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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. Fire Protection design is to establish optimum safeguards against loss of life and property by fire, consistent with the mission, risk involved, and economic utilization. Design shall be coordinated with the Architectural, Structural, Environmental, Electrical, and Mechanical sections. The minimum requirement 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 APPLICABLE PUBLICATIONS. In case of conflict between NFPA codes and other criteria referenced hereinafter the following shall govern: for Army Projects, the Architect and Engineering Instructions; for Air Force Projects, AFR 88-15; followed for both Military services by the MIL-HDBK-1008C. 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.

6.1.3 Qualifications of Fire Prevention Engineer. The design of Fire Protection features shall be by a registered Professional Engineer or Registered Architect who is a full "Member" - in good standing - of the Society of Fire Protection Engineers (SFPE) or by an individual who is a registered Fire Protection Engineer and whose principle duties are Fire Prevention Engineering. The Fire Prevention Engineer shall certify in written form that the design meets the NFPA and other referenced codes and criteria as applicable to the project under design. The name and credentials (education and experience) of the Fire Prevention Engineer shall be submitted with the initial contract documents and approved by the District Fire Protection Engineer prior to issuance of the Notice To Proceed.

6.1.4 Required Design. A Fire Protection design 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, Mechanical, and Energy Analysis Sections for review.

6.1.4.1 Design Analysis. A Fire Protection design analysis is required for every project and shall include the following:

- a. Type of construction (including interior finish materials).
- b. Classification of occupancy.
- c. Building separation or exposure protection.
- d. Fire protection criteria.

- e. Location of all fire-rated walls including fire-rated doors and dampers with identification as to application (fire walls, fire partitions, and smoke partitions, with their fire resistive ratings).
- f. Life safety provisions (exit travel distances, exit unit widths based on the capacity and occupant load, horizontal exits, exit signs, and lighting).
- g. Automatic extinguishing systems (identification of all sprinklered areas and areas protected by other automatic suppression systems).
- h. Water supplies.
- i. Smoke control system. (Smoke compartments and the requirements for smoke dampers, smoke detectors, and smoke partitions shall be provided. The smoke control system shall be delineated by schematic diagram, when applicable, indicating the operations of the normal HVAC mode and the smoke removal mode.)
- j. Fire alarm system (type of alarm system and location of the fire alarm equipment, and the fire zones.)
- k. Fire detection system (type of detection system and location of detectors, and fire zones.)
- l. Location of fire extinguisher cabinets and fire hose standpipes.
- m. Interior finish ratings.

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 This drawing shall show at least the following items of interest to Fire Protection/Life Safety personnel. This drawing(s) is to be labeled "to be used as reference only". A statement is to be made on the drawing that it is not part of the construction contract and that all information contained on it is called for elsewhere.

- a. Location and hourly rating of fire and smoke carriers (walls).

- b. Location of exit paths and the maximum travel distance of each.
- c. Fire hazard and occupancy classification.
- d. Building construction type as to its fire resistance capability.
- e. Exit units required and at each exit, the number of exit units available.
- f. Location of hand-held fire extinguisher and fire hose cabinets.
- g. Location and description of automatic sprinkler system.
- h. Location of building sprinkler entrance.
- i. Number of gpm per square foot by sprinkler system to each area.
- j. Location and notation of class of stand-pipe systems.
- k. Location of all smoke and fire detectors and a statement of their type.
- l. Location of manual pull boxes and audible/visual signaling devices.
- m. Description of any special fire protection features.

6.1.4.3 Fire Prevention Engineer's Credentials. A copy of the Fire Prevention Engineer's credentials and the approval provided by Savannah's District Fire Protection Engineer 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 AR 380-380.
- 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.

TI 800-01 Design Criteria, 20 July 1998

MIL-HDBK-1008C	Fire Protection for Facilities - Engineering, Design, and Construction
IBC	International Building Code
NFPA	National Fire Codes (NFC)
MIL-HDBK-1190	Facility Planning and Design Guide
MIL-HDBK-1191	Department of Defense Medical and Dental Treatment Facilities Design and Construction Criteria
ETL 1110-3-484	Engineering and Design - Aircraft Hangar Fire Protection Systems, 26 September 1997
ETL 1110-3-485	Engineering and Design - Fire Protection for Helicopter Hangars, 15 October 1997
ETL 02-15	Fire Protection Engineering Criteria - New Aircraft Facilities - U.S. Air Force, 1 April 2001
TM 5-813-7/AFM 8810 Vol 7	Water Supply for Special Projects
UFC 3-600-01	Design Fire Protection Engineering for Facilities, 17 April 2003

6.3 PRECONCEPT SUBMITTAL REQUIREMENTS. No requirements for this section.

6.4 CODE 3 DESIGN REQUIREMENTS

6.4.1 Submittal. Submittal content and format shall be as described in TI 802-01, "Technical Instructions for Code 3 Design with Parametric Estimating".

6.5 CONCEPT/EARLY PRELIMINARY (35 PERCENT) DESIGN SUBMITTAL REQUIREMENTS.

6.5.1 Concept/Early Preliminary Design Analysis. A consolidated submittal is required to include features of paragraph Design Analysis. Submittal shall comply with the requirements of this chapter and 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/Early Preliminary Fire Prevention/Life Safety Drawing(s). This drawing (if required) shall contain all the project features required in paragraph Fire Prevention/Life Safety Drawing(s), for review. The drawing does not have to 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/Early Preliminary 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 SIXTY PERCENT SUBMITTAL REQUIREMENTS.

6.6.1 Sixty Percent Design Analysis. This shall be an updated version of the Concept/Early Preliminary Design Analysis incorporating review comments and design changes.

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

6.6.3 Sixty Percent 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.

6.7 PRELIMINARY DESIGN SUBMITTAL REQUIREMENTS (FORMAL 60% SUBMITTAL).

6.7.1 Preliminary (60 Percent) Design Analysis. This shall be an updated version of the Concept/Early Preliminary Design Analysis incorporating review comments and design changes.

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

6.7.3 Preliminary (60 Percent) 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.

6.8 FINAL (100 PERCENT) DESIGN SUBMITTAL REQUIREMENTS.

6.8.1 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.

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

6.8.3 Final Fire Prevention Engineer Certification. The A-E's Fire Prevention Engineer shall certify the final design in written form. This is a separate certification from that required at the Concept submittal. The certification shall be included in the Fire Protection Design Analysis package.

6.8.4 Final Specifications.

6.8.4.1 Typed project specifications with electronic copy shall be submitted in accordance with Chapter A-11, SPECIFICATIONS.

6.8.4.2 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.

6.8.4.3 Specifications for fire suppression systems shall be CEGS adapted for the project. Components such as smoke detectors, heat actuated devices, and control panels for a Halon system shall be specified in the Fire Suppression specifications.

6.8.4.4 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.

6.9 CORRECTED FINAL DESIGN SUBMITTAL REQUIREMENTS.

6.9.1 Notice. Corrected Final submittals are not considered a normal design level, and are required only when Final submittals must be revised or corrected due to error or omission.

6.9.2 Compliance. Comments affecting Fire Protection, 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.

6.10 REQUIREMENTS FOR DESIGN/BUILD RFP PACKAGES. To be provided with specific instructions for the contract or delivery order.

*** End of Section ***

EXHIBITS

There are no exhibits for this chapter.