DIVISION OF PLANNING AND PERMITTING
FREDERICK COUNTY, MARYLAND
Department of Permits and Inspections
30 North Market Street • Frederick, Maryland 21701
Phone (301) 600-2313 • Fax (301) 600-2309• TTY: Use Maryland Relay Services

FIRE PROTECTION ENGINEERING DESIGN EVALUATION (FPEDE) GUIDELINES

Overview

This document is intended to assist the designing Fire Protection Engineer (FPE) in providing the authority having jurisdiction (AHJ) with the necessary details and information to conduct a thorough review of the building(s) or fire protection system(s). These guidelines are not intended to provide an all-inclusive set of requirements for the FPEDE (independent reviewer). The FPE (designer) must evaluate all applicable codes and standards for any additional details. The FPE and FPEDE cannot be the same person or work for the same firm.

A Fire Protection Engineering Design Evaluation (FPEDE) is intended to assist in applying the appropriate building and life safety codes. This will help to ensure that public and fire safety goals are met for projects involving a complex building or fire protection system. The purpose of the evaluation is to report observations and proposals of corrective action for all deficiencies a building or fire protection system may have. These deficiencies will be considered in accordance with all applicable codes adopted by Frederick County and the State of Maryland. The FPEDE should be designed to expedite the review process of a complex building or fire protection system design. The plans for these complex projects should address all issues and deficiencies observed in the FPEDE prior to submission.

When Required

In accordance with the International Building Code (IBC) section [A]107.1 *General* and The National Fire Protection Association (NFPA) 101 section 4.6.1.4.1, *the authority having jurisdiction shall be permitted to require a review by an approved independent third-party expertise in the matter to be reviewed at the submitter's expense.*

There are projects that have been predetermined to require an FPEDE. However, the AHJ may require an FPEDE for projects that may not have been predetermined, if it is deemed necessary due to the nature, complexity, or persistent code deficiencies of the project. The projects that are required to have an FPEDE are as follows:

(1) Any assembly occupancy use group "A" with an occupant load equal or greater than one thousand (1,000) *(the occupant load is determined by the AHJ);*

(2) Use group "E", Educational;

(3) All high hazard occupancies, classified as use group "H";

(4) Use Group I-2 and I-3, Institutional, *including daycares required by the AHJ;*

(5) Use group “M”, all covered malls and open malls that exceed thirty thousand (30,000) square feet in gross floor area;

(6) Any project with an estimated construction cost at or exceeding five million dollars ($5,000,000).

(7) Any Use Group when deemed necessary by the Director or the Director's designee due to complexity or scope of the design;

(8) Any automatic fire suppression, fire detection, fire alarm or smoke management system shop drawings when deemed necessary by the Director or the Director's designee due to complexity or scope of the design;

(9) Any building design for a Use Group when deemed necessary by the Director or the Director's designee due to submission of drawings containing extensive or repeated code deficiencies, which create an undue burden upon the review process.

Exception: The Manager of Life Safety and Plan Review may waive the FPEDE requirements for minor construction projects such as, but not limited to, projects where required life safety systems are not affected.

Qualifications

An FPEDE will only be accepted from a qualified professional. To be considered a qualified professional, recognition by the state of Maryland as a registered Professional Engineer is required. The FPE must also have a Bachelor of Science in Fire Protection Engineering from an Accreditation Board for Engineering and Technology (ABET) accredited university. If the FPE does not have the required degree, a minimum of five years of professional experience will be considered. The FPE must have been a registered Professional Engineer by the state of Maryland during the five years of experience and must be certified in fire protection plan review by a major model code organization. The experience gathered must include the review and evaluation of buildings and fire protection systems for code compliance. Documentation to support the required qualifications may be requested by the AHJ.

Format and Content

The FPEDE must be in the format established by the Fire Code Official or designee. The evaluation must be typed and submitted on 8 ½” by 11” letter size paper and presented as described below:

COVER PAGE

The cover page of the document must include the name of the FPE and the architect along with any professional licensures and the names of the affiliated firms and the contact information including address, telephone/fax numbers and email addresses. The cover page must also include the name of the project along with the project’s site address.

INTRODUCTORY STATEMENT

The introductory statement should give a brief overview of the scope of the project. This overview should incorporate any relevant history concerning the project as well as any foreseen obstacles with the proposed occupancy and/or construction.

ANALYSIS

The content of the FPEDE must incorporate sections of the various codes as highlighted in the local building code ordinance. The content of each subject area must be complete with all the information requested. This section is the bulk of the FPEDE and should be extensive and must include the following:

Code Analysis- Documentation of the title and edition of all applicable State and local Building and Fire codes and standards, and amendments thereto, on which the design is based. The AHJ must realize which codes the building or fire protection systems are being designed and evaluated to assess the design properly.

Construction Type – The construction type(s) involved with the project must be identified for each building(s). All buildings must be identified and compared to the required materials for a given construction type. The building elements that carry a fire resistance rating must be identified in this section. Also, any documentation regarding the fire endurance of a structural element must be included here.

Use group Classifications/ Height and Area Calculations – The FPE must identify all uses as per current codes including the main use group classification(s) and any incidental use(s) involved with the building. Multiple use groups should be classified as separated or non-separated as per the building codes currently enforced. The square footage of each use group classified must be indicated. The actual height and area of the building should be stated here along with the calculated allowable height and area in accordance with the applicable building code. The calculations used to derive the allowable height and area should include all increases due to open perimeter and sprinklers, or any decreases due to the number of stories of the building. All calculations must be shown in a step-by-step format.

Site Analysis – The FPE will evaluate the site for fire hydrant location(s), fire department connection location(s), and emergency fire and medical vehicle access. An analysis of the fire hydrant coverage must be presented verifying the distance(s) of the fire hydrant(s) from all portions of the building(s) as well as the coverage provided from the fire hydrant(s) on site. The location of the fire department connection in relation to the building and the nearest fire hydrant must be evaluated.

Occupant Load/Egress Calculations – The total occupant load of the building must be calculated (per all building codes and where in conflict the most stringent [highest occupant load] must be used) in consideration of the uses of the spaces within the building. Any supportive calculations must also be provided. The occupant load of all floor areas of a building is essential in determining the required minimum width (or the capacity) of the means of egress components, as well as the required number of certain egress components. The square footage of all usable spaces must be shown along with the occupant load factor (person per square foot) for that particular area. This section must also include an egress plan with calculations, verifying adequate egress capacity is provided. The egress plan is a key plan of the building / floor illustrating routes the occupants may travel to arrive to an exit. Travel distance, dead ends, common paths of travel must be analyzed here along with the allowable and actual distances.

Fire Resistant Materials – All materials that carry a fire rating due to any requirement other than construction type, must be identified here. This section must cover fire separation distance, firewalls, fire separations assemblies, exit enclosures, shaft enclosures, draft stopping, fire blocking, dampers, etc. Opening protectives and penetrations must be included in the analysis of the fire rated assemblies. All design listings for fire rated assemblies must be included here, such as UL, FM or GA.

Fire Protection Systems – All required fire protection systems of the building must be identified. The FPE must determine the appropriate fire protection system for the intended application of the building. The FPE must ensure that fire protection systems, sprinklers, alarms, smoke control systems, etc., are in compliance with the applicable code requirements.

Emergency Lighting / Emergency Power – The FPE shall determine any area or component required to be provided with emergency lighting and/or emergency power. The capacity of the emergency systems operation shall be evaluated by the FPE for equipment such as means of egress lighting, exit signs, door locks, fire pumps, communication, elevators, and other emergency equipment as required by the applicable code.

Interior Finishes – The FPE must evaluate all interior finishes including, but not limited to, fixed or movable walls and partitions, columns, ceilings, floor finishes and wainscotting, paneling or any other finish applied for acoustical treatment, insulation, fire resistance, decoration, or similar purposes.

Special Use and Occupancy – The FPE must evaluate any special provisions of the use and occupancy of the building in accordance with the applicable building code which may include atriums, high rises, etc.

Special Processes, Materials, or Hazards – In some cases, there are other requirements for special processes, materials, or hazards, such as elevators, special locking arrangements, etc. These requirements can be found in the applicable NFPA codes referenced by the applicable Building Code or Life Safety Code and must be evaluated by the FPE.

Applicable provisions of Chapter 4 of the IBC, "Special Detailed Requirements Based on Use and Occupancy". If Chapter 4 of the IBC is applicable to the project, then that information must be detailed in the report.

DEFICIENCIES

If the FPE discovers any code deficiencies during a site visit to an existing building or fire protection system or during the review of the plans for a building or fire protection system(s), the deficiencies must be identified in this section of the FPEDE.

RECOMMENDATIONS

The FPE must analyze the building or fire protection system design. Considering all deficiencies, the FPE must make recommendations that would remedy any non-code compliant issues recognized upon analysis of the plans and building or fire protection system. These proposals must also be incorporated into the building or fire protection system design.

STATEMENT OF COMPLIANCE

To ensure that the drawings submitted are of quality, the FPE and the architect of record must attest that the drawings submitted are in compliance with the applicable codes to the best of their knowledge. The statement must read: *"These drawings and specifications are in full compliance with the fire safety provisions of all adopted State and Local Building Codes, Fire Codes, Mechanical Codes, Local Amendments and referenced codes and standards to the best of my knowledge and belief."* This statement must be signed and sealed by the FPE and the architect of record. The FPE and the architect of record cannot be the same individual. No general statements will be accepted, such as *"…. will comply with Section X of Code Y…"* without any plans or details to verify compliance with the referenced code.

Inspections

In accordance with the IBC section 110 Inspections, c*onstruction or work for which a permit is required shall be subject to inspection by the building official and such construction or work shall remain visible and able to be accessed for inspection purposes until approved.* Further, *the building official is authorized to make or require other inspections of any construction work to ascertain compliance with the provisions of this code and other laws that are enforced by the department of building safety* in accordance with section 110.3.10.

A preconstruction meeting should be requested by the applicant and design professional with County staff, to coordinate the designated point of contact with the intake, plan review and inspections team.

The Department of Permits and Inspection may require the submission of a Statement of Special Inspections in accordance with the IBC Chapter 17 Special Inspections.

Prior to inspection by county officials, the fire protection engineer shall personally inspect and verify that the systems are installed correctly and are prepared for an inspection. The fire protection engineer shall be present for the inspection by county officials. All inspection reports can be submitted directly through the application portal, linked to the attachments or emailed to Permits@FrederickCountyMD.gov.

Conclusion

Once the FPEDE report is completed, the plans must be revised to incorporate any changes deemed necessary by the FPE ***prior to the plans being submitted to the County for review.*** Failure to do so will result in an immediate "hold" status from which the plans must be revised and resubmitted. The FPEDE report must be included with submitted plans, to the County's Department of Permits and Inspections.