

CHAPTER A-6
FIRE PROTECTION

Revised July 2020

INDEX

- 6.1 GENERAL**
 - 6.1.1 Scope
 - 6.1.2 Purpose
 - 6.1.3 Qualifications of Fire Prevention Engineer
 - 6.1.4 Required Design
 - 6.1.5 Critical Projects

- 6.2 APPLICABLE PUBLICATIONS**

- 6.3 PRECONCEPT SUBMITTAL REQUIREMENTS**

- 6.4 CODE 3 DESIGN REQUIREMENTS**

- 6.5 CONCEPT (35%) DESIGN SUBMITTAL REQUIREMENTS**
 - 6.5.1 Concept Design Analysis
 - 6.5.2 Concept Fire Prevention/Life Safety Drawing(s)
 - 6.5.3 Concept Fire Prevention Engineer Certification

- 6.6 PRELIMINARY (60%) DESIGN SUBMITTAL REQUIREMENTS**

- 6.7 FINAL (100%) DESIGN SUBMITTAL REQUIREMENTS**
 - 6.7.1 Final Design Analysis
 - 6.7.2 Final Fire Prevention/Life Safety Drawing(s)
 - 6.7.3 Final Fire Prevention Engineer Certification
 - 6.7.4 Final Specifications

- 6.8 CORRECTED FINAL DESIGN SUBMITTAL REQUIREMENTS**
 - 6.8.1 Notice
 - 6.8.2 Compliance

- 6.9 REQUIREMENTS FOR DESIGN/BUILD RFP PACKAGES**

CHAPTER A-6

FIRE PROTECTION

6.1 GENERAL.

6.1.1 Scope. This chapter provides general guidance for the preparation and development of the Fire Prevention/Life Safety design.

6.1.2 Purpose. The purpose of Fire Protection design is to establish optimum safeguards against loss of life and property by fire that are consistent with the mission, the risk involved, and economic utilization. Fire Protection design shall be coordinated with the Architectural, Structural, Environmental, Electrical, and Mechanical sections. At a minimum, the design shall conform to the applicable standards contained in the current National Fire Code - published by the National Fire Protection Association (NFPA) - and other criteria referenced in paragraph 6.2, "APPLICABLE PUBLICATIONS". In case of conflict between NFPA codes and other criteria referenced hereinafter, UFC 3-600-01 shall govern. The NFPA codes are not the final criteria for Fire Protection design unless the other referenced criteria so state, or those criteria do not address an issue. Unless otherwise noted, the designer shall use the most current version of the publications listed or referenced in this chapter as of the date of contract award.

6.1.3 Qualifications of Fire Prevention Engineer. The design of Fire Protection features shall be performed by, or under the direct supervision of, a Qualified Fire Protection Engineer (QFPE). The QFPE shall be an individual who is a registered professional engineer (P.E.) who has passed the fire protection engineering written examination administered by the National Council of Examiners for Engineering and Surveying (NCEES) and has relevant fire protection engineering experience. Prior to issuance of the Notice to Proceed, the QFPE must submit a written copy of their resume indicating education, professional registration and work experience to the Designated Fire Protection Engineer (DFPE)*. The Qualified Fire Protection Engineer shall submit a letter certifying that the design complies with applicable Unified Facilities Criteria and other referenced codes and criteria as applicable to the project under design. The letter must include an imprint of their professional engineering stamp with signature.

The requirement for a QFPE is applicable to engineering services for design-bid-build projects, as well as all phases of design-build projects including RFP development, design development, and construction.

*Refer to UFC 3-600-01 for the definition of "Designated Fire Protection Engineer (DFPE)."

6.1.4 Required Design. Unless specifically directed otherwise by the Savannah District's Designated Fire Protection Engineer (DFPE), a fire protection design analysis and life safety plan(s) is required and shall be included in every project. Sufficient copies of the design submittals shall be provided for submission to Architectural, Structural, Environmental, Electrical, and Mechanical Sections for review.

6.1.4.1 Design Analysis. Where applicable, discuss the following minimum fire protection provisions (include required vs. provided):

- a. Identification of all fire protection and life safety related codes and standards applicable to the project, including the edition. This includes Host Nation requirements.
- b. Building code analysis (e.g., type of construction, height and area limitations, building separation, exposure protection, etc.).
- c. Classification of occupancy (per both IBC and NFPA 101).
- d. Requirements for fire walls, fire barriers, fire partitions, smoke barriers and smoke partitions, compartmentation and special hazard protection (both horizontal and vertical). Include the associated fire resistance rating.
- e. Requirements for protection of horizontal and vertical penetrations and openings as well as the associated fire resistance rating.
- f. Separation from hazards per NFPA 101.
- g. Interior finish ratings
- h. Means of egress provisions and components (occupant load, exit capacity, exit width, travel distance, common path of travel, dead-end corridors, use of suites, etc.).
- i. Water supplies, water distribution, location of fire hydrants, *Fire Flow* calculations.
- j. Location of fire department connections (FDCs).
- k. Location of post indicator valves (PIVs) and other control or isolation valves.
- l. Analysis of automatic sprinkler and suppression systems and protected areas. Include supporting calculations used to establish system performance requirements such as hydraulic analysis of water demand or agent concentration and quantity.
- m. Standpipe systems
- n. Location of fire extinguisher cabinets and brackets (where required)
- o. Fire detection (the type of detection and type/location of detectors).
- p. Fire alarm system (the type of alarm system, location of the fire alarm equipment and mass notification).
- q. Smoke management or control methods.
 - r. Connection to and description of base *Fire Alarm Reporting System*.
 - s. Coordination with security and antiterrorism requirements, including connection to *Installation-wide Mass Notification System*.
 - t. Fire department access.

- u. AHJ approved equivalencies (see paragraph entitled “Equivalencies” in Chapter 1 of UFC 3-600-01).
- v. For projects not within the United States or its territories, identify code/criteria conflicts and AHJ approved design solutions or equivalencies to DoD or Host Nation criteria necessary to resolve. The analysis must also identify the associated impact on project cost.
- w. Initial, or draft, integrated performance verification and testing plan(s) where multiple systems across multiple trades rely on an integrated operation to perform the desired result.

6.1.4.2 Fire Prevention/Life Safety Drawing(s).

6.1.4.2.1 A separate Fire Prevention/Life Safety floor plan drawing(s) shall be submitted for all projects that are:

- a.Places of assembly, or
- b.Educational or institutional type facilities, or
- c. Commissaries or any other buildings exceeding 930 square meters (10,000 square feet) in gross area, or
- d.Three stories or greater above grade, or
- e.As required by the Specific Instructions.

6.1.4.2.2 Fire Prevention/Life Safety drawings are to be labeled as, “For reference use only.” A statement is to be made on the drawing explaining that it is not part of the construction contract, and that all information contained on it is called for elsewhere. Acceptable drawings shall show at least the following items of interest to Fire Protection/Life Safety personnel. Where applicable, the following minimum fire protection provisions must be included on the life safety plans:

- a. All minimum fire protection provisions listed in paragraph 6.1.4.1, on a separate code summary sheet.
- b. Capacity and number of occupants using each major means of egress component (e.g., stairs, stair doors, exterior doors, assembly exit doors).
- c. Maximum travel distance, dead-end corridor, common path of travel, accessible means of egress and exit components for each floor and occupancy classification. When suites are used, indicate type, location, area and arrangement.
- d. IBC and NFPA occupancy classification of each room, area or compartment (on the drawings or in tabular form). Include occupant load of each room, area or compartment. Similar occupancies can be grouped together for occupant load calculations.
- e. Location and rating of all fire walls, fire barriers, fire partitions, smoke barriers and smoke partitions (both horizontal and vertical). Barriers requiring fire resistance rated

supporting construction must be specifically identified for coordination with the structural design.

- f. Location of hazardous materials storage, handling and use that exceed the maximum allowable quantities.
- g. Structural fireproofing locations and associated ratings.
- h. Description of any special fire protection features.

6.1.4.3 Fire Prevention Engineer's Credentials. A copy of the QFPE's credentials and the approval provided by the Savannah District's DFPE shall be a part of each required fire protection submittal.

6.1.5 Critical Projects. Projects identified as "Critical Projects" shall have a complete, fully detailed design of all Fire Protection, Detection, and/or Life Safety Systems. Critical Projects include the following facilities:

- a. Medical facilities
- b. Aircraft maintenance and storage facilities
- c. Engine test cells/areas
- d. Missile assembly facilities/areas
- e. Ordinance facilities or exposed explosives areas
- f. Facilities which include significant data processing/telecommunications systems, as defined by UFC 3-600-01
- g. POL facilities
- h. Flight simulators/Computer based training facilities.
- i. Warehouses with high piled or high rack storage
- j. JSOC/SOTF facilities
- k. Mission-essential facilities
- l. Any facility occupied (during normal working or sleeping times) by 100 or more persons

6.2 APPLICABLE PUBLICATIONS

Designs shall be created using the most current version of Unified Facilities Criteria (UFCs), which are available on the [Whole Building Design Guide](#) website. UFCs are effective upon issuance and shall be applied as prescribed in paragraph 1-3.1 of UFC 1-200-01. The versions of the IBC and IEBC to be used are specified in paragraph 1-6 of UFC 1-200-01.

UFC 1-200-01	DoD Building Code
UFC 3-230-01	Water Storage, Distribution, and Transmission
UFC 3-600-01	Fire Protection Engineering for Facilities
UFC 4-010-01	DoD Minimum Antiterrorism Standards for Buildings
UFC 4-021-01	Design and O&M: Mass Notification Systems
NFPA	National Fire Codes (as modified by UFC 3-600-01)
International Code Council	International Building Code - IBC (as modified by Chapter 2 of UFC 1-200-01)
International Code Council	International Existing Building Code - IEBC (as modified by Chapter 3 of UFC 1-200-01)
FM Global	Property Loss Prevention Data Sheets (http://www.fmglobal.com/)

6.3 PRECONCEPT SUBMITTAL REQUIREMENTS

No requirements for this section.

6.4 CODE 3 DESIGN REQUIREMENTS

No requirements for this section.

6.4.1 Submittals. Submittal content and format shall be as described in UFC 3-710-01A, "Technical Instructions for Code 3 Design with Parametric Estimating".

6.5 CONCEPT (35%) DESIGN SUBMITTAL REQUIREMENTS

6.5.1 Concept Design Analysis. A consolidated submittal is required to include features of paragraph 6.1.4.1, "Design Analysis". Submittals shall comply with the requirements of this chapter as well as chapters A-2, "STRUCTURAL"; A-3, "ARCHITECTURAL"; A-4, "MECHANICAL"; A-5, "ELECTRICAL"; A-7, "ENERGY ANALYSIS" (if necessary); and A-8, "ENVIRONMENTAL".

6.5.2 Concept Fire Prevention/Life Safety Drawing(s). This drawing (if required) shall contain all the project features required in paragraph 6.1.4.2, "Fire Prevention/Life Safety Drawing(s)", for review. The drawing need not be in final form for this submittal; however, changes in content shall not be made except by the direction of Savannah District technical personnel through the Project Manager.

6.5.3 Concept Fire Prevention Engineer Certification. This submittal shall include written certification by the A-E's Fire Prevention Engineer that the design of the project meets all appropriate listed criteria.

6.6 PRELIMINARY DESIGN SUBMITTAL REQUIREMENTS (FORMAL 60% SUBMITTAL)

6.6.1 Preliminary (60%) Design Analysis. This shall be an updated version of the Concept Design Analysis incorporating review comments and design changes.

6.6.2 Preliminary (60%) Fire Prevention/Life Safety Drawing(s). This shall be an updated version of the Concept Fire Prevention/Life safety Drawing(s) incorporating review comments and design changes.

6.6.3 Preliminary (60%) Fire Prevention Engineer Certification. This submittal shall include written certification by the A-E's Fire Prevention Engineer that the design of the project meets all appropriate listed criteria.

6.6.4 Specifications. The concept submitted Unified Facilities Guide Specifications (UFGS) list shall be updated to include any new specifications based on the refined preliminary design. All specifications from the list shall be tentatively marked up, with major edits, and submitted as part of the preliminary (60 percent) submittal. Specifications shall comply with the requirements of Chapter A-11, SPECIFICATIONS. Specifications shall be submitted with red-line edits indicating all deleted/modified text.

6.7 FINAL (100%) DESIGN SUBMITTAL REQUIREMENTS

6.7.1 Final Design Analysis. The final Fire Protection design analysis shall be developed from the design analysis submitted with the concept submittal. It shall be an updated version, not an amendment to earlier work. It shall incorporate all Fire Protection requirements, calculations, analyses, determinations, etc. required by all technical sections and chapters of this handbook and shall accurately reflect the final project design. The submittal shall be logically separated into subsections relating to the various technical disciplines involved.

6.7.2 Final Fire Prevention/Life Safety Drawing(s). The final drawing(s) shall be complete and shall accurately reflect the final design features.

6.7.3 Final Fire Prevention Engineer Certification. The A-E's Qualified Fire Protection Engineer shall certify the final design in written form. This is a separate certification from that required at the Concept submittal. The *QFPE* must review the complete 100 percent design drawings and specification submission (all disciplines) and document in writing that the design is in compliance with UFC 3-600-01 and all applicable fire protection and life safety design criteria. The review must provide verification that all items listed in the design analysis are correctly shown on the drawings and in the specification and list any approved equivalencies or deviations from UFC 3-600-01. This design compliance document must be submitted with the final design submission as part of the design analysis and must bear the signature and professional seal of the *QFPE*.

6.7.4 Final Specifications.

6.7.4.1 Typed project specifications with electronic copy shall be submitted in accordance with chapter A-11, "SPECIFICATIONS".

6.7.4.2 Specifications will not be restrictive. Generally, the description will be such that at least three manufacturers can meet the specified requirements. Do not use trade names in the specifications. Shall include the requirement to provide shop drawing submittals to DFPE for record keeping purposes.

6.7.4.3 Specifications for fire suppression systems shall be UFGS adapted for the project. Components such as smoke detectors, heat actuated devices, and control panels for clean-agent systems shall be specified in the Fire Suppression specifications.

6.7.4.4 The subparagraphs on "Electrical Work" shall be carefully coordinated with the electrical section of the specifications. There shall be no conflicts as to which section covers starters, controls, or wiring, and no conflicts as to the type of starters required for the individual items of equipment.

6.8 CORRECTED FINAL DESIGN SUBMITTAL REQUIREMENTS

6.8.1 Notice. In the Corrected Final Design Submittal, the designer of record finalizes the construction documents. This includes the incorporation of approved comments from the previous design submittal reviews. The Corrected Final Design Submittal requirements shall be the same as the Final Design Submittal requirements. Unless indicated otherwise in the project Specific Instructions, this submittal will not be another review in ProjNet and is only for final backcheck of all comments.

6.8.2 Compliance. Comments affecting Fire Protection that are generated during the Final Design review shall be incorporated into the design analysis and drawing(s) in the Corrected Final submittal. Recertification by the Fire Prevention Engineer shall be required.

6.9 REQUIREMENTS FOR DESIGN/BUILD RFP PACKAGES

To be provided with specific instructions for the contract or delivery order.

*** End of Section ***