letter 31 Dec 98

EFD/EFA CQM personnel should periodically conduct Construction Assistance Visits (CAV)¹⁸ to assure field offices follow uniform construction procedures. The visits may be inclusive of or in addition to, the regularly scheduled reviews conducted under the Performance Measurement Assistance Program (PMAP). The occurrence or frequency of the visits may also be as directed by the Head of Construction. The Construction Assistance Visit should focus on the major and/or sensitive projects under construction and the Assistance Team should include members from the ROICC Office that will receive the next CAV.

The EFD/EFA is also responsible for reviewing field office workload and staffing needs and reallocation of resources as required within their own areas of responsibility.

3.2.1.1 Acquisition Planning (Pre-Award) Responsibilities (EFD/EFA)

The Procuring Contracting Officer (PCO) for larger projects is normally at the EFD/EFA. The PCO for locally awarded projects is normally at the Field Office. The PCO has the responsibility for the Acquisition Planning Process, but the ROICC Construction Management Team is a major stakeholder in this process. The Acquisition Planning Phase is the most important phase for the Government to affect the quality of the project.

The PCO responsibilities include:

- Develop an acquisition strategy for the project that best achieves the client's quality, schedule and budget objectives.
- Coordinate client inputs regarding design, acquisition schedule, budget, construction phasing and establish a realistic construction timeframe to achieve the client's need date. (Note: It is important to establish a realistic construction duration to avoid making a promise to our customers that cannot be kept.)
- Coordinate Design.
- Partner with the ROICC Construction Management Team to develop the General Requirements such as scheduling, quality control, etc., for the project.
- Review and incorporate constructibility review comments received from Field Office at 100% design phase.
- Incorporate the qualifications of the QC organization developed by the CQM Staff by the 100% design submission.

¹⁸ Chapter 5 and Appendix Q

3.2.1.2 Contract Formation (Award) Responsibilities (EFD/EFA) and ROICC

There has been a major shift in NAVFAC Acquisition policy for sealed bid IFB to best value RFP, Design-Build, and Multiple Award Construction Contracting. The ROICC Team now participates on the Technical Evaluation Board (TEB) and Source Selection Board (SSB) to select the Contractor who will provide the best value to our clients.

ROICC Team participation must include:

- Participate in the development of the Acquisition Strategy.
- Tailor the Division 01 "General Requirements" specifications including but not limited to the Summary of Work, Price and Payment Procedures, Schedules, and Quality Control.
- Develop a realistic construction schedule that will achieve the client's need date with appropriate time frames built into the schedule for potential changes.

3.2.1.3 Construction Administration (Post-Award) Responsibilities (EFD/EFA)

The EFD/EFA passes authority to administer the contract to the Field Office. The ROICC is the Administrative Contracting Officer (ACO) during the execution of the contract. At this point, the EFD/EFA plays a less direct role in the administration of the contract. Their role becomes one of supporting the field office in administrative, financial, legal and technical matters.

The emphasis on the Contractor's QC System has not changed the field office's responsibility for obtaining quality construction within the funds and time allotted. However, some additional duties have been created such as the review and approval of the QC Plan, QA inspections, and determining the degree and frequency of inspection for a particular contract. Fundamentally though, the field office is still responsible for acceptance of the work¹⁹.

Each field office shall develop a written Quality Management Plan (QMP). The Supervisory General Engineer/ROICC at the field office level is responsible for the development of this plan and addressing the overall operations of the field office. The plan provides a "road map" for field operations, organization, staffing responsibilities, training, pre-award activities, post-award activities, testing and documentation. To remain effective, the plan shall be updated at least annually for changes in workload, staffing, etc. The Project Engineer assigned to the project is responsible for developing a Quality Assurance Plan for the project.

¹⁹ FAR Part 46.104

The QC System must get off to a good start. During the early stages, the QA Rep should spend as much time as possible in attending three phases of control meetings. The following personnel should attend and participate in the preparatory and initial phase meetings:

- ROICC personnel
- QC Manager/QC Specialists
- Superintendent
- Foreman responsible for the definable feature of work
- Safety personnel

During site visits, field office personnel should focus on the processes by which the Quality Control System is implemented. If site visits reveal deficiencies, efforts shall be made to correct the process. Careful review of the three-phase control documentation may help determine the cause of the problem. After the preliminary review they should attend as many three-phase meetings as necessary to assure that they are being properly conducted. If the QC procedures are deficient, corrective action should be taken immediately. You should place emphasis on correcting Contractor deficiencies from the onset. Remember that problem avoidance starts before actual work starts. Once work is underway and deficiencies occur, rework is required to correct them. All corrective action taken by the field office should be properly documented.

3.2.1.4 Acquisition Planning (Pre-Award) Responsibilities (Field Office)

The field office is generally responsible for the following actions on all contracts that they will administer:

- a) Participate in the development of the Acquisition Strategy
- b) Participate in Design Reviews as directed by the EFD/EFA
- c) Perform constructibility reviews on projects at 100% Plans and Specifications
- d) Coordination with using agencies or local staff as directed by the EFD/EFA
- e) Tailor Division 1 and provide input regarding general requirements, provide input regarding contract performance periods, quality control and safety requirements
- f) Writing the Quality Assurance Plan

In addition, the field office functions as a PCO for smaller contracts, primarily Station funded contracts. In these instances, the field office performs essentially the same pre-award functions as the EFD/EFA.

3.2.1.5 *Constructibility Reviews*

The Constructibility Review process is of special concern, as it offers the opportunity to have the biggest and most cost-effective impact on quality for projects with 100% Plans and Specifications. A project design must not only be technically correct, but also practical to be “constructible”. A Contractor with normal capability must be able to construct the facility as designed, on the site provided, and in the time allowed. The contract documents must be inherently understandable, biddable, and enforceable within our normal contract procedures. The constructibility review seeks to identify design errors, omissions, and ambiguities, thus reducing the potential for modifications and lost time during construction. The field office project team and EFD/EFA CQM staff normally performs the reviews, but the review may also be done by an independent A-E Contractor.

A constructibility review consists of a complete review of the contract documents. The earlier the construction management and field office personnel are involved in the review process, the more effective the process. During this review we are specifically concerned with answering three questions:

- Are the drawings properly coordinated with each section of the specifications?
- Is the design practicable, and can it be built, taking into account all of the factors related to construction in the area, as well as general industry practice?
- Are the requirements identified in the contract enforceable?

There are many additional factors to consider in conducting a Constructibility Review. A comprehensive checklist for use in reviewing the contract documents is given in the NAVFAC P-446 and a checklist is also included in Appendix S. Some examples are:

- Clarity of all contract documents.
- Completeness of contract documents.
- Construction time. Is it appropriate for the size and complexity of the project?
- Potential conflicts with Government operations or other contractors. Is phasing of the schedule necessary?
- Compliance with applicable laws, environmental regulations, and ordinances.
- Site conditions.
- Site access.
- Significant construction inspection requirements.

Timing is everything. The review comments must be forwarded to the responsible Project Leader in time to incorporate into the final documents (solicitation). For maximum efficiency, comments should

be forwarded from the Project Leader to the A/E in time for consideration with any comments from the Interdisciplinary Coordination Review. The Project Engineer and Project Leader must work closely together as a team to schedule the Constructibility Review and maintain the acquisition schedule. The Project Leader must provide plans and specifications to the field office in sufficient time to allow the Project Team to perform a thorough review. Providing multiple sets of documents to the field office or other reviewers can shorten turnaround time. Delays by the design A/E in providing the documents for review can result in hurried or incomplete reviews. The Project Leader can fail to incorporate changes into the bid documents. An Amendment to the solicitation to delay the bid date may be necessary to provide adequate time for the constructibility review and properly incorporate the Field Office's comments.

The primary objective of the Constructibility Review is to achieve a project design that is "buildable", "biddable", enforceable and efficient. Therefore, Project Engineers and Con Reps/ETs experienced in construction of similar complexity and magnitude should conduct these reviews. ROICC's are encouraged to develop a quarterly schedule for these reviews and use a team approach to accomplishing the reviews.

The field office that will administer the project is tasked with the constructibility review. They are at or near the project site, will have local knowledge of site conditions, special constraints, know the abilities of local contractors and their equipment and methods. In addition, they are the most motivated. Each error, conflict, omission and ambiguity, identified, avoids potential modification and extra work. Every hour spent on a Constructibility Review will save 40 hours handling RFIs and change orders after award. The advance bid allows the office time to schedule workload, assign personnel, and develop a Quality Assurance Plan (QAP). The Project Team and the Contractor's Team are placed at the same level of understanding at the start of the project.

The Project Leader may also choose to hire an A/E other than the designer of record to help the Field Office conduct the constructibility review. This might be prudent where the appropriate field office does not have the desired skills for this type of facility or where their workload might prevent timely completion of the review. This scheme may be prudent if the ROICC has hired an A/E for additional Title II inspection services. Their review would enhance their Title II and Con Rep's ability to more effectively carry out this inspection. The Project Leader should assure that a review from the EFD/EFA CQM Staff is coordinated with the field office review. This may be a complete review or could focus on certain specialty aspects of the project such as electrical or mechanical systems, roofing, substructures, etc.

The constructibility review process, properly executed, will have a major contribution to quality in the facility acquisition process. It should be a specific item in the Acquisition Plan. The corporate knowledge of the field office personnel is invaluable. Field Office personnel are familiar with the Naval activities in their areas and with the peculiarities of the project sites such as drainage patterns, underground utilities, disposal sites, soil types and problems experienced by previous contractors.

Project managers are paid to be proactive...not reactive. There is no excuse for a ROICC not performing a constructibility review on an important project. But don't think that constructibility reviews are just for large projects. ROICCs historically struggle with the smaller locally designed projects. Use constructibility reviews as an effective tool on locally designed and awarded projects to built quality into your project prior to award.

3.2.1.6 Contract Formation (Award) Responsibilities (Field Office)

When acting as the PCO, the field office performs essentially the same pre-award functions as the EFD/EFA. In other instances, the field office may perform certain activities such as Bid Openings for the EFD/EFA as directed.

3.2.1.7 Construction Administration (Post-Award) Responsibilities (Field Office)

NAVFAC Quality Assurance procedures are not intended, or should they be allowed, to replace Quality Control Provisions required of the Contractor. When the Contractor's QC is unsatisfactory, the Project Manager must apply the necessary corrective measures, as outlined in section 3.5.2 to obtain an acceptable system. The temptation to provide continuing full time inspection in lieu of enforcing the required Contractor efforts in QC must be avoided. This practice is unfair both to the Government and to the unsuccessful contractors. Quality Control by the Contractor and Quality Assurance by the Government are both necessary and must be applied.

3.2.1.8 Review of the QC Plan

The QC Plan establishes the procedures the Contractor will use throughout the project. The plan is subject to review and approval by the Government. During a review, the items in Appendix A and Appendix C should be addressed in conjunction with the specification section from the contract in question. This review should be accomplished as quickly as possible. EFD's/EFA's/OIC's should also establish procedures to assure that approvals made at the Project Manager level are consistent from one office to another.

Chapter 2, paragraph 2.3 discussed incomplete QC Plan approval using "Approved as Noted". As a minimum the Project Manager shall consider the following:

1. Acknowledgement of the full range of QC requirements as evidenced by a complete package with all required items identified. Items may be incomplete, or even not present, but the Contractor should clearly indicate that he understands that the requirement for an item exists and will provide the information or item, as it becomes available.
2. Basic organizational structure of the Contractor's Project Team, including the appointment of the QC Manager, complete with requisite authorities.

3. Established procedures for the basic processes that must run from the beginning of the project, including submittal processing, rework procedures, documentation forms and procedures.
4. Control procedures including testing and inspection for those construction activities that will be accomplished prior to submission and approval of the complete plan.
5. Acknowledge any work activities not covered by the plan will not start, and the Contractor will furnish the completed plan and receive approval before proceeding with work beyond the scope of the plan as approved.

The submittal should clearly be marked "Approved As Noted" and the notes should specifically address the following issues:

1. The acceptability of the QC organization, including the manager and staff.
2. The date the Contractor must submit the remainder of the information. This date should be coordinated with the Contractor's construction schedule.
3. Specific comments regarding any of the material contained in the plan as submitted, including errors, proposed corrections, etc.
4. A statement that failure to provide the completed plan in sufficient time for review and approval will be considered a contractor caused delay. Any impacts to the construction schedule will not entitle the Contractor to an adjustment to the Contract Completion Date (CCD).

Authority to approve these plans "As Noted" must not be delegated below the ROICC level. All ROICC's must exercise a good judgement when approving Contractor QC Plans. To approve an inadequate QC Plan virtually assures inadequate construction project quality. The "Approved as Noted" approval of an incomplete plan allows the Contractor to commence work as quickly as possible which is beneficial to both parties. However, each contract's requirements must be individually applied with regard to approving a QC Plan "as noted". This ensures that:

- The Contractor submits a well-organized plan in a timely manner to avoid delays in meeting the specified contract completion date;
- The Contractor thinks through the execution of the project and establishes the necessary controls to ensure quality;
- The ultimate goal of delivering a quality product to the client is achieved; and
- The Government preserves its' rights under the contract.

After the QC Plan is reviewed and approved, the Project Manager must monitor its use to assure that the Contractor's QC organization is functioning as planned. This is the essence of the Quality Assurance System. The Project Manager must take affirmative steps to correct Contractor deficiencies in the implementation of the QC provisions of the contract. This can be accomplished by discussing these deficiencies with the Contractor during periodic QC Meetings.

The QC Plan is likely to require updating throughout the life of the project. Changes to the approved QC Plan, including personnel changes, are subject to the prior approval of the Government.²⁰

Failure to comply with the QC provisions of the contract should result in non-payment by the Government for any non-conforming work and any work dependent upon non-conforming work.²¹ In cost-reimbursement contract situations, non-payment is normally not an available option. In these cases, appropriate adjustments should be made to the Award Fee calculation. Dismissal of the Project Superintendent, QC Manager, or other members of the Contractor's staff²² should be considered if non-compliance continues.

3.2.1.9 *Developing Project Quality Assurance Plans*

Every Project Manager shall develop a written Quality Assurance plan for each construction project. Any such plan should be based on the particular design, expertise of construction personnel available, the QC effort being expended, the complexity of the job, and its time for completion. The QA Plan should clearly delineate the function and responsibilities of the team members. Its purpose is to help the Project Manager plan quality assurance activities to monitor the most critical construction activities. Changing job conditions should result in the plan being periodically reviewed and updated. An example of areas to consider in preparing a Quality Assurance Plan is shown in Appendix M.

To determine the frequency of inspections and the amount of QA time and effort required on any project, the Project Manager must consider the following:

- Effectiveness of the Contractor's QC System.
- Previous experience with the Contractor.
- Quality of the drawings and specifications.
- Complexity, size, urgency and location of the job.

²⁰ NFGS 01450, ¶ 1.4.3

²¹ FAR Clause 52.232-5 *Payments under Fixed-Price Construction*, and NFGS 01200 ¶ 1.6.1

²² FAR Clause 52.236-5 *Materials and Workmanship*, and NFGS 01450 ¶ 1.4

- Resources available.

3.3 Role of NAVFAC Quality Assurance Personnel

The ROICC Field Office Model has been promulgated by NAVFAC as the baseline, notional organizational structure for NAVFAC Field Offices²³. It identifies positions in the Contracting (K), Technical (T), and Quality (Q) areas of responsibility with respect to contract administration functions. The Quality Assurance Representative is primarily responsible for the execution of the Quality function in the Field Office Model. For additional definition of these positions, see "Separation of Functions" in the Glossary section of this manual.

3.3.1 The Role of the Quality Assurance Representative (QA Rep)

The CQM Program places responsibility on the QA Rep to be cognizant of the Contractor's activities in order to monitor the critical work elements. The QA Rep is the primary point of contact at the jobsite level between the Contractor and the Government. Any communications affecting the execution of the work should always include the QA Rep.

A close, professional working relationship between the QA Rep and the QC Manager is important. The QC Manager should be given every opportunity to perform their required duties and correct any deficiencies.

On most contracts, the QA Rep should visit the work site each day. As a minimum, he must visit the work site once a week to maintain awareness of the project status. A concise QA Plan can help the QA Rep make the most effective use of limited field time. The duration and frequency of visits will depend on the number of contracts assigned as well as the problems being encountered on other contracts. As a general rule, the QA Rep should spend more time on a contract at the beginning to ensure that the Contractor's QC System is functioning properly. Within several weeks they should be able to determine whether or not the quality control organization is functioning in a satisfactory manner. They may then be able to devote less time to that project and use the time saved on other projects where their presence is more critical. Attendance at all meetings with the Contractor, such as the Preconstruction Conference and QC meetings is strongly recommended. The QA Rep is also encouraged to attend the preparatory and initial phases conducted by the Contractor.

The QA Rep must daily review all Contractor reports and inform his supervisor of any errors or omissions. Timely documentation review and appropriate follow up action are critical to a successful job. Reports inconsistent with the QA Rep's personal knowledge must be reconciled immediately.

²³ NAVFAC Letter dated 31 December 1998, see Appendix L

The primary point of contact for the QA Rep on items of quality, workmanship, or the construction in general should be the QC Manager. However, this does not preclude the QA Rep from dealing with the superintendent on the same items as the QC Manager or items that are normally their responsibility such as site safety, utility outages, the overall construction schedule, and access to the site.

3.3.1.1 Specific Duties

Carrying out the responsibilities outlined above requires the QA Rep to accomplish the following tasks on a routine basis, both pre- and post-award:

- Observe enforcement of safety provisions during normal site visits.
- Become familiar with the contract documents, in their electronic or hardcopy form and request correction through proper channels of any conflicts, omissions, errors, etc., that is found.
- Update the contract documents to incorporate any amendments issued.
- Become familiar with the QC Plan.
- Review and comment on Construction Schedule and Schedule of Prices or the Network Analysis.
- Assist in obtaining gate passes and clearances for contractor personnel.
- Check submittals for proper approval stamps.
- Act as contractor's normal contact with the Field Office.
- Assist in arranging for contractor use of Government utilities and Government-furnished equipment.
- Coordinate construction work between contractors working in the same area on other contracts.
- Make or arrange for inspections to be performed by the Government.
- Verify and obtain decision on changed conditions.
- Inspect critical items and monitor specific testing. (In conjunction with the QC Manager under the QC System).
- Make sufficient site visits to determine adequacy of QC System performance, such as:
 - ✓ Check certifications of materials and equipment delivered to the site.
 - ✓ Spot-check workmanship.
 - ✓ Observe testing procedures.
 - ✓ Review submittal register, rework items list, testing plan and log, etc.

- ✓ Evaluate Contractor's Quality Control System.
- Obtain and review the daily QC and Production reports in a timely manner and take necessary action.
- Prepare the QA Report (QAR) when required.
- Prepare Construction Contract Non-compliance Notices.
- Review and make recommendations on Contractor payment requests.
- Contribute to preparation of Project Manager contract modification recommendations.
- Witness final tests and make final inspections for acceptance. (In conjunction with the QC Manager).
- Check status of "as-builts" maintained by the Contractor.
- Perform Labor Standards Interview. (Must be done by Government Employees).
- Conduct pre-final and final inspections.
- Scheduling and coordination of required utility outages.

3.3.1.2 Quality Assurance Representative Actions Concerning Deficiencies

The QC organization should be given the opportunity to detect and initiate correcting deficiencies. The QA Rep's responsibility is to assure the deficiency is corrected. If a deficiency is not corrected within 24 hours, the QC Manager is required to track the deficiency on the Rework Items List. If the deficiency is not logged on the Rework Items List, the QA Rep shall issue a Construction Contract Non-Compliance Notice. If the deficiency will significantly impact the construction schedule, the QA Rep must immediately notify the Project Manager and other supervisory personnel.

The QA Rep should continually monitor the Rework Items List maintained by the QC Manager on each contract using the QC System. The log should record the following:

- Date identified;
- Description of each rework item;
- Action taken/resolution; and
- Date corrected.

3.4 Reporting Requirements

The basic reporting requirement is to provide an accurate record of the work in progress and the as-built condition. This will help minimize later misconceptions concerning methods and progress of construction. Both the Government and the Contractor contribute to this contract record.

3.4.1 Quality Assurance Reports.

Reports prepared or initiated by the QA Reps, Government personnel, and others, such as A/E support personnel, include the following:

- Quality Assurance Report,
- Construction Contract Non-compliance Notice (NAVFAC 4330/36), and
- Labor Standards Interview Report DD 1567

Generally, government initiated construction reporting will be on an exception basis; however, the Project Manager may increase the reporting requirements at any time deemed necessary.

3.4.1.1 QA Representative's Remarks Section on Contractor's Reports

The "QA Representative's Remarks" section on the Quality Control Report, (included in Appendix F.), is for QA Rep's remarks on routine matters and exceptions to the Contractor's reports. Remarks should be directed at the Contractor's various operations, job progress, adequacy of the QC System and potential problems. The QA Representative shall note any disagreement or question regarding the accuracy and completeness of the report. A copy of any remarks must be returned to the Contractor for resolution and appropriate reporting in subsequent Contractor reports or by another acceptable method.

Use of the "Remarks Section" on the reports is also appropriate to record that the QA Rep was unable to visit the project on the day represented by the report.

As discussed below, the optional "QA Report" (QAR) shown in Appendix I may be used when additional space is needed to supplement and continue the "QA Rep's Remarks" Section on the Contractor's reports, or when it is necessary to document facts or conditions in detail.

3.4.1.2 The Quality Assurance Report (QAR)

The QA Report (QAR) is an optional form for use on construction contracts. A copy is shown in Appendix I. The reporting frequency is on an as-needed basis. The following are considered general guidelines for use of the QAR and do not preclude the EFD/OIC/AOIC from varying them as circumstances dictate. The QA Rep should prepare a QAR whenever:

- 1) Specific work is inspected for contract compliance. This does not mean whenever the site is visited. "Normal" visits can be reported solely through use of the QA Rep's remarks on the QC report.
- 2) Situations are discovered which adversely affect contract compliance (either time or quality). These may also be reported using the QA Rep's remarks on the QC report.
- 3) A team inspection is performed.
- 4) Verbal instructions are given to the QC Manager or Project Superintendent. These may also be reported using the QA Rep's remarks on the QC report.
- 5) There is a lack of application by the Contractor of QC requirements or failure to take corrective action on known deficiencies.
- 6) Uncorrected hazardous safety conditions exist.
- 7) There is a lost time accident.
- 8) When the Contractor's own daily reports are not received and reviewed in a timely manner (i.e. the following day).

If a QAR contains disagreement, dispute or any issue requiring further resolution, a copy shall be forwarded to the Contractor's home office or Project Manager.

3.4.2 Reviewing the Contractor's Reports

The QA Rep has the prime responsibility to ascertain the completeness and accuracy of the Contractor's Production and Quality Control Reports. They play an important role in settling disputes, especially those involving extended overhead and impact costs. Success in requiring the Contractor to properly execute these reports can substantially reduce the volume of documentation prepared by the Government. The QA Rep must review all reports immediately upon receipt to ensure their accuracy and completeness. The Contractor must correct any discrepancies. The QA Rep should use the space provided on the form to comment on, or take exception to, information indicated in those reports. Incorrect or erroneous information must be commented upon and appropriate follow-up action taken. Failure to take exception to incorrect information contained in the report constitutes constructive acceptance of the Contractor's version of events.

The QA Rep should check the following when reviewing reports:

- Phases of construction (preparatory, initial, and follow-up) under way on the day of the report, and the specific location of the work performed.

- Results of quality control procedures and inspections, including the nature of deficiencies observed and the corrective action proposed by the Contractor. This should include dimensional checks and validation of work elements along with safety violations and the location of such inspections. Minor deficiencies that are corrected on the same day they occur need not be included in the report. However, any deficiency that is carried over to the following day must be shown.
- Test results, including failures and remedial action to be taken. When test results cannot be completed by the time the report is submitted, a notation should be made that the test was performed and the approximate date results will be available. Delayed test results should be submitted with the report on the date received. Make sure Testing Log is kept updated.
- Any offsite inspection activities and the inspection of materials and equipment at the job site. Specific impacts, or lack thereof, of adverse weather conditions on the job.

3.4.3 Construction Contract Non-compliance Notice

This is a standard form (NAVFAC 4330/36) initiated by the QA Rep or other Government representatives to inform the Contractor and their home office of a deficiency requiring corrective action. The effectiveness of the form will be lost if it is issued to the Contractor for every deficiency regardless of magnitude or importance. If the Contractor has acknowledged the deficiency and correction is forthcoming, this notice should not be used. Further details on the use of this form are included in Appendix P.

3.4.4 Labor Standards Interview

The Defense Federal Acquisition Regulation Supplement (DFARS) provides a form used to make regular checks of compliance with contract labor standards. These regular compliance checks should include the following:

- a) Employee interviews to determine classifications and rate of pay, including fringe benefit payments. DD Form 1567, "Labor Standards Interview," (PACDIV uses GSA Form SF 1445) shall be used for recording such interviews.
- b) On-site checks of type and classification for work performed and number of workers.

The QA Rep should be tasked with most items on the form. The item "FOR USE BY PAYROLL CHECKER" is normally the responsibility of the field office clerical staff. By Department of Labor policy, Labor Standards Interview functions may be accomplished only by Government employees. Further guidance is contained in the NAVFAC P-386, "*Contractor Labor Relations Manual*".

3.5 Enforcement of QC

Contractors must accept QC responsibilities. When contractors fail to control their own construction processes and those of their subcontractors and suppliers, enforcement becomes a vital element. Past experience shows the Project Manager's timely and firm action is a major factor in resolving QC issues. This includes elevating problems to appropriate levels within the Contractor's organization, as well as use of the various enforcement mechanisms available in the contract.

3.5.1 Quality Management Problems

The difficulties associated with QC vary, but most fall into the following categories:

- Commencing work without an acceptable, approved QC Plan and Safety Plan.
- Inadequately developed QC provisions.
- Inadequately enforced QC provisions.
- Delay in submitting an acceptable QC Plan.
- Inadequate qualifications of personnel in the quality control organization.
- Untimely or incomplete daily reports.
- Inadequate preparatory, initial and follow-up controls on each DFOW.
- Failure to take corrective action when deficiencies exist.
- Late and incomplete reporting of tests and inspections.
- Lack of interest by contractor's management personnel.
- Failure to verify punch-list item completion.
- Submittal Processes

3.5.2 Corrective Measures

The contract provides the means to enforce contractor compliance. Reasonable but firm application of these provisions can be as effective in enforcing QC as it is for any other contract requirement. Implementation of any enforcement action requires careful consideration, along with complete and timely documentation. Actions that should be considered are:

- "Removal and Replacement of Defective Materials or Workmanship." FAR 52.246-12 "Inspection of Construction," clause is the appropriate provision for directing the Contractor to replace unsatisfactory work. The Project Manager must notify the Contractor in writing of nonconforming work and of his obligation to replace material or correct workmanship as necessary. The Contractor must not be allowed to build upon defective work.

- "Disallow Payment." No payment shall be made for nonconforming work or subsequent work that will be affected in correcting the nonconforming work.
- "Retention on Invoiced Amounts" In addition to disallowing payment, you may also withhold payment²⁴ in the form of retention from the Contractor's request for payment. The payment clause applies to each of the above items.
- "Non-Payment for Unapproved Materials." Materials used or installed without an approved submittal should not be paid for until such time the submittal is approved and the materials verified as conforming to the submittal.
- "Removal of Incompetent/Careless/Objectionable Personnel." The contracting officer may direct the Contractor to remove any employee deemed incompetent, careless, or otherwise objectionable²⁵. Prior to removal, the Project Manager should convene a meeting with the Contractor and attempt to correct the situation. Once the QC Manager has been removed, work should not be allowed to proceed until the Contractor provides an acceptable replacement. Reluctance to replace an incompetent QC Manager will only lead to greater problems as the job progresses. Any removal must be supported with complete documentation showing carelessness, negligence, or other behavior detrimental to contract performance.
- "Stop The Work." The ROICC Construction Management Team can direct the Contractor to stop work on any unsatisfactory item or work element pending satisfactory correction of the deficiency. The Contractor should also be directed not to install materials that lack an approved submittal. This is particularly important if the materials or defective work will be enclosed, will support further construction, or will be inaccessible if further work proceeds. These directives should not be designated as "Stop Orders," but should cite the deficiency and state that no further work be accomplished that will interfere with correction of the deficiency²⁶.
- "Contractor Performance Evaluation." The Construction Contractor Performance Evaluation Report includes appraisal of the Contractor's Quality Control effort. Failure by the Contractor to provide an adequate QC System or marginal performance despite repeated written notification should result in an unsatisfactory rating. Interim unsatisfactory appraisals should be considered when performance has been unsatisfactory for a reasonable period of time. The significance of this action should be explained to the Contractor as well as the exact reasons for such action.

²⁴ FAR Clause 52.232-5 *Payments under Fixed-Price Construction*

²⁵ FAR Clause 52.236-5 *Materials and Workmanship*

²⁶ FAR Clause 52.236-5 *Materials and Workmanship*

Conversely, when a contractor exercises good quality control and produces quality construction, it should be noted in the performance appraisal. Recognition of outstanding QC Systems and quality workmanship should be given when appropriate. Information on evaluating performance on construction contracts is given in P-68.

- "Default." The "Default (Fixed Price Construction)" clause is the authority for terminating the Contractor's right to proceed with the work. This is the ultimate action that can be taken against the Contractor and must be in accordance with the requirements of the "Default (Fixed Price Construction)" clause and applicable NAVFAC regulations. Only in justifiable instances will default recommendations be sustained. This remedy is not within the authority of the ROICC and must be closely coordinated with the EFD/EFA CCO²⁷ (Chief Contracts Office).

3.6 Design and Construction Quality Related Issues

3.6.1 Building Codes and Life-Safety

Codes are written to protect the public and governmental entities from people or firms who do not comply with laws governing building construction and safety. Codes have stated purposes such as providing for safety, health, and public welfare through structural strength and stability, means of egress, adequate light and ventilation and protection to life and property from fire and hazards incident to the design, construction, alteration, removal, or demolition of structures. There are three nationally recognized model-building codes: *The Uniform Building Code*, *The BOCA National Building Code*, and *The Standard Building Code*. In addition, there are many state, county, and city codes, as well as standards and regulations of Federal Agencies that deal with buildings and systems. Specific area or discipline codes are also available, such as *NFPA 101, Life-Safety Code*, *NFPA 70 (National Electric Code)*, *OSHA* and *The Uniform Plumbing Code*. Organizations such as ASME, ANSI, and ASHRAE publish nationally recognized standards that are incorporated into various Codes.

To be enforced, a Code must be adopted by legislation, usually at the local or state level. Unlike most other construction in the United States, DoD facilities built on DoD-owned property are exempt from the jurisdiction of state or local governments, and consequently, do not fall under the requirements of locally- or state-adopted codes²⁸. Therefore, various codes and standards must be referred to as needed in specific construction contract specifications. It is the responsibility of the design agent, the designer, the Contractor, construction contracting office, and QA Representatives working together to ensure

²⁷ P-68

²⁸ NAVFAC Planning and Design Policy Statement 95-02

appropriate code requirements are included in the contract and met during construction to protect the life-safety of the occupants of the facility.

3.6.2 A/E Firm Liability for Design

The issue of A/E Liability must be considered whenever a design deficiency modification is issued.²⁹ The CO must determine: 1) the extent to which the A-E may be responsible for such design deficiency; and 2) whether any increased costs resulting from such design deficiency should be assessed against the A-E. The determination and any subsequent action shall be documented in the contract file.

A design deficiency is any deficiency in the design, drawings and specifications that may result in the Government incurring damages. A-E liability for a design deficiency may result from either an A-E's negligent failure to meet the standard of care reasonably associated with the A-E profession or its breach of the contractual duty or skill and care in performing design services. The determination of A-E liability requires answering affirmatively all of the following questions:

- Is the construction modification attributable to a design deficiency?
- Does the design deficiency stem from an error or omission by the A-E?
- Does the design deficiency by the A-E result from the A-E's negligent failure to meet the standard of care reasonably associated with the A-E profession or from a breach of contractual duty? ROICC's must recognize that the negligence standard does not imply "perfection" in the design.
- Has the Government suffered (financial) damage as a result of the design deficiency?

Not all errors meet the requirements noted above, and other circumstances outside the view of the field office may also influence the decision to pursue the A/E for damages, even in cases where liability appears clear cut. Therefore in cases where it seems that A/E liability should be pursued, close coordination with the EFD/EFA (or other Design Agent) is required.

3.6.3 ROICC Review of Submittal Variations

When reviewing and approving submittal variations, Project Engineers should consider the following points:

- Obtain the technical support if the issue is outside your area of technical expertise.

²⁹ P-68

- The variation is a minor change to the contract requirements to substitute essentially equivalent items or procedures.
- All variations should be evaluated for initial and life cycle cost impact. At the point that a deviation is determined to impact project cost, it must be evaluated as a modification to the contract, usually using the Value Engineering Change Proposal process. Any initial cost savings should be recovered from the contract cost. If a variation results in an overall increase in life cycle costs, it should generally not be approved unless the initial cost savings are significant enough to offset the increase. Project Engineers should be careful not to “build-in” long term maintenance problems by approving deviations. Increases in initial costs that may have a long-term life cycle cost benefit must also be handled as modifications rather than variations.

Variations should be evaluated for conformance to the design intent and the overall integrity of the design. Most variations will require review by the designer of record prior to approval, which is the reason that the NFGS includes a modified review period for all variations/deviations³⁰.

3.6.4 Evaluation of Contractor Performance

Design, Construction and Service Contractor performance on contracts must be documented and substantiated³¹. These reports are used in determination of responsibility³², and can also be used in evaluating suitability for a particular award under Negotiation award procedures. Fair evaluation of contractor performance is a critical part of building business relationships with reputable firms, and removing less reputable firms from consideration. Instructions regarding the evaluation process are contained in the P-68, *NAVFAC Contracting Manual*.³³

3.6.5 Construction Schedules

Schedules are required on most construction contracts and task orders issued by NAVFAC. Depending on the specification requirements, the schedule may be anything from a single sheet hand drawn bar chart to a computer-developed Critical Path Method (CPM) schedule with many activities and relationships. The Government is required to perform a review on the Contractor’s schedule and accept a

³⁰ NFGS Section 01330, ¶ 1.5.4.4

³¹ FAR Part 36.201 and Part 36.604

³² FAR Part 9.104

³³ P-68

"practicable" schedule³⁴. Neglecting to review and accept the schedule may be viewed as acceptance of the schedule as submitted. The Government's review will concentrate on specified scheduling requirements/constraints and contractually assigned responsibilities. It is however, appropriate to point out obvious logic errors contained in the schedule and ensure that it is complete and in sufficient detail to allow the Government to monitor the progress of the work. You should contact your EFD/EFA CQM Staff for assistance in reviewing schedules when needed. See Appendix O for Review/Analysis checklists for Initial [Baseline] Schedules and Updated Schedules.

The schedule is the Contractor's tool to manage the project and a statement to the Government of how the Contractor will accomplish construction within the guidelines of the contract. It is the tool the Government will use to measure the Contractor's progress throughout the contract, and the one the QA Rep should use to plan the most effective use of their limited field visit time. Knowing which activities are scheduled allows pre-planning of site visits to look at the most critical items.

Schedules are intended to be a dynamic tool; activities, logic, resources, etc. are changed intermittently to indicate the Contractor's approach to the construction. A properly maintained schedule is an important tool for managing the project and processing payments. Critical Path schedules are particularly useful as a record for construction progress, in determining fair entitlement to extensions of the performance period, and for evaluating contractor's claims for delay costs and time extensions.

The critical path will continually evolve as work progresses. Activities not originally on the critical path can become critical. The Contractor is required to maintain the schedule and reflect the current status of the project³⁵. Changes made to the schedule to reflect actual progress are considered *Updates*. Each month's update establishes the new baseline for the next month's update, so events and progress can be chronologically recorded throughout the life of the project. Changes made to the schedule as a result of modifications to the contract, to re-establish a baseline of performance and bring the Contractor back on schedule, or significant changes to methods of operation, activity sequencing or duration, are considered *Revisions* or *Changes*³⁶. Revised schedules are subject to the acceptance of the Contracting Officer³⁷.

The Government and the Contractor should meet each month to review and update the schedule as part of the monthly invoice process. Examples of items to review are:

³⁴ FAR Clause 52.236-15 *Schedules for Construction Contracts*, ¶ (a)

³⁵ FAR Clause 52.236-15 *Schedules for Construction Contracts*, ¶ (b)

³⁶ NFGS - 01321 *Network Analysis Schedules*

³⁷ FAR Clause 52.236-15 *Schedules for Construction Contracts*

- Identify changes to the schedule
- Locate any negative float activities
- Ensure the Contractor is not obligating the Government to responsibilities that are not contractual
- Is not posturing for change orders (e.g., changing relationships to alter the critical path for shedding blame to the Government)
- The updates reflect the actual work progression.

Not performing a review could be construed as constructive acceptance of the changes shown. This could impose implied obligations on the Government, limit our ability to recover liquidated damages, or prevent us from taking other actions such as termination for default.

If circumstances warrant, the Contractor can be required to provide a revised schedule. The revised schedule should be thoroughly reviewed for compliance with the contract and any modifications, especially in regards to the Contract Completion Date (CCD). Once reviewed and accepted by the Government, the revised schedule becomes the new baseline for measuring the progress of the contract.

3.6.6 Environmental Concerns

All construction projects require an Environmental Protection (EP) plan. The Contractor is required to submit a detailed, site specific plan to the Field Office for review and approval prior to commencement of the work³⁸. The NAVFAC P-1071 and NFGS 01575A can be used as references in developing EP Plans. The Navy and the Contractor should develop a mutual understanding relative to environmental protection and measures for protecting natural resources. The EP Plan shall define which regulatory agency(s) must be interfaced with and the corrective procedures outlined in the event of “non-compliance” by the Contractor.

Station commanders are solely responsible for compliance with the environmental protection laws for all activities occurring within their bases. Commands responsible for Class 1 Property (real estate) utilize an Environmental Coordinator (EC) or equivalent official. They are responsible to deal directly with the regulatory agency(s). As Navy areas continue to “regionalize” and responsibility shifts to regional commanders, Regional Environmental Coordinators (REC) will likely assume more of this responsibility. Under the contract, the Contractor is generally responsible for obtaining the necessary permits for

³⁸ NFGS Section 01575A *Temporary Environmental Controls*

execution of the construction.³⁹ In contrast, the using activity is responsible for any required operating permits. Close coordination between user, host EC or REC, Field Office and Contractor is required to ensure that all necessary permits are obtained in a timely fashion and that the work proceeds in accordance with the requirements of the contract and any applicable regulations.

Certain permits may be required during design, or prior to award of the contract. In these cases, whether the designer is the Design-Build Contractor, or an independent A/E firm, the A/E will prepare the necessary documentation for submission to regulatory agencies.

3.6.7 Additional Quality Assurance Support

EFDs and EFAs are responsible for providing adequate post contract award quality assurance to ensure the requirements of construction contracts are being met. It is policy that Government personnel perform quality assurance whenever practicable. However, there are times when a short-term increase in workload, projects at remote geographic locations, and technically complex projects can surpass the numbers of Government personnel, or the expertise available “in-house” for performance of quality assurance. In these cases, quality assurance must be accomplished by contractual means.

During constructibility review the field office staff should review the work scope and “raise the flag” to ensure any additional quality assurance support beyond the available field office expertise or capacity is identified. This may be necessary for some types of specialty construction work. This additional support could be provided by any of the following means:

- The Project Leader contacts and requests internal Navy expertise for projects that are specialized, highly technical, or high-risk. NAVFAC Instruction 11014.53A, dated 24 April 1996 (Available on NAVFAC Intranet) provides a Navy-wide listing of specialized expertise throughout the various EFD/EFA's. Such services include cathodic protection, underwater inspection, etc. Funding for such services is on a reimbursable basis.
- Through post contract award services (PCAS) the A-E could perform on-site field support to assist the field office on critical items for quality assurance. Only the disciplines directly involved with that particular critical design element should make site visits.
- The EFD/EFA can provide final inspection and acceptance of certain work, such as fire protection.

³⁹ FAR Clause 52.236-7 *Permits and Responsibilities*

- Public Works Centers (PWCs) can be used to inspect and certify equipment before it is turned over to the user. Some examples are elevators, cranes, intrusion detection, boilers, and uninterruptible power supplies.

It is important to coordinate the construction and surveillance work. The QA Rep must review the construction schedule and give the supporting personnel or organizations advance notice when their services are needed. Also, these personnel should be provided any approved shop drawings or manuals prior to their visit.

3.6.7.1 *Title II Inspection Services*

Title II inspection is construction quality assurance provided by an A/E firm through an Architect-Engineer contract. The designer of record is usually used, but other Architect-Engineer firms may be used if circumstances warrant. The cost is funded out of SIOH funds rather than project funds.

The following criteria should be considered to determine the Title II inspection efforts needed:

1. Work is technically complex, beyond our capabilities.
2. Work is at a remote location.
3. Workload exceeds resources for a short, predictable period of time
4. Title II is the most economical solution.
5. Overall workload is of such a nature that the Government employee and the Contractor employee efforts are not redundant.

In no case shall the inspection effort be construed as engineering consultation provided for in the contract.

3.6.7.2 *Cooperative Administrative Support Unit (CASU) Services*

Another form of additional support is Cooperative Administrative Support Unit (CASU) services.

CASU is a cooperative made up of federal, state or local government agencies in a geographical area. The CASU exists only to assist its member agencies in reaping the benefits of cross servicing. CASU membership does not obligate the member agency either to order services or to provide services to other members. All CASU participation, as a seller or purchaser of services, is strictly voluntary; thus each CASU member is able to consider the best terms offered by all potential supplies of the services that the member needs. Members of the CASU identify their needs to the CASU Director, who locates qualified sources and "brokers" arrangements to provide the services or products required. A great majority of the requirements are satisfied by service contractors, who respond to tasking initiated by the CASU Director in accordance with provisions of broad-based service contracts and Basic Ordering

Agreements (BOAs) awarded by the CASU's leading agency or by the principal member agencies of the CASU. The cost is funded out of SIOH funds as well.

The following criteria should be considered to determine the CASU efforts needed:

1. Work is at a remote location.
2. Workload exceeds our resources for a short, predictable period of time.
3. Overall workload is of such a nature that the Government employee and the Contractor employee efforts are not redundant.
4. CASU is the most economical solution.

Technically complex projects should not be accomplished by CASU services. Professional services of an architectural or engineering nature as well as services that members of these professions may logically or justifiably perform should not be acquired through CASU services.

3.6.7.3 Field Office Responsibilities with respect to CASU/Title II

When Title II inspection/CASU services are provided, the field office is still responsible to ensure that:

1. All work is accomplished in accordance with the plans and specifications.
2. Sufficient surveillance is provided by Government to ensure control of efforts.
3. The Title II or CASU representative(s) does not provide direction to Construction Contractor.
4. Efforts accomplished by the Title II / CASU are not those functions that are reserved for the Government, such as decision making, ordering of work or approving payment.

Although the responsibility for inspection is upon the Title II / CASU, the field office is responsible for final acceptance of the project. Therefore, the QA Representative must understand the scope of the contract and establish an inspection plan to:

1. Ensure that the Title II /CASU Inspector is qualified to do the job (sufficient on – site expertise).
2. Ensure that the job is being inspected at all times during the progress of the work.
3. Ensure that the Title II / CASU is performing all of the duties as outlined in the scope of work and /or schedule of services.

Unless specific exceptions are established by the contract, the Title II /CASU for inspection services shall not:

1. Authorize any deviation from the approved documents.
2. Undertake any of the responsibilities of the construction Contractor, i.e. Superintendent, QC Manager, etc.
3. Expedite or accelerate the work.
4. Advise on or issue directions relative to any aspect of the means, methods, techniques, sequences or procedures.
5. Authorize or advise users to occupy projects.

3.6.7.4 *Post Contract Award Services (PCAS)*

The need for the services of an Architect-Engineer (A-E) Contractor seldom ends completely upon completion of the basic design contract and acceptance of the plans and specifications. Following award of the construction contract the need for professional services will continue. The types and amounts of service will depend upon the size and complexity of the project. Acquiring these services via A-E contract provides another tool to increase our flexibility, manage our workload and ensure that our increasingly complex facilities meet our needs. In most cases the necessary services should be included in the scope of work for the initial design contract.

Traditionally PCAS services include:

1. Reviewing the Construction Contractor's submittals; shop drawings, catalogue cuts, manufacture's certificates, samples, literature.
2. Responses to "Requests For Information" (RFI)
3. Providing consultation during construction. This may involve meetings that are described and scheduled in advance, or that are unscheduled and defined as the need arises. The location may be in the offices of the NAVFAC or the A-E, or in the field.
4. Preparing O&M Manuals. Operation and maintenance of the completed facility may require detailed instructions for various system and installed equipment.
5. Preparing as-built or record drawings.

Under a PCAS contract the A-E firm may visit the project to support the QA function. These kinds of visits are used to ascertain whether work in place meets the design and to keep the A-E involved in the status and quality of construction. Reviews may take place on a regular schedule or at specific stages in the construction, such as at the 25%, 50%, and 75% project stages. This type of support compliments the "partnering" program.

PCAS can also be used to have the A-E (designer) on site during the preparatory phase and the initial phase of quality control at critical or unique milestones in the construction project. The A-E can also participate with the field office and a representative from the EFD/EFA construction management personnel in reviewing the Contractor's schedule.

3.6.8 HVAC System Quality Management & Building Commissioning

The requirements for managing the quality of more complex building systems such as HVAC systems are more stringent than the "normal" procedures practiced every day. Additional, specific requirements are placed upon the Contractor for QC and the Government for QA. These additional requirements and the reasoning behind them are discussed below.

The quality, effectiveness, efficiency and long-term maintenance of building HVAC systems are a continuing systemic problem. We need to provide our clients an effective system that meets the design intent and complies with the contract. The Contractor is obligated to follow specified quality control procedures. ROICC's must assure that these procedures are followed. The *TABS*, *DALTS* & *ACATS* processes found in our contracts with HVAC work provide systematic, sequential QC processes that, when followed, minimize the potential for HVAC shortcomings and failures in construction. The key is to start these processes immediately after contract award; monitor the Contractor's execution of them vigilantly throughout the contract; and have the proper expertise involved during the contract and during performance verification and acceptance testing. Waiting until the end of the HVAC work to become involved with the testing is a recipe for failure. The Testing, Balancing and Controls verification processes described following under *TABS*, *DALTS* and *ACATS* are specified for most of our contracts and are sufficient when properly followed.

On complex or larger projects, a "Commissioning" process may be specified. Commissioning embraces many of the tenets of our normal QC, & construction testing, balancing & controls processes, but may move the start of the process back to the design inception, and may carry it forward into the customer's operation of the building. The pure commissioning process may be better applied to design-build projects, but commissioning, or aspects of it, can also be applied to design-bid-build projects. When required, a Commissioning Specification Section must be tailored to the size & complexity of the project.

Field office personnel should review the Plans and Specifications of each project with these variables in mind. The plans and specifications for a project will contain specific requirements for HVAC Quality Control and building commissioning.

3.6.8.1 *TABS, DALTS and ACATS*

Definitions:

TABS: Testing, Adjusting, Balancing & Startup of Systems;

DALTS: Duct Air Leakage Testing of Systems;

ACATS: Automatic Controls Acceptance Testing of Systems.

Each construction contract with HVAC systems will typically contain a TABS specification and a building controls specification. The TABS and Automatic Controls System specification sections address complete procedures for submittal of plans and test documentation, and provide procedures for testing and Acceptance. These specifications require that the Construction Contractor perform the following types of activities:

- Schedule TABS work in accordance with Specified Time Constraints found at the back of the TABS Specification
- Participate in Pre -TABS meeting with the Government
- Submit Qualifications of TABS Agency & Personnel for approval
- Submit Design Review Report for approval
- Submit Pre-Field Engineering Report for approval
- Perform Duct Air Leakage Tests (DALTS)
- Submit DALTS Test Results for Approval
- Perform Testing & Balancing of Air & Water Systems, Summer & Winter
- Submit TABS Test Reports for approval
- Verify Operational Performance in presence of the Government
- Perform Final Acceptance Testing in presence of the Government
- Participate in a Pre – Controls Meeting with the Government
- Submit Controls technical submittals for Approval
- Perform the Three Phases of Control for the Controls System installation
- Perform Controls Field Inspections & Tests
- Submit Report of Field Tests for Approval
- Verify & Replicate Field Tests in presence of the Government
- Submit Plan for Controls Operational Tests for Approval
- Perform Controls Operational Tests

- Submit Report of Operational Tests for Approval
- Verify Operational Performance Tests in Presence of the Government
- Perform Controls Acceptance Testing in Presence of Government

Field office personnel are responsible for the following specific Quality Assurance procedures with respect to HVAC work:

- Review the TABS, DALTS, & ACATS Procedures with Contractor at the Precon and no less than 90 days before commencement of final testing
- Review the specified timelines that are found in the Spec Sections
- Ensure that the Contractor's schedule accounts for the submittal & testing phases
- Ensure that the Contractor's Schedule of Prices and/or cost loading of the CPM splits up the compensation for TABS & controls work accordingly with the specified phasing. No lump-sum 100% payments
- Assure that Pre -TABS and Pre - Controls Meetings occur;
- Assure the Contractor performs the Three Phases of Control
- Assure the review & approval of all submittals
- Assure that plans are approved, in specified sequence, before testing begins
- Assure that test reports are submitted & approved, in specified sequence, before the next test phase begins
- Require Re-submittal of submittals & plans when they are disapproved
- Require Re-testing when tests and test reports are disapproved
- Witness Contractor verification demonstrations and acceptance testing only after the Contractor's own tests have been approved
- Obtain assistance from the A&E of Record and EFA/efd or NFESC corporate expertise for approval, witness, and acceptance testing
- Do not grant UCD (Usable Completion Date) until the HVAC & Controls systems have been satisfactorily tested & accepted
- Do not pay completely on the HVAC & controls systems until completion & acceptance

3.6.8.2 Commissioning

Building Commissioning is a systematic process of ensuring that a building performs in accordance with the contract documents, designer's intent, and owner's operational needs. It is similar in intent to the DOD/NAVFAC construction QA/QC process, but is intended to incorporate design and operation in addition to construction. Commissioning, however, may be specified in a construction contract as only a construction process.

In theory, Building Commissioning can be applied to all building systems – Architectural, Structural, Mechanical & Electrical. Commissioning is typically focused on HVAC systems, but in the future may be expanded to major electrical, fire alarm, and other high-risk systems. The discussion below focuses on HVAC systems.

ASHRAE defines Commissioning as follows: *“The process of ensuring that systems are designed, installed, functionally tested, and capable of being operated and maintained to perform in conformity with the design intent. Commissioning begins with planning and includes, design, construction, start-up, acceptance and training, and can be applied throughout the life of the building.”*

The purpose of the commissioning process is to provide the owner assurance that the systems have been installed in the prescribed manner and will operate within the performance guidelines. Commissioning is intended to enhance the quality of system start-up and aide in the orderly transfer of systems to beneficial use by the owner.

In most cases, Commissioning will add value to the building delivery process. However, the extent of the Commissioning should match the size, type, and complexity of a building and its systems. Benefits can be seen in the reduction of energy use through energy management design strategies, enhancement of indoor air quality and reduction of sound, pollution emissions and thermal emissions. Worker productivity for the using occupant can be enhanced. Evaluation of quality during the construction process is systematized further and improved. Delivery of accurate O&M documentation and complete training for customer staff is integrated with the Commissioning process.

Some of the Key Commissioning Requirements are:

- Establishment of a Commissioning Authority;
- Establishment of a Commissioning Team of Key Stakeholders, including owner, designers, maintenance managers, Prime Contractor and key subcontractors (HVAC, TABS, Controls, Electrical);
- Development & Approval of a Commissioning Plan.

Some Key Commissioning Tasks that must be accomplished are:

- Commissioning Team input during design
- Commissioning Team input & evaluation/verification during construction
- Commissioning Team observes & evaluates final operational testing and determines acceptance
- Commissioning Team evaluation & approval of O&M documentation
- Integration of Training in the Commissioning Process
- Commissioning Team follow-up and feedback on system operation after occupancy.

“Getting what you pay for” is the ultimate goal of Commissioning, going hand in hand with QA/QC process. Although the responsibility of the design is still with the A-E, and the responsibility for construction still belongs to the Construction Contractor, the designated Commissioning Authority provides an expert view from the standpoint of the need for proper operations and efficacious maintenance. The Commissioning Authority may be designated from an independent third party. Often the design and construction engineers do not have the practical hands-on experience to design and witness the system and equipment testing process, making the designation of the Commissioning Authority a distinct advantage for the project.

3.6.9 Closeout Procedures

The process by which the project is completed, accepted and turned over to the client for operation and maintenance is the Project Closeout process. Both the Field Office and the Contractor have important roles to play in this phase of the project. A highly successful project can become an unsuccessful project just by being poorly handled during closeout.

3.6.9.1 Field Office Responsibilities

The Field Office is ultimately responsible for acceptance of the work. In addition, we “hand-off” the completed facility to the client who will occupy and operate it and the Public Works organization which will maintain it. The turnover might include the commissioning type issues discussed earlier, but regardless of whether a formal commissioning process has been established, certain items must be completed. Appendix D includes a checklist of items to review for each project during closeout. Not every item is applicable to every project, but it provides a baseline from which to depart.

3.6.9.2 Contractor Responsibilities

The NFGS specification section, NFGS –01770, Closeout Procedures, is used to define the Contractor’s responsibilities during the turnover. This guide specification is updated periodically and provides detailed guidance.

3.6.10 Warranty Procedures

Warranty of construction consists of at least three separate and distinct categories of warranties:

- A “project warranty” which may be provided by the Construction Contractor and covers the project as a whole
- Various “commercial” warranties associated with the various components of the project, such as HVAC Condensers, water heaters, air compressors, etc. In NFGS 01770, these are referred to as “Extended Equipment/Product Warranties”
- Specific system warranties, typically associated with installed systems that are made up of multiple components and installed on the job site, such as a roofing system

Depending upon the acquisition vehicle that is chosen, all of these warranties may not be available for the particular project. The options regarding construction warranty should be discussed with the client early in the Acquisition Planning phase. The OIC must advise the client specifically what options are available under each acquisition strategy, and the impact on warranty of the acquisition strategy that is selected. The designer must address the various aspects of warranty with the client at each step of design development, helping to choose cost-effective and practicable warranty provisions for commercial and system warranties. For EFD/EFA designed and awarded acquisitions, the Project Leader has the primary responsibility for ensuring that clients understand the implications of each option decision before it is included in the contract specifications. For local, station funded work, Field office personnel, who will often have frequent contact with the customer during all phases of project development and construction, must be able to advise the client and be responsive to needs that will likely affect the post construction warranty period. Note that nothing in the warranty provisions affects the Government’s other rights in regards to latent defect, gross negligence or fraud.

The subject of warranty responsibilities should be an agenda item at the pre-construction and partnering conferences on all projects. The Contractor should be informed that warranty performance is a factor in all performance evaluations, and evaluations will be adjusted appropriately to reflect exceptionally good or bad performance.

3.6.10.1 Acquisition Vehicles & Warranty Provisions

The acquisition vehicle selected will have an impact on the range of warranty options available. It is important that we advise our clients regarding these impacts early on in the process. A clear understanding of the options available will also help to eliminate misunderstandings regarding warranty enforcement options.

3.6.10.2 *Fixed-Price Construction Contracts*

Fixed-price construction contracts will generally include provisions for a warranty of the entire project under clause FAR 52.246-21, "Warranty of Construction"⁴⁰. The clause allows discretion in the inclusion of this requirement, as does the P-68, based upon the expected increased costs of acquisition versus the risk associated with the Government assuming the warranty itself. Normal practice is for this clause to be included. Since the clause is so commonplace in NAVFAC (and ACE) contracts, it is likely that contractors would assume that the requirement exists, even if it does not. Therefore, if a particular contract does not include this requirement, that fact should be clearly and obviously communicated to the prospective bidders by whatever means is available. The client must also be made aware that the responsibility for warranty work does not lie with the Contractor.

Under the Warranty Clause, the Contractor warrants that the work conforms to the specifications and is free of defects. This Warranty runs one year from acceptance or from possession if earlier than acceptance, (see "Use and Possession Prior to Completion" clause 52.236-11). The Contractor shall remedy any defect including consequential damage, and shall restore any other work damaged during warranty work. Any corrected work shall be warranted for one year after correction. The Contractor must obtain and enforce sub and suppliers' warranties.

This clause also requires that the Contractor provide such "commercial" warranties as would be available or given in normal commercial practice. Under this provision the Contractor is required to provide for the Government's use, any such warranties. NFGS 01770 should be included in construction contracts to inform the Contractor of the specific requirements for providing these warranties. Typically the requirements are as follows:

- Provide a list of components covered by commercial warranties, including the period, warranty's start date, local manufacturer or supplier point of contact, and specification section that the items are included in. The purpose of this list is to provide maintenance personnel with a ready reference to the warranties for a particular project, making it more likely that the warranties will actually be used.
- Tag each component with a "warranty tag" providing the basic information regarding the warranty of that particular item. There may be some components that cannot be practically tagged in this fashion, but still have a warranty. If possible, a warranty tag should be placed in a location that does not interfere with the performance or appearance of the item, but easily found by field maintenance personnel.

⁴⁰ FAR 46.710 (e)(1)

The warranty start date for these components should be the same as the project acceptance date, as stated in NFGS 01770, unless the component is in regular use prior to the acceptance date. In this case the warranty start date should be the date the component is placed in regular use. If this start date policy conflicts with the manufacturer's normal commercial practice, the Contractor is still required to meet the requirement as stated in the contract documents.

In addition to the project warranty, and the "commercial" warranties included under the warranty clause, the contract should include specific system warranties for those items where performance risk is high enough to offset the additional costs, or where normal industry practice would require or provide such a warranty. Some specific items to consider would be:

- Roofs
- Direct Digital Control Systems
- Exterior Insulation Finish Systems (EIFS)

3.6.10.3 *Cost-Reimbursement Construction Contracts (Including RAC)*

Cost reimbursement contracts are significantly different from fixed-price contracts in regards to warranty. Since the Contractor is reimbursed the cost of performing the work, including rework, there is no practical use for a construction project warranty. Therefore, the "normal" practice of a one-year warranty of construction is not part of the cost-reimbursement contract. Generally contracting officers shall not include warranties in cost-reimbursement contracts, unless authorized in agency regulations.⁴¹ There are no specific provisions currently included in the DFARS, NAPS, or P-68 regarding the inclusion of a construction warranty in these contracts, therefore, they should not be included. Clients should clearly understand this before award to prevent misconceptions regarding responsibility for warranty type work.

While not specifically stated in the existing regulations, inclusion of both commercial warranties and system warranties in cost-reimbursement contracts should be considered on a case by case basis. Generally these warranties on components or systems should be included only when they would normally be included in commercial practice and there is no additional cost to the Government for their inclusion.⁴²

The client, ROICC, and OIC must resolve the most cost-effective means of correcting a warranty deficiency. Depending upon the circumstances, this could mean in-house forces, the original contractor,

⁴¹ FAR 46.705(a)

⁴² FAR 46.709

or another contractor under a different acquisition vehicle. The following things should be considered in making the decision:

- Are there any commercial or system warranties included in the original contract, and are they impacted by the corrective work?
- Is the original contractor still available, and accessible under the original contract?
- How extensive is the corrective work?
- How quickly is the work required?
- Are there any contractual rights under the original contract that would be affected by using someone other than the original contractor to correct the work?

Regardless of how the corrective work is accomplished the ROICC and OIC should evaluate whether the circumstances surrounding the corrective work should affect the Contractor's performance evaluation. If necessary, a revised evaluation should be filed in accordance with normal procedures.

3.6.10.4 Task Order (Indefinite Delivery) Based Contracts

Task-orders are fixed-price orders, and as such may include the same warranty requirements as a fixed-price contract.

When the task-order contract is being developed the OIC and ROICC should resolve how to include the requirements. General requirements as well as provisions for altering these requirements should be included. During negotiations the specific warranty requirements should be discussed and the work priced accordingly.

3.6.10.5 Public-Private Venture (PPV) & Civil Works Contracts

Evaluation of warranty provisions for PPV and Civil Works contracts should be done on a case by case basis. Generally, warranty requirements would be included only in those cases where the long-term risks of project performance accrue to the Government. If a private developer or other entity assumes these risks, then it would generally be inappropriate to include the warranty of construction clause in the contract.

3.6.10.6 Evaluating Contractor Performance with regard to Warranty

Unsatisfactory warranty response should be documented in the Contractor performance evaluation. After substantial completion, when the performance evaluation is completed, it should reflect warranty activities to that point in time. Contractor responsibilities continue through the specified warranty period, and must be taken into account.

The ROICC shall inform the Contractor in writing of their warranty obligation before transferring the completed facility to the customer. Also, his performance on resolving warranty problems will be monitored during the one-year period or beyond. If their warranty rating changes during this period, an amended DD Form 2626 will be submitted into the CCASS System.

The revisions should include appropriate documentation of the performance, either exceptionally good or bad. The revised evaluation will reflect appropriate changes to Part III of the form, dealing with the section Evaluation of Performance Elements. Specifically, the ratings for the following elements should be reviewed and revised as appropriate to correspond with the level of performance achieved:

- Part 15; Quality Control; Item k, Identification/Correction of deficient work in a timely manner.
- Part 16; Effectiveness of Management; Item g, Warranty Response.
- Part 17; Timely Performance; Item g, Warranty Response.

If the overall performance rating is being revised to either Marginal or Unsatisfactory, then Part 20; Remarks, should also be completed to explain the specific warranty problems which have caused this revision. This section is especially important, since the change in rating must be communicated to the Contractor, and serves to explain the rationale for a lesser rating.

3.6.10.7 Post-Occupancy Administration of Warranty

Another key area to address during the warranty period is the satisfaction of the customer. Joint inspections with the client/occupant may be performed after transfer of the facility to identify any warranty issues or defects. The client should be given the opportunity to provide input on the Contractor's performance and responsiveness to warranty problems. The ROICC should evaluate these comments to determine if the Contractor reasonably tried to meet the client's demands within the contract requirements. Documented input from the customer will be used to augment any documentation from the field office regarding warranty performance if a revised performance evaluation is filed.

Field Offices should specifically look at completed projects shortly before the expiration of the warranty period and determine if there are any outstanding actions required under the warranty provisions. Affirmative steps should be taken to ensure that the Contractor is notified of any known problems before the expiration of the warranty period.

When a defect in a construction project is discovered, the Public Works organization is responsible for determining whether the defect results from user abuse, improper operation or maintenance, design or construction. This initial determination may require the assistance of the ROICC when there is doubt as to the Construction Contractor's liability. If the defect is the responsibility of a contractor, efforts to obtain correction must initially be made through the avenues provided by the

contract. Immediate notification will be made to the Contractor on defects of a critical nature, i.e., defects that affect operations, habitability of living spaces, life safety, or the physical security of the property. The notification will require that the Contractor provide an adequate response immediately. Defects that are found to be the result of user abuse or improper operation or maintenance are the responsibility of the customer. If there is a controversy over the cause of the defect, the final decision authority lies with the OIC.

The following procedures apply to administration of the warranty requirements:

- Construction defects covered by a contract warranty. The initial contact with the Contractor, vendor, or manufacturer to obtain correction will be made by the Public Works organization unless specific local procedures are established to the contrary. If the initial effort to solve the problem is unsuccessful, the client should contact the ROICC for assistance.
- Design defects covered by an AE contract clause. Upon identification, the ROICC will obtain correction by the most expedient means, and where appropriate, take action to recover costs. The ROICC will request any additional funds and will arrange work required for immediate and full correction.
- Design or construction defects not covered by a contract clause or warranty. Upon identification and evaluation, the ROICC will correct by the most expedient means, using appropriate available project funds or requesting additional funds through the EFD/EFA.
- Defects in Government property installed by the Construction Contractor. Procedures similar to those for a contract warranty item will be used when a GFM item is covered by warranty. For items not covered by warranty, or if the warranty has expired before the end of the first year after facility transfer, the ROICC will obtain correction by the most expedient means, using appropriate available project funds or requesting additional funds through the EFD/EFA.

All necessary actions shall be taken by the ROICC to recover the cost of defects from the Contractor or design firm when the Contractor or design firm is held responsible. Appropriate available project funds will be used to correct defects. Additional funds will be requested from the EFD/EFA or reimbursable funds (O&M,N or other) will be requested from the client.

Neither acceptance of a facility by the Government nor the end of the warranty period ends the Contractor's, manufacturer's, or supplier's liability for defects of a latent nature. However, the burden of proof to establish failure due to the latent defect falls on the Government. As soon as a latent defect is suspected, the client should contact the ROICC and a joint inspection should be held.

If the Contractor responsible for the warranty or latent defect refuses to perform or is no longer in business, the ROICC will notify the surety that furnished the required performance bond, or other optional

bonding instruments, for the contract. The ROICC will pursue warranty corrections with the surety until all warranty defects have been corrected.

All administrative costs resulting from warranty enforcement are SIOH funded.

3.6.11 Handling of Requests For Information

Timely, well-documented responses to contractor requests for information are a necessary part of government contract administration. The forms and procedures to be used for a specific contract should be discussed and agreed upon at the pre-construction conference.

Generally, the ROICC will provide copies of the standard Request for Information (RFI) form, Appendix R, and require the Contractor to coordinate and manage RFIs through it's Quality Control Manager. The Contractor is additionally required to maintain a RFI log and discuss the status of outstanding RFIs at each work site quality control meeting.

Unless otherwise agreed upon at the pre-construction meeting, RFIs are processed and transmitted as indicated on the standard RFI form.

Chapter 4. Contract Requirements.

The contract documents (typically drawings and specifications) contain the technical requirements of the contract. Specifications contain both general and specific quality control measures. These measures must be clearly stated in the contract documents to ensure that necessary quality control actions and tests or inspections are properly identified. The Contractor must know what is expected and required in order to properly prepare an offer. He should not perform work not included in the contract documents.

The acquisition planning process should include consideration of quality issues. The choice of both contract type and method affects how quality control requirements are included. In general, the following guidelines should be used.

4.1 Contracting Methods

There are three possible ways to award contracts, Simplified Acquisition Procedures, Sealed Bidding, and Negotiation. To some extent, the method will influence the most appropriate way of incorporating quality control requirements. In both SAP and Sealed Bidding it is important that all prospective contractors base their offers on the same requirements description, as the opportunity for discussion is extremely limited. This requires any QC procedures to be well defined in order for the prospective contractors to properly prepare their offers. The Negotiation process is inherently more flexible.

4.1.1 Simplified Acquisition Procedures (SAP)

Under the FAR, no formal Quality Control System is required unless the Contracting Officer determines that it is in the Government's interest to incorporate such requirements. The decision to incorporate formal QC procedures should be made based upon financial risks and risk to life and property.

4.1.2 Sealed Bidding

Projects awarded by sealed bidding will normally exceed the SAP threshold, and will therefore require a formal system of contractor quality control.⁴³ To ensure fair competition, detailed requirements of the expected quality control system are incorporated into the contract. Enforcement of these requirements in their entirety after award is critical to protect the integrity of the sealed bidding process.

⁴³ FAR Part 42.104

4.1.3 Negotiation

Contracts can be awarded by a number of different techniques that fall into the general category of the Negotiation Method. These techniques include such things as “Best-Value”, and “Lowest Price – Technically Acceptable”. Because of the discussions allowed and the methods used to evaluate offers, the prospective contractors can be allowed flexibility in how they will perform the quality control function. In this case the Request For Proposals (RFP) may allow for flexibility in the implementation of the Quality Control system. The proposed Quality Control System should be a rating criterion in determining acceptability or value of proposals. Any criteria used to evaluate offers should require the Contractor to provide sufficient detail to allow differentiation between offers based on the proposed quality control systems.

The NFGS 01450 must still be used and should reflect the minimum requirements that are considered acceptable to the Government. An enhanced system that incorporates “better” controls may also be proposed by the Contractor. The value of this enhanced system in providing a better quality project should be weighed during technical evaluation of proposals. Proposals that lack adequate Quality Control shall not be considered acceptable.

4.2 Contract Types⁴⁴

4.2.1 Design-Bid-Build Construction Contracts

In the past, Design-Bid-Build contracts were awarded using Sealed Bidding Procedures. This is changing. As stated in NAVFAC Letter 4200, Ser 02/98-123 of 14 May 1998, NAVFAC awarded 35% of its contracts using the Source Selection process in fiscal year (FY) 96 and 40% in FY 97. Further increases are expected for FY 99 and it is projected that NAVFAC will accomplish 80% of FY 00 contract actions using Source Selection. Source Selection is preferred because the requirements for the work are well defined and no discussions with the prospective contractors are usually required.⁴⁵ Trends indicate that NAVFAC will continue to award a significant number of contracts using negotiation methods.

In compliance with Department of Defense’s (DOD) Specifications and Standards Reform Program, NAVFAC is participating in the move towards the use of commercial specifications (AIA, CSI, etc.) and standards for replacement of military specifications and standards where practicable. The primary basis for developing project specifications shall be the NAVFACENGCOM Guide Specifications (NFGS). They are written in sixteen Division, three Part (General, Products, Execution) Construction Specifications Institute (CSI) Master Specification (MASTERSPEC) format.

⁴⁴ NAVFAC’s *Standardization of Contract Acronyms* Memo dtd 24 May 1999

⁴⁵ FAR Part 6.401

The *Quality Control* specification, Section 01450 from the NAVFACENGCOM Guide Specification (NFGS) Series is placed in Division 01 of construction contract specifications. At the discretion of the EFD/EFA CQM Staff, the "Short Form" of Section 01450 may also be used. Technical requirements, or "specific quality controls," are found in each technical section of the specifications, Divisions 02 through 16. Examples of these would be manufacturer or installer qualifications, testing agency qualifications, submittals, inspections, job mock-ups and design criteria. Testing requirements are also specified under the technical specifications. These tests are for the acceptance and control of materials or systems installed in the field. The test method, frequency or number of tests per unit, and acceptance limits must be specified. Examples of these items would include soil compaction and concrete compressive strength tests.

The designer plays a key role in establishing the quality controls necessary to achieve design intent and assure contract compliance. It is the responsibility of the Officer in Charge (OIC) to ensure that all designers understand the principles of the CQM Program and their role in preparing NAVFACENGCOM drawings and specifications. EFD A&E Manuals and Engineer (Architect)-In-Charge (EIC) Guides should describe the principles and practices of the Contractor Quality Control System and how it is to be incorporated into construction contracts.

4.2.2 Design-Build Construction Contracts.

The Design-Build process requires the Government to define the requirements for a construction project in terms of a broad performance specification. Construction contractors then propose design solutions to meet the requirements as stated. Since discussions are vital to ensuring that the Government's requirements are met, these contracts are typically awarded using a Negotiation Procedure of one kind or other, such as "Lowest Price – Technically Acceptable" or "Best – Value".

A formal design for the project is still required, and is submitted after award by the successful contractor to the Government for approval. The approved design contains the normal technical requirements for execution of the construction, with the exception that the term "or equal" may not be used in the post-award documents. The "Inspection of Construction" clause is included within the Request for Proposal (RFP) and the resultant contract. The roles of the Government and the Contractor during execution remain the same, with the exception that the role of the designer is contained within the Construction Contractor. Therefore, the requirement for a regimented, established quality control system still exists. To give the prospective contractor maximum flexibility in preparation of their proposals, it is acceptable to allow them to propose how they will establish their own quality control system, as long as the evaluation criteria used in selecting the successful offeror can distinguish between poor and acceptable quality control systems.

4.2.3 Task Order (Indefinite Delivery) Based Contracts

Task Order based contracts can be awarded using any contracting method. They should include the requirements for a QC System in the basic contract. If the minimum dollar value of construction work stated in the contract exceeds the Simplified Acquisition Threshold, the "Inspection of Construction" Clause must be included. Any construction work (Type I or Type II) accomplished under the contract should include QC requirements. Allowance should be made for incorporating specific Quality Control requirements, such as those found in the Technical Divisions of a CSI formatted contract, into each Task Order as appropriate.

4.2.4 Public-Private Venture (PPV) & Civil Works Contracts

PPV contracts should include the same QC requirements as other contracts of similar type unless the facilities to be constructed are located off Navy property and the Navy will not own the facilities. This is because the Life-Safety concerns for these off-base facilities should be addressed through the local municipal Code Enforcement/Building Code Office and the other risks associated with poor quality construction accrue to the developer as the owner, rather than to the Navy.

For further information regarding Civil Works contracts see NAVFAC P-95, *Civil Works Contract Administration*.

4.2.5 Environmental Study and Remediation (CLEAN & RAC)

All work related to remediation is considered to be Type I construction⁴⁶, and therefore requires significant oversight and monitoring by the field office. For further information regarding environmental study and environmental cleanup or remediation contracts, see NAVFAC P-1071, *Environmental Contract Quality Management Guide*.

4.2.6 Multiple Award Construction Contract (MACC)

Multiple-award indefinite delivery construction contract when award is made to more than one contractor. The initial request for proposal is a negotiated procurement involving several contractors. The award is made to three or more contractors, each of whom will compete for future construction task orders awarded under this contract. Each successful contractor is given a unique contract number for the duration of the MACC. Each contractor is guaranteed a minimum yearly task order award amount. Task orders must be under the stated maximum, but may be more with the concurrence of the MACC contractors. This process ensures that one of the contractors selected through the best value approach

⁴⁶ NAVFAC Letter dated 31 December 1998, see Appendix L

receives the work and also provides for a competitive price. Its major advantage is the speed with which a task order can be issued.

Chapter 5. CONSTRUCTION ASSISTANCE VISITS (CAV)

5.1 Introduction

Construction Assistance Visits (CAV) will provide a process to check the effectiveness of the Quality Management Program. The Quality Management Program includes Quality Assurance (QA) responsibilities performed by the Government and the Quality Control (QC) requirements of the contract performed by the Contractor. QA and QC efforts on selected projects will be evaluated on site. Areas of excellence and areas that need improvement will be identified and communicated to all members of the team. The information requested and generated as a result of the CAV Visits shall be done electronically to the extent possible.

5.2 Objective

The objective of each CAV is to assess and improve the effectiveness of the Quality Management Program by reviewing selected project(s).

5.3 Procedure

A Construction Assistance Visit will be conducted either: 1) Every two years at each Field Office, 2) In conjunction with the Performance Measurement Assistance Program (PMAP), or 3) As directed by the Head of the Construction Department. The Head of the Construction Department will select the high visibility operationally significant projects to be evaluated and will appoint team members. The Construction Department will coordinate the schedule for all CAVs.

The EFD/EFA Field Team Advocate and/or the Quality Assurance Engineer from the EFD/EFA lead each CAV team. The senior military or civilian engineer from the next Field Office to be visited may be invited to be present at the CAV.

One month prior to a CAV, the Field Office will send the Project Manager the Pre-visit information shown in enclosure (1) of Appendix Q to enable the Contractor and Field Office to perform self assessments of their QC and QA Systems.

When the team arrives on site, the Field Office will brief the team on workload, staffing, project schedule and other significant factors to be considered.

The team will use the Quality Assurance Checklist and evaluation forms (See Appendix Q, Enclosures 2, 3 and 4) as a guide for evaluating Quality Assurance and Quality Control. They will conduct interviews with the Field Office team managing the selected project (PM, QA Rep, and Contract

Specialist), the Contractor's Quality Control team (Contractor Superintendent and QC Manager), and the local customer representative as appropriate.

At the conclusion of the visit, the Team will out-brief the Field Office management and will make recommendations. No rating will be assigned.

5.4 Follow-Up

- The recommendations will be provided to the Field Office for information and action.
- The Field Office will provide a copy of the recommendations to the QC Manager and the Principal of the company to whom he reports.
- The Field Office will update the CAV Team Leader on the progress of the corrective actions for each of the findings the first of each month until all items are resolved.

GLOSSARY

Construction Quality Assurance (QA). The means by which the Government fulfills its responsibility of assuring the QC System is functioning and determining through reviews, surveillance and tests assures that the completed project complies with contract.

Construction Contract Quality Control. The tests, controls, performances, or certifications specifically required in each technical section of the specifications to describe the quality level of a particular type of work.

Contractor Quality Control (QC). The Contractor's management and control of his own, his suppliers' and his subcontractors' activities to comply with contract requirements.

Contractor Quality Control Manager (QC Manager). An employee of the Construction Contractor, appointed in writing, by the Contractor and approved by the Government, with the responsibility for administration and implementation of the QC System at the job site.

Contractor Quality Control (QC) Plan. A plan prepared by the Contractor and approved by the Government, which outlines the procedures, instructions, reports, and personnel, the Contractor intends to use in the implementation of the QC System.

Factory Inspection. Inspection that is performed at the point of manufacture for various products and components to be incorporated into the work.

Inspection. The examination of the activities of construction that supplements quality control of the work and assists in obtaining compliance with contract requirements. The examinations may be conducted on a full or part-time basis and may be made during progress or at strategic intervals of the work performed by the contractor.

NAVFAC Construction Quality Management (CQM). All control and assurance activities to achieve that quality which is established by the contract.

Officer of the Firm. An owner or employee of the construction firm whom, by virtue of position, is empowered to obligate the company.

Quality Assurance Representative. A Government employee on the field contract office staff whose primary function is to perform quality assurance on construction projects.

Quality Level. The degree of excellence, basic nature, character or kind of performance of a particular type of work established by the designer and indicated in the drawings and specifications.

Separation of Functions. There are three functions within an ROICC Field Office; Contracting (K), Technical (T) and Quality (Q). The Contracting function is responsible for the execution of contractual actions and ensuring the project is being performed within the parameters of the contract, as awarded and modified. The Technical function is responsible for ensuring the project is built in accordance with applicable engineering principles and within the parameters of the contract. The Quality function is responsible for Quality Assurance to ensure the Contractor builds the project in accordance with established Quality Control systems and quality principles established in the contract. Any of the individuals in the three functions may overlap to a second function for a period of time or for the duration of the contract, as long as that individual possesses the qualifications to perform each function. A single individual is never allowed to perform all three functions. These functions are illustrated in the ROICC Field Office Model of Appendix L.

APPENDIX A: QC Manager Duties, Authorities and Sample Letter

QC Manager Duties

- The QC Manager shall have no job-related responsibilities other than QC unless specifically permitted in the particular project's specification.
- He shall be on the site at all times during progress of the work, with complete authority to take any action necessary to ensure conformance with the contract requirements. In the event of his absence, the approved alternate shall be on the site.
- Authority to immediately stop any segments of work, which does not comply with the contract plans and specifications, and directs the removal and replacement of any defective work.
- Will conduct daily inspection of work performed for compliance with plans and specifications.
- Must certify daily that all materials and equipment delivered/installed in the work comply with contract plans and specifications. Certify daily that all work performed on the construction site and off the construction site conforms to plans and specifications. Report any deficiencies and remedial action planned and taken.
- Supervise and coordinate the inspection and tests made by the members of the Quality Control Organization, including subcontractors.
- Assure QC staff is adequate to meet its responsibilities.
- Maintain a copy of the ROICC approved QC Plan on file at the job site, complete with up-to-date approved revisions/filled-in log of submittals. Maintain at the job site an up-to-date QC Submittal Register (provided in the specification) showing the status of all submittals required by the contract.
- Maintain at the job site a testing plan showing status of all tests required by the contracts. Ensure that all tests required are performed and results are reported. Indicate whether test results show the item tested conforms to contract requirements or not.
- Authority to remove any individual from the site who fails to perform their work in a skillful, safe and workmanlike manner or whose work does not comply with the contract plans and specifications.
- QC manager does not have authority to deviate from plans and specifications without prior approval, in writing, from the ROICC.
- Ensure that the Contractor's Quality Control Organization is adequately staffed with qualified personnel to perform all the detailed inspections and testing specified in the plans and specifications.
- Maintain at the job site the up-to-date QC Rework Items List.

Items in Letters of Authority to QC Manager and Alternate.

The appointing letter to the QC Manager and the Alternate shall detail their authority and responsibility to act for the Contractor. It should also outline duties, responsibilities, and authority without any job-related responsibilities other than QC.

The QC Manager or approved Alternate must be on the site at all times during progress, with complete authority to take any action necessary to insure conformance with the contract requirements.

The QC Manager's Letter of Appointment will specifically address the following items:

- Authority to immediately stop any segment of work which does not comply with the contract plans and specifications, and direct the removal and replacement of any defective work.
- Conduct daily inspection of work performed each day for compliance with plans and specifications.
- Certify daily that all materials and equipment delivered/installed in the work comply with contract plans and specifications. Certify daily that all work performed on the construction site and off the construction site conforms to plans and specifications. Report any deficiencies and remedial action planned and taken.
- Supervise and coordinate the inspection and tests made by the members of the Quality Control Organization including subcontractors.
- Assure QC staff is adequate to meet its responsibilities.
- Insure that all tests required are performed and the results reported. Indicate whether test results show the item tested conforms to contract requirements or not. Ensure corrective work achieves acceptable test results.
- Maintain at the job site a testing plan showing status of all tests required by the contracts.
- Authority to remove any individual from the site who fails to perform work in a skillful, safe and workmanlike manner or whose work does not comply with the contract plans and specifications.
- QC Manager has no authority to deviate from plans and specifications without prior approval, in writing, from the Contracting Officer or designated representative.
- Ensure that the Contractor's Quality Control Organization is adequately staffed with qualified personnel to perform all the detailed inspections and testing specified in the plans and specifications.
- Maintain a copy of the approved QC Plan on file at the job site complete with up-to-date approved revisions/filled-in log of submittals.
- Maintain at the job site an up-to-date QC Submittal Status Log showing status of all submittals required by the contract.

- Maintain at the job site an up-to-date Noncompliance Check-off List (Log of deficiencies) on all nonconforming work.
- Assure that As-Built Drawings are kept current by showing all deviations made from the contract drawings on a daily basis.

Sample Letter

1 April 1999

Tom Stone

1000 State Street

San Diego, CA

SUBJECT: QC Manager, Appointment as

RE: Contract N62474-83-C-0000, Maintenance Hanger, NAS

Dear Sir:

You are hereby appointed as the Contractor Quality Control Manager (QC Manager) for Pacific Construction Co., Inc. during the term of this contract.

You are directed to follow the inspection procedures, instructions, and reports in strict compliance with the contract drawings and specifications and any authorized changes thereto. As a direct representative of the company, you are authorized and directed to perform the following duties:

1. Approve all Shop Drawings and submittals for conformance to the contract requirements. You are to keep a status log and Testing Plan up to date and record copies of your approved submittals are to be forwarded to the NAVY Contract Administrator. Submittals that require Government approval are to be forwarded to the designated party for appropriate action after your certification.
2. Inspect the work performed on a continual basis for compliance with current drawings and specifications. You have the authority to issue a stop work order on any item or work feature pending satisfactory correction of any deficiency in that work, particularly if the defective work is to be enclosed, is to support further construction, or will be inaccessible if further work proceeds. You have the authority to direct removal and replacement of any defective work.
3. Perform, supervise, or coordinate as required the reviews, inspections, and tests to be made by other members of your Quality Control Organization.
4. Inspect and certify that all material and equipment delivered to the job site complies with the approved submittals.
5. Ensure that all required test and/or inspections are performed, and report the results in the daily Contractor Quality Control Report.
6. File Certified Contractor Quality Control Reports, on the forms provided, with the NAVY Contract Administrator. These reports are to cover prime and subcontractor personnel and equipment on the site, idle

equipment and personnel, material deliveries, weather conditions, work accomplished, inspections, and tests conducted, results of inspections and tests, deficiencies found, and corrective action taken.

7. Maintain as-builts. At the job site, two sets of full-size contract drawings shall be marked to show any deviations that have been made from the contract drawings.

8. Recommend to Mr/Ms (indicate Name & Title) removal of any individual from the project who consistently fails to perform work properly.

9. Report to me any subcontractor who consistently does not conform to the contract drawings and specifications.

10. Keep a copy of the approved QC Plan, with up-to-date approved revisions, on file at the job site.

Very truly yours,

CONSTRUCTION CO., INC.

President

SAMPLE

APPENDIX B: Approval of Material Testing Laboratories



DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
200 STOVALL STREET
ALEXANDRIA VA 22332-2300

4121.7
114B/labltr5.doc
19 Dec 97

From: Commander, Naval Facilities Engineering Command

Subj: **CONSTRUCTION MATERIALS TESTING LABORATORY
ACCREDITATION**

Ref: (a) NAVFAC letter 4121.7 114B/labltr.doc dtd 23 Jan 97
(b) NFGS 01450, Quality Control

Encl: (1) American Society of Testing and Materials (ASTM) standards
(2) Laboratory Accreditation Authorities

1. By reference (a) we advised that NAVFAC was considering requiring construction materials testing laboratories to become certified by an accrediting agency and comments from organizations affected were requested. The feedback in response to reference (a) was supportive. Reference (b) is being revised to require construction materials testing laboratories performing work on NAVFAC construction contracts to be accredited by one of the laboratory accreditation authorities. The policy will apply to laboratories whose scope of accreditation includes one or more of the ASTM standards listed in enclosure (1) and to the specific office performing the actual testing, not just the "Corporate Office". Use of accredited laboratories overseas when available will be implemented at the discretion of the contracting officer. The laboratory accreditation authorities are agencies that recognize the competence of testing laboratories; they ensure that laboratories have a quality system, a quality manual and have been found competent to perform specific tests. The list of approved laboratory accreditation authorities is provided by enclosure (2).

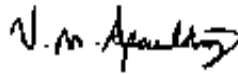
2. The accreditation requirement will be implemented in 2 phases. Effective 1 Jun 98, construction materials testing laboratories performing work for NAVFAC construction contracts will be required by reference (b) to submit an acknowledgment letter from one of the laboratory accreditation authorities listed in enclosure (2) indicating that the application for accreditation has been received and the accreditation process has started. Effective 1 Dec 1999, reference (b) will be revised to require construction materials testing laboratories performing work for NAVFAC construction contracts to be accredited by one of the laboratory accreditation authorities.

3. In the mean time, request that you send a copy of this letter to construction contractors, architect-engineers, facility service contractors, consultants and those laboratories that you have mailing addresses for. We are also notifying professional

Subj: **CONSTRUCTION MATERIALS TESTING LABORATORY
ACCREDITATION**

societies and contracting associations of the implementation of this policy. Should you have any questions, please contact Mr. Miguel E. Lopez @703-325-9015 or internet: lopezme@hq.navfac.navy.mil.

By direction,



V. M. Spaulding

Distribution.

COMLANTNAVFACENGCOM 02, 05, 04, 0523
COMPACNAVFACENGCOM 02, 04, 50, 505
COMSOUTHWESTNAVFACENGCOM 02, 04, 5SOO.WB
CO NORTHNAVFACENGCOM 02, 04, 09TF
CO SOUTHNAVFACENGCOM 02, 05, 05AB, 07
CO EFA WEST 02, 02R, 04
CO EFA CHESAPEAKE 02, 04, 05A, 05AA
CO EFA NORTHWEST 02, 04, 09A, 151SM
CO EFA MIDWEST 02, 44C
CO EFA MED 02, N3
CO NFESC
ESCECdet OOCE
CO PWC GUAM 200
CO PWC NORFOLK 200
CO PWC PEARL HARBOR 200
CO PWC PENSACOLA 200
CO PWC SAN DIEGO 200
CO PWC SAN FRANCISCO 200
CO PWC YOKOSUKA 200
CO PWC JACKSONVILLE 200
CO PWC WASHINGTON 200
NAVFACCO (27)
NAVFACENGCOM ACQrb/ACQrg/ACQmh/ACQml/Egm/FAjb/FApm/lefd/IEss

Copy to:
PMAP Team
CECOS (T. Wood)
Director, NFCTC

Subj: CONSTRUCTION MATERIALS TESTING LABORATORY
ACCREDITATION

Blind Copy to:
OCE, CEMP-CP (Mr. Jones)
OCE, CEMP-EB (Mr. East)

**AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)
STANDARDS**

- a. Laboratories engaged in testing of construction materials. (ASTM E 329)
- b. Laboratories engaged in testing of concrete and concrete aggregates, (ASTM C 1077)
- c. Laboratories engaged in testing of bituminous paving materials- (ASTM D 3666)
- d. Laboratories engaged in testing of soil and rock, as used in engineering design and construction- (ASTM D 3740)
- e. Laboratories engaged in inspection and testing of steel, stainless steel, and related alloys- (ASTM A 880)

Enclosure (1)

Laboratory Accreditation Authorities

The American Association of State Highway and Transportation Officials
(AASHTO)
AMRL/NIST Building 226 room A365
Gaithersburg MD 20899
301-975-6704

National Voluntary Laboratory Accreditation Program (NVLAP)
Bldg. 411 RoomA124
Gaithersburg, MD 20899
301-975-4016

American Association for Laboratory Accreditation (A2LA)
656 Quince Orchard Rd
Gaithersburg, MD 20878-1409
301-670-1377

Washington Association of Building Officials (WABO)
200 Union Ave., S.E. Suite 200
PO Box 7310
Olympia, WA 98507-7310
206-586-6725
("Approval authority by WABO is limited to projects within Washington State".)

Washington Area Council of Engineering Laboratories (WACEL)
7900 Wisconsin Avenue, Suite 204
Bethesda, MA 20814
301-652-7925
("Approval authority by WACEL is limited to projects within the Chesapeake Division
and Public Works Center Washington geographical area)

Enclosure (2)

APPENDIX C: QC Plan Review Checklist

Table 1. Contents of the QC Plan

Item	Description & Remarks	01450	SF-01450
Table of Contents	The Table of Contents should include Tabs for each required item in the Plan.	Required	Required
QC Organization Chart	The quality control organization depicted in chart form, showing the relationship of the quality control organization to other elements of the Prime Contractor's company as well as subs, suppliers, and other outside organizations.	Required	Not Required
Names & Qualifications	The qualifications for the QC Manager and staff are required. The acceptance of these personnel must be based on the stated qualifications and past experience in comparison to the requirements indicated in the specifications. A list of the proposed requirements must be provided to the EFD CQM Staff for approval prior to advertisement of the contract.	Required	Required
Duties and Responsibilities	Area of responsibility and authority of each individual in the quality control organization, outlined in detail. Some duties and responsibilities may overlap and require clarification as work progresses. NAVFAC policy does not preclude the Prime Contractor from using subcontractor personnel as part of the quality control staff. However, the Prime Contractor should understand that the QC organization acts on behalf of the prime and that the prime is held responsible for their actions.	Required	Required
Outside Organizations	Outside organizations include design agents, consultants, and subcontractors that will perform work or services for the prime under this contract. The list should also indicate the general scope of the work or services to be performed.	Required	Optional
Appointment Letter(s)	A copy of the letter appointing the QC Manager, signed by an officer of the firm, outlining the QC Manager's duties, responsibilities, and authority. This letter must include the authority to direct removal and replacement of any defective work. This letter provides the authority for the QC Manager to act as an agent of the Contractor. No QC plan can be accepted unless these requirements are satisfactorily addressed in the appointing letter. A sample of the appointing letter is provided in Appendix A.	Required	Optional
Submittal Procedures	Procedures for reviewing all shop drawings, samples, certificates, or other submittals for contract compliance, including the name of the person(s) authorized to sign the submittals for the Contractor as complying with the contract. Procedures for processing submittals and responsibility for approving each submittal must be included in the plan. A sample of the Contractor's proposed approval stamp(s) should be included for verification against the contract requirements. The Contractor shall also include a submittal status log listing all submittals required by the specifications and stating the action required by the Contractor and the Government. The Contractor shall complete columns (a) through (e) of this log and name the persons authorized to review the submittals.	Required	Required
Testing Lab Information	A listing of testing laboratories that will be employed by the Contractor and a description of the services these firms will provide, including statements of their accreditation as required by the contract. If there is any question regarding the capability of a particular testing organization, refer to Appendix B, Approval of Material Testing Laboratories for Construction Contracts.	Required	Optional
Testing Plan and Log	This plan includes the tests required, referenced by the specification paragraph number requiring the test, the frequency, and the person responsible for each test.	Required	Required
Rework Procedure	These include the Contractor's internal procedures to identify, document, track, and sign off completion of deficiencies in the construction.	Required	Required

Item	Description & Remarks	01450	SF-01450
Documentation Procedures	The procedures for documenting quality control operation, inspection, and testing must be addressed and a copy of all forms and reports to be used included. The Contractor's reporting requirement includes preparation of daily reports.	Required	Required
List of Definable Features of Work	The listing of Definable Features of Work is the fundamental breakdown of the project into distinct tasks. Special care should be taken to review this list and ensure that the activities not only meet the minimum requirements contained in the specifications, but are practicable for use throughout the project.	Required	Required
Performing The Three Phases of Control	The Preparatory and Initial Phase Checklists provided in Appendices G. and H. will be completed for each DFW. Dependent on how the project specification is edited, the checklists may be included in the original plan as: 1) A single copy of the blank forms, or; 2) A complete assemblage of each checklist (with the header portion fill out) for each DFW.	Required	Required
Personnel Matrix	Where required, this matrix assigns responsibility by name for documentation of the three phases of control and testing activities, as well as review and approval of submittals. This matrix should assign these responsibilities by Specification Section.	Optional	Optional
Completion Inspection Procedures	The Completion Inspection Procedures outline the turnover process including assignment of responsibility for various phases of turnover. The Punch-Out Inspection is to be completed by the Contractor QC Manager. The Pre-Final Inspection is done by the Government with the QC Manager. The Contracting Officer, based on the completion of the pre-final schedules, conducts the Final Inspection. The Contractor's QC Manager, the Contracting Officer or designated representative and the client representative should be present.	Required	Required

Table 2. Sample Approval Checklist

Item Description	Items to be checked	✓
General Items	<ul style="list-style-type: none"> • As-built drawing statement. The required full-size set of marked up contract drawings to be maintained on-site, updated monthly and submitted to AOIC after completion of construction. 	
Table of Contents	<ul style="list-style-type: none"> • TOC is included • Page numbers are indicated • Revision sheet is included to indicate any changes made to the plan during the course of construction. 	
QC Organization Chart	<ul style="list-style-type: none"> • Relationship of QC Manager to officer of firm to whom he reports. • Relationship of QC Manager to other members of QC staff. • Relationship of QC Manager to subcontractor QC Managers or foremen. • Relationship of QC Manager to consultants, testing firms, etc. • Relationship of QC Manager to Prime Contractor's superintendent 	
Names & Qualifications	<ul style="list-style-type: none"> • Names and qualifications of personnel in the QC organization. Multi-page resumes are not desired. Qualifications of an individual should be confined to one or two pages and should relate to person's function in the QC organization. Pertinent information would include education and training, construction experience, quality control experience and management experience. 	
Duties and Responsibilities	<ul style="list-style-type: none"> • The area of responsibility and authority of each individual in the QC organization is clearly stated. 	
Outside Organizations	<ul style="list-style-type: none"> • A list of outside organizations such as testing laboratories, architects, and consulting engineers that will be employed and a description of the services they will provide. 	
Appointment Letter(s)	<ul style="list-style-type: none"> • Letter appointing the QC Manager 	
Submittal Procedures	<ul style="list-style-type: none"> • Submittal Review Procedure including names of persons authorized to sign submittals for the Contractor. • Submittal Status Log. • Specification matrix indicating who the authorized submittal reviewer, inspector, and testing lab personnel (both on-site and factory) will be for each technical specification section. 	
Testing Lab Information	<p>The Contractor must provide the following information for each independent testing laboratory for Government approval:</p> <ol style="list-style-type: none"> 1. Functional description of lab's organizational structure. 2. List and resume of testing lab personnel. 3. Affidavit of compliance with applicable ASTM publications and certification that all lab work will be performed in accordance with contract technical specifications. 4. List of inspection equipment corresponding to each test noted in the testing log and equipment calibration certificate. 5. Certification from a nationally recognized agency. 6. Affidavits for special inspections must be submitted to the Contracting Officer before progress payments for the work are approved. 	
Testing Plan and Log	<ul style="list-style-type: none"> • Testing plan includes all formal tests and the specification reference • Responsible parties identified for each test 	
Rework Procedures	<ul style="list-style-type: none"> • Non-compliance check-off list (Log of Deficiencies Form) 	

Documentation Procedures	<ul style="list-style-type: none"> • Specific statement in the QC reports indicating that a Professional Engineer inspected any designs and/or certifications for formwork, falsework, or erection procedures, if applicable. • QC/DRI Daily Report Form. 	
List of Definable Features of Work	As a minimum, this will include each section of the specification cross referenced to the production schedule. For projects requiring a progress chart (Bar or Gantt Chart), the list of DFW shall include but not be limited to all items of work on the schedule. For projects requiring a network analysis, the list of DFW shall include but not be limited to all critical path activities.	
Preparatory and Initial Phase Checklists	<ul style="list-style-type: none"> • Dependent on the editing of Specification Section 01450; include a copy of the forms provided in Section 01450 or copies of the forms with the heading partially filled in (Spec Section, Contract Number, DFW title and Schedule Activity Number) for each DFW. • No initial development of the checklists is required, beyond inclusion of the sample checklists contained in Appendices G. and H. 	
Personnel Matrix	<p>Personnel assignment for each specification section on who is responsible for:</p> <ul style="list-style-type: none"> • Review and approval of submittals • Perform and document the 3 Phases of Control • Perform and document the testing • Performing punch-out, pre-final, and final inspections 	
Completion Inspection Procedures	<p>Identify process and the responsible party(s) for documenting completion inspections for:</p> <ul style="list-style-type: none"> • Punch-Out Inspections • Pre-Final Inspections • Final Acceptance Inspection 	

APPENDIX D: Sample Contract Completion Checklist

**CONTRACT COMPLETION
CHECKLIST**

Project Manager RESPONSIBILITIES

A. Before Final Acceptance

- 1. Pre-Final Inspection Held _____
- 2. EFDEFA Inspections Held (Fire, Elevators, TABS, etc.) _____
- 3. Final Inspection with Customer and PW _____
- 4. Establish Usable Completion Date (UCD) _____
- 5. Turn Over Letter to Activity _____
- 6. Acceptance Letter to Contractor _____
- 7. Document Environmental Permit Compliance for
Construction Certification (if applicable) _____
- 8. Inform Client of requirements for operating permits,
Certificates of Occupancy, or Terminations of
Construction Permits, if required. _____

B. Before Final Payment

- 1. Punchlist Complete _____
- 2. List of Warranty Agents to PW/Customer _____
- 3. As-Built Drawings Submitted and Reviewed (2 sets or as req'd)
and As-Built Record of Materials. _____
- 4. Operation & Maintenance Manuals Reviewed/
Submitted to PW (EFD/EFA involved for OMSI) _____
- 5. Submittals to PW _____
- 6. Keys to PW or Customer _____
- 7. Spare Parts, Special Tools, & Extra Stock to PW _____
- 8. Account for all GFE/GFM/Salvage Material _____

- 9. Determine Status of Contractor Utility Bill _____
- 10. All Changes/Equitable Adjustments Finalized _____
- 11. All Claims Resolved _____
- 12. LD's Assessed if Necessary _____
- 13. Final Release Received _____

C. Before Closing Out File

- 1. Property Record Forms to EFD/EFA
(NAVFAC 11010/29A, B, C or DD 1354) _____
- 2. Final Progress Photos Taken _____
- 3. Contractor Evaluation to EFD/EFA (DD 2626 / CCASS) _____
- 4. A/E Evaluation to EFD/EFA (DD 2631 / ACASS) _____
- 5. Quality Control Manager Evaluation _____
- 6. As-Builts to EFD/EFA/PW _____

QA Rep's RESPONSIBILITIES

A. Before Final Acceptance

1. Schedule Pre-Final, Develop Punchlist _____
2. Verify Resolution of all Non-Compliance Notices _____
3. Verify Completion of all Modification Work _____
4. Review Requirements for Submittals and Training and Operations Manuals Due at Turnover _____
5. EFD Inspections Scheduled and are Satisfactory _____
6. Electrical/Mechanical System Tests Complete _____
7. Tag Warranty Equipment _____
8. Framed Instructions/Warranties Mounted _____
9. Schedule Final Inspection, Develop Punchlist _____
10. All Test Results and Certifications Received _____
11. User/PW Training Completed _____

B. Before Final Payment

1. Punchlist Complete _____
2. Final Review of As-Builts for Completeness _____
3. Final Review of O & M Manuals for Completeness _____
4. Final Demobilization and Clean-Up Completed _____
5. Contractor Passes Returned _____

C. Before Closing Out File

1. Final Progress Photos Taken _____
2. Provide Inspector's copy of submittals to PW _____
(Ensure OICC File is Complete First)

CONTRACT SPECIALIST RESPONSIBILITIES

A. Before Final Payment

- 1. Liquidated Damages Assessment if Required _____
- 2. Payrolls Complete Including Statement of Compliance _____
- 3. All Modifications Executed _____
- 4. Final Release Received (NAVFAC 4330/7) _____

B. Before Closing Out File

- 1. De-obligate Excess Funds _____
- 2. Originate Contractor Evaluation _____
- 3. Acceptance Letter Received from Activity _____
- 4. All Bonds Returned _____

APPENDIX E: Daily Production Report Form

CONTRACTOR PRODUCTION REPORT (ATTACH ADDITIONAL SHEETS IF NECESSARY)					DATE		
CONTRACT NO		TITLE AND LOCATION			REPORT NO		
CONTRACTOR				SUPERINTENDENT			
AM WEATHER		PM WEATHER		MAX TEMP	F	MIN TEMP F	
WORK PERFORMED TODAY							
Schedule Activity No.	WORK LOCATION AND DESCRIPTION			EMPLOYER	NUMBER	TRADE HRS	
JOB SAFETY	WAS A JOB SAFETY MEETING HELD THIS DATE? <small>(If YES attach copy of the meeting minutes)</small>				<input type="checkbox"/> YES	<input type="checkbox"/> NO	TOTAL WORK HOURS ON JOB SITE, THIS DATE, INCL CONT SHEETS
	WERE THERE ANY LOST TIME ACCIDENTS THIS DATE? <small>(If YES attach copy of completed OSHA report)</small>				<input type="checkbox"/> YES	<input type="checkbox"/> NO	CUMULATIVE TOTAL OF WORK HOURS FROM PREVIOUS REPORT
	WAS CRANE/MANLIFT/TRENCHING/SCAFFOLD/HV ELEC/HIGH WORK/ HAZMAT WORK DONE? <small>(If YES attach statement or checklist showing inspection performed.)</small>				<input type="checkbox"/> YES	<input type="checkbox"/> NO	TOTAL WORK HOURS FROM START OF CONSTRUCTION
	WAS HAZARDOUS MATERIAL/WASTE RELEASED INTO THE ENVIRONMENT? <small>(If YES attach description of incident and proposed action.)</small>				<input type="checkbox"/> YES	<input type="checkbox"/> NO	
Schedule Activity No.	LIST SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED					<input type="checkbox"/>	SAFETY REQUIREMENTS HAVE BEEN MET.
EQUIPMENT/MATERIAL RECEIVED TODAY TO BE INCORPORATED IN JOB (INDICATE SCHEDULE ACTIVITY NUMBER)							
Schedule Activity No.	Submittal #	Description of Equipment/Material Received					
CONSTRUCTION AND PLANT EQUIPMENT ON JOB SITE TODAY. INDICATE HOURS USED AND SCHEDULE ACTIVITY NUMBER.							
Schedule Activity No.	Owner	Description of Construction Equipment Used Today (incl Make and Model)				Hours Used	
Schedule Activity No.	REMARKS						
_____					_____		
CONTRACTOR/SUPERINTENDENT					DATE		

CONTRACTOR PRODUCTION REPORT

(CONTINUATION SHEET)

DATE

CONTRACT NO

TITLE AND LOCATION

REPORT NO

WORK PERFORMED TODAY

Schedule Activity No.	WORK LOCATION AND DESCRIPTION	EMPLOYER	NUMBER	TRADE	HRS

Schedule Activity No.	LIST SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED

EQUIPMENT/MATERIAL RECEIVED TODAY TO BE INCORPORATED IN JOB (INDICATE SCHEDULE ACTIVITY NUMBER)		
Schedule Activity No.	Submittal #	Description of Equipment/Material Received

CONSTRUCTION AND PLANT EQUIPMENT ON JOB SITE TODAY. INDICATE HOURS USED AND SCHEDULE ACTIVITY NUMBER.			
Schedule Activity No.	Owner	Description of Construction Equipment Used Today (incl Make and Model)	Hours Used

Schedule Activity No.	REMARKS

INCLUDE ALL PERSONNEL WORK HOURS IN THE WORK PERFORMED SECTION ON THIS SHEET INTO THE FRONT CONTRACTOR PRODUCTION REPORT

APPENDIX F: Daily QC Report Form

CONTRACTOR QUALITY CONTROL REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

DATE _____

REPORT NO _____

PHASE	CONTRACT NO	CONTRACT TITLE	
PREPARATORY	WAS PREPARATORY PHASE WORK PERFORMED TODAY? YES <input type="checkbox"/> NO <input type="checkbox"/>		
	IF YES, FILL OUT AND ATTACH SUPPLEMENTAL PREPARATORY PHASE CHECKLIST.		
	Schedule	Definable Feature of Work	Index #
	Activity No.		
INITIAL	WAS INITIAL PHASE WORK PERFORMED TODAY? YES <input type="checkbox"/> NO <input type="checkbox"/>		
	IF YES, FILL OUT AND ATTACH SUPPLEMENTAL INITIAL PHASE CHECKLIST.		
	Schedule	Definable Feature of Work	Index #
	Activity No.		
FOLLOW-UP	WORK COMPLIES WITH CONTRACT AS APPROVED DURING INITIAL PHASE? YES <input type="checkbox"/> NO <input type="checkbox"/>		
	WORK COMPLIES WITH SAFETY REQUIREMENTS? YES <input type="checkbox"/> NO <input type="checkbox"/>		
	Schedule	Description of Work, Testing Performed & By Whom, Definable Feature of Work, Specification	
	Activity No.	Section, Location and List of Personnel Present	

REWORK ITEMS IDENTIFIED TODAY (NOT CORRECTED BY CLOSE OF BUSINESS)		REWORK ITEMS CORRECTED TODAY (FROM REWORK ITEMS LIST)	
Schedule	Description	Schedule	Description
Activity No.		Activity No.	

REMARKS (Also Explain Any Follow-Up Phase Checklist Item From Above That Was Answered "NO"), Manuf. Rep On-Site, etc.	
Schedule	Description
Activity No.	

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.

AUTHORIZED QC MANAGER AT SITE

DATE

GOVERNMENT QUALITY ASSURANCE REPORT

DATE _____

QUALITY ASSURANCE REPRESENTATIVE'S REMARKS AND/OR EXCEPTIONS TO THE REPORT

GOVERNMENT QUALITY ASSURANCE MANAGER

DATE

APPENDIX G: Preparatory Phase Checklist

PREPARATORY PHASE CHECKLIST		SPEC SECTION	DATE
(CONTINUED ON SECOND PAGE)			
CONTRACT NO	DEFINABLE FEATURE OF WORK	SCHEDULE ACT NO.	INDEX #
PERSONNEL PRESENT	GOVERNMENT REP NOTIFIED ____ HOURS IN ADVANCE: YES <input type="checkbox"/> NO <input type="checkbox"/>		
	NAME	POSITION	COMPANY/GOVERNMENT
SUBMITTALS	REVIEW SUBMITTALS AND/OR SUBMITTAL REGISTER. HAVE ALL SUBMITTALS BEEN APPROVED? YES <input type="checkbox"/> NO <input type="checkbox"/>		
	IF NO, WHAT ITEMS HAVE NOT BEEN SUBMITTED? _____		
	ARE ALL MATERIALS ON HAND? YES <input type="checkbox"/> NO <input type="checkbox"/>		
	IF NO, WHAT ITEMS ARE MISSING? _____		
CHECK APPROVED SUBMITTALS AGAINST DELIVERED MATERIAL. (THIS SHOULD BE DONE AS MATERIAL ARRIVES.)			
COMMENTS: _____			
MATERIAL STORAGE	ARE MATERIALS STORED PROPERLY? YES <input type="checkbox"/> NO <input type="checkbox"/>		
	IF NO, WHAT ACTION IS TAKEN? _____		
SPECIFICATIONS	REVIEW EACH PARAGRAPH OF SPECIFICATIONS.		
PRELIMINARY WORK & PERMITS	ENSURE PRELIMINARY WORK IS CORRECT AND PERMITS ARE ON FILE.		
	IF NOT, WHAT ACTION IS TAKEN? _____		

PREPARATORY PHASE CHECKLIST

(CONTINUED FROM FIRST PAGE)

SPEC SECTION

DATE

CONTRACT NO

DEFINABLE FEATURE OF WORK

SCHEDULE ACT NO.

INDEX #

TESTING

IDENTIFY TEST TO BE PERFORMED, FREQUENCY, AND BY WHOM. _____

WHEN REQUIRED? _____

WHERE REQUIRED? _____

REVIEW TESTING PLAN. _____

HAS TEST FACILITIES BEEN APPROVED? _____

SAFETY

ACTIVITY HAZARD ANALYSIS APPROVED? YES

NO

REVIEW APPLICABLE PORTION OF EM 385-1-1.

MEETING COMMENTS

NAVY/ROICC COMMENTS DURING MEETING.

OTHER ITEMS OR REMARKS

OTHER ITEMS OR REMARKS:

QC MANAGER

DATE

APPENDIX H: Initial Phase Checklist

INITIAL PHASE CHECKLIST		SPEC SECTION	DATE
CONTRACT NO	DEFINABLE FEATURE OF WORK	SCHEDULE ACT NO.	INDEX #
PERSONNEL PRESENT	GOVERNMENT REP NOTIFIED _____ HOURS IN ADVANCE: YES <input type="checkbox"/> NO <input type="checkbox"/>		
	NAME	POSITION	COMPANY/GOVERNMENT
PROCEDURE COMPLIANCE	IDENTIFY FULL COMPLIANCE WITH PROCEDURES IDENTIFIED AT PREPARATORY. COORDINATE PLANS, SPECIFICATIONS, AND SUBMITTALS.		
	COMMENTS: _____		
PRELIMINARY WORK	ENSURE PRELIMINARY WORK IS COMPLETE AND CORRECT. IF NOT, WHAT ACTION IS TAKEN?		
WORKMANSHIP	ESTABLISH LEVEL OF WORKMANSHIP.		
	WHERE IS WORK LOCATED? _____		
	IS SAMPLE PANEL REQUIRED? YES <input type="checkbox"/> NO <input type="checkbox"/>		
	WILL THE INITIAL WORK BE CONSIDERED AS A SAMPLE? YES <input type="checkbox"/> NO <input type="checkbox"/> (IF YES, MAINTAIN IN PRESENT CONDITION AS LONG AS POSSIBLE AND DESCRIBE LOCATION OF SAMPLE)		
RESOLUTION	RESOLVE ANY DIFFERENCES.		
	COMMENTS: _____		
CHECK SAFETY	REVIEW JOB CONDITIONS USING EM 385-1-1 AND JOB HAZARD ANALYSIS		
	COMMENTS: _____		
OTHER	OTHER ITEMS OR REMARKS		

QC MANAGER _____

DATE _____

APPENDIX I: Quality Assurance Report Form

APPENDIX J: Testing Plan and Log Format

APPENDIX K: Rework Items List

APPENDIX L: NAVFAC Letter dated 31 December 1998



DEPARTMENT OF THE NAVY

NAVAL FACILITIES ENGINEERING COMMAND
WASHINGTON NAVY YARD
1322 PATTERSON AVENUE SE SUITE 1000
WASHINGTON DC 20374-5065

IN REPLY REFER TO

31 December 1998

From: Commander, Naval Facilities Engineering Command

Subj: DESIGN AND CONSTRUCTION OVERSIGHT POLICY FOR NAVFAC
CONSTRUCTION WORK

Encl: (1) Guidelines for Design and Execution of NAVFAC Construction Work

1. All EFDs, EFAs, PWCs/PWDs and field offices shall ensure that appropriate professional engineering services and proper engineering oversight are provided in the design and execution of construction work under NAVFAC contracts, including contracts awarded by field offices. Recent incidents under delivery order/task order contracts have highlighted a critical need to reemphasize minimum professional engineering participation and oversight for all NAVFAC construction work.

2. Minimum professional guidelines for design and execution of NAVFAC construction are summarized in enclosure (1). Regardless of the contract vehicle used and type of construction work contracted, minimum requirements shall be included in contract documents and statements of work to ensure a sufficient level of professional design, engineering and construction management is provided for all NAVFAC construction.

3. EFDs, EFAs, PWCs/PWDs and field offices shall issue implementing directives or revisions, as appropriate, to ensure proper engineering and contractual oversight, no later than 30 January 1999. NAVFAC points of contact are Dr. Get W. Moy, P.E., Chief Engineer, (DSN 325-9165), and Mr. Robert R. Boyer, Director of Acquisition (DSN 325-9135).

A handwritten signature in black ink, appearing to read "C. R. Kubic".

C. R. KUBIC, P. E.
Vice Commander

Subj: DESIGN AND CONSTRUCTION OVERSIGHT POLICY FOR NAVFAC
CONSTRUCTION WORK

Distribution:

PACNAVFACENGCOM (00, 02, 04, 50, 16)
LANTNAVFACENGCOM (00, 02, 04, 05, 16)
NORTHNAVFACENGCOM (00, 02, 09X, 09TF)
SOUTHNAVFACENGCOM (00, 02, 07, 05, 16)
SOUTHWESTNAVFACENGCOM (00, 02, 570, 05F, 030)
EFA WEST (00, 02, 02R, T2)
EFA CHESAPEAKE (00, 02, 04, 05)
EFA NW (00, 02, 09A, 15)
EFA MIDWEST (00, 02, 07, 44)
EFA MED (00, 02, 04)
PWC GREAT LAKES (00, 10, 200, 400)
PWC GUAM (00, 10, 200, 400)
PWC NORFOLK (00, 10, 200, 400)
PWC PEARL HARBOR (00, 10, 200, 400)
PWC PENSACOLA (00, 10, 200, 400)
PWC SAN DIEGO (00, 10, 200, 500)
PWC SAN FRANCISCO (00, 10, 200, 400)
PWC YOKOSUKA (00, 10, 200, 400)
PWC JACKSONVILLE (00, 10, 200, 400)
PWC WASHINGTON (00, 10, 200, 40)
NAVFACCO Port Hueneme (27)
NFESC

Copy to (w/encl):

PMAP TEAM
CECOS
NAVFAC CONTRACEN Port Hueneme
COE, NPP/CENWP-CT (Mr. Wight)

**GUIDELINES FOR DESIGN AND EXECUTION
OF NAVFAC CONSTRUCTION WORK**

EFD/PWC Summit meetings were convened in 1996. A standard combined ROICC Field Office Model (Attachment A) was defined and NAVFAC construction work was divided into two types, Type I and Type II, based upon the characterization of the work and the level of engineering and design required to define the work. The Summit agreed that, in general, all construction would be administered from the combined ROICC office. Type I and Type II construction are differentiated by (1) technical complexity, (2) special requirements for quality assurance and quality control, (3) potential for environmental violations and (4) special safety requirements. The proper, sufficient level of professional design, engineering, and construction management shall be provided and minimum requirements outlined in paragraph C shall be included in contract documents and statements of work for all NAVFAC construction. EFD/EFA COs are responsible for final determination of work Type where there are potential conflicts.

A. Definitions:

Construction: All work which, if performed by contract, is subject to the Davis-Bacon Act (DBA). (See DFARS 222.402-70 for clarifying definitions of DBA construction work).

Type I Construction: Type I construction involves sophisticated engineering and design, or requires plans and specifications. Type I construction can be executed under a variety of procurements methods, including Design/Build, Design/Bid/Build, SOC, TOC, and other innovative contracting tools.

- Construction involving structural engineering, fire protection, high voltage electrical work and high-risk safety hazards is Type I regardless of the size or complexity of the project.
- Type I construction is work that would require a licensed Professional Engineer or Registered Architect's seal before a building permit could be obtained.
- Type I construction requires professional engineers (A-E and Government) to design and manage construction.
- EFDs/EFAs are responsible for Type I construction (including Type I construction executed by delivery order/task order contracts) within their AORs.

- Environmental work executed by contract (e.g. CLEAN and RAC) is Type I.

Type II Construction: Type II construction requires limited technical design, and can be executed by delivery order/task order contracts (e.g. JOC, SOC and TOC) or can be executed by PWC or PWD in-house forces.

- Type II construction is less sophisticated maintenance work with incidental construction and cosmetic renovation.
- Type II construction is work that could receive a building permit without a licensed Professional Engineer or Registered Architect seal.

NOTE: Design and construction involving asbestos or lead containing materials may be Type I or Type II but requires design and construction oversight by EPA/HUD accredited government and contractor personnel.

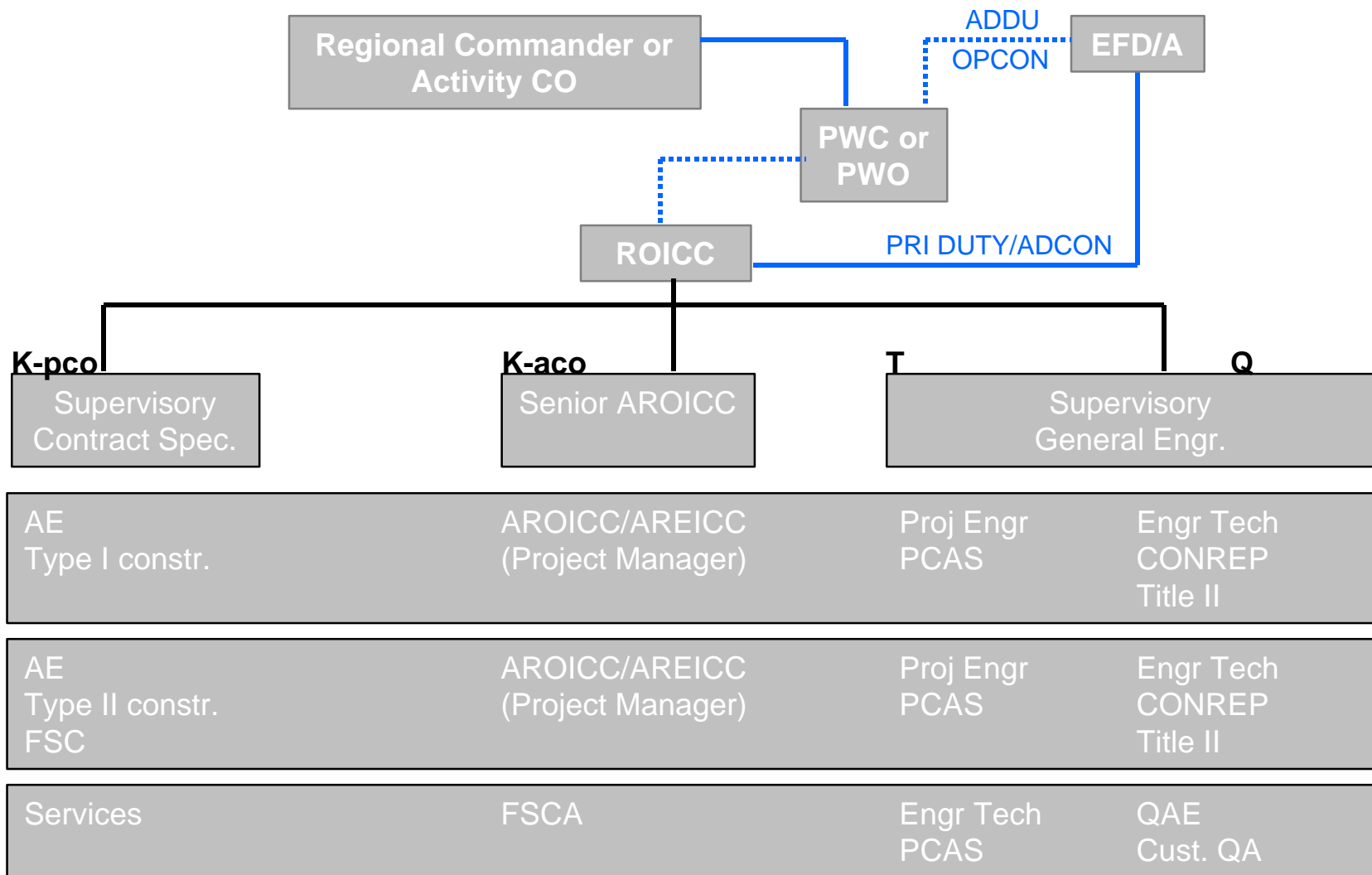
- B. Acquisition Planning: Effective Acquisition Planning includes selection of the procurement method that provides the best solution (meets operational needs, within budget, at lowest life cycle cost) to our clients' requirements, and is safe to construct, operate and maintain. This process must incorporate the proper level of engineering and post contract award oversight. Minimum engineering, building life safety and construction safety criteria must not be compromised by pressure to provide fastest delivery and/or lowest cost. A Professional Engineer (P.E.) or Registered Architect (R.A.) representing the EFD/EFA Engineering Director should participate in the PWC/PWD Acquisition Planning process.
- C. Formulation of Contract Documents: Minimally, all NAVFAC construction contracts shall include applicable NAVFAC guide specification provisions for quality control, safety and environmental controls, and shall incorporate contract Construction Quality Management (CQM) requirements defined by NAVFAC P-445, Construction Quality Management Plan (QMP), (current version January 1988, presently being revised for publication in March 1999).
- D. Design Phase: Professional engineer/architect design and design oversight shall be provided for all Type I construction and applicable Type II construction:

1. Type I construction: EFD/EFA Engineering Directors shall ensure, via their implementing directives of this guidance, that minimum engineering, building life safety and construction safety criteria are maintained in all Type I construction projects. Type I contract documents will include drawings with responsible designer's professional seal applied.
 2. Type II construction: OICC/ROICC (contracting officer and engineer) or P.E./R.A. representative of the EFD/EFA or PWC Engineering Director shall decide, based upon engineering judgment, whether specific Type II construction projects require engineering/design by a licensed Professional Engineer or Registered Architect.
- E. Construction Phase: For all NAVFAC construction, Type I and Type II, construction management, field surveillance and quality assurance oversight shall be provided by personnel qualified as required by NAVFAC P-445. These personnel include AROICCs, AREICCs, Construction Management Engineers or Project Engineers, Engineering Technicians and Construction Representatives.

Attachment

A. ROICC Field Office Model

ROICC Field Office Model



APPENDIX M: Sample QA Plan Format

CONTRACT: [Contract Number]

DELIVERY ORDER: [Delivery Order Number]

Title: [Short Title of Contract]

Ref: (a) NAVFAC P-445, Construction Contract Quality Management

(b) Designer to ROICC Report dated [Enter date of Designer to ROICC Report]

(c) P-68 Appendix M

Encl: (1) QA Report

1. PURPOSE: Establish a Quality Assurance Plan (QAP) for the surveillance of the Contractor's work to ensure compliance with contract quality requirements. The assigned QA Representative and the Project Engineer shall jointly develop the QAP. It should be developed at the earliest upon receipt of the 100% design review package.

2. RESOURCES: The QAP requires the cooperation and consultation of various individuals. Those with specific responsibilities are:

<u>POSITION</u>	<u>NAME</u>	<u>PHONE NO.</u>
ROICC		
REICC		
CONTRACTUAL		
REQUIREMENTS		
ACCEPTANCE		
SUPPORT (EFD/EFA (Tech))		
CUSTOMER		
A/E Point of Contact		
PROJECT LEADER		

3. RESPONSIBILITIES:

A. Pre-Award

1. Requirements/Acceptance

1.1 Review references (a) and (b) and perform constructibility review of the 100% design submittal.

1.2 Determine if section 01450 is adequate. Relay concerns and thoughts to REICC for discussion at EFD/EFA Pre-Award Meeting.

2. ROICC/REICC

2.1 Participate in EFD/EFA Pre-Award Meetings for this project.

B. Pre-Construction (Post Award)

1. Requirements/Acceptance

1.1 Review references (a) and (b) as well as the plans, specifications and proposed QC Plan to determine critical construction features.

1.2 Conduct coordination and mutual understanding meeting.

1.3 Review and recommend approval/disapproval of QC Plan.

1.4 Complete preparation of QAP and submit to REICC.

2. ROICC/REICC

2.1 Review references (a), (b), and (c). Review plans, specifications, proposed QC Plan, and this QAP.

2.2 Recommend approval or disapproval of the QC Plan and submit to Contracting Officer for approval.

2.3 Approve QAP.

C. During Construction

1. Requirements

1.1 Ensure all submittals/shop drawings/samples etc. are submitted, reviewed and approved or disapproved as discussed in Section 01300 of the project specification.

1.2 Ensure AE/PL site visits occur each month (or other frequency as appropriate) to maintain AE/PL effectiveness during construction. PCAS should be awarded to have the designer and his consultants participate in team inspections as appropriate, pre-final and final inspections. Ensure that AE provides trip report for each visit.

2. Acceptance

2.1 Review Section 01450 and the Contractor's prepared schedule. Witness preparatory, initial, and follow-up phases of control conducted by the QC organization, as appropriate, on the following definable features of work:

Definable Feature(s) of Work & Schedule Activity Number:

[List the Definable Features of Work (with its associated Schedule Activity Number) for which you will be observing the QC conducted Control Phases. Example:

Definable Feature(s) of Work & Schedule Activity Number:

Section 15996 TAB (15996-41)

Grounding System (16402-33)]

2.2 Witness and monitor, as appropriate, all required contract testing outlined in the Contractor's Testing Plan.

2.3 Ensure the following assistance is obtained for specific Definable Features of Work:

<u>Definable Feature of Work</u>	<u>Support Personnel</u>
----------------------------------	--------------------------

[List the Definable Features of Work for which you plan on having additional EFD/EFA Tech Staff. Example:

Section 15996 TAB ([Insert Spec Para Number]) [Name]

Concrete Placement ([Insert Spec Para Number])[Name]]

2.4 Visit job site [Enter frequency of job site visits to monitor QC Plan compliance (e.g.; daily, weekly, etc.)] to review QC reports. Monitor contractor's compliance with approved QC Plan. Discuss any issues with QC Manager. Complete enclosure (1) for each site visit as appropriate.

2.5 Attend [Enter frequency you will attend QC Meetings (e.g.; all, random, etc.)] QC Meetings and document results on enclosure (1). Review QC Meeting minutes.

2.6 Conduct team review approximately [Enter frequency of team site visits (e.g. 30 days, etc.)] after on-site work begins. This shall be a comprehensive review of the Contractor's QC System to ensure that it is adequate and is operating as envisioned in the QC Plan. Additional team inspections will be conducted at the following points in construction:

<u>Item of work</u>	<u>Team Members</u>
---------------------	---------------------

[Exercise good judgement here. List the DFOWs used to perform a comprehensive review of the QC System to ensure it is adequate and operating as envisioned in the QC Plan. List team members which may include AE, PL, EFD/EFA technical personnel, etc. Example:

<i>Item of Work</i>	<i>Team Members</i>
---------------------	---------------------

<i>Section 15996 TAB (15996-41)</i>	<i>[Name]]</i>
-------------------------------------	----------------

D. Close Out

1. Requirements

1.1 Ensure that the requirements of Specification Section 01770 are complied with.

2. Acceptance

2.1 Coordinate preliminary and final walk-through with customer.

2.2 Ensure QC Punch List is complete and accurate.

Submitted by: _____

Date: _____

QA Representative

Approved by: _____

Date: _____

ROICC/REICC/DROICC

APPENDIX N: Training Requirements for NAVFAC QA Personnel

A-E, CONSTRUCTION, ENVIRONMENTAL and FACILITY SERVICE QUALITY ASSURANCE

(Minimum Training Requirements for Personnel Performing)

30 Sept 99

Minimum A-E Quality Assurance Training Requirements for Architect-Engineer Personnel

Minimum Construction Quality Assurance Training Requirements for Quality Assurance Representatives

Minimum Construction Quality Assurance Training Requirements for ROICCs, Supervisory General Engineers and Technical Representatives

Minimum Quality Assurance Training for Personnel Performing Hazardous Waste Operations, Remediation Projects, Asbestos or Lead Abatement Projects.

Minimum Facility Services Quality Assurance Training Requirements for Quality Assurance Evaluators

Minimum Facility Services Quality Assurance Training Requirements for Facility Support Contract Assistant Resident Officers in Charge

Minimum Facility Services Quality Assurance Training Requirements for Facility Support Contract Heads of Contracting Offices

ARCHITECT-ENGINEERING QUALITY ASSURANCE

(Minimum Training Requirements for Personnel Performing)

(See Note 1)

1. Not later than the end of the first six months of assignment to Architect-Engineer (A-E) contract quality assurance (QA) duties (see note 2), each employee shall have accomplished the following training:

- a. Architect-Engineer Fixed Price Contracting, CTC 466 (see note 3)

2. Not later than the end of the second year of assignment to Architect-Engineer (A-E) contract quality assurance (QA) duties, each employee shall have accomplished the following training:

- a. Source Selection, CTC 415 (see note 3)
- b. Technical Evaluation Board, CTC 315 (see notes 2 & 3)

3. To be eligible to perform COTR or NTR duties on Environmental cost-type contracts, each employee shall have accomplished the following training, within six months from the date of the COTR or NTR appointment:

- a. Environmental Cost Reimbursement Contracting, CTC 423 (see note 3)

NOTES:

- (1) The respective EFD/EFA shall determine if other training is equivalent and ensure that employee-training records are appropriately annotated.
- (2) Under NAVFACENGCOM A-E contracts, several position titles are used to refer to individuals who perform these functions usually in combination with functions of a technical engineering and architectural nature. Among these position titles are Engineer-in-Charge, Architect-in-Charge, Designer-in-Charge, Design Manager, Project Manager and Remedial Project Manager. The Source Selection course (CTC 415) must be completed before attending the Technical Evaluation Board (CTC 315). A local course or a course from the GSA schedule may be more appropriate if the requirement is only needed for cost-reimbursement contracts not dealing with Environmental contracts.
- (3) Naval Facilities Contract Training course

CONSTRUCTION QUALITY ASSURANCE

(Minimum Training Requirements for QA Representatives Performing)

(See Note 1)

1. Not later than the end of the first six months of assignment to construction QA representative (Construction Representative (CONREP)/Engineering Technician ENGTECH) duties, each CONREP/ENGTECH shall have accomplished the following training:
 - a. NAVFAC (EFD/EFA) Construction Safety & Health Correspondence Course (see note 2)
 - b. Construction Quality Management--QV (see notes 3 & 4)
2. Not later than the end of the first year of assignment to CONREP/ENGTECH duties, each CONREP/ENGTECH shall have accomplished the following training:
 - a. Introduction to General Construction--QV (see notes 3 & 4)
3. Not later than the end of the second year of assignment to CONREP/ENGTECH duties, each CONREP/ENGTECH shall have accomplished the following training:
 - a. Construction Hazard Awareness course (see note 5)
 - b. Project Scheduling (see notes 3 & 6)
4. Not later than the end of the third year of assignment to CONREP/ENGTECH duties, each CONREP/ENGTECH shall have accomplished one of the following training courses. The remaining two training courses shall be accomplished by each CONREP/ENGTECH prior to the end of the fourth year of assignment to CONREP/ENGTECH duties:
 - a. Mechanical--QV (see note 3)
 - b. Electrical--QV (see note 3)
 - c. Concrete--QV (see notes 3 & 4)
5. At least two CONREP/ENGTECHs in each large Construction Contract Administration Office and one in each medium size Construction Contract Administration Office shall have accomplished the following training:
 - a. Roofing Technology (see notes 3 & 4)
 - b. Paint--QV (see note 3)
 - c. HVAC System TA&B—QV (see note 3)
 - d. Flexible Pavement Construction--QV (see note 3)
 - e. Earthwork I--QV (see note 3)
 - f. Architectural Hardware--QV (see note 3)

g. Basic Welding--QV (see notes 3 & 4)

6. At least one CONREP/ENGTECH in each small size Construction Contract Administration Office shall have accomplished the following training:

a. Roofing Technology (see notes 3 & 4)

b. Paint—QV (see note 3)

c. HVAC System TA&B—QV (see note 3)

7. Any individual tasked to facilitate USACE Exportable Training (facilitated video training) shall have accomplished the following training:

a. Facilitator Workshop (see note 3)

USE THE FOLLOWING NUMBER OF CONSTRUCTION QUALITY ASSURANCE PERSONNEL IN DETERMINING OFFICE SIZE:

LARGE OFFICE: > 10 QA PERSONNEL

MEDIUM OFFICE: 5-10 QA PERSONNEL

SMALL OFFICE: < 5 QA PERSONNEL

NOTES:

(1) The respective EFD/EFA shall determine if other training is equivalent and ensure that employee-training records are appropriately annotated. CASU/Title II employees must comply with the same requirements as CONREPs/ENGTECHs.

(2) Administered by the EFD/EFA Safety Manager

(3) US Army Corps of Engineers Proponent Training Program (classroom)

(4) US Army Corps of Engineers Exportable Training Program (facilitated video training).

(5) NAVFAC approved training course in construction safety and health standards. Contact EFD/EFA Safety Manager for approved courses. If you take an approved 40 hrs const. haz. awareness course which includes accident prevention techniques and appropriate testing, you meet the requirements of both Part I and II NAVFAC Construction Safety & Health Correspondence Course and the Accident Investigation course.

(6) This training is only mandatory for Engineering Technicians and recommended for Construction Representatives.

RESIDENT OFFICERS IN CHARGE OF CONSTRUCTION, SUPERVISORY GENERAL ENGINEERS and TECHNICAL REPRESENTATIVES

(Minimum Training Requirements for Personnel Performing Duties as)

(See Note 1)

1. Not later than the end of the first six months of assignment to ROICC, SGE or Technical Representative (AROICC/AREICC/Project Engineer) duties, each ROICC, SGE or AROICC/AREICC/Project Engineer shall have accomplished the following training:

- a. NAVFAC Construction Safety & Health Correspondence course (see note 2)
- b. Construction Quality Management (see notes 3 & 4)

2. Not later than the end of the first year of assignment to ROICC, SGE or AROICC/AREICC/Project Engineer duties, each ROICC, SGE or AROICC/AREICC/Project Engineer shall have accomplished the following training:

- a. ROICC Office Management (see note 6)

3. Not later than the end of the second year of assignment to ROICC, SGE or AROICC/AREICC/Project Engineer duties, each ROICC, SGE or AROICC/AREICC/Project Engineer shall have accomplished the following training:

- a. Construction Hazard Awareness course (see note 5)
- b. Estimating for Construction Modifications (see note 3)
- c. Project Scheduling (see note 3)

4. Any individual tasked to facilitate USACE Exportable Training (facilitated video training) shall have accomplished the following training:

- a. Facilitator Workshop (see note 3)

NOTES:

- (1) The respective EFD/EFA shall determine if other training is equivalent and ensure that employee-training records are appropriately annotated.
- (2) Administered by the EFD/EFA Safety Manager
- (3) US Army Corps of Engineers Proponent training program (classroom)
- (4) US Army Corps of Engineers Exportable Training Program (facilitated video training).
- (5) NAVFAC approved training course in construction safety and health standards. Contact EFD/EFA Safety Manager for approved courses. If you take an approved 40 hrs Construction Hazardous

Awareness course which includes accident prevention techniques and appropriate testing, you meet the requirements of both Part I and II NAVFAC Construction Safety & Health Correspondence Course and the Accident Investigation course.

(6) Naval School, Civil Engineer Corps Officers (CECOS).

HAZARDOUS WASTE OPERATIONS, REMEDIATION PROJECTS, ASBESTOS or LEAD ABATEMENT PROJECTS

(Minimum Training Requirements for Personnel Performing)

(See Note 1)

1. These courses are mandatory for personnel who work in contaminated zones (see note 9) of Hazardous Waste Operations (HWO) and remediation projects. No one is allowed to perform site work prior to receiving this required training. Safety and Health training requirements are mandated by Congress in the Superfund Amendment and Reauthorization Act of 1986. Under the authority of SARA, the Occupational Safety and Health Administration (OSHA) expanded its regulations to cover HWO (29 CFR 1910.120). Based on projected workload for environmental projects, each ROICC office shall ensure that an adequate number of Construction Representatives, Engineering Technicians, Navy Technical Representatives (NTRs) and their on-site supervisors receive the following training. If you have questions as to who should receive training, contact your EFD/EFA Safety and Environmental office for assistance.

- a. Safety/Health for HWO (40 hours for Construction Representatives, Engineering Technicians and NTRs, 40 hrs for their supervisors plus an additional 8 hours of supervisory training) (see notes 2,3, 6, 7 & 8)
- b. Supervised on-the-job training (see notes 4 & 7)
- c. Annual Hazwoper refresher (8 hours) (see notes 2, 3, 6, 7 & 8)

2. Not later than the end of the first year of assignment to work in contaminated zones (see note 9) of Hazardous Waste Operations (HWO) and remediation projects, each employee shall have accomplished one of the following training courses. The remaining training course shall be accomplished prior to the end of the second year:

- a. Hazardous/Toxic and Radioactive Waste Construction Inspection
- b. (see note 3)
- c. Quality Assurance for Environmental Sampling for HTRW Sites
- d. (see note 3)

3. These courses are mandatory for personnel who work in support zones or contaminated zones for Asbestos or Lead Abatement projects (see note 10). No one is allowed to perform site work prior to receiving this required training. The Department of Labor, Occupational Safety and Health Administration (OSHA) mandate safety and health training requirements. OPNAVINST 5100.23E provides Navy policy, procedures & guidance for lead and asbestos projects. Based on projected workload for asbestos or lead abatement projects, each ROICC office shall ensure that an adequate number of Construction Representatives, Engineering Technicians, Navy Technical Representatives (NTRs) and their on-site supervisors receive the

following training. If you have questions as to who should receive training, contact your EFD/EFA Safety and Environmental office for assistance.

- a. Asbestos Abatement Contractor/Supervisor (see notes 5 & 7)
- b. Asbestos annual refresher (8 hours) (see notes 5 & 7)
- c. Lead Abatement Contractor/Supervisor (see notes 5 & 7)
- d. Lead annual refresher (8 hours) (see notes 5 & 7)

NOTES:

- (1) The respective EFD/EFA shall determine if other training is equivalent and ensure that employee-training records are appropriately annotated
- (2) NAVFAC Engineering Service Center course.
- (3) US Army Corps of Engineers Proponent training program (classroom).
- (4) Each EFD/EFA Safety and Environmental office shall develop a 24-hour on-the-job training (supervised) and any other special training needed to perform HWO and remediation projects.
- (5) ROICC personnel involved in asbestos or lead projects shall receive training and accreditation in accordance with federal, state and local laws governing asbestos or lead operations. Additional hazard specific safety and health training shall be provided prior to personnel exposure on-site. Requirements for lead training and certification are contained in 40 CFR 745, Subpart L. Requirements for Asbestos training and certification are contained in OPNAVINST 5100.23E
- (6) Alternate sources of HWO training are available. Contact your EFD/EFA Safety and Environmental office for course schedules and additional information.
- (7) The EFD/EFA Safety Manager shall assist ROICC personnel to ensure that appropriate training is provided.
- (8) Naval School, Civil Engineer Corps Officers (CECOS)
- (9) Once contamination is discovered, or a work site is designated for clean up, only fully trained personnel are allowed to work on this site. However, once the work area is characterized (i.e., the support zone (entire work site) and the contaminated zones are identified), the employees whose duties are limited strictly to the support zone with no possibility of entry into the contaminated zone or subsequent potential exposure are not required to take the training per 29 CFR 1910.120(e).
- (10) When a site containing asbestos or lead contamination is designated for clean-up or asbestos or lead contamination is discovered at a work site, only fully trained personnel are allowed to enter the support zone (entire work site).

FACILITY SERVICES QUALITY ASSURANCE EVALUATORS

(Minimum Training Requirements for Personnel Performing Duties as)

(See Note 1)

1. Not later than the end of the first six months of assignment to Quality Assurance Evaluator (QAE) duties (see note 2), each QAE shall have accomplished the following training:

- a. Quality Assurance Evaluator Training course (see note 3)
- b. NAVFAC (FSC) Construction Safety & Health Correspondence course (see note 4)

2. Not later than the end of the first year of assignment to Quality Assurance Evaluator (QAE) duties, each QAE shall have accomplished the following training:

- a. Facility Support Contracting (CTC 337) (see note 5)

NOTES:

- (1) The respective EFA/EFA shall determine if other training is equivalent and ensure that employee-training records are appropriately annotated.
- (2) The term QAE, as used herein, refers to any employee performing day-to-day contractor/government interface duties of NAVFACENGCOM facility support contract (FSC) quality assurance (QA). Several other position titles, such as Contract Surveillance Representative, Inspector or Customer Monitors may also perform FSC QA.
- (3) Any individual who performs NAVFACENGCOM FSC QAE duties on NAVFACENGCOM awarded contracts (including non-Navy personnel) must be adequately trained. The QAE training offered by EFDs or equivalent is required.
- (4) Administered by the EFD/EFA Safety Manager
- (5) Naval Facilities Contract Training course.

FACILITY SUPPORT CONTRACT ASSISTANT RESIDENT OFFICERS IN CHARGE

(Minimum Training Requirements for Personnel Performing Duties as)

(See Note 1)

1. Not later than the end of the first six months of assignment to facility support Assistant Resident Officer in Charge (AROICC) (see note 2) duties, each facility support contract AROICC shall have accomplished the following training:

- a. Facility Support Contracting CTC 337 (see note 3)
- b. NAVFAC (FSC) Construction Safety & Health Correspondence course (see note 4)

NOTES:

- (1) The respective EFA/EFA shall determine if other training is equivalent and ensure that employee-training records are appropriately annotated.
- (2) The term AROICC, as used herein refers to civilian employees and Civil Engineer Corps (CEC) officers responsible to an HCO for administration of specific assigned contracts. Civilian employees performing this function are usually referred to as Facility Support Contract Managers.
- (3) Naval Facilities Contract Training course
- (4) Administered by the EFD/EFA Safety Manager

FACILITY SUPPORT CONTRACT HEADS OF CONTRACTING OFFICES

(Minimum Training Requirements for Personnel Performing Duties as)

(See Note 1)

1. Not later than the first six months of assignment to facility support contract (FSC) Head of Contracting Office (HCO) (see note 2) duties, each FSC HCO shall have accomplished the following training:

- a. Facility Support Contracting CTC 337 (see note 3)
- b. NAVFAC (FSC) Construction Safety & Health Correspondence course (see note 4)

NOTES:

- (1) The respective EFA/EFA shall determine if other training is equivalent and ensure that employee-training records are appropriately annotated.
- (2) The term FSC HCO, as used herein, refers to a Civil Engineer Corps Officer responsible for the overall management of a NAVFACENGCOM FSC contracting office.
- (3) Naval Facilities Contract Training course
- (4) Administered by the EFD/EFA Safety Manager

APPENDIX O: Initial/Update Schedule Review/Analysis

Reviewing and Analyzing the Preliminary or Initial [Baseline] Schedule

Note: This checklist is to be used in conjunction with the new NFGS 01321D. If used with any other specification, use only to the extent that it is applicable.

Note: Government review shall extend only to activities (and connecting relationships) of the Contractor's schedule that the Government has been assigned responsibility for and the Government agrees it is responsible. The Government will also review for contract imposed schedule constraints, conformance, and cost loading of the CPM activities. Caution must be exercised that review comments made by the Government on the Contractor's construction schedule will not relieve the Contractor from the responsibility of scheduling, sequencing, and prosecuting the Work. Comments offered on other parts of the schedule, which the Contractor is assigned responsibility, shall be clearly identified as not being a part of government acceptance.

Note: Contractor is responsible for all items listed below. The highlighted items are verifications that the government Project Team should perform for compliance with the specifications.

General Requirements

ITEM	DESCRIPTION	YES	NO
1	Qualifications of Scheduler have been submitted and comply with the specs?		
2	Standard Activity Code Dictionary has been defined and submitted?		
3	Was Precedence Diagram format used?		
4	Schedule calculations set to Retain Logic, not Progress Override (software setting)?		
5	% Complete separated from Remaining Duration (software setting)?		
6	Organized by Early Start; activity flow from left to right?		
7	Critical Path is clearly depicted?		
8	Are Critical Activities defined as being less than 1 day (software setting)?		
9	If Preliminary Schedule was used, do activities at end of 90 day period mesh w/ Initial Schedule?		

Review

ITEM	DESCRIPTION	YES	NO
1	Is the schedule complete?		
	a. Reflects contractual scope of work?		
	b. Activity descriptions are clear?		
2	Are required activity codes entered? (I.e.; Work Category, Area,		

	Responsibility, etc.)		
3	Are activities cost and resource loaded?		
	a. Ensure early activities are not "front-end loaded" with excessive costs.		
	b. Are activities loaded with adequate labor hours, crews and equipment? (This is a key factor in determining activity duration.)		
4	Are activity categories and durations reasonable?		
	a. Construction activities no longer than 20 workdays (or as allowed by contract)?		
	b. Are all construction activity categories represented?		
	c. Government responsibility activity durations in accordance with contract?		
	d. Are all government activity categories represented?		
	e. Are the activities assigned as government responsibility correctly assigned?		
	f. Procurement activities shown for each specification section?		
	g. Are all procurement activity categories represented?		
5	Are activity relationships complete?		
	a. Only the first and last schedule activities are open-ended?		
	b. All necessary logical relationships included?		
	c. No redundant relationships exist?		
6	Are activity relationships valid?		
	a. Relationships reflect logical work sequence?		
7	Is the project calendar complete?		
	a. Calendars for contractor activities defined?		
	b. Calendars for government activities comply to contract definitions?		
	c. Calendars for activities not reliant on workdays are defined?		
8	Is the schedule duration within the contract time?		
	a. Schedule completion on or before Contract Completion Date?		
	b. Negative float not shown on the Critical Path?		
9	Are contractual milestones correct and met?		
	a. "Contract Award" milestone is constrained to award date?		
	b. "Start Project" milestone is constrained to Notice-to-Proceed date?		
	c. "End Project" milestone is constrained to Contract Completion Date?		
	d. Interim milestones are being met and are <u>not</u> constrained?		

Analysis

ITEM	DESCRIPTION	YES	NO
1	Is the critical path reasonable?		
	a. Are the activities on the path of a significant nature?		
	b. Would these activities normally control project completion?		
	c. Has the contractor used float suppression techniques?		
	d. Do assigned resources support activity durations?		
	e. Any date or other constraints applied other than specified?		
2	Are there multiple critical paths?		
	a. Are there any faulty relationships causing the additional path(s)?		
	b. Are any activity durations excessively long?		
3	What activities are near critical?		
	a. Is the number of critical and near critical activities within the contract limit?		
	b. Do assigned resources support activity durations?		
	c. Any date or other constraints applied other than specified?		
4	How does the work flow?		
	a. Does the work flow from start to end of schedule in a logical manner?		
	b. Are there any apparent discontinuities in the work?		
5	Any conflicts between concurrent activities?		
	a. Will the concurrent activities interfere with each other?		
	b. Will concurrency cause any safety hazards?		
6	Is there an excessive amount of work at any time?		
	a. Will too many people be in one area at any given time (causing inefficiencies)?		
7	Are there sufficient resources to support concurrent activities?		
	a. Do assigned resources support activity durations?		
	b. Do the Procurement Activities support the construction activities?		
8	Are any activities scheduled out of season?		

Reviewing and Analyzing Schedule Updates

Note: The first schedule update will use the Initial [Baseline] schedule that was accepted by the Government, as its baseline. Each follow on update will use the previous month's update as its baseline. Updates are cumulative of current and all previous accepted updates.

Note: The first one to three schedule updates will potentially have many changes; as the Contractor "settles into the project" and becomes increasingly familiar with the project requirements and their scheduling errors. Because of these changes, the Project Team Members must remain as vigilant in the first few updates as they were in the Initial Schedule review.

General Requirements

ITEM	DESCRIPTION	YES	NO
1	Schedule calculations set to Retain Logic, not Progress Override (software setting)?		
2	% Complete separated from Remaining Duration (software setting)?		
3	Organized by Early Start; activity flow from left to right?		
4	Are Critical Activities defined as being less than 1 day (software setting)?		
5	Have any activity calendars been changed?		
6	Activity Log(s) are updated for each revision?		
7	Ensure meeting minutes are kept by Contractor and provided to Government.		

Gather Activity Status Information

Note: (Primarily Contractor's responsibility, but Field Office should also gather data during progress period to prepare for meeting.)

ITEM	DESCRIPTION	YES	NO
1	Establish Update Date (scheduling software data date)?		
2	Where is information for activity status gathered from (Direct Observations, Meetings, Field Reports, etc.)?		
3	Enter revisions (activities and relationships) from conformed modifications		
4	Determine each activity's status:		
	a. Actual Start Date – Date meaningful work started		
	b. Percent Complete – Satisfactory Work-in-Place vs. Contracted Work Quantity		
	c. Remaining Duration – Comparing production rate to-date with		

	remaining work.		
	d. Actual Finish Date – When work is substantially complete (does not hinder start of successor activities)		
	e. % Payment on Activities - % of Satisfactory Work-in-Place vs. Budgeted Cost		
	f. If CCD was changed by SF30, enter new date in “End Project” Milestone.		
5	Determine Schedule Status		
	a. Recalculate the schedule with the new data and data date.		
	b. Plot the schedule and print the reports for analysis.		

Analyze Schedule Status

ITEM	DESCRIPTION	YES	NO
1	What is the planned completion date?		
	a. Normal to have small variations in planned completion.		
	b. If large discrepancy, determine why.		
2	Has the critical path shifted and how?		
	a. Compare the current Critical Path to the previous schedule		
	b. Determine cause of shift		
	c. Were there any shortages in crew(s) or equipment?		
	d. Was there any equipment breakdowns?		
	e. Planned labor/equipment resource not adequate?		
	f. Did Unforeseens, Design Errors, etc. cause shift?		
3	Has the float of any activity changed and why?		
	a. Who was responsible for float consumption?		
4	Has weather become a factor for any activities?		
	a. Weather sensitive activities pushed in or out of adverse weather periods?		
	b. Change in anticipated weather delays required?		
5	Are there any trends worth watching?		
	a. Are any crews consistently ahead or behind schedule?		
	b. Does the trend require activity duration adjustments?		
6	Does the Contractor intend on changing any planned labor or equipment resources?		
<p><i>If project is proceeding as planned, go to “Implement The Updated Schedule”; if not preceding to plan, go to “Modify/Revise and Re-Analyze The Schedule”.</i></p>			

Modify/Revise and Re-Analyze the Schedule

ITEM	DESCRIPTION	YES	NO
1	Revising the network logic		
	a. Are any revisions necessary to meet completion dates?		
	b. Any revisions to accommodate new approaches to work?		
	c. Any new relationships added because of new activities?		
	d. Has any out-of-sequence work been performed?		
2	Revising the activity duration		
	a. Has the planned quantity of work changed?		
	b. Have the planned available resources for an activity changed?		
	c. Has anticipated productivity changed from the planned rate?		
	d. Are changes due to Variance Request(s) by Contractor?		
3	Adding and "Zeroing" activities		
	a. Have obsolete, unstatused activities been set to zero duration?		
	b. Have activities been split-out for greater detail but original durations maintained?		
4	Analyze the updated schedule		
	a. Recalculate the schedule with the revisions.		
	b. Plot the schedule and print the reports for analysis.		
5	Identify responsible party(s) for increase/decrease of schedule duration		
	a. If delay caused by Government, should a Time/Money Change be granted?		
	b. If delay caused by Contractor, what action is the Contractor going to take to regain the schedule?		
	c. If delay caused by <i>force majeure</i> (acts of God), should a Time [only] Change be granted?		
	d. Are there any concurrent delays?		
6	Perform any additional independent reviews when submitted with progress payment.		
	a. Ensure <u>only</u> the agreed to changes were made.		
	b. Recommend any adjustments of the CCD to the Project Team		

Implement the Updated Schedule

ITEM	DESCRIPTION	YES	NO
1	Mitigate problems identified during update process		
2	This is the schedule to be used to focus your energy on for disruption/delay avoidance/control.		

APPENDIX P: Construction Contract Non-Compliance Notice

CONSTRUCTION CONTRACT NON-COMPLIANCE NOTICE

NAVFAC 4330/36 (Rev. 7-87)

This is prepared on CARBONLESS paper.
Tear off a complete set BEFORE filling in.
See additional instructions on reverse side.

1. CONTRACTOR/RESPONSIBLE INDIVIDUAL		3. NOTICE NUMBER	
2. CONTRACT NUMBER, PROJECT, AND ACTIVITY		4. DATE	
5. SPEC PARAGRAPH AND/OR DRAWING NUMBER		6. REFERENCE (Shop Drawing, Certification, CQC Report Number)	
7. DEFICIENCY IN WORKMANSHIP AND/OR MATERIAL/REPLY DATE		8. CORRECTIVE ACTION ACCOMPLISHED	
<p>This notice does NOT authorize Any work not included in the Contract and shall not constitute a basis for additional payment or time.</p> <p>If you are in disagreement with this Notice, contact the Resident Officer in Charge of Construction immediately.</p>	9A. NAVY QA REPRESENTATIVE		
	DATE NOTED	SIGNATURE AND TITLE	
		9B. ROICC/ROICC REPRESENTATIVE	
DATE ISSUED	SIGNATURE AND TITLE		
		10. CONTRACTOR'S ACKNOWLEDGEMENT	
DATE RECEIVED	SIGNATURE AND TITLE		

INSTRUCTIONS

General

This form is applicable to construction contracts accomplished under the cognizance of the Commander, Naval Facilities Engineering Command.

Distribution of completed form

Superintendent or CQC Representative (White) (Original and first copy)
Contractor's home office (Pink)
ROICC designated representative (Blue)
ROICC Office (Yellow)

Item No. 1, Contractor/Responsible Individual

Individual responsible – superintendent, foreman, or subforeman

Item No. 3, Notice Number

Number consecutively for each job with only ONE DEFICIENCY noted.

Item No. 7, Deficiency in workmanship and/or material – reply date.

Briefly describe the deficiency and include the date that RETURN of white copy with Item No. 8 completed to the OICC/ROICC is required.

Item No. 10, Contractor's Acknowledgement

For completion by contractor as appropriate. If this is a CQC job, indicate corrective action on daily CQC report and post in the non-compliance check-off list.

CONSTRUCTION CONTRACT NON-COMPLIANCE NOTICE (CCCN) NAVFAC 4330/36

A. DESCRIPTION/PURPOSE

This form is used to notify construction contractors of deficiencies and to record corrective action taken. It is drafted by inspection personnel, signed by the appropriate Government representative and delivered to the appropriate representative of the Construction Contractor who signs in block 10, acknowledging receipt of it.

B. PREPARATION INSTRUCTION

Form completion:

Item numbers coincide with numbers shown on sample.

1. Contractor. Enter Construction Contractor's company name.
2. Contract Number, Project, and Activity. Enter the number of the construction contract, the title of the contract, and for "Activity" enter "the name of the Activity or Station as appropriate."
3. Notice Number. Number notices sequentially by construction contract.
4. Date. Enter date of notice using Navy dating system; e.g., 17 Aug 1984
5. Spec Paragraph and/or Drawing Number. Enter appropriate reference to construction contract documents.
6. Reference. Enter applicable reference, if any, to shop drawings, certifications, QC Reports.
7. Deficiency in Workmanship and/or Material. Enter brief narrative description of item not in compliance. Be specific.
8. Corrective Action. Completed by Construction Contractor indicating corrective action to correct deficiency noted.
- 9A. QA Representative. Signed by QA Representative.
- 9B. ROICC/ROICC Representative. Signed by the Designated Government Representative for the particular construction contract.
10. Contractor's Acknowledgement. Signed by the Construction Contractor's QC Representative if a QC contract or the Construction Contractor's project superintendent, if the contract is not a QC contract.

C. GENERAL INSTRUCTIONS.

When the Inspector notes a construction deficiency, the form should be completed listing only on deficiency on each notice. The QA Rep completed blocks 1 thru 7 then signs and dates the notice. The QA Rep then obtains the signature of the appropriate Government representative. After the Government

representative signs the form, the QA Rep presents it to the QC Manager. The QC Manager should acknowledge receipt of the notice by signing in block 10.

After the form is signed by the Construction Contractor's Representative, that person is given the original white and one white copy. When the item has been corrected, the Contractor should return the original with the corrective actions noted to the inspector. The form should be accepted only after the QA Rep is satisfied that the item is properly corrected.

If appropriate, the QA Rep shall take a photograph of the deficiency and attach a copy to the CCCN.

D. FREQUENCY

As required.

E. DUE DATE

Due with the daily QC Report for the day the deficiency was noted.

F. DISTRIBUTION

The pink and yellow copies are attached to the QC report(s) and turned into the Project Manager. The Project Manager will mail the pink copy to the Construction Contractor's home office. The yellow copy is filed by the Project Manager in a suspense file for the appropriate contract. When the white original is received from the Contractor indicating that corrective action has been taken the original is filed with the appropriate QC Report.

The QA Rep retains the blue copy with his/her files. It is used to follow up correction. At the close of each contract all uncorrected deficiencies still remaining shall be transferred by the inspector to the final inspection punch list. Payment deductions or appropriate retention of progress payments should be taken until all corrective actions are acceptable to the QA Rep.

APPENDIX Q: Construction Assistance Visit (CAV) Enclosures

PRE-VISIT INFORMATION

1. Each Field Office will send the following information to the Construction Department NLT 30 days before the Field Office Construction Assistance Visit (CAV):

- Current Organization Chart
- Current Modifications and Warranty Logs for the project(s)
- List of all Active Construction Contracts highlighting projects with full time QC Manager, TABS/ACATS provisions and OMSI packages.
- Areas of Construction Management excellence that you want the Team to review during the visit
- Specific areas of concern that you want the Team to review
- Location of the In-Brief and Out-Brief and list of attendees and their office phone numbers
- Completed Quality Management Checklists (Enclosures 2, 3, and 4)

2. The Field Office will provide the following support during the visit:

- A working office for the Team. This includes telephone and one computer with printer access
- QA Representatives to escort team members around job sites
- Coordinate meeting with customer representative
- Copy of the Quality Assurance Plan for the project(s)
- Copy of following:
 1. Construction Schedule
 2. Submittal Log
 3. Modification Log
 4. RFI Log
 5. QC Plan and Safety Plan

APPENDIX Q

Enclosure (1)

Appendix Q-2



QUALITY ASSURANCE CHECKLIST

Office Management and Controls

1. Does the ROICC conduct a project status review with the Project Manager/Engineer at least on a monthly basis?
2. Is there a management information system in-place to track:
 - Constructibility Reviews
 - RFI Processing Time
 - Submittal Processing Time
 - Modification Processing Time
 - Cost Growth Due to Modifications
 - Action Correspondence
 - TABS/ACATS Submittals and Deficiencies noted during TABS QA verification of QC requirements

Payment to Contractors

1. Does the Field Office have a published payment and retention policy? If so, is it being followed?
2. Are QA Representatives making sure material and labor on the invoices is correct?
3. Are only approved materials being considered for payment?

Effectiveness of QA Staff (QA Representatives and Project Engineer)

1. Does QA staff have the minimum QA training specified in P-445?
2. Does the ROICC have a multi-disciplined QA staff i.e. general, electrical and mechanical con reps? If not, then how are these shortfalls being covered?
3. Is there an office policy for processing daily reports?
4. Are daily reports (Production/Quality) timely, accurate, complete, including site conditions?
5. Do the Supervisory Con Rep and Project Engineer review the Daily Reports?
6. Is the office getting maximum use out of CASU inspectors, Title II Services, QC System and QA Plan visit by the designers of record?
7. Are QC records easy to locate? Are they complete?
8. Does QA rep and/or Project Engineer attend critical Preparatory and Initial Phase control meetings?
9. Does a member of the ROICC Construction Team attend the QC Meeting and Production Meeting?
10. Are Contractor Performance Evaluations done in a timely manner?
11. Does the Project Engineer hold weekly 5-Part Meetings?
 - ✓ Review Construction Schedule
 - ✓ Review RFI Log
 - ✓ Review Modification Log
 - ✓ Review Submittal Log
 - ✓ Review QC/Safety

Appendix Q

Enclosure (2)

Appendix Q-3

Safety and QC Enforcement

1. Team will evaluate the office's construction safety program, enclosure 4.
2. Team will visit the project and evaluate the QC System and staff using enclosures 3 and 4.
3. Are the ROICC, REICC and Supervisory QA Representative actively engaged in the:
 - Project QA/QC Systems?
 - Project Safety Program?
 - Field Offices Safety Program (NAVOSH)?

Effectiveness of In-House Training Programs

1. Does the office have an in-house training program for its military/civilian associates? If not, explain why it does not.
2. Are accurate training records being kept? If not, then why doesn't the office have an in-house training program?
3. Is there a mentoring program for new members of the Field Office on Safety, QC and QA?

Project Closeout and Warranty Enforcement

1. Does the Field Office have a written policy for closing out contracts in a timely manner?
2. Are OMSI and O&M manuals and specified training being turned over and completed before BOD?
3. Does the Field Office have a proactive program of pre-final and final inspections to resolve punch lists?
4. Is the customer being made aware of the extended warranties on products provided by manufactures.

Constructibility Review Process

1. Does the office have a written policy and checklist for doing constructibility reviews? Were review procedures followed?
2. Was construction performance period looked at and included with the comments?
3. Were annotated comments included with the final contract documents or otherwise addressed.
4. Does the Field Office provide input in the development of Division 1 for the project?

TABS/ACATS Management and Enforcement

1. Does senior leadership within the office support the TABS/ACATS program?
2. Do PMs and QA Representatives have a good working knowledge of the TABS/ACATS process? Are specified provisions being enforced?
3. What are some ideas for improving the process?

Modification Management

1. Team will look at the contracts to make sure contract modifications are being processed in timely manner. Specifically looking at funding flow to make sure enough systems are in-place to prevent the ROICC from having to do Ratification of Unauthorized commitments.
2. Are Modifications and Undefined Contract Modification Logs being maintained?

Office Staffing

1. Is the office staffed to a level that allows them to carryout their workload? If not, what are the staffing shortfalls?

ADP Support and Other Office Equipment

1. Does the office have adequate ADP hardware and software, digital camera(s) and testing equipment?
2. What additional equipment is needed to perform your mission?

Common Business Practices

1. Is the office implementing the five-part meeting format as Common Business Practice Initiative? (Regular meetings with Contractor to discuss the Project Schedule (2 to 4 week look-ahead), QA/QC & Safety, RFIs, Submittals and Modifications).

Design/Construction Support Issues

1. Is timely support being received on this project(s)?
2. How can the Design and Construction Departments improve their support to this Field Office?

**ROICC EVALUATION
OF THE
CONTRACTOR QUALITY CONTROL MANAGER**

Date: _____ % Complete: _____

Contract No. _____ Location: _____

Project Title: _____

Contractor: _____

1. QC Manager's Rating

If you wish to evaluate other members of the QC staff, please attach additional forms. This information will help insure approval of competent QC Managers and their staff. Use Enclosure (4) "Quality Control Checklist".

Indicate all education/experience that applies.

- G** - Graduate Eng/Arch **C** - Graduate Construction Manager
F - Former QC Representative **S** - Superintendent /PM/Foreman

Name: _____ Education/Experience _____

	POOR	FAIR	GOOD	EXCELLENT
a. Overall Performance/Cooperation Level	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Daily Quality Control Reports	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Submittal Register Log Maintenance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Testing Plan & Log Maintenance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Deficiency Log / Rework Items List	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. As-built Drawings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Three Phase Control	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. <u>Contractor's Support of QC System</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. <u>Effectiveness of 01450 QC specification</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. Comments: _____

Attach Evaluation to DD FORM 2626 Evaluator's (Printed) Name & Signature Date

APPENDIX Q
Enclosure (3)

QUALITY CONTROL SYSTEM CHECKLIST

Contract No: _____ Title: _____

Contractor: _____ Superintendent: _____

QC Manager: _____ Date: _____

<u>Check List Items</u>	<u>Yes</u>	<u>No</u>
1. Copy of approved QC Plan at job site, or in trailer?	<input type="checkbox"/>	<input type="checkbox"/>
2. Signature on forms match approved QC staff names?	<input type="checkbox"/>	<input type="checkbox"/>
3. Submittal Register / log up to date and maintained at job site?	<input type="checkbox"/>	<input type="checkbox"/>
4. QC Manager (QCM) daily reports up to date and filled out completely using the Three Phase Control reporting system?	<input type="checkbox"/>	<input type="checkbox"/>
a. Preparatory Phase Checklist completed & attached?	<input type="checkbox"/>	<input type="checkbox"/>
b. Initial Phase Checklist completed & attached?	<input type="checkbox"/>	<input type="checkbox"/>
5. QCM maintains 3 ring binder with Preparatory and Initial Checklists, close-up inspections and special inspections filed by Specification Section.	<input type="checkbox"/>	<input type="checkbox"/>
6. Testing Plan and Log used and maintained by QCM at site?	<input type="checkbox"/>	<input type="checkbox"/>
7. Summary of all field tests (whether passing or failing) submitted by the testing lab(s) each month?	<input type="checkbox"/>	<input type="checkbox"/>
8. Full size as-builts at site and marked up in red?	<input type="checkbox"/>	<input type="checkbox"/>
9. Certifications by QCM with monthly pay requests that as-builts are up to date?	<input type="checkbox"/>	<input type="checkbox"/>
10. Are QC biweekly meeting minutes on file?	<input type="checkbox"/>	<input type="checkbox"/>
11. Does the QCM provide good support to the QC System?	<input type="checkbox"/>	<input type="checkbox"/>
12. Is Safety a part of the CQM Program? Is <u>Safety</u> discussed at QC Meetings	<input type="checkbox"/>	<input type="checkbox"/>

Comments: _____

APPENDIX R: Requests for Information (RFI)

REQUEST FOR INFORMATION (RFI) TRANSMITTAL AND REPLY: RFI# _____

The RFI system is intended to provide an efficient and formal mechanism for responding to contractor's request for information. It is NOT an authority to proceed with a changed condition. If you consider the RFI response a changed condition, written notice to the ROICC is required in accordance with contract provisions.

From: (Contractor) _____ Date: _____

To: (ROICC) _____

Subj: Contract N _____ -C- _____, _____

Specification Section _____ Paragraph _____

Drawing _____ Details _____

Information Required: _____

A response to this RFI is required by _____

Schedule Activities being effected, by order of most impact: _____

QC Manager

.....
From: (Designer) _____ Date: _____

To: (ROICC) _____

Recommendation: _____

Designer

.....
From: (ROICC) _____

To: (Contractor) _____

Reply: _____

Clarification Only (No additional time or costs)

Project Engineer

REQUEST FOR INFORMATION (RFI)

I. BACKGROUND

Requests for information represent a convenient, formal procedure to record, track and monitor contractor questions concerning a particular construction contract. The use of the three-part Request for Information (RFI) format encourage the contractor to submit questions in writing and research the questions prior to submission by requiring the contractor to reference specifications and drawing numbers as part of the question. Secondly, the three-part format encourages the use of the designer in the RFI process to clarify the intent and interpretation of the plans and specifications and to provide advice on questions that arise during construction. Finally, the RFI three-part form provides a convenient mechanism for a written ROICC response, assuring clear and concise answers to a contractor questions. Rapid and correct responses to RFIs keep contract work moving smoothly and provide one of the best chances to resolve a question before letting it grow into a change or dispute.

II. RFI FORM

The use of the standard RFI format should be encouraged by the ROICC at all pre-construction conferences and a supply of the RFI forms should be made available to the contractor. On larger and more complex projects, the government often provides specific contract provisions relating form and processing of RFIs. The status of all outstanding RFIs should be discussed at the quality control meeting and recorded into the minutes.

III. RFI PROCEDURES

RFIs are processed in a manner similar to the procedures established for processing of contractor submittals. The contractor should transmit the original and three copies of all RFIs to the designer and send one copy (5th) to the ROICC directly. The ROICC copy assures that the RFI will be tracked and expedited, as necessary, by the ROICC. A written response for all RFIs is expected in an average of seven working days, but more complex questions may require a longer time. RFIs requiring a response in less than seven working days may be expedited through facsimile and electronic mail. These should be managed by exception to ensure they are answered as quickly as possible.

ROICC responses to RFIs must be carefully considered and drafted to preclude misinterpretation, misdirection or contract change. The ROICC should review the content of the designer's recommendation to assure contractual adequacy. If an answer to an RFI clearly indicates that the contractor is due an equitable adjustment for any direction given, the ROICC should send a Request for Proposal (RFP) with an RFI response. The ROICC should also set up a Proposed Change Order (PCO) number and file for this change. A RFI response in NOT intended to be an authority to proceed with a changed condition. If the contractor considers the RFI response a changed condition, written notice is required in accordance with contract provisions.

(back side)

APPENDIX S: Constructibility Review Checklist

CONSTRUCTIBILITY REVIEW CHECKLIST

BIDDING INFORMATION

ITEM	YES	NO	N/A
1. Bid Item wording is correct and is correctly shown on the drawings.			
2. Multiple bid items correct.			
3. Bidding place address correct.			
4. Plan Issue Office address and telephone number correct.			
5. Correct telephone number for bid inquiries.			
6. Pre-bid site visitation date, time, and phone number correct.			

DIVISION 1

ITEM	YES	NO	N/A
1. Adequacy of General Intentions & General Description paragraphs.			
2. Adequate time for completion.			
3. Contract completion dates compatible with phasing & sequencing schedule.			
4. Provision of liquidated damages including those for multiple completion dates.			
5. Correct NAVFAC drawing numbers & titles in both specs and drawings.			
6. Construction Cost Categories specified.			
7. Salvage material/equipment requirements clearly specified			
8. CQC Office requirements correctly specified.			
9. Laydown area clearly indicated.			
10. Level of scheduling requirements appropriate for size/complexity of project.			
11. CPM specification correct (verify requirement to have schedule approved prior to start of work).			
12. Utility Outage requirements properly specified.			
13. GFE/GFM requirements clearly specified.			
14. Working space adequate.			
15. Security requirements properly specified.			
16. Special permits (COE, PSAPCA, etc.) in hand.			
17. Environmental Protection requirements properly spec'd.			
18. Availability of utilities properly specified; location, cost, etc.			
19. CQC Staffing is adequate including specialty inspectors and submittal reviewers.			
20. Level of CQC required is appropriate for size and complexity of contract.			
21. Check wording on "Work after Normal Work Hours" clause to make sure it is consistent with operational requirements such as housing, etc.			

SPECIFICATION CHECK

ITEM	YES	NO	N/A
1. Compare architectural finish schedule to specification index. Ensure all finish materials are specified.			
2. Check major items of equipment and verify they are coordinated with contract drawings. Pay particular attention to horsepower ratings and voltage requirements.			
3. Verify that items specified "as indicated" or "where indicated" are in fact indicated on drawings.			
4. Verify that cross-referenced specification sections exist.			

PLAN CHECK CIVIL

ITEM	YES	NO	N/A
1. Verify that site plans with new underground utilities (power, telephone, water, sewer, gas, storm drains, fuel lines, grease traps, fuel tanks) have been checked for interferences.			
2. Verify existing telephone poles, pole guys, street signs, drainage inlets, valve boxes, manhole castings, etc., do not interfere with new driveways, sidewalks, or other site improvements on architectural site plans.			
3. Verify that limits of clearing, grading, sodding, grass or mulch are shown and are consistent with architectural or landscaping plans.			
4. Verify fire hydrant and street light pole locations against electrical and architectural.			
5. Verify profile sheets show other underground utilities and avoid conflicts.			
6. Verify horizontal distances between drainage structures and manholes match with respect to scaled drawings and stated dimensions on both plan and profile sheets.			
7. Verify provisions have been included for adjusting valve box and manhole castings (sewer, power, telephone, and drainage) to match final or finish grade of pavement, swales, or sidewalks.			
8. Verify all existing and proposed grades are shown.			

PLAN CHECK STRUCTURAL

ITEM	YES	NO	N/A
1. Verify column lines on structural and architectural.			
2. Verify all column locations are same on structural and architectural.			
3. Verify perimeter slab on structural matches arch.			
4. Verify all depressed or raises slabs are indicated.			
5. Verify slab elevations against architectural.			
6. Verify all foundation piers are identified.			
7. Verify all foundation beams are identified.			
8. Verify roof framing plan column lines against foundation plan column lines.			
9. Verify perimeter roofline against architectural roof plan.			
10. Verify all columns and beams are listed in column and beam schedules.			
11. Verify length of all columns in column schedule.			
12. Verify all sections and details are properly labeled.			
13. Verify expansion joint locations against arch.			
14. Verify dimensions.			
15. Verify drawing notes do not conflict with specifications.			
16. Ensure concrete slabs have an adequate placement schedule. If sawcutting of concrete is required, ensure "soft cut" technique is specified. Ensure that notes and/or details require re-entrant steel, outside corner steel, adequate embedment details, etc.			

PLAN CHECK ARCHITECTURAL

ITEM	YES	NO	N/A
1. Verify property line dimensions on site survey plan against architectural.			
2. Verify building is behind set back lines.			
3. Verify all concrete columns and walls against structural.			
4. Verify on site plans that all existing and new work is clearly identified.			
5. Verify building elevations against floor plans. Check rooflines, window and door openings, and expansion joints.			
6. Verify building sections against elevations and plans. Check rooflines, windows and door locations.			
7. Verify wall sections against architectural building sections and structural.			
8. Verify masonry openings for windows and doors.			
9. Verify expansion joints through building.			
10. Verify partial floor plans against small scale floor plans.			
11. Verify reflected ceiling plan against architectural floor plan to ensure no variance with rooms. Check ceiling materials against finish schedule, check light fixture layout against electrical, check ceiling diffusers/registers against mechanical, check all soffits and locations of vents.			
12. Verify all room finish schedule information including room numbers, names of rooms, finishes and ceiling heights. Look for omissions, duplications, and inconsistencies.			
13. Verify all door schedule information including sizes, types, labels, etc.			
14. Verify all rated walls.			
15. Verify dimensions.			
16. Ensure that adequate details are provided for roofing. Ensure that roofing details and specifications are coordinated.			

PLAN CHECK MECHANICAL AND PLUMBING

ITEM	YES	NO	N/A
1. Verify all new electrical, gas, water, sewer, etc. lines connect to existing.			
2. Verify all plumbing fixture locations against architectural. Verify all plumbing fixtures against fixture schedule and/or specs.			
3. Verify storm drain system against architectural roof plan. Verify that pipes are sized and that all drains are connected and do not interfere with foundations. Verify wall chases are provided on architectural to conceal vertical piping.			
4. Verify sanitary drain system pipes are sized and all fixtures are connected.			
5. Verify HVAC floor plans against architectural.			
6. Verify all sections are identical to architectural/structural.			
7. Verify that adequate ceiling height exists at worst case duct intersection.			
8. Verify all structural supports required for mechanical equipment are indicated on structural drawings.			
9. Verify dampers are indicated at smoke and fire walls.			
10. Verify diffusers against architectural reflected ceiling plan.			
11. Verify all roof penetrations (ducts, fans, etc.) are indicated on roof plans.			
12. Verify all ductwork is sized.			
13. Verify all notes.			
14. Verify all air conditioning units, heaters, and exhaust fans against architectural roof plans and mechanical schedules.			

PLAN CHECK ELECTRICAL

ITEM	YES	NO	N/A
1. Verify all plans are identical to architectural.			
2. Verify all light fixtures against architectural reflected ceiling plan.			
3. Verify all major pieces of equipment have electrical connections.			
4. Verify location of all panel boards and that they are indicated on the electrical riser diagram.			
5. Verify all notes.			
6. Verify there is sufficient space for all electrical panels to fit.			
7. Verify electrical panels are not recessed in firewalls.			
8. Verify electrical equipment locations are coordinated with site paving and grading.			

SPECIALTY ITEMS

ITEM	YES	NO	N/A
1. Shoring requirements identified.			
2. Dewatering requirements properly specified.			
3. Test piles properly specified.			
4. Asbestos abatement properly specified.			
5. Raised floor systems properly specified and drawn.			
6. Elevator properly specified.			
7. Cranes properly specified.			
8. Loading Dock properly specified			
9. UPS system properly specified.			
10. EMCS/DDC systems properly specified, proprietary specifications included if required.			
11. Adequate requirements for O&M manuals and training of activity personnel.			
12. Adequate requirements for start-up, testing, and turnover of mechanical and electrical equipment.			
13. Verify keying requirements.			
14. For all plans ensure that Legends, Abbreviations and Notes are complete and accurate.			
15. Ensure handicapped access is provided unless facility does not require it.			