

UNIFIED FACILITIES CRITERIA (UFC)

DESIGN PROCEDURES



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U.S. ARMY CORPS OF ENGINEERS

NAVAL FACILITIES ENGINEERING COMMAND (Preparing Activity)

AIR FORCE CIVIL ENGINEER SUPPORT AGENCY

Record of Changes (changes are indicated by \1\... /1/)

Change No.	Date	Location

This UFC supersedes Military Handbook 1006/1, dated 15 June 1995.

FOREWORD

The Unified Facilities Criteria (UFC) system is prescribed by MIL-STD 3007 and provides planning, design, construction, sustainment, restoration, and modernization criteria, and applies to the Military Departments, the Defense Agencies, and the DoD Field Activities in accordance with [USD\(AT&L\) Memorandum](#) dated 29 May 2002. UFC will be used for all DoD projects and work for other customers where appropriate.

UFC are living documents and will be periodically reviewed, updated, and made available to users as part of the Services' responsibility for providing technical criteria for military construction. Headquarters, U.S. Army Corps of Engineers (HQUSACE), Naval Facilities Engineering Command (NAVFAC), and Air Force Civil Engineer Support Agency (AFCESA) are responsible for administration of the UFC system. Defense agencies should contact the preparing service for document interpretation and improvements. Technical content of UFC is the responsibility of the cognizant DoD working group. Recommended changes with supporting rationale should be sent to the respective service proponent office by the following electronic form: [Criteria Change Request \(CCR\)](#). The form is also accessible from the Internet sites listed below.

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- Whole Building Design Guide web site DoD page : [http://dod.wbdg.org/..](http://dod.wbdg.org/)

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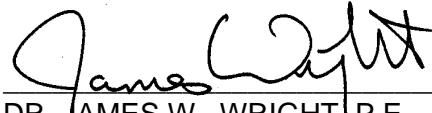
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CHAPTER 1 INTRODUCTION

1-1 **PURPOSE AND SCOPE.**

This UFC, in conjunction with the soon to be published UFC 1-300-10N, *Electronic Design Deliverables (EDD) Manual of Policies and Procedures* provides policy and standards for design of facilities under the cognizance of NAVFAC and in developing and revising project drawings and specifications. This UFC has been developed to ensure consistency and clarity of project drawings and specifications that form the basis of contracts for the construction of facilities.

1-2 **APPLICABILITY.**

This UFC applies to all projects for all NAVFAC activities, and their contractors that are preparing construction contract drawings and specifications for shore facilities, and is applicable to both design-bid-build and design-build projects.

1-3 **REFERENCES.**

Appendix A contains the list of references used in this UFC.

CHAPTER 2 POLICY

2-1 CRITERIA.

Design Naval shore facilities in accordance with all Navy and Department of Defense (DOD) Criteria. DoD Design Criteria are available from the Whole Building Design Guide web site (<http://dod.wbdg.org/>) and from the Construction Criteria Base (CCB) web site (www.ccb.org.) Design criteria include general design criteria, as well as specific criteria on particular elements of the work (e.g., Geotechnical and Engineering Procedures for Foundation Design of Buildings and Structures) and facility types (e.g., Bachelor Quarters). Design guidance is typically in the form of Unified Facilities Criteria (UFC). The A/E contract or the Design-Build RFP will reference the specific guidance applicable to a particular project. Deviations from criteria must be approved by the NAVFAC Chief Engineer.

2-1.1 Antiterrorism.

Design all inhabited buildings to meet the requirements of UFC 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*; UFC 4-010-02, *DoD Minimum Antiterrorism Standoff Distances for Buildings*; and/or Combatant Commander Anti-terrorism/Force Protection construction standards. It is important to remember that the project documents provide only the minimum amount of information necessary for the installation of all elements required for force protection and must not contain information on force protection methods, philosophy, or information on design threats, as this information is considered sensitive and for official use only.

2-1.2 Sustainable Design.

Integrate sustainable development principles into all phases of projects. Refer to NAVFAC Instruction 9830.1, *Sustainable Development Policy* and use the U. S. Green Building Council's LEED Green Building Rating System as a tool to apply sustainable development principles and as a metric to measure the sustainability achieved through the planning, design and construction processes. All applicable projects must meet the LEED Certified level, unless justifiable conditions exist that limit the pursuit and accomplishment of the LEED credits necessary for achieving the Certified level.

The Government determines the minimum sustainable LEED goals and verification methods. The facility project manager or the RFP document will identify the sustainable LEED goals. There are three methods of sustainable verification for Design-Build projects. Refer to UFGS-01331 in the RFP for identification of Design-Build verification method.

2-2 INTERNATIONAL SYSTEM OF UNITS.

It is NAVFAC policy to use the metric system of measurement (International System of Units, SI) for planning and design criteria, Unified Facilities Guide Specifications

(UFGS), and construction contract documents for all MCON/MILCON, BRACON, and family housing regardless of acquisition method.

Public Law 94-168 designates the SI system of measurement as the preferred system of weights and measures for United States trade and commerce. Executive Order 12770 requires the use of the metric system in Federal acquisitions except when such use is “impracticable or is likely to cause significant inefficiencies or loss of markets to United States firms.” Public Law 104-289 exempts concrete masonry units and recessed lighting fixtures from the metric policy until January 2007. Until that time they should not be specified in SI units.

Generally, design and construction of new or renovated facilities shall use the SI system of measurement, unless such use leads to inefficiencies or would be otherwise impractical. Increased initial cost or life cycle cost is certainly an indicator of inefficiencies. The design agent / project manager is responsible for making the determination on whether or not to use the SI units of measurement on a project-by-project basis. Customer preferences or limited designer experience are not adequate justifications on their own for eliminating SI use, but may be part of the decision process. Decisions to not use the SI units must be justifiable and documented in permanent project files. Where request for proposals (RFP) or similar alternatives to the design-bid-build process are used, the RFP may be issued in dual units (inch-pounds and SI) with the requirement that each proposal indicate the system of units to be used by the contractor throughout. For any type of project for any service, do not use dual units on the drawings. UFC 1-300-01, *Criteria Format Standard*, provides guidance on the use of SI units in criteria documents. UFC 1-300-02 *Unified Facilities Guide Specifications (UFGS) Format Standard*, provides guidance on the use of SI units in and specifications.

2-2.1 **SI Definitions.**

- A Hard Metric measurement indicates a non-interchangeable SI value and is based on SI values that change in size and properties from Inch-Pound (IP) values.
- A Soft Metric measurement is a mathematical approximation or equal unit conversion of an IP product.

2-2.2 **General Policy.**

Design host country projects using hard metric units except in cases where items that are unavailable in hard metric manufactured equivalents are procured from U.S.-based manufacturers and only obtainable in IP units or their soft metric equivalents. Plan and design CONUS and OCONUS projects in US states and territories in a combination of soft metric and hard metric units.

Strive to use as many hard metric products as possible. Only where hard metric products are determined to be unavailable or uneconomical should soft metric products be used.

2-3 **OWNERSHIP OF PROJECT DOCUMENTS.**

The clauses set forth in [DFAR 252.227-7023](#), *Drawings and Other Data to Become Property of Government*, [DFAR 227.71](#), *Rights in Technical Data*, and [DFAR 227.72](#) *Rights in Computer Software and Computer Software Documentation*, apply to all project design documents.

2-4 **REGISTRATION.**

Develop stateside project documents under the direction of a Registered Architect or a Professional Engineer currently licensed by a state, the District of Columbia, or territory of the United States. Develop foreign project documents under the direction of a Registered Architect or a Professional Engineer currently licensed by a United States state, commonwealth, or territory, the District of Columbia, or by the foreign country in which the project is to be built. Sign documents of record in accordance with UFC 1-300-10N.

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CHAPTER 3 PROJECT PHASES

3-1 PROJECT PHASES.

A project progresses through phases from inception to construction completion. Differing drawing and specification submission requirements characterize the phases. And, the submission requirement for each phase varies depending upon the project type (design-bid-build or design-build) and the scope of the project.

3-2 PLANNING PHASE.

The planning phase is the first phase of the project. Documents include the project program, character and preliminary budgetary cost information, as well as project justification and impact analyses (often presented in DD1391 format using the [Electronic Project Generator, EPG](#)). Documents generally also include supporting facilities information (e.g., utility connections) and may include collateral equipment lists and summary descriptions. Drawings are sketches that site the project in the general geographic area (e.g., on the base), and within the context of the site. Diagrams and sketches may also be included that suggest the relationships between project Functional Space Areas, supporting facilities, and/or adjacent or related projects or existing facilities. They may rely on single line schematics, bubble diagrams, or graphics included in the facility-type UFC. The planning phase does not typically include any specification information. The budgetary costs and life cycle costs are developed following the guidance of the *NAVFAC Cost Engineering Policy and Procedures* (www.uscost.net/costengineering) manual. The cost information will typically include a Life Cycle Cost Analysis justifying the project as programmed by the activity.

3-3 Design-Build RFP Preparation.

Paragraph 5-6 describes the parts of the Design-Build RFP located on the NAVFAC Design-Build Master Web Site (<http://www.wbdg.org/ndbm>.) The design-build RFP can utilize part of the concept design phase to help define acceptable options for the project or strictly state functional requirements allowing maximum design flexibility for the design-build contractor. Stating functional requirements is preferred, but mold the process to the needs of the using activity.

3-4 DESIGN PHASES.

3-4.1 Concept Design (10% To 15% Design).

The Concept Design phase gives further definition to the project. The sketches that accompany the concept design are schematic and show the general arrangement of spaces as well as the general character of the project. The concept design may also be the result of a Design Charrette or Function Analysis Concept Development (FACD) study, which uses value-engineering techniques to help develop concept designs. Or,

the concept design may be the layout and functional drawings and design that are part of a technical response to a Design-Build RFP.

3-4.1.1 **Function Analysis Concept Development (FACD) Studies.**

FACD studies and design charettes are cooperative efforts by the design team, user/customer representatives, facility engineering command personnel, and other interested parties. They may last a week or two and include on-site development of a conceptual design in response to functional, aesthetic, environmental, base planning, site, budgetary, and other requirements. The scope of FACDs and design charettes are project specific and will be defined in the A/E Scope of Work or the Design-Build RFP. The following defines the efforts typically associated with a FACD study:

3-4.1.1.1 **Specialized Customer Coordination:** Coordination with the respective offices for the following types of facilities should be done as early as possible, but no later than the FACD phase.

- Fitting Out & Supply Support Assistance Center (FOSSAC): Navy's office for technical and operational matters regarding supply and warehouse facilities including material handling and storage systems and related equipment. FOSSAC Code 062, (804) 444-4370.
- Bureau of Naval Personnel (BUPERS): Navy's office for technical and operational matters regarding Moral, Welfare, and Recreation (MWR) Facilities. BUPERS can provide standard modular designs for many MWR facilities. BUPERS Code PERS 656D, (901) 874-661.
- Navy Food Service Systems Office (NAVFSO): Navy's office for technical and operational matters on dining facility operations. NAVFSO Code E2, (202) 433-0713.
- Medical Facilities Design Office (MFDO): NAVFAC's office for technical and operational matters on hospitals, clinics, and other medical facilities. MFDO coordinates with Navy bureau of Medicine and Surgery (BUMED) and the Department of Defense Medical Facilities Design Office (DMFO). MFDO Director (202) 685-3254.

3-4.1.1.2 **On-Site Analysis:** Conduct an on-site project analysis conference at the activity to systematically define the project. The preparatory effort will include all preliminary field and office work including: agenda, questionnaires, special studies, surveys, code research, analysis of existing field conditions, building evaluations, visits to similar facilities, and preliminary graphical presentation material on data collected. Prepare and distribute a User Questionnaire intended to obtain quantitative and descriptive information and criteria from the facility users necessary to complete the design of the project. Include questions pertaining to staffing, adjacencies, relationships, power requirements, heat load, and other special requirements.

3-4.1.1.3 **Objective:** A comprehensive look at project requirements is necessary to define and organize program elements and design features before beginning the schematic design. The intent is to enhance communications among team members; to

analyze and address all facts, concepts, issues, and priorities pertaining to the project; and understand the goals, objectives, processes, and relationships of the users being served. Address, as a minimum, the following in the project analysis conference and documentation:

- Project goals and objectives;
- Graphic analysis of project site, existing facilities, and other pertinent factual data;
- Interviews, focus groups, and work sessions with user groups and key decision makers;
- Conceptual information (graphically organized and diagrammed);
- Refined quantitative information including project scope, space allocations, built-in equipment, all furnishings including systems furniture, parking, budgetary cost estimate (primary and supporting facilities), etc.;
- Summary project statements that reflect the unique qualitative aspects of the project;
- Diagrams of spaces graphically illustrating spatial proportions and relationships; and
- Outstanding issues to be resolved with indication of responsibility. Total team consensus on project description (all of the above).

3-4.1.1.4 **Submittal:** Completely document the project analysis conference describing the customer's goals and objectives, project data, conceptual considerations, quantitative needs, and summary project statements. Include the organization and analysis of interview results, questionnaire summaries, investigative reports, economic considerations, cost summary, outstanding issues, conference minutes, and other project information and data. The information is the result of a collaborative effort by the total project team.

3-4.1.1.5 **On-Site Schematic:** Conduct an on-site project schematic conference with the customer to develop an approved schematic design. The Project Analysis Documentation described above, of which all team members must have a thorough understanding, is the basis of the Schematic on-site. The preparatory work for this conference will include resolution of any outstanding issues, graphical clarifications of any concepts, and any other work necessary to be completely ready to produce a schematic design. In advance of the conference, prepare the conference agenda, and refinements and clarifications to any project analysis information (including diagrams, preliminary costing, and preliminary alternative drawings) as necessary to serve as a starting point for the on-site work. The total project team attends the on-site schematic conference. The conference is a working session utilizing the total team approach and will continue until the team reaches a consensus on a schematic design. Elements of the schematic conference include:

- Validated project analysis documentation (program requirements and square footage);
- Synthesized ideas, options, and alternatives;
- Preliminary selection of construction materials;

- Preliminary layout of built-in equipment and systems furniture;
- Economic analysis;
- Preliminary parametric cost estimate
- Responsive schematic design drawings, renderings, and models; and
- Total design consensus.

3-4.1.1.6 **Documentation:** Prepare minutes of the meeting and document all decisions.

3-4.2 **Design Development (30% - 50% Design).**

The Design Development phase is the period between Concept Design and 50% Design when the project is described in a preliminary manner in the design documents. The earlier stages include: a Basis of Design for each Architectural/ Engineering discipline included in the project, selection criteria and preliminary calculations, and preliminary drawings in sufficient detail to support the Basis of Design. Outline Specifications are also typically required at the earlier design stages. The latter stages include more detailed preliminary drawings depicting the project design. The design may be predicated on Standard Design representing detailed contract drawings and specifications of selective specialized facilities, which are repetitive facility types in the construction program. Their use is mandatory without change for ammunition facilities, but others may be modified to meet specific requirements.

3-4.3 **Pre-Final Design (100% Design).**

The Pre-final Design phase is the period between the 30% - 50% Design Development phase and Completion of the Design Documents.

The Pre-final (100%) Design includes complete Design Development Drawings and specifications fully describing the work and incorporating the Design Development Government review comments, and full Engineering Calculations supporting the selections/ decisions made in the course of designing the project.

3-4.4 **Final Design (100% Design).**

The Final Design Contract Documents include the final and complete design development drawings and specifications. These documents fully describe the project for either bidding (for Design-Bid-Build projects) or for construction (Design-Build projects) and have been approved by the various government agents as to having incorporated all previous pre-final review comments.

3-5 **BID/ NEGOTIATION PHASE.**

The Bid/ Negotiation Phase is the period from the project Request for Proposal (RFP) release date until construction contract award. Bid/ Negotiation phase documents include responses to requests for information (RFI) from the Government, as well as, supplemental drawings, documents to support changes to the project, and documents

supporting contract amendments to correct errors or omissions in the contract documents.

3-6 **CONSTRUCTION PHASE.**

The Construction Phase is the period from the design-bid-build project construction contract award, or the start of construction on a design-build project, until beneficial occupancy date (BOD). Construction phase documents may include responses to the request For Information from the contractor to the Government, as well as, documents to support changes to the project and documents supporting contract modifications to correct errors or omissions in the contract documents.

3-7 **POST-CONSTRUCTION PHASE.**

3-7.1 **Project Close-Out.**

The designer of record (DOR) may be required to execute specific project tasks during project close out. These tasks may include preparing for Government signature Form 1354, attendance at project close out meetings, or other tasks. The DOR should refer to the design contract (if a design-bid-build project) or the Design-Build RFP for project close out related tasks.

3-7.2 **Record Design.**

The Record Design documents are comprised of the Final Design documents inclusive of marked prints (As-Built Marked Prints) indicating construction deviations from the Final Design Contract Documents.

For design-build projects, draft the as-built modifications on the Contractor-originated design drawings to create a complete set of record drawings. For each Record drawing, provide a CADD drawing identical to the signed Contractor-originated Adobe Acrobat® format drawings that incorporate modifications indicating the as-built conditions. In addition copy initials and dates from the Contracting Officer approved Adobe Acrobat® format documents to the title block of the Record CADD drawings. The Record electronic files must have a "RD" added to the end of the file name just before the file extension. An example of properly arranged Record drawing file name is 012345.A-101RD.XXX. The RFP reference or definitive drawings are not required for inclusion in the Record set of drawings.

CHAPTER 4 DRAWING PREPARATION

4-1 **DRAWING STANDARDS.**

All Computer Aided Design (CAD) documents are to be prepared in accordance with the CAD Standards as described in UFC 1-300-10N.

4-1.1 **Assignment Of NAVFAC Drawing Numbers.**

All drawings will be assigned a unique NAVFAC drawing number to be provided by the design agency.

4-1.2 **Security Classification And Notation.**

For drawings requiring security classification, conform to the requirements of [SECNAVINST 5510.36](#), *Department of the Navy (DoN) Information Security Program (ISP) Regulation*, for safeguarding classified information. Do not use words, symbols or word-symbol combinations that would disclose information in an established security category in the drawing titles.

4-1.3 **Record Drawings.**

Retain Record Drawings in accordance with the policies and procedures established by each activity and submit record drawings in accordance with UFC 1-300-10N.

A NAVFAC centralized archive system is under development and is expected to be implemented in FY 2005. Until that time, each Activity is responsible for setting the policy for record drawings within its area of responsibility. The design A/E should consult the Activity Project Manager for specific direction on Record Drawings.

CHAPTER 5 SPECIFICATION PREPARATION

5-1 SPECIFICATION REQUIREMENTS.

Design-Bid-Build and Design-Build projects have differing specification requirements. In either case, the specifications must be as brief as possible, definitive, and free of ambiguities and omissions that may result in controversy and contractor claims for additional compensation.

5-2 GUIDE SPECIFICATIONS.

Considerable data are available to facilitate the preparation of project specifications and are included in a series of guide specifications covering most major elements of construction. Referenced specifications offer criteria for materials, equipment, and test methods.

Guide specifications are documents that describe products and materials and the work necessary to incorporate them into a construction project. A guide specification facilitates the preparation of project specifications by standardizing products and processes and their order of presentation. They are edited to conform to project requirements so that they may be incorporated into the contract documents of a specific project. Guide specification and project specification sections describe in detail the following:

- Product or system to be provided,
- Salient design features or performance requirements of the product or system,
- Quality of that product or system and methods used to ensure the quality, including on-site and off-site testing,
- Method to be used to incorporate the product or system into the project, and
- Other features and functions necessary.

Use of the guide specifications of the Unified Facilities Guide Specifications (UFGS) system is mandatory in preparing design-bid-build project specifications and the prescriptive specifications of a design-build project. UFGS are available via the Construction Criteria Base (CCB) website (<http://www.ccb.org/>) and the Whole Building Design Guide website (<http://dod.wbdg.org/>.) Tailor the UFGS as necessary to suit the work required by the specific project, including tailoring for metric or inch-pound projects. In addition, modify and edit to reflect the latest proven technology, materials, and methods, if warranted.

There is only one current version of a guide specification at any time. The guide specification with the latest revision date automatically cancels specifications of the same number with a previous date.

5-2.1 **Regional Guide Specifications.**

Regional specifications are limited in number and scope to selected subjects such as summary of work and contain a majority of local requirements. Regional specifications are used in the same way as the UFGS except that they are used only in the area of the specific facility engineering command jurisdiction. Regional specifications are always numbered the same as the UFGS that has been used as a basis for the regional specification. A capital letter representing the facility engineering command precedes the specification number (e.g., UFGS-S-07516, *Aggregate Surfaced Coal Tar Built-Up Roofing*, Southern Division, or UFGS-L-02471, *Bituminous Concrete Pavement*, Atlantic Division).

5-2.2 **Performance Technical Specifications.**

Performance Technical Specification (PTS) sections define the performance and quality of the building elements that are required by the Design-Build Project Program. PTS are available from the Design Build Master web site (<http://www.wbdg.org/ndbm>.) The performance technical sections are arranged by the Unifomat II/WBS building element classification system and tie directly to the numbering system used in the Project Program. For example, the Room Requirements Section of a Project Program may require for building element D201001 that two handicap water closets be provided in each of the bathrooms in the lobby of a building. The corresponding paragraph D201001 in Performance Technical Section D20 would define the performance requirements for that water closet. As with the UFGS, the PTS are editable by the RFP preparer to reflect the characteristics of a particular project.

5-2.3 **Other Guide Specifications.**

The use of other guide specifications (e.g. MASTERSPEC) and other means of specification are allowed on Design-Build projects for the creation of a complete project specification. The specifications used must specifically state compliance with the requirements of the RFP by using the same reference standards as used in the design-build performance technical specifications and the UFGS section utilized. Refer to the Design-Build RFP for direction on preparing design-build project specifications. On design-bid-build projects, other guide specifications are only allowed as a basis for information not available in the UFGS. These developed specifications must be in CSI MasterFormat for inclusion in the project specifications.

5-3 **PREPARATION POLICIES AND GUIDANCE.**

5-3.1 **Grammar, Style And Language.**

Grammar, style and language are covered in UFC 1-300-02, *Unified Facilities Guide Specifications (UFGS) Format Standard*.

5-3.2 **Project Specifications.**

Prepare the project specification section by using the appropriate UFGS included in the edition of the Construction Criteria Base (CCB), <http://www.ccb.org>, or available from the Whole Building Design Guide website, <http://dod.wbdg.org/>, which is current at the beginning of the pre-final design. Modify the guide specification to fit the project. Delete portions of the guide specification that cover work not included in the project. When portions of the work involved are not covered in a guide specification, add requirements to the project specification, as necessary, using language and format similar to that employed in the guide specification. Use guide specifications only as source documents and do not reference them in project specifications. Do not combine work covered by various UFGS into one section unless the work is of a minor nature.

5-3.3 **Proprietary Specifications.**

Except as allowed in the RFP documents for design-build projects, do not use proprietary or restrictive requirements unless it is conclusively established that no substitute will serve the purpose. When a situation arises in which only a single product will perform the required function, forward a request from the DOR fully justifying the use of a sole source product. In addition to the detailed justification, provide an estimate of the proprietary item in relation to the total project contract cost. Use of proprietary items is prohibited unless formal written approval is obtained from a Level One Contracting Officer.

If authorization is granted, specify the proprietary item by manufacturer's name and catalog number, followed by the phrase: "notwithstanding any other provision of the contract, no other product will be acceptable". This statement is necessary to override the contract clause that permits substitution of any supposedly equal product unless such language is used.

Any specification section that contains proprietary items must include a notice to that effect on the first page of the section. Place the following above the section number and title at the top of the first page of the section:

This Specification Contains Proprietary Products.

The use of proprietary items has been the subject of many contract claims. Project designers and specifiers must be aware of the restriction on the specification of proprietary items and take special precautions to avoid their use unless formal written approval is obtained.

5-3.4 **“Or Equal” Specifications.**

Specifying products by naming acceptable commercial products followed by the words "or equal" is permitted under the following conditions:

- There are no Government or commercial standards or specifications for the item,
- The item is a minor part of the construction project, and
- The item cannot be adequately described because of technically involved construction or composition.

In each instance, include in the description a minimum of two manufacturers followed by the words "or equal". The essential features (salient characteristics) of the item must also be set forth in sufficient detail to establish the basis upon which the equality of non-listed products will be determined.

5-3.5 **Experience Clauses.**

Ordinarily, experience clauses are not included in the technical specifications. On occasion, because of special difficulties in the work, strict construction schedules, or past unsuccessful experience with contractors, an experience clause may be used to ensure competence in the contractor. Experience clauses relate to the responsibility of a firm, and more specifically, to its capacity to perform the work. The inclusion of experience clauses in project specifications requires the approval of a Level One Contracting Officer. Do not use experience clauses except those contained in UFGS. Experience clauses that occur in the UFGS have been reviewed by a Level One Contracting Officer and may be used without further approval or waiver.

5-3.6 **Warranty Clauses.**

Ordinarily, warranty clauses are not included in specifications. A warranty clause is any provision that modifies terms of the normal 1-year warranty required by the contract clause. There are two classes of exceptions. First, in rare instances, it is acceptable to extend the period of the warranty based on the judgment of the designer, if the industry routinely provides such extended periods of warranty and the unusually complex nature of the product makes the provision cost effective on a life-cycle basis, or if UFGS suggest the extension. Second, it is possible to add terms to a warranty, but only in the rarest of circumstances and with written approval of a Level 1 Contracting Officer or when UFGS indicate such an extension has been reviewed and approved by a Level 1 Contracting Officer.

5-3.7 **Unrestricted Bidding.**

Specifications for procurements state only the actual minimum needs of the Government and describe the materials and installation so as to encourage maximum competition in bidding. Eliminate, insofar as possible, any restrictive features that might limit acceptable offers to one supplier's product or to the products of a relatively few suppliers.

5-3.8 **Contract Parties.**

In general, do not designate part of the work to be performed by a particular subcontractor (e.g., the plumbing contractor) in constructing the project. The Government recognizes only one Contractor (the prime or general contractor) and it is the Contractor's responsibility to divide up the work except in some specific instances. Design-Build RFP sections do require that some specific tasks be executed by specifically qualified Contractor design personnel. Other sections (e.g., Fire Protection, Elevators, small arms ranges) may require the certification of a particular item by a particular subcontractor representative or refer to another party for work not included in the contract.

5-3.9 **Contract Clauses.**

Do not repeat the contract clauses in project specifications. The contract clauses in the contract contain requirements, which affect the general conduct of the work in the contract. If these are randomly modified within the specifications, it may weaken or void the contract clauses.

5-3.10 **Contractor Direction.**

Avoid the term "the Contractor shall". The Contractor is responsible for performing the work as shown and specified; therefore, there is no reason to use the phrase. Speak only to the Contractor, not the supplier or manufacturer. The Contractor cannot be directed through the manufacturer or supplier or vice versa. Stating "the manufacturer shall provide [_____]", could be interpreted as simply informing the Contractor that a party other than the Contractor is responsible, comparable to "the Government shall provide [_____]". Likewise, there is usually no reason to differentiate between actions expected of the "Contractor" and the Contractor's various suppliers, to attempt to do so borders closely on an assignment of work. Avoid using the specification to instruct the Contracting Officer.

5-3.11 **Specifying New Items.**

From time-to-time, requests are made to consider the use of materials that are relatively new. While NAVAFC encourages innovative solutions, we must manage risk appropriately. Take care in specifying project items that have not gained widespread acceptance and use. Usually, service records of new materials do not exist. It is therefore necessary to base performance on laboratory tests. These tests:

- Must have been made under the conditions of actual use,
- Must have been conducted by a reputable, independent laboratory, and
- Must have factual documentation sufficient to support evaluation of the material.

Most manufacturers will furnish all requested information about a product and answer all reasonable questions. The manufacturer may also provide a suggested, competitive,

generic type specification section that may be edited for the project. If there are not two or more manufacturers or suppliers capable of supplying the product specified, the product must be considered proprietary, and approval sought for its use in accordance with paragraph 5-3.3, "Proprietary Specifications".

5-3.12 **Lessons Learned.**

Individual NAVFAC Activities maintain lessons learned from prior projects. The lessons learned may include examples of language to be avoided in writing specifications for projects in the Activity's region. The DOR is encouraged to consult with the Activity representative for information on how to access the lessons learned information.

5-4 **COORDINATION OF SPECIFICATIONS AND DRAWINGS.**

[FAR 52-236-21](#), *Specifications and Drawings for Construction* states: "Where 'as shown', 'as indicated', 'as detailed', or words of similar import are used, the reference is made to the drawings accompanying this contract unless stated otherwise."

5-4.1 **Precedence.**

Refer to [FAR 52-236-21](#). In general, treat anything mentioned in the specifications but not shown on the drawings or shown on the drawings but not included in the specifications as if shown or mentioned in both. In the case of discrepancies between the drawings and specifications or RFP, the specifications or the RFP take precedence.

5-4.2 **Coordination.**

Coordinate the drawings and the specifications to ensure that all items depicted in the drawings are covered by an appropriate specification section and that all specification sections relate to items in the drawings.

5-5 **DESIGN-BID-BUILD PROJECT SPECIFICATIONS.**

5-5.1 **Specsintact.**

Department of Defense (DOD) agencies use a specification processing system called "SpecsIntact," an acronym for "Specifications-Kept-Intact." This system allows several time-saving features including creation of an outline specification; paragraph renumbering; printing without notes; reference verification; bracket removal check; and printing of the reference standards list; a submittal register, and a report which lists test requirements and actions of interest to the Contracting Officer. The system also records a precise editing record and ensures maintenance of the project specification as last edited. SpecsIntact is available on the Construction Criteria Base (CCB) website (<http://www.ccb.org/>) and the SpecsIntact web site (<http://specsintact.ksc.nasa.gov/>.)

5-5.2 **Organizing Structure.**

5-5.2.1 **Organization.**

Include a cover sheet with every project specification. Follow the cover sheet with a table of contents that lists each section contained in the project specification.

5-5.2.2 **Organization of Bidding Requirements and Contract Requirements.**

Bidding and contract requirements are normally formulated and included in the solicitation by a Contract Specialist. Do not include the UFGS (Sections 00021 through 00830) available for these requirements in the specifications table of contents. These UFGS are listed individually in a separate table of contents for the contracts part of the solicitation package. Local procedures may require that the specification writer prepare one or more of these sections, such as Section 00102, *List of Drawings*.

5-5.2.3 **Format.**

The format (e.g., page layout, size, and electronic format) for the specifications is defined by UFC 1-300-02.

5-5.2.4 **Numbering.**

Project specifications are to be identified by use of the number of the contract of which the specifications are a part, modified as follows:

- The first six digits of the contract number are replaced by the corresponding two-digit specification number designation representing the office handling the project. Specification number designations are as follows:

Specification Number Designation	Office
03	NAVFAC Mid-Atlantic
04	NAVFAC Northeast
05	NAVFAC Atlantic
06	NAVFAC Southeast
11	NAVFAC Southwest
12	NAVFAC Northwest
21	NAVFAC Washington
25	NAVFAC Headquarters
33	NAVFAC Europe

40	NAVFAC Pacific
41	NAVFAC Marianas
42	NAVFAC Far East
43	NAVFAC Hawaii
50	NAVFAC Midwest

- The Alpha Designation that follows the first six digits of the contract number is deleted.

For example, construction contract number N62470-03-B-3209 corresponds to specifications number 05-03-3209 for NAVFAC Atlantic.

5-5.2.5 **Division 01 Sections.**

Tailor, as applicable, the UFGS Division 01 Sections describing the general project requirements for use in the project. Include any additional section of a general requirement nature rather than a technical nature in Division 01.

5-5.3 **Use Of Specsintact.**

Prepare Design-Bid-Build project specifications utilizing Construction Specifications Institute (CSI) format and utilizing the SpecsIntact application.

5-6 **DESIGN-BUILD PROJECT SPECIFICATIONS.**

For Design-Build RFP use UFGS 01331, edited for a specific project's requirements that gives specific guidance on the preparation of Design-Build project specifications. UFGS 01331 is available for download and subsequent editing from the NAVFAC Design-Build Master web site (<http://www.wbdg.org/ndbm>.)

5-6.1 **Design-Build Request For Proposal Preparation**

- Guidance on preparing the RFP for design-build projects is available on the NAVFAC Design-Build Master web site (<http://www.wbdg.org/ndbm>.) The site is intended to (1) familiarize those new to the Design-Build process with the RFP format and typical RFP specification sections and (2) allow those preparing a Design-Build RFP to download the electronic documents. The Design-Build RFP Web Site is organized using tabs for the major sections and organization structures for the various categories of information within each tabbed section. The RFP must include all six RFP Parts indicated below unless they are not applicable to the project. The typical facility project will have information in every RFP Part, with the possible exception of RFP Part Five, "Prescriptive Specifications".

- **Part One** includes the Proposal Form and Documents and specifies the contractual requirements.
- **Part Two** contains the General Requirements Specification Sections.
- **Part Three** contains the Project Program for the project.
- **Part Four** contains the Performance Technical Specifications.
- **Part Five** contains any Prescriptive Specifications required for the design-build RFP.
- **Part Six** is for Attachments (e.g., Boring Logs).

5-6.1.1 **Part One: Proposal Forms and Documents.**

Part One, Proposal Forms and Documents, contains the contract documents that are prepared by the Contract Specialist using the standard design-build template in the Standard Procurement System - Procurement Desktop Defense module (SPS-PDD) and included in the RFP.

5-6.1.2 **Part Two: General Requirements.**

Part Two, General Requirements, contains the Division 01 specifications. Most of these sections are available on the UFGS web site. The design-build specific sections are only available on the Design-Build Master web site.

5-6.1.3 **Part Three: Project Program.**

Part Three is dedicated to the Project Program. A project program is the documentation of the operational, functional, and space planning requirements from an architectural and engineering perspective.

5-6.1.4 **Part Four: Performance Technical Specifications.**

Part Four, Performance Technical Specifications (PTS), contains the performance technical sections that define the performance and quality of the building elements that are required by the Project Program. The performance technical sections are arranged by the Uniformat II/WBS building element classification system and tie directly to the numbering system used in the Project Program. Within the PTS, the information on particular subsystems is referenced through Level Three and Level Four of the Uniformat II/WBS. As with the UFGS, the PTS are editable by the RFP preparer to reflect the characteristics of a particular project. Notes in the text provide guidance on the decision making process for editing.

5-6.1.5 **Part Five: Prescriptive Specifications.**

Part Five, Prescriptive Specifications, contains edited Unified Facility Guide Specifications (UFGS) (other than those incorporated into the PTS) which are part of the Design-Build RFP. The Design-Build RFP preparer should attach the full text edited version of these UFGS rather than referencing a location for view or download of the

relevant specification. Prescriptive specifications are used when performance specifications will not meet particular project requirements.

5-6.1.6 **Part Six: Attachments.**

Part Six, Attachments, contains additional information necessary for a complete RFP. Examples include drawings, reports, pictures and references.

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CHAPTER 6 DRAWING AND SPECIFICATION SUBMISSION AND APPROVAL

6-1 ALL PROJECT DESIGN SUBMISSIONS.

6-1.1 General Submission Standards.

6-1.1.1 Hard Copies.

The number of project document hard copies required and the distribution of those documents at the various submission stages are outlined in the Architect/ Engineer (A/E) Contract Scope of Work or in the Design-Build RFP. Format hard copy submissions in accordance with UFC 1-300-02. For paper submittals, use recycled paper for all submittals unless recycled paper is not available with a quality or at a cost similar to that of virgin paper.

6-1.1.2 Electronic Submissions.

Make electronic submissions in accordance with UFC 1-300-10N and as required by the A/E or in-house contract Scope of Work or in the Design-Build RFP.

6-1.2 Approval Authority.

- Authority and responsibility for formal approval of drawings and specifications and RFPs by or for the Commander, NAVFACENCOM, is vested in Facility Engineering Command Chief Engineer.

6-2 DESIGN-BID-BUILD PROJECTS SUBMISSIONS.

6-2.1 Submission Standards.

6-2.1.1 Planning Phase Submission.

Develop Planning Phase submissions in accordance with [Electronic Project Generator \(EPG\)](#) guidance.

6-2.1.2 Basis of Design.

Basis of Design general submission requirements for the architectural and engineering disciplines are outlined in Chapter 8 and 9. The minimum requirements may be adjusted by the Activity to reflect the project scope and specific design requirements.

6-2.1.3 Conceptual Design.

Conceptual Design submissions include the Basis of Design document as well as the concept design drawing requirements outlined in the respective design discipline sections of Chapter 8 or 9.

6-2.1.4 **Design Development.**

Design Development submissions are at design stages that vary from project to project. The submission requirements for a project will be outlined in the A/E Contract or in-house Scope of Work. Minimum Design Development submission requirements are outlined in the respective design discipline sections of Chapter 8 and 9.

6-2.1.5 **Final Design.**

The final design submission is the complete project design document prepared for release for bidding. The final submission is inclusive of all design drawings and specifications, as well as an updated and complete Basis of Design. Make Final Submission electronic deliverables in accordance with UFC 1-300-10N.

Before drawings and specifications are submitted for formal approval, the individuals directly responsible for the accuracy and sufficiency of the data included therein must sign the drawings and specifications in accordance with UFC 1-300-10N.

6-2.1.6 **Design Submissions after Final Design.**

Design submissions made after final design include A/E and Government responses to contractor requests for clarification (RFC) and requests for information (RFI), as well as change order documents, and as-built drawings. Submissions may include sketches, additions and/or corrections to drawings and specifications. Make changes after the Final Submission in accordance with Chapter 10, "Changes to the Final Submission".

As-built documents are submitted by the contractor at the completion of the construction phase and reflect all changes made during construction. The record documents include all of those project design documents that constitute the Final Submission, edited to include the changes.

6-2.1.7 **Cost Estimates.**

Submit the contract cost estimate electronically with each submittal. Do not submit the cost estimate on the project CD when provided. Make all cost estimating submissions in accordance with the *NAVFAC Cost Engineering Policy and Procedures* (<http://www.uscost.net/costengineering>) manual.

6-3 **ALL CONSTRUCTION SUBMISSIONS.**

6-3.1 **Construction Submissions.**

The submittal procedures between NAVFACENGCOM and the Contractor are included in the contract documents; procedures for Quality Control (QC) are included in UFGS Section 01450N, *Construction Quality Control*, 01451N, *Design and Construction Quality Control* and 01455N, *Quality Control (QC) - Minor Construction*, depending on the type of project. Procedures within NAVFACENGCOM follow:

- The A/E or in-house design office provides the Contracting Officer with a list of shop drawings proposed for review.
- Carefully review the list to ensure that the A/E or in-house design office reviews only those shop drawings that have an impact on design. Include drawings showing structural connectors, installation details of structural members, and others that relate to structural strength, integrity of a system, or the safety of personnel, or drawings that are of significant design or cost importance.
- For the Quality Control UFGS (01450N, 01451N or 01455N), the Contractor's Quality Control Manager approves submittals, unless indicated that they are to be approved by the Government. The method used to indicate that Government approval is required is to place a "G" following any such submittals. Tag the "G" appropriately in SpecsIntact such that the submittals are automatically inserted onto the submittals register by the SpecsIntact system. Approval of submittals by the Quality Control Manager does not preclude subsequent review by the Government as a quality control measure. Submittals reserved for Government approval should consist of those items that the designer considers to be of special importance because of the complexity of certain design features, the critical nature of certain life safety features, or the necessity to maintain control of certain project features.
- Specifications list the submittal types and products or services to be the subject of the submittal. Do not repeat information contained in UFGS-01330 in the technical sections.
- Promptly give to the A/E or in-house design office for review and approval those submittals being reviewed by the Government. Review drawings for compliance with the contract documents. Only a qualified fire protection engineer can approve fire protection systems. A registered professional engineer practicing structural engineering must approve structural systems. Provide results of the review to the Contracting Officer within 2 weeks after receipt of submittals by the A/E or in-house design office.
- Submittals to be reviewed by the Government should be certified by the Contractor's Quality Control (QC) Manager in accordance with UFGS 01450N, 01451N or 01455N, whichever is included in the project.

6-3.1.2 **Construction Submission Reviews.**

Construction submissions will be returned to the contractor with one of the following stamps:

- "APPROVED" or "APPROVED AS SUBMITTED"

- "APPROVED AS NOTED" authorizes Contractor to proceed with work as noted provided the Contractor takes no exception to the notations.
- "REVISE AND RESUBMIT" or "DISAPPROVED" indicates the submittal is incomplete or does not comply with design concept or requirements of contract documents and must be resubmitted with appropriate changes.
- "NOT REVIEWED" indicates submittal has been previously reviewed and approved, is not required as a submittal, does not have evidence of being reviewed and approved by the Contractor, or is not complete. Submittal will be returned with an explanation of the reason it was not reviewed. Resubmit returned submittals that are deemed to lack review by the Contractor or to be incomplete with appropriate action, coordination, or change.

6-4 **DESIGN-BUILD PROJECTS.**

6-4.1 **Design-Build Design Submissions.**

Follow the requirements of UFGS 01331, *Design Submittal Procedures* and Chapter 9, "Design Build Submittal Requirements".

CHAPTER 7 DESIGN REVIEWS

7.1 DESIGN REVIEWS.

7-1.1 Activity, Command And Major Claimant Reviews.

There should be adequate liaison between the activity and the design agent through participation by appropriate activity personnel in review of design through the early Design Development design stages. The design agent is responsible for architectural and engineering aspects of the project to ensure reasonable facility cost appropriate for the functions to be performed. The activity, together with the systems command or major claimant, as deemed necessary, will review the functional aspects of the facility design developed by the Facility Engineering Command. Resolve required changes before proceeding to the later Design Development design stages. Change of functional requirements after the early Design Development design stages seriously affects the completion date and design cost of the project. If the user offers purely technical comments, the ultimate responsibility of the design agent for these features should be explained.

7-1.2 Design Agent Reviews.

Contract drawings and specifications prepared under the direction of the design agent are reviewed and given final approval by the design agent.

For design-build projects, the design agent is the Design Quality Control (DQC) Manager. The specific responsibilities of the DQC Manager are outlined in Sections 01331N, and 01451N of the Design-Build RFP. The DQC Manager is a key person for the design, who is subordinate to the QC Manager, and is responsible for the design integrity, professional design standards and all engineering services required by the design-build contract and RFP. The DQC Manager implements the DQC plan and must remain on staff until completion of the project. The DQC Manager has the responsibility for being cognizant of and assuring that all design documents on the project have been developed in accordance with the RFP, and been properly coordinated.

The Facility Engineering Commands have developed and implemented, in addition to the normal technical adequacy review, a procedure to establish that the A/E or DQC has accomplished the required final coordination review. The Activity is to:

- Perform a spot-check of the interdisciplinary coordination of the final plans and specifications.
- Require the DOR to include the final coordination review check-set of plans and specifications with the final submittal.
- Return the plans and specifications to the DOR for rework if the spot-check or other procedure indicates inadequate quality control by the A/E, or if design errors or omissions are found.
- Process payment for final plans and specifications after adequate quality control has been accomplished by the A/E.

- Delete all, except under unusual circumstances and with careful documentation, direct specific corrections to the FEC to avoid assuming responsibility for the design.
- Specifically evaluate the DOR quality performance in both the post-design completion and the post-construction completion A/E performance evaluations for consideration in future selection actions.

7-1.3 **Other Government Design Reviews.**

7-1.3.1 **Resident Officer In Charge of Construction Reviews.**

The Resident Officer in Charge of Construction (ROICC) reviews the plans and specifications at an early Design Development design stage and at the Pre-Final submission. The review should be limited to project constructability (e.g., site problems, existing obstructions or proposed utilities, new construction methods, proposed contract time for construction, omissions, discrepancies, and coordination problems that could lead to change orders or construction difficulties).

7-1.3.2 **Commander Naval Construction Battalion Reviews.**

Projects scheduled for accomplishment by naval construction forces are reviewed at an early Design Development design stage by Commander Naval Construction Battalions, U.S. Atlantic Fleet (COMCBLANT) or by Commander Naval Construction Battalions, U.S. Pacific Fleet (COMCBPAC), as appropriate, for construction methods and procedures.

7-1.3.3 **Reviews for Health Hazards During Facilities Design Process.**

For facilities projects that require industrial hygiene technical assistance and that involve potential health hazards such as toxic materials, non-ionizing radiation, noise, or other health hazards, consult the appropriate Naval Medical Command (NAVMEDCOM) activity. The NAVMEDCOM activity is required to participate in design reviews and reviews of plans and specifications for these projects. The NAVMEDCOM activity will ensure that engineering designs properly consider and provide for adequate environmental controls for the elimination of health hazards. Use this review process for medical facility designs in excess of \$1 million.

7-1.3.4 **Commandant, U.S. Marine Corps (CMC) Reviews.**

Submit to Commandant, U.S. Marine Corps (CMC), Code LFF, for review for compliance with functional requirements early Design Development design stage documents for Marine Corps-funded projects. Furnish one set to the Marine Corps installation, one set to CMC, and one set to NAVFACENGCOM Contracting Officer for information. Make comments on, or approval of, the functional aspects of the design by letter, and resolve discrepancies to the satisfaction of CMC. Send one complete set of the final drawings (half-size preferred), specifications, and cost estimates to CMC, the

Marine Corps installation, and NAVFACENGCOM Contracting Officer for information concurrent with acceptance of the final design.

7-1.3.5 **Space and Naval Warfare Systems Command (SPAWAR) Reviews.**

There are two types of drawings for SPAWAR projects: (Type 1) drawings of the building, site and other facilities and (Type 2) drawings for electronic and other equipment to be installed within the building. Although Type (2) drawings are sometimes prepared by SPAWAR, both types should bear standard NAVFAC title blocks in accordance with UFC 1-300-10N and drawing numbers. On drawings that require SPAWAR approval, append a box to the left of the title block for SPAWAR signature and provide a space for a SPAWAR cross-reference drawing number.

7-1.3.6 **Civil Works Contracts Reviews.**

NAVFACENGCOM or the delegated Facility Engineering Command approves drawings and specifications prepared for civil works subcontracts. Assign NAVFAC drawing numbers to civil works contract drawings and approve and sign the drawings as "Satisfactory to" the prime contractor of the particular Navy industrial plant for whose use the facility is provided.

7-1.3.7 **Review by Other Government Organizations.**

Approval of drawings for projects of other Government organizations or approval of modifications or revisions of drawings prepared by such organizations is required as follows:

- Indicate approval by other Government departments or agencies by appropriate signature.
- When NAVFAC drawings are prepared for construction projects for other Government departments or agencies, submit fully developed concept designs to the appropriate departments or agencies for formal approval and signature.
- For drawings prepared under the direction of NAVFAC, approval by that other Government organization is solely for functional and operational sufficiency.
- When definitive, standard, or project drawings of other Government departments or agencies are used by NAVFAC for design of projects for those departments or agencies, make any modifications or revisions to such drawings with the approval of the department or agency concerned, unless NAVFAC has been authorized otherwise.

7-1.3.8 **Local Design Reviews.**

Local design reviews and approval may be required. Consult the Project Manager for the design activity administering the design.

CHAPTER 8 DESIGN-BID-BUILD SUBMITTAL REQUIREMENTS

NOTE: All electronic submittals must be in accordance with UFC 1-300-10N. As a minimum all final submittals must be in electronic format. The project scope of work must define any other submittals required in electronic format.

8-1 ARCHITECTURAL SUBMITTALS.

8-1.1 Concept Design Submittals.

The Concept Design Submittal is intended to convey the extent of the work in a preliminary conceptual manner. Drawings are approximately 10% to 15% complete at this stage. This submittal must include, as a minimum:

8-1.1.1 Basis of Design.

Submit a preliminary version of the Basis of Design addressing all items defined elsewhere in this guide.

8-1.1.2 Drawings.

As a minimum, provide the following drawings:

- Floor Plans – Provide all floor plans, new and demolition, indicating room names and basic dimensions.
- Building Elevations – Provide all building elevations indicating all exterior materials.
- Building Section – Indicate heights of critical building elements.

8-1.2 Design Development Submittals.

The Design Development Submittal is intended to convey the complete extent of the work in a preliminary manner. The drawings are typically about 35% to 50% complete at this stage. This submittal must include, as a minimum:

8-1.2.1 Basis of Design.

Submit a complete Basis of Design addressing all items defined in UFC 3-100-10N, *Design: General Architectural Requirements* and UFC 1-200-01, *Design: General Building requirements*.

8-1.2.2 Drawings.

As a minimum, provide the following drawings:

- Floor Plans – Provide all floor plans, new and demolition, indicating room names and dimensions.

- Building Elevations – Provide all building elevations indicating all exterior materials.
- Roof Plan – Provide a plan of all roof areas, indicating direction of slope and method of drainage.
- Building Section – Indicate heights.
- Typical Wall Sections – Provide sufficient wall section(s) to indicate all materials and different conditions.
- Finish Schedule – Indicate all proposed finishes
- Furniture Plan.

8-1.2.3 **Specifications.**

Provide preliminary outline specifications in accordance with Chapter 5.

8-1.2.4 **Cost Estimate.**

Provide Preliminary cost estimate. See *NAVFAC Cost Engineering Policy and Procedures* (www.uscost.net/costengineering).

8-1.2.5 **Color Boards.**

Provide separate interior and exterior color boards indicating all proposed material and color selections.

8-1.3 **Pre-Final Design Submittals.**

The intent of the Pre-Final submittal is to provide a complete set of drawings and specifications. Specifications may be in an edited, or redlined format. The following are the minimum requirements of a Pre-Final submittal:

8-1.3.1 **Basis of Design.**

Resubmit the Basis of Design. Update information as necessary.

8-1.3.2 **Drawings.**

Provide complete construction drawings as described in UFC 3-100-10N.

8-1.3.3 **Specifications.**

Provide complete specifications in accordance with Chapter 5.

8-1.3.4 **Cost Estimate.**

Submit complete detailed cost estimate. See *NAVFAC Cost Engineering Policy and Procedures* (www.uscost.net/costengineering).

8-1.3.5 **Color Boards.**

Provide separate updated interior and exterior color boards indicating all proposed material and color selections.

8-1.3.6 **Annotated Review Comments.**

Provide written responses to all government review comments.

8-1.4 **Final Design Submittals.**

The intent of the Final Submittal is to provide a complete and final set of contract documents ready for bidding by the government, or in the case of Design-Build, ready for construction by the contractor. All government comments must have been addressed. The following is the minimum required of a Final Submittal:

8-1.4.1 **Basis of Design.**

Resubmit the Basis of Design. Update information as necessary.

8-1.4.2 **Drawings.**

Provide complete construction drawings.

8-1.4.3 **Specifications.**

Provide complete specifications in accordance with Chapter 5.

8-1.4.4 **Cost Estimate.**

Submit complete updated cost estimate.

8-1.4.5 **Color Documentation Binders.**

Provide separate interior and exterior color documentation binders indicating all proposed material and color selections.

8-1.4.6 **Annotated Review Comments.**

Provide written responses to all government review comments.

8-2 **CIVIL, GEOTECHNICAL AND LANDSCAPE SUBMITTALS.**

8-2.1 **Concept Design Submittals.**

The Concept Design Submittal is intended to convey the extent of the work in a preliminary conceptual manner. Drawings are approximately 10% to 15% complete at this stage. This submittal must include, as a minimum:

- Basis of Design. Submit a preliminary version of the Basis of Design addressing all items defined in UFC 3-200-10N, *Design: General Civil, Geotechnical, Landscape Requirements*.
- Drawings. As a minimum, provide the following drawings: Conceptual site plan, indicating above and below grade utility lines, vehicular and pedestrian circulation paths, buildings, parking, paved areas, preliminary landscape architectural concept, and existing site features to remain.

8-2.2 **Design Development Submittals.**

The Design Development Submittal is intended to convey the complete extent of the work in a preliminary manner. The drawings are typically 35% to 50% complete at this stage. This submittal must include, as a minimum:

8-2.2.1 **Basis of Design.**

Submit a complete Basis of Design addressing all items indicated in UFC 3-200-10N.

8-2.2.2 **Drawings.**

As a minimum, provide the following drawings:

- Legend and Notes
- Existing Conditions
- Utility Plan
- Layout Plan for Roads and Parking
- Datum security tied between NGVD and local datums

Landscape Drawings must show sufficient detail to clearly identify the following items:

- Locations of all facilities (buildings, parking areas, roads, existing vegetation noted for preservation, etc.)
- New plantings of trees, shrubs and ground covers.
- Other landscape features such as specialty paving, site furniture, etc.
- Irrigation Plan, when required.

8-2.2.3 **Specifications.**

Provide preliminary outline specifications in accordance with Chapter 5.

8-2.2.4 Cost Estimate.

Provide preliminary cost estimate. See *NAVFAC Cost Engineering Policy and Procedures* (www.uscost.net/costengineering).

8-2.3 Pre-Final Design Submittals.

The intent of the Pre-Final submittal is to provide a complete set of drawings and specifications. Specifications may be in an edited, or redlined format. The following are the minimum requirements of a Pre-Final submittal:

8-2.3.1 Basis of Design.

Resubmit the Basis of Design. Update information as necessary.

8-2.3.2 Drawings.

Provide a complete set of construction documents organized by discipline in accordance with UFC 3-200-10N.

8-2.3.3 Specifications.

Provide complete specifications in accordance with Chapter 5.

8-2.3.4 Cost Estimate.

Submit complete detailed cost estimate. See *NAVFAC Cost Engineering Policy and Procedures* (www.uscost.net/costengineering).

8-2.3.5 Annotated Review Comments.

Provide written responses to all government review comments.

8-2.4 Final Design Submittals.

The intent of the Final Submittal is to provide a COMPLETE and FINAL set of contract documents ready for bidding by the government. All government comments must have been addressed. The following is the minimum required of a Final Submittal:

8-2.4.1 Drawings.

Provide a complete set of construction drawings organized by discipline in accordance with this UFC.

8-2.4.2 Specifications.

Provide complete specifications in accordance with Chapter 5.

8-2.4.3 **Cost Estimate.**

Submit complete updated cost estimate.

8-2.4.4 **Annotated Review Comments.**

Provide written responses to all government review comments.

8-3 **STRUCTURAL SUBMITTALS.**

8-3.1 **Design Development Submittals.**

8-3.1.1 **Basis of Design.**

Submit a complete Basis of Design addressing all items defined in UFC 3-300-10N, *Design: General Structural Requirements*.

8-3.1.2 **Drawings.**

As a minimum, submit the following drawings developed in sufficient detail to support the items outlined in the Basis of Design:

- Foundation Plans - Include for all structures, showing dimensions, arrangements, elevations, locations referred to a column line grid system, type of foundation and foundation obstructions. Include the layout of all slabs, footings, piers, grade beams, piles, etc., showing all foundation features of the design.
- Framing Plans – Include a framing plan for each structural level of the facility, showing dimensions, elevations, and column locations and numbering referenced to a column line grid system, and overall sizes of major members and components. Show the layout of beams, joists, stringers, etc.
- Structural Details – Show typical details of construction, indicating the connection and relationship between major components of the structural system.
- Structural Elevations – Show general sizes, location and arrangement of all significant features of the vertical framing system, including columns, walls, beams, etc.

8-3.1.3 **Outline Specifications.**

Provide preliminary outline specifications in accordance with Chapter 5.

8-3.1.4 **Calculations.**

Calculations must be complete in sufficient detail to support the items outlined in the Basis of Design and indicated on the drawings.

8-3.1.5 Cost Estimate.

Submit an estimate of probable cost, with a level of detail appropriate for the status of the design at this stage. See *NAVFAC Cost Engineering Policy and Procedures* (www.uscost.net/costengineering).

8-3.2 Pre-Final Design Submittals.

The intent of the Pre-Final submittal is to provide a complete set of drawings and specifications. Specifications may be in an edited, or redlined format. The following are the minimum required of a Pre-Final submittal:

8-3.2.1 Basis of Design.

Supplement the Basis of Design discussions as necessary and respond to reflect previous government review comments. Resubmission of corrected Basis of Design is not required.

8-3.2.2 Drawings.

Drawings must be 100% complete, minus signatures, and modified to reflect the responses to previous review comments. Prepare drawings with sufficient detail that structural decisions and choices need not be made in the field. Address all construction conditions in the construction documents, including details that apply to specific conditions, complete schedules, identification of all members, dimensions, connection details, etc.

8-3.2.3 Specifications.

Modify specifications to reflect the responses to previous review comments. They must be 100% complete. Provide complete specifications in accordance with Chapter 5.

8-3.2.4 Calculations.

Revise calculations as required to reflect resolution of all previous government review comments. At this stage, the analysis must be 100% complete.

8-3.2.5 Cost Estimate.

Submit an estimate of probable cost, including all of the items shown on the drawings and specifications.

8-3.2.6 Annotated Review Comments.

Provide written responses to all government review comments.

8-3.3 **Final Design Submittals.**

The intent of the Final Submittal is to provide a complete and final set of contract documents ready for bidding by the government, or in the case of Design-Build, ready for construction by the contractor. All government comments must have been addressed. The following is the minimum required of a Final Submittal:

8-3.3.1 **Drawings.**

Provide complete construction drawings.

8-3.3.2 **Specifications.**

Provide complete specifications in accordance with Chapter 5.

8-3.3.3 **Cost Estimate.**

Submit complete updated cost estimate.

8-3.3.4 **Calculations.**

Calculations must be revised as required to reflect resolution of all previous government review comments.

8-3.3.5 **Annotated Review Comments.**

Provide written responses to all government review comments.

8-4 **MECHANICAL SUBMITTALS**

8-4.1 **Design Development Submittals.**

8-4.1.1 **Basis of Design.**

Provide as indicated in UFC 3-400-10N, *Design: General Mechanical Requirements*.

8-4.1.2 **Drawings.**

Provide the following sheets, as a minimum, for the design development submittal:

- Plumbing Floor Plan. Show plumbing fixtures, floor drains and equipment locations.
- Site Plan. Show connection to base steam distribution, location of propane and oil tanks, layout of ground coupled heat pump well fields, etc.

- HVAC Floor Plan. Show equipment locations, one or two-line duct layout and preliminary piping runs.
- Mechanical Room Plan. Show major equipment and maintenance access space. Provide section view(s) to clarify layout and supports.

8-4.1.3 **Calculations.**

Provide the following calculations, as a minimum, accompanying the Design Development submittal:

8-4.1.4 **Energy Analysis.**

Provide a bound copy of the computerized energy analysis that includes input and output data in their entirety.

8-4.1.5 **Life Cycle Cost Analysis.**

Submit the computerized LCC analysis utilizing the latest edition of the NIST Building Life-Cycle Cost Program.

8-4.1.6 **Building Heating and Cooling Load.**

Provide a bound copy of the computerized load calculations with input and output data in their entirety.

8-4.1.7 **ASHRAE 90.1 Compliance Calculations.**

Submit calculations and compliance forms indicated in the Basis of Design.

8-4.2 **Pre-Final Design Submittals.**

8-4.2.1 **Drawings.**

Plumbing and mechanical drawings must be complete to the extent that they may be released for bid as submitted.

8-4.2.2 **Calculations.**

Submit all calculations to support the plumbing and mechanical systems and the major equipment comprising those systems. Update the 35% energy analysis with the equipment efficiencies scheduled on the drawings.

8-4.2.3 **Basis of Design.**

Submit revised basis of design.

8-4.3 **Final Design Submittals.**

8-4.3.1 **Drawings.**

Submit the final plumbing and mechanical drawings in accordance with UFC 3-400-10N.

8-4.3.2 **Calculations.**

Submit the final plumbing and mechanical calculations, revised and updated, in accordance with UFC 3-400-10N.

8-4.3.3 **Basis of Design.**

Submit final basis of design, revised and updated, in accordance with UFC 3-400-10N.

8-5 **ELECTRICAL SUBMITTALS.**

Listed below are design submittal requirements for specific levels of design completion. Not all submittals listed may be required. The Statement of Work (SOW) or RFP will indicate the number of and required completion percentage (e.g., 35%, 100%, Final) of all submittal requirements. Only those submittals listed in the SOW are required and each required submittal must follow the guidelines indicated below.

8-5.1 **Concept Design Submittals.**

The Concept Design Submittal need not provide extensive details but must be complete enough to thoroughly express the Designer's intentions and include the following:

- Existing Site and Demolition Plan: Plans must include all existing site information such as buildings, pavements and utilities. All electrical demolition must be shown and indicated by legend. Demolished features must not be shown on subsequent drawings. Indicate existing exterior power and telecommunications distribution to a point of connection.
- Site Plan: Plan must show new and remaining aboveground and underground electrical lines and equipment. Show other utilities in proximity to electrical utilities. Information on existing conditions must be complete and field checked. Show proposed Power and Telecommunications cabling and routing.
- Single Line Diagram (Not a Riser) including Pad mounted transformer or substation with primary and secondary protective devices: Show Secondary feeders to major items of equipment.
- Preliminary floor plans with dedicated space clearly identified for electrical and telecommunications rooms: Show proposed locations for large equipment such as HVAC connections, Switchgear or Switchboards, and 400 Hertz equipment, etc.
- Design Analysis including Preliminary load calculations for Utility connections.

- Outline Specifications.
- Electrical Design Check List.

8-5.2 Design Development Submittals.

a) Submittal must include all requirements of the previous submittal plus additional detail to bring them to the required completion percentage.

- Legend and Abbreviations
- Existing Site and Demolition Plan: Plans must be developed to approximately 50 percent completion.
- Site Plan: Plan must be developed to approximately 50 percent completion.
- Lighting Plan(s): Plans must show a building's full floor plan (first, second, etc.) with the layout and type of fixtures to be used. No wiring or circuits required. Scale will be 1:100 (1/8" = 1'-0") minimum.
- Power Plan(s): Plans must show a building's full floor plan (first, second, etc.) with the location of receptacles, panelboards, switchboards, motor control centers, transformers and any other major equipment. No wiring or circuits required. Scale will be 1:100 (1/8" = 1'-0") minimum.
- Lightning Protection Plan: No details required.
- Cathodic Protection Plan: Include the location of soil resistivity measurements. No details required.
- Special Systems Plans: Show location of devices (e.g., telephone, IDS, others as required).
- Single Line Diagram: Plan must be developed to approximately 50 percent completion showing all panels, switchboards, motor control centers, transformers and other major electrical loads such as motors, chillers, etc.
- Additional Plans/Risers
- Updated Design Analysis to substantiate design level shown.

b) Submit Design Calculations to substantiate design level shown including:

- Lighting: Interior and Exterior Foot-candles.
- Load Analysis
- Service size
- Feeder size
- Larger special circuit sizes
- Lightning Risk Assessment

c) Outline Specifications

d) Response to Previous Submittal Review Comments

e) Electrical Design Checklist

8-5.3 Pre-Final Design Submittals.

a) Submittal must include all requirements of the previous submittal plus additional detail to bring them to the specified completion percentage. Drawings and specifications must be substantially complete at this stage and require only minor corrections if any.

- Legend and Abbreviations
- Existing Site and Demolition Plan
- Lighting Plans and Details
- Power Plans and Details
- Power - Single Line Diagram
- Telephone Riser Diagram
- Intercommunication Riser Diagram
- Fire Alarm Riser Diagram: Include only when separate Fire Protection Drawings are not included in the design.
- Other Riser Diagrams for Television, Security, Etc.
- Panel Schedules
- Switchboards and Motor Control Center Schedules
- Lighting Fixture Details

b) Updated Design Analysis to substantiate design level shown

c) Sequence of Construction when applicable

d) Updated Calculations from previous submittal to substantiate design level shown including the following as applicable.

- Short Circuit
- Voltage Drop
- Lighting
- Load Analysis
- Motor Starting/Flicker Analysis
- Sag, Tension, and Guying Analysis
- Manhole Design Calculations
- Cable Pulling Tension Calculations
- Cathodic Protection Calculations
- CATV Network Loss Calculations

e) Redlined Specifications

f) Design must be free of conflicts between the contract drawings and the specifications.

g) Response to Previous Submittal Review Comments

h) Updated Electrical Design Check List

8-5.4 Final Design Submittals.

- a) The final submission must incorporate the corrections and clarifications noted on the Pre-Final submittal.
- b) Include the Pre-Final submittal reviewer comments with replies
- c) Typed Specifications
- d) Design Analysis to reflect the final design
- e) Calculations, including all updates to substantiate the final design.

8-6 FIRE PROTECTION SUBMITTALS

This section summarizes the items required at each submittal stage for design-bid-build projects. Not all submittal stages are necessarily required. Contract documents will outline which submittals are required and information presented below is a guide of the minimum level of information required at each submittal stage.

8-6.1 Design Development Submittals.

8-6.1.1 Basis of Design.

Complete Basis of Design meeting the requirements as outlined in UFC 3-600-10N, *Design: General Fire Protection Requirements*.

8-6.1.2 Drawings.

Provide, as a minimum, the following:

- Identify exterior distribution piping and sizes.
- Identify location of P.I.V. (if used) and fire hydrants.
- Provide a fire hydrant detail.
- Provide a detail of the fire main service entrance to the building. Identify a pipe sleeve in the floor slab. May be shown on fire protection drawings.
- Provide fire department vehicular access in accordance with UFC 3-600-01, *Design: General Fire Protection Requirements*.
- Rated partitions
- Show location of Fire Alarm Control Panel (FACP), locations for extender panels, radio transmitter or master box, all initiating and signaling devices (including duct smoke detectors) and pump controller on plans, electromagnetic door holders, single station smoke detectors, fire protection releasing panels, fire protection system air compressors and fire pump/jockey pump controllers.

- Show locations of sprinkler risers, exterior water flow alarms, fire department connections, post indicator valves, and back flow preventers. Show the location of all isolation control valves. Do not show sprinkler branch lines or feed main piping, unless a specific routing is required. i.e.: single feed to computer room or elevator equipment room and hoistway.
- Location of fire alarm and suppression system devices requiring 120V power supply or greater. i.e.; fire alarm control panel, fire suppression system control panel, fire suppression system air compressor, fire pump and jockey pump controllers. Ensure power connections for fire pumps are in strict compliance with NFPA 20, *Standard for Installation of Stationary Pumps for Fire Protection*.

8-6.1.3 **Calculations.**

Submit all hydraulic calculations supporting all fire suppression systems for the project. Make all calculations using commercially available hydraulic sprinkler computer software.

8-6.1.4 **Guide Specifications.**

Provide an outline list of the required fire protection specifications supporting the project.

8-6.2 **Pre-Final Design Submittals.**

8-6.2.1 **Basis of Design.**

Complete final Basis of Design meeting the requirements as outlined throughout this guide.

8-6.2.2 **Drawings.**

Provide, as a minimum, all drawings as shown in the UFC 3-600-10N.

8-6.2.3 **Calculations.**

Submit complete final calculations supporting all the fire suppression systems for the project. Make all calculations using commercially available hydraulic sprinkler computer software.

8-6.2.4 **Specifications.**

Provide full edited fire protection specifications supporting the project.

8-6.3 **Final Design Submittals.**

8-6.3.1 **Drawings.**

Provide all drawings required to meet the intended design approaches for the project. As a minimum, provide all noted drawings in UFC 3-600-10N.

8-6.3.2 Specifications.

Submit completed final fire protection specifications supporting the project.

8-6.4 Additional Overseas Submittals Requirements.

- Host Nation Life Safety and Building Code analysis.
- Comparisons with NFPA Codes and UFC 1-200-01

8-7 ENVIRONMENTAL SUBMITTALS.

Environmental submittals vary with the location and type of project. Consult with the local command environmental office regarding the specific environmental submittals necessary for the specific project.

CANCELLED

CHAPTER 9 DESIGN-BUILD SUBMITTAL REQUIREMENTS

NOTE: All electronic submittals must be in accordance with UFC 1-300-10N. As a minimum all final submittals must be in electronic format. The project scope of work must define any other submittals required in electronic format.

9-1 **ARCHITECTURAL SUBMITTALS.**

The following submittals are typically required for Design-Build projects. Refer to the particular RFP for the exact submittal requirements for each project.

9-1.1 **Concept Design Submittals.**

The Concept Design Submittal is intended to convey the extent of the work in a preliminary conceptual manner. Drawings are approximately 10% to 15% complete at this stage. This submittal must include, as a minimum:

9-1.1.1 **Basis of Design.**

Submit a preliminary version of the Basis of Design addressing all items defined in UFC 3-100-10N and UFC 1-200-01.

9-1.1.2 **Drawings.**

As a minimum, provide the following drawings:

- Floor Plans – Provide all floor plans, new and demolition, indicating room names and basic dimensions.
- Building Elevations – Provide all building elevations indicating all exterior materials.
- Building Section – indicate heights of critical building elements.

9-1.2 **Design Development Submittals.**

The Design Development Submittal is intended to convey the complete extent of the work in a preliminary manner. The drawings are typically about 35% to 50% complete at this stage. This submittal must include, as a minimum:

9-1.2.1 **Basis of Design.**

Submit a complete Basis of Design addressing all items defined in UFC 3-100-10N and UFC 1-200-01. Update sustainable design validation/certification information required in UFGS 01331 of the project RFP.

9-1.2.2 **Drawings.**

As a minimum, provide the following drawings:

- Floor Plans – Provide all floor plans, new and demolition, indicating room names and dimensions.
- Building Elevations – Provide all building elevations indicating all exterior materials.
- Roof Plan – Provide a plan of all roof areas, indicating direction of slope and method of drainage.
- Building Section – indicate heights.
- Typical Wall Sections – Provide sufficient wall section(s) to indicate all materials and different conditions.
- Finish Schedule – Indicate all proposed finishes
- Furniture Plan.

9-1.2.3 **Specifications.**

Provide preliminary outline specifications in accordance with Chapter 5.

9-1.2.4 **Cost Estimate.**

Provide Preliminary cost estimate. See *NAVFAC Cost Engineering Policy and Procedures* (www.uscost.net/costengineering).

9-1.2.5 **Color Boards.**

Provide separate interior and exterior color boards indicating all proposed material and color selections.

9-1.3 **Pre-Final Design Submittals.**

The intent of the Pre-Final submittal is to provide a complete set of drawings and specifications. Specifications may be in an edited, or redlined format. The following are the minimum required of a Pre-Final submittal:

9-1.3.1 **Basis of Design.**

Resubmit the Basis of Design. Update information including sustainable design validation/certification information required in UFGS 01331 of the project RFP.

9-1.3.2 **Drawings.**

Provide complete construction drawings as described in UFC 3-100-10N.

9-1.3.3 **Specifications.**

Provide complete specifications in accordance with Chapter 5.

9-1.3.4 **Cost Estimate.**

Submit complete detailed cost estimate. See *NAVFAC Cost Engineering Policy and Procedures* (www.uscost.net/costengineering).

9-1.3.5 **Color Boards.**

Provide separate updated interior and exterior color boards indicating all proposed material and color selections.

9-1.3.6 **Annotated Review Comments.**

Provide written responses to all government review comments.

9-1.4 **Final Design Submittals.**

The intent of the Final Submittal is to provide a complete and final set of contract documents ready for bidding by the government, or in the case of Design-Build, ready for construction by the contractor. All government comments must have been addressed. The following is the minimum required of a Final Submittal:

9-1.4.1 **Basis of Design.**

Resubmit the Basis of Design. Update information including sustainable design validation/certification information required in UFGS 01331 of the project RFP.

9-1.4.2 **Drawings.**

Provide complete construction drawings.

9-1.4.3 **Specifications.**

Provide complete specifications in accordance with Chapter 5.

9-1.4.4 **Cost Estimate.**

Submit complete updated cost estimate.

9-1.4.5 **Color Documentation Binders.**

Provide separate interior and exterior color documentation binders indicating all proposed material and color selections.

9-1.4.6 **Annotated Review Comments.**

Provide written responses to all government review comments.

9-2 CIVIL, GEOTECHNICAL AND LANDSCAPE SUBMITTALS.

The following submittals are typically required for Design-Build projects. Refer to the particular RFP for the exact submittal requirements for each project.

9-2.1 Concept Design Submittals.

The Concept Design Submittal is intended to convey the extent of the work in a preliminary conceptual manner. Drawings are approximately 10% to 15% complete at this stage. This submittal must include, as a minimum:

9-2.1.1 Basis of Design.

Submit a preliminary version of the Basis of Design addressing all items defined elsewhere in this guide and UFC 3-200-10N.

9-2.1.2 Drawings.

As a minimum, provide a conceptual site plan, indicating above and below grade utility lines, vehicular and pedestrian circulation paths, buildings, parking, paved areas, preliminary landscape architectural concept, and existing site features to remain.

9-2.2 Design Development Submittals.

The Design Development Submittal is intended to convey the complete extent of the work in a preliminary manner. The drawings are typically 35% to 50% complete at this stage. This submittal must include, as a minimum:

9-2.2.1 Basis of Design.

Submit a complete Basis of Design addressing all items indicated in UFC 3-200-10N. Update sustainable design validation/certification information required in UFGS 01331 of the project RFP.

9-2.2.2 Drawings.

As a minimum, provide the following drawings:

- Legend and Notes
- Existing Conditions
- Utility Plan
- Layout Plan for Roads and Parking
- Landscape Drawings in sufficient detail to clearly identify the following items:
 - Locations of all facilities (buildings, parking areas, roads, existing vegetation noted for preservation, etc.)
 - New plantings of trees, shrubs and ground covers

- Other landscape features such as specialty paving, site furniture, etc.
- Irrigation Plan, when required.

9-2.2.3 **Specifications.**

Provide preliminary outline specifications in accordance with Chapter 5.

9-2.2.4 **Cost Estimate.**

Provide a preliminary cost estimate. See *NAVFAC Cost Engineering Policy and Procedures* (www.uscost.net/costengineering).

9-2.3 **Pre-Final Design Submittals.**

The intent of the Pre-Final submittal is to provide a complete set of drawings and specifications. Specifications may be in an edited, or redlined format. The following are the minimum required of a Pre-Final submittal:

9-2.3.1 **Basis of Design.**

Resubmit the Basis of Design. Update information as necessary, including sustainable design validation/certification information required in UFGS 01331 of the project RFP.

9-2.3.2 **Drawings.**

Provide a complete set of construction documents organized by discipline in accordance with UFC 3-200-10N.

9-2.3.3 **Specifications.**

Provide complete specifications in accordance with Chapter 5.

9-2.3.4 **Cost Estimate.**

Submit complete detailed cost estimate. See *NAVFAC Cost Engineering Policy and Procedures* (www.uscost.net/costengineering).

9-2.3.5 **Annotated Review Comments.**

Provide written responses to all government review comments.

9-2.4 **Final Design Submittals.**

The intent of the Final Submittal is to provide a complete and final set of contract documents ready for bidding by the government. All government comments must have been addressed. The following is the minimum required of a Final Submittal:

9-2.4.1 **Basis of Design.**

Resubmit the Basis of Design. Update information as necessary, including sustainable design validation/certification information required in UFGS 01331 of the project RFP.

9-2.4.2 **Drawings.**

Provide a complete set of construction drawings organized by discipline in accordance with UFC 3-200-10N.

9-2.4.3 **Specifications.**

Provide complete specifications in accordance with Chapter 5.

9-2.4.4 **Cost Estimate.**

Submit complete updated cost estimate.

9-2.4.5 **Annotated Review Comments.**

Provide written responses to all government review comments.

9-3 **STRUCTURAL SUBMITTALS.**

9-3.1 **Design Development Submittals.**

9-3.1.1 **Basis of Design.**

Submit a complete Basis of Design addressing all items defined elsewhere in this guide.

9-3.1.2 **Drawings.**

As a minimum, submit the following drawings developed in sufficient detail to support the items outlined in the Basis of Design:

- Foundation Plans - Include for all structures, showing dimensions, arrangements, elevations, locations referred to a column line grid system, type of foundation and foundation obstructions. Include the layout of all slabs, footings, piers, grade beams, piles, etc., showing all foundation features of the design.
- Framing Plans – Include a framing plan for each structural level of the facility, showing dimensions, elevations, and column locations and numbering referenced to a column line grid system, and overall sizes of major members and components. Show the layout of beams, joists, stringers, etc.
- Structural Details – Show typical details of construction, indicating the connection and relationship between major components of the structural system.

- Structural Elevations – Show general sizes, location and arrangement of all significant features of the vertical framing system, including columns, walls, beams, etc.

9-3.1.3 **Outline Specifications.**

Provide preliminary outline specifications in accordance with Chapter 5.

9-3.1.4 **Calculations.**

Calculations must be complete and in sufficient detail to support the items outlined in the Basis of Design and indicated on the drawings.

9-3.1.5 **Cost Estimate.**

Submit an estimate of probable cost, with a level of detail appropriate for the status of the design at this stage. See the cost estimating design guide.

9-3.2 **Pre-Final Design Submittals.**

The intent of the Pre-Final submittal is to provide a complete set of drawings and specifications. Specifications may be in an edited, or redlined format. The following are the minimum required of a Pre-Final submittal:

9-3.2.1 **Basis of Design.**

Supplement the Basis of Design discussions as necessary and respond to reflect previous government review comments. Resubmission of corrected Basis of Design is not required.

9-3.2.2 **Drawings.**

Drawings must be Pre-Final complete, minus signatures, and modified to reflect the responses to previous review comments. Prepare drawings with sufficient detail that structural decisions and choices need not be made in the field. Fully address all construction conditions in the construction documents, including details that apply to specific conditions, complete schedules, identification of all members, dimensions, connection details, etc.

9-3.2.3 **Specifications.**

Modify specifications to reflect the responses to previous review comments, and ensure they are 100% complete. Provide complete specifications in accordance with Chapter 5.

9-3.2.4 **Calculations.**

Revise calculations as required to reflect resolution of all previous government review comments. At this stage, the analysis must be 100% complete.

9-3.2.5 **Cost Estimate.**

Submit an estimate of probable cost, including all of the items shown on the drawings and specifications.

9-3.2.6 **Annotated Review Comments.**

Provide written responses to all government review comments.

9-3.3 **Final Design Submittals.**

The intent of the Final Submittal is to provide a complete and final set of contract documents ready for bidding by the government, or in the case of Design-Build, ready for construction by the contractor. All government comments must have been addressed. The following is the minimum required of a Final Submittal:

9-3.3.1 **Drawings.**

Provide complete construction drawings.

9-3.3.2 **Specifications.**

Provide complete specifications in accordance with Chapter 5.

9-3.3.3 **Cost Estimate.**

Submit complete updated cost estimate.

9-3.3.4 **Calculations.**

Revise calculations as required to reflect resolution of all previous government review comments.

9-3.3.5 **Annotated Review Comments.**

Provide written responses to all government review comments.

9-4 **Mechanical Submittals.**

9-4.1 **Design Development Submittals.**

9-4.1.1 **Basis of Design.**

Provide as indicated in UFC 3-400-10N.

Provide the following sheets, as a minimum, for the design development submittal:

- Plumbing Floor Plan. Show plumbing fixtures, floor drains and equipment locations.
- Site Plan. Show connection to base steam distribution, location of propane and oil tanks, layout of ground coupled heat pump well fields, etc.
- HVAC Floor Plan. Show equipment locations, one or two-line duct layout and preliminary piping runs.
- Mechanical Room Plan. Show major equipment and maintenance access space. Provide section view(s) to clarify layout and supports.

9-4.1.2 **Calculations.**

Provide the following calculations, as a minimum, accompanying the Design Development submittal:

- Energy Analysis. Provide a bound copy of the computerized energy analysis that includes input and output data in their.
- Life Cycle Cost Analysis. Submit the computerized LCC analysis utilizing the latest edition of the NIST Building Life-Cycle Cost.
- Building Heating and Cooling Load. Provide a bound copy of the computerized load calculations with input and output data in their entirety.
- ASHRAE 90.1 Compliance Calculations. Submit calculations and compliance forms indicated in the Basis of Design.

9-4.2 **Pre-Final Design Submittals.**

9-4.2.1 **Drawings.**

Plumbing and mechanical drawings must be complete to the extent that they may be released for bid as submitted.

9-4.2.2 **Calculations.**

Submit all calculations to support the plumbing and mechanical systems and the major equipment comprising those systems. Update the 35% energy analysis with the equipment efficiencies scheduled on the drawings.

9-4.2.3 **Basis of Design.**

Resubmit Basis of Design. Update information as necessary, including sustainable design validation/certification information required .

9-4.3 **Final Design Submittals.**

9-4.3.1 **Drawings.**

Submit the final plumbing and mechanical drawings in accordance with UFC 3-400-10N.

9-4.3.2 Calculations.

Submit the final plumbing and mechanical calculations, revised and updated, in accordance with UFC 3-400-10N.

9-4.3.3 Basis of Design.

Resubmit Basis of Design. Update information as necessary, including sustainable design validation/certification information required ..

9-5 ELECTRICAL SUBMITTALS.

The following are typically required for Design-Build projects. Refer to the RFP for the exact submittal requirements for each project.

9-5.1 Concept Design Submittals.

Listed below are design submittal requirements for specific levels of design completion. Not all submittals listed may be required. The SOW or RFP indicates the number of and required completion percentage (e.g., 35%, 100%, Final) of all submittal requirements. Only those submittals listed in the SOW are required and each required submittal must follow the guidelines indicated below.

9-5.1.1 Concept Design Submittals. Submittal need not provide extensive details but must be complete enough to thoroughly express the Designer's intentions and include the following:

- Existing Site and Demolition Plan. Plans must include all existing site information such as buildings, pavements and utilities. All electrical demolition must be shown and indicated by legend. Do not include demolished features on subsequent drawings. Indicate existing exterior power and telecommunications distribution to a point of connection.
- Site Plan. Show new and remaining aboveground and underground electrical lines and equipment. Show other utilities in proximity to electrical utilities. Information on existing conditions shall be complete and field checked. Show proposed Power and Telecommunications cabling and routing.
- Single Line Diagram (Not a Riser) including Pad mounted transformer or substation with primary and secondary protective devices. Show Secondary feeders to major items of equipment.
- Preliminary floor plans with dedicated space clearly identified for electrical and telecommunications rooms. Show proposed locations for large equipment such as HVAC connections, Switchgear or Switchboards, and 400 Hertz equipment, etc.

- Design Analysis including Preliminary load calculations for Utility connections
- Outline Specifications
- Electrical Design Check List
- Sustainable design validation/certification information required in UFGS 01331 of the project RFP

9-5.2 Design Development Submittals.

a) Submittal must include all requirements of the previous submittal plus additional detail to bring them to the required completion percentage.

b) Legend and Abbreviations

c) Existing Site and Demolition Plan: Plans must be developed to approximately 50 percent completion.

d) Site Plan: Plan must be developed to approximately 50 percent completion.

e) Lighting Plan(s): Show a building's full floor plan (first, second, etc.) with the layout and type of fixtures to be used. No wiring or circuits required. Scale must be 1:100 (1/8" = 1'-0") minimum.

f) Power Plan(s): Show a building's full floor plan (first, second, etc.) with the location of receptacles, panelboards, switchboards, motor control centers, transformers and any other major equipment. No wiring or circuits required. Scale must be 1:100 (1/8" = 1'-0") minimum.

g) Lightning Protection Plan: No details required.

h) Cathodic Protection Plan: Include the location of soil resistivity measurements. No details required.

i) Special Systems Plans: Show location of devices (e.g., telephone, IDS, others as required).

j) Single Line Diagram: Plan must be developed to approximately 50 percent completion showing all panels, switchboards, motor control centers, transformers and other major electrical loads such as motors, chillers, etc.

k) Additional Plans/Risers

l) Updated Design Analysis to substantiate design level shown.

m) Submit Design Calculations to substantiate design level shown including:

- Lighting: Interior and Exterior Foot-candles.

- Load Analysis
- Service size
- Feeder size
- Larger special circuit sizes
- Lightning Risk Assessment

n) Outline Specifications

o) Response to Previous Submittal Review Comments

p) Electrical Design Checklist

q) Sustainable design validation/certification information required in UFGS 01331 of the project RFP.

9-5.3 Pre-Final Design Submittals.

There are two instances where Design-Build pre-final documentation may vary from Design-Bid-Build documentation. In Design-Build, the Contractor may submit manufacturer's catalog data for a particular product in lieu of a prescriptive specification. The other instance is that shop drawings can be included as design drawings. Refer to the Design-Build RFP for additional direction for these two instances.

Submittal must include all requirements of the previous submittal plus additional detail to bring them to the specified completion percentage. Drawings and specifications must be substantially complete at this stage and require only minor corrections if any.

- Legend and Abbreviations
- Existing Site and Demolition Plan
- Lighting Plans and Details
- Power Plans and Details
- Power - Single Line Diagram
- Telephone Riser Diagram
- Intercommunication Riser Diagram
- Fire Alarm Riser Diagram: Include only when separate Fire Protection Drawings are not included in the design.
- Other Riser Diagrams for Television, Security, Etc.
- Panel Schedules
- Switchboards and Motor Control Center Schedules
- Lighting Fixture Details

a) Updated Design Analysis to substantiate design level shown.

b) Sequence of Construction when applicable.

c) Updated Calculations from previous submittal to substantiate design level shown including the following as applicable.

- Short Circuit
- Voltage Drop
- Lighting
- Load Analysis
- Motor Starting/Flicker Analysis
- Sag, Tension, and Guying Analysis
- Manhole Design Calculations
- Cable Pulling Tension Calculations
- Cathodic Protection Calculations
- CATV Network Loss Calculations

d) Redlined Specifications

e) Design must be free of conflicts between the contract drawings and the specifications.

f) Response to Previous Submittal Review Comments

g) Updated Electrical Design Check List

h) Sustainable design validation/certification information required in UFGS 01331 of the project RFP.

9-5.4 **Final Design Submittals.**

There are two instances where Design-Build construction documentation may vary from Design-Bid-Build documentation. In Design-Build, the Contractor may submit manufacturer's catalog data for a particular product in lieu of a prescriptive specification. The other instance is that shop drawings can be included as design drawings. Refer to the Design-Build RFP for additional direction for these two instances.

a) The final submission must incorporate the corrections and clarifications noted on the 100% submittal.

b) Include the Pre-Final submittal reviewer comments with replies.

c) Typed Specifications.

d) Design Analysis to reflect the final design.

e) Calculations, including all updates to substantiate the final design.

f) Sustainable design validation/certification information required in UFGS 01331 of the project RFP.

9-6 FIRE PROTECTION SUBMITTALS.

This section summarizes the items required at each submittal stage for design-build projects. Not all submittal stages are necessarily required. Contract documents will outline which submittals are required and information presented below is a guide of the minimum level of information required at each submittal stage.

9-6.1 Design Development Submittals.

9-6.1.1 **Basis of Design.** Complete Basis of Design meeting the requirements as outlined throughout this guide.

9-6.1.2 **Drawings.** These drawings will not need to contain information on the suppression and detection systems other than for coordination purposes.

9-6.1.3 Calculations.

Submit all hydraulic calculations supporting all fire suppression systems for the project. Make all calculations using commercially available hydraulic sprinkler computer software.

9-6.2 Pre-Final Design Submittals.

9-6.2.1 Basis of Design.

Complete final Basis of Design meeting the requirements as outlined throughout UFC 3-600-10N.

9-6.2.2 Drawings.

Provide construction (shop) drawings for the suppression systems, detection and alarm systems, firestopping, spray-applied fireproofing.

9-6.2.3 Calculations.

Submit complete final calculations supporting all the fire suppression systems for the project. All calculations must be made using commercially available hydraulic sprinkler computer software.

9-6.2.4 Specifications.

Specifications are not necessary for the suppression systems, detection and alarm systems, firestopping, and spray-applied fireproofing. Provide manufacturer's data sheets for these items.

9-6.3 **Final Design Submittals.**

9-6.3.1 **Drawings.**

Provide all drawings required to meet the intended design approaches for the project. As a minimum, provide all noted drawings in UFC 3-600-10N.

9-6.3.2 **Specifications.**

Specifications are not necessary. Provide manufacturer's data sheets for the suppression systems, detection and alarm systems, firestopping, spray-applied fireproofing.

9-6.4 **Additional Overseas Submittals Requirements.**

- Host Nation Life Safety and Building Code analysis.
- Comparisons with NFPA Codes and UFC 1-200-01

9-7 **ENVIRONMENTAL SUBMITTALS.**

Environmental submittals vary with the location and type of project. Consult with the local command environmental office regarding the specific environmental submittals necessary for the specific project.

CHAPTER 10 CHANGES TO THE FINAL SUBMISSION

10-1 SCOPE.

Changes made to the drawings and specifications after the Final Submission are changes to the Contract Documents. Changes before contract award are amendments; changes after contract award are modifications.

10-2 CHANGE NUMBERS.

Numbers are assigned in numerical order as required. Amendment numbers are prefixed by three ciphers, for example, the first amendment is numbered "0001." Modification numbers begin with a "P" followed by five digits; for example, "P 00003" is the third modification.

The Contracts Division of the Activity assigns change numbers. On A/E prepared changes, provide a blank space for insertion of the number by the Activity. The Activity's Contracts Division prepares a cover sheet, Standard Form (SF) 30, *Amendment of Solicitation/ Modification of Contract*, for changes; therefore, the first page of the change's text is page number "2."

10-3 CHANGES COST ESTIMATES.

Accompany changes with detailed cost estimates to indicate all changes in construction cost of the project, or to substantiate a statement of no change in cost. Prepare cost estimates in accordance with *NAVFAC Cost Engineering Policy and Procedures* (www.uscost.net/costengineering). Accompany proposed modifications with a detailed cost estimate that can be used in the negotiation of change orders.

10-4 CHANGE FORMAT.

Changes should follow the same order as the contract specifications with each change item referencing the appropriate section and paragraph by number and title. Some examples follow.

10-4.1 Specification Changes.

Use Table 10-1, as a guide in preparing changes to the Specifications. Changes to a Design Build RFP follows a similar logic.

Table 10-1 Specification Changes Format

Change	Change Format
Adding a Specification	<p>In the Project Table of Contents: Section 09680, Carpet is added to the Project Table of Contents.</p> <p>This Section accompanies this [Amendment] [Modification].</p> <p>Note: Add the [Amendment] [Modification] number opposite the Specification Number at the bottom of each page.</p>
Replacing an Existing Specification	<p>In the Project Table of Contents: Section 09680, Carpet, is deleted and Section 09680X, Carpet, is added to the Project Table of Contents and accompanies this [Amendment] [Modification].</p> <p>Note: Add the [Amendment] [Modification] number opposite the Specification Number at the bottom of each page.</p>
Adding Paragraphs or Sub-paragraphs	<p>Section 03330 Cast-in Place Architectural Concrete</p> <p>2.1 MATERIALS FOR FORMS</p> <p>After this paragraph, add the following:</p> <p>"2.1.1 Reuse of Forms</p> <p>Forms may be reused in subsequent parts of the project provided they are undamaged and continue to meet all specified requirements."</p>
Making Word Changes	<p>SECTION 15330 REFRIGERANT PIPING</p> <p>2.1.1.2 Copper Pipe and Fittings:</p> <p>In the second sentence, delete "bronze" and substitute "galvanized steel".</p>
Omitting Paragraphs or Sub-paragraphs	<p>SECTION 15530 BITUMINOUS HOT MIX PAVEMENT</p> <p>2.2 ASPHALT CEMENT</p> <p>Delete this Paragraph in its entirety and substitute the following:</p> <p>"2.2 NOT USED"</p>

10-4.2 Drawing Changes.

Use Table 10-2, as a guide in preparing changes to the Drawings.

Table 10-2 Drawing Changes Format

Change	Change Format
Adding Drawings	<p>SECTION 00102 LIST OF DRAWINGS 1.2 CONTRACT DRAWINGS</p> <p>Add the following to the list of drawings: NAVFAC DWG NO. Title 4265191 Revised Floor Plan – Area A 4265192 Lighting Fixture Details</p> <p>These new Drawings accompany this [Amendment] [Modification].</p>
Revising Drawings	<p>SECTION 00102 LIST OF DRAWINGS 1.2 CONTRACT DRAWINGS</p> <p>The following drawings are revised as of [Date]: NAVFAC DWG NO. Title 4265191 Foundation Plan, Revised [Date] 4265192 Floor Plan, Revised [Date]</p> <p>These revised Drawings accompany this [Amendment] [Modification].</p> <p>Note: Make the Drawing Revisions and note the Revision in accordance with UFC 1-300-10N, Electronic Design Deliverables Manual of Policy and Procedures.</p>
Making Text Changes to Drawings	<p>SECTION 00102 LIST OF DRAWINGS 1.2 CONTRACT DRAWINGS</p> <p>NAVFAC DWG NO. 4265191</p> <p>On Foundation Plan notes, note number 3, change “the bottom of the footing” to “the top of the footing”.</p>
Adding Sketch Sheets	<p>SECTION 00102 LIST OF DRAWINGS 1.2 CONTRACT DRAWINGS</p> <p>The following sketches are added to the List of Drawings and modify current NAVFAC drawings as indicated:</p> <p>These sketches accompany this [Amendment] [Modification].</p>

GLOSSARY

A/E	Architectural and Engineering
BUPERS	Bureau of Navy Personnel
CAD	Computer Aided Design
CMC	Commandant, Marine Corps
CSI	Construction Specifications Institute
COMCBLANT	Commander Naval Construction Battalion, U.S. Atlantic Fleet
COMCBPAC	Commander Naval Construction Battalion, U.S. Pacific Fleet
CONUS	Continental United States
DQC	Design Quality Control
FACD	Facility Analysis Concept Design
FACP	Fire Alarm Control Panel
FOSSAC	Fitting Out and Supply Support Assistance Center
IP	Inch-Pound (English)
LCC	Life-Cycle Cost
LEED	Leadership in Energy and Environmental Design
MFDO	Medical Facilities Design Office
NAVFACENGCOM	Naval Facilities Engineering Command
NAVFSSO	Navy Food Service Systems Office
NAVMEDCOM	Navy Medical Command
NFPA	National Fire Prevention Agency
NIST	National Institute of Science and Technology\
OCONUS	Outside the Continental United States
RFI	Request of Information

RFP	Request of Proposal
ROICC	Resident Officer in Charge of Construction
SI	System International (Metric)
SOW	Scope of Work (or) Statement of Work
SPAWAR	Space and Naval Warfare Systems Command
SPS-PDD	Standard Procurement System – Procurement Desktop Defense module
UFC	Unified Facilities Criteria
UFGS	Unified Facilities Guide Specifications
UIC	Unit Identification Code

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APPENDIX A REFERENCES

- DFAR 227.71, *Rights in Technical Data*, Office of the Undersecretary of Defense for Acquisition, Technology and Logistics, http://www.acq.osd.mil/dp/dars/dfars/pdf/r20031001/227_71.pdf
- DFAR 227.72, *Rights in Computer Software and Computer Software Documentation*, Office of the Undersecretary of Defense for Acquisition, Technology and Logistics, http://www.acq.osd.mil/dp/dars/dfars/pdf/r20031001/227_72.pdf
- DFAR 252.227-7023, *Drawings and Other Data to Become Property of Government*, Revised 01 October 2001, Office of the Undersecretary of Defense for Acquisition, Technology and Logistics, <http://www.acq.osd.mil/dp/dars/dfars/pdf/r20031001/252227.pdf>
- DODI 4150.24, *Defense Standardization Program (DSP)*, 18 June 1998, Defense Standardization Program, <http://www.dsp.dla.mil/>
- Electronic Project Generator*, (EPG), Naval Facilities Engineering Command, 1322 Patterson Avenue, SE, Washington, DC, 20374-5065, <https://jersey-3.navfac.navy.mil/prd/epg.htm>
- FAR 52-236-21, *Specifications and Drawings for Construction*, February 1997, General Services Administration, FAR Secretariat, <http://www.arnet.gov/far/>
- NAVFAC Cost Engineering Policy and Procedures*, Engineering Innovation and Criteria Office, NAVFAC, 6506 Hampton, Blvd, Norfolk, VA 23508, 757-322-4200, <http://www.uscost.net/costengineering>
- NAVFAC DESIGN-BUILD MASTER WEB SITE, (<http://www.wbdg.org/ndbm>), Engineering Innovation and Criteria Office, NAVFAC, 6506 Hampton, Blvd, Norfolk, VA 23508, 757-322-4200
- NAVFACINST 9830.1, *Sustainable Development Policy*, Naval Facilities Engineering Command, 1322 Patterson Avenue, SE, Washington, DC, 20374-5065, <http://www.navfac.navy.mil/>
- NFPA 20, *Standard for Installation of Stationary Pumps for Fire Protection*, National Fire Protection Association (NFPA), 1 Batterymarch Park, Quincy, MA 02169, (617) 770-3000, fax (617) 770-0700, <http://www.nfpa.org/>
- SECNAVINST 5510.36 CH2, *Department of the Navy (DON) Information Security Program (ISP) Regulation*, 17 March 1999, Secretary of the Navy, <http://neds.nebt.daps.mil/>
- Standard Form (SF) 30, *Amendment of Solicitation/ Modification of Contract*,

UFC 1-300-02, *Unified Facilities Guide Specifications (UFGS) Format Standard*, Tri-Service Engineering Senior Executive Panel, <http://dod.wbdg.org/>

UFC 1-300-10N, *Electronic Design Deliverables (EDD) Manual of Policies and Procedures*, Engineering Innovation and Criteria Office, NAVFAC, 6506 Hampton, Blvd, Norfolk, VA 23508, 757-322-4200, <http://www.wbdg.org/ndbm>

UFC 3-100-10N, *Design: General Architectural Requirements*, Engineering Innovation and Criteria Office, NAVFAC, 6506 Hampton, Blvd, Norfolk, VA 23508, 757-322-4200, <http://www.wbdg.org/ndbm>

UFC 3-200-10N, *Design: General Civil, Geotechnical, Landscape Requirements*, Engineering Innovation and Criteria Office, NAVFAC, 6506 Hampton, Blvd, Norfolk, VA 23508, 757-322-4200, <http://www.wbdg.org/ndbm>

UFC 3-300-10N, *Design: General Structural Requirements*, Engineering Innovation and Criteria Office, NAVFAC, 6506 Hampton, Blvd, Norfolk, VA 23508, 757-322-4200, <http://www.wbdg.org/ndbm>

UFC 3-400-10N, *Design: General Mechanical Requirements*, Engineering Innovation and Criteria Office, NAVFAC, 6506 Hampton, Blvd, Norfolk, VA 23508, 757-322-4200, <http://www.wbdg.org/ndbm>

UFC 3-600-10N, *Design: General Fire Protection Requirements*, Engineering Innovation and Criteria Office, NAVFAC, 6506 Hampton, Blvd, Norfolk, VA 23508, 757-322-4200, <http://www.wbdg.org/ndbm>

UFC 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*, Tri-Service Engineering Senior Executive Panel, <http://dod.wbdg.org/>

UFC 4-010-02, *DoD Minimum Antiterrorism Standoff Distances for Buildings*, Tri-Service Engineering Senior Executive Panel, <http://dod.wbdg.org/>

UFGS 01330, *Submittal Procedures*, Tri-Service Engineering Senior Executive Panel, <http://dod.wbdg.org/>

UFGS 01331, *Design Submittal Procedures*, Engineering Innovation and Criteria Office, NAVFAC, 6506 Hampton, Blvd, Norfolk, VA 23508, 757-322-4200, <http://www.wbdg.org/ndbm>

UFGS 01450N, *Construction Quality Control*, Engineering Innovation and Criteria Office, NAVFAC, 6506 Hampton, Blvd, Norfolk, VA 23508, 757-322-4200, <http://dod.wbdg.org/>

UFGS 01451N, *Design and Construction Quality Control*, Engineering Innovation and Criteria Office, NAVFAC, 6506 Hampton, Blvd, Norfolk, VA 23508, 757-322-4200, <http://dod.wbdg.org/>

UFGS 01455N, *Quality Control (QC) - Minor Construction*, Engineering
Innovation and Criteria Office, NAVFAC, 6506 Hampton, Blvd, Norfolk, VA
23508, 757-322-4200, <http://dod.wbdg.org/>

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APPENDIX B SUPPLEMENTAL RESOURCES

DFAR 252.227-7022, *Government Rights (Unlimited)*, Revised 1 October 2001,
Office of the Undersecretary of Defense for Acquisition, Technology and
Logistics, <http://www.acq.osd.mil/dp/dars/dfars/pdf/r20031001/252227.pdf>

United States National CAD Standard, National Institute of Building Sciences,
1090 Vermont Ave, NW, Suite 700, Washington, DC, 20005, (202) 289-7800,
<http://www.nibs.org/>

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