

PART 1 - GENERAL

1.01 Requirements

- A. General. The fire protection system shall be an automatic wet pipe sprinkler system. Fire protection design requirements shall be per the Unified Facilities Criteria UFC 3-600-01 Fire Protection Engineering for Facilities except as noted below. Comply with NFPA 101 Life Safety Code) and NFPA 13, Latest Edition, except where Unified Facilities Criteria UFC 3-600-01 is indicated. The following table shows commodity class, hazard class, densities and areas to be used for the various parts of the building. Per UFC 3-600-01 Tables 9-3 and 9-4, are used for non-storage hazards and NFPA 13 is used for storage and miscellaneous storage areas.

Area	Hazard classification	Min K Factor	Commodity Classification	Design Density	Design Area	Hose Stream
Sales	Ordinary	8.0		0.20 gpm/sf	2500	250 for 60 min.
Administration	Light	5.6		0.10 gpm/sf	1500	250 for 60 min.
Common Areas	Light	5.6		0.10 gpm/sf	1500	250 for 60 min.
Staging ≤ 5'-0" (Bulk or Rack)	NFPA 13 Table 13.2.1 – OH2	8.0	Class I-IV / Cartoned and Exposed Group A Plastics	0.20 gpm/sf	1500	250 for 90 min.
Storage and Staging (≤12'-0" High, Bulk or Rack, 32' maximum ceiling)	NFPA 13 Table and Figure 13.2.1 – EH1	11.2	Class I-IV	0.30 gpm/sf	2500	500 for 120 min.
Storage and Staging (≤8'-0" High, Bulk Only, 28' maximum ceiling)	NFPA 13 Table and Figure 13.2.1 – EH2	11.2	Cartoned and Exposed Group A Plastics	0.40 gpm/sf	2500	500 for 120 min.

*DeCA's policy is that storage height in staging areas will not exceed 12'-0". If storage height exceeds 12'-0", the system shall be designed in accordance with NFPA 13 taking into account the height and conditions of storage. This may entail higher densities, higher flow rates, in rack sprinklers, and other expensive modifications to the design which can be avoided by limiting storage to 12'-0" for Class I-IV and 8'-0" for plastics.

- B. The Receiving/Staging area will conform to UFC and NFPA 13, latest edition, Commodity Class I-IV, non-encapsulated product and the design requirements indicated in the table above. No racks will be provided in the remaining Staging/Receiving Area. For Add/Alter projects, all rack storage will be limited in height to a maximum of 8' high top shelf and the entire area will be protected to Commodity Class I-IV protection standards. In-rack sprinklers will not be required.

- C. Commodities stored on pallets shall conform to NFPA 13 5.6.2. Commodities stored on plastic pallets that cannot be documented as equivalent to wood must be treated as Group A plastics and stored no higher than 8'-0".
- D. Sprinkler the entire building interior excluding concealed spaces exempted by NFPA 13, latest edition.
- E. Canopies shall have sprinkler protection if they are large enough to store materials beneath them. Canopies that are in place for weather protection over doors do not need sprinkler protection if they are of wholly non-combustible construction and meet the exceptions of NFPA 13. Canopies and covered docks at the rear of the store and the front of the store where materials may be stored for special sales or temporary staging must have sprinkler protection. Canopy sprinklers shall be dry pendant, sidewall dry pendant, or where mains are not in heated areas, dry pipe systems.
- F. Rooftop Mechanical Centers need sprinkler protection, fire alarm notification, and detection.
- G. Sprinkler protection for walk-in freezers and coolers, where unit cooler discharge temperature is below 32 deg F, shall be per NFPA 13, latest edition, with dry pendent heads.
 - 1. Insulate sprinkler drops into freezer and cold storage rooms per design plate.
- H. Design Drawings. At a minimum, indicate the service entrance, proposed design approaches, sprinkler densities and hazards, and type of sprinkler and finish for the different areas.
- I. Verify that no wet pipe sprinkler lines pass through unheated soffitts, canopies, etc. Where this is unavoidable provide a dry pipe zone or antifreeze loop.
- J. Verify that no mains or branch lines are run above electrical panels or gear.
- K. Locate inspectors test stations and drains in utility or unfinished areas, not in public areas or offices. Drains shall discharge to floor sinks when located within the building. Floor drains are not acceptable.
- L. Clearly delineate on the drawings those areas to be protected with wet pipe systems, with dry pipe systems, and by dry pendent heads. Show approximate area by square feet protected by each system riser. If systems are existing, identify type and design (hydraulically designed with appropriate information or "pipe schedule").
- M. Do not locate risers on the exterior of the building. (Force Protection Requirements.)
- N. Construction Type. The construction type and fire areas shall be Type IIB, Noncombustible, Mercantile Occupancy as described by the International Building Code (IBC).
- O. Fire Flow Test: Per UFC 3-600-01 Section 4-1.3, the Fire Protection Engineer of Record must perform or witness a Fire Flow Test prior to the first submission. This information must be presented as an appendix in the Design Analysis in order to determine the necessity of a fire pump or the viability of the existing sprinkler system.
 - 1. Document the following in the test report:
 - a. Address and GIS coordinates of the building or site.
 - b. Locations and GIS coordinates of the individual flow and gauge hydrants.
 - c. Static pressure at the gauge hydrant.
 - d. Residual pressure at the flow hydrant.
 - e. Calculated flow at the flow hydrant.
 - f. Calculated flow at 20psi (138kPa).
 - g. Date and Time of the test.

- h. Names of all persons performing and witnessing the test.
- i. Satellite map with the building/site and the hydrants labeled.

1.02. New Store Concept:

- A. Current marketing trend eliminates suspended ceiling in Sales Area and renders ceiling structure visible. This impact on the fire-suppression system is immediate. The design Engineer shall provide guidance to the design Architect for appropriate visual appearance of the fire-suppression system. Accomplish this by camouflaging fire sprinkler systems and paralleling structural support runs with piping runs.

1.03. Remodel Concept:

- A. Incorporate new store concepts during major remodeling of existing facilities. Many will not apply. The design Engineer shall coordinate with the design Architect on those marketing concepts to include in the construction documents. The same requirements for new store projects shall apply for remodel projects to the extent feasible.
- B. Phasing of work to accomplish the desired changes will be an important consideration to incorporating the changes. Clearly discuss the effect of the work on the mechanical systems in the design analysis. Discuss any conflicts or problems with attempting to incorporate the new marketing concept application.

PART 2 - PRODUCTS

- 2.01. Alarm Systems. Comply with the requirements of Division 28 Section ~~28 31 76 28-39-00~~ Fire Alarm and Mass Notification Systems.
- 2.02. Fire Extinguishing System. Hydraulically calculated wet pipe automatic sprinkler system, with hose connections, that complies with NFPA 13, latest edition. Provide dry pendant sprinkler assembly with heads in rooms refrigerated to less than 4 deg C (40 deg F) per NFPA 13, latest edition, Chapter 8 (test dry-pendant automatic sprinklers per NFPA 25). Should the Contractor's investigation indicate adequate water supply is not available for the proposed system, provide a proposed method of correction, e.g. pressurization/pumping/holding system, as part of the proposal (do not consider an installation-wide correction of the system).
- 2.03. Extinguisher Cabinets. Comply with the requirements of Division 10, Section 10 44 00 Fire Protection Specialties.
- 2.04. High-Volume Low Speed (HVLS) Fans: Verify that HVLS fans are installed per NFPA 13 11.1.7 and 12.1.4.
 - A. Maximum fan diameter of 7.3m (24 feet)
 - B. Fan must be installed approximately centered between four adjacent sprinklers.
 - C. The distance between the fan blades and the sprinkler deflectors must be a minimum of 0.9m (3 feet).
 - D. Fans must shut down immediately upon the receipt of a water flow alarm. See section 28.31.76.

PART 3 - EXECUTION

END OF SECTION