Element D Services
D4010 Wet Standpipe and Sprinkler Systems

PART 1 - GENERAL

1.01 OVERVIEW

A. This section addresses wet standpipe and sprinkler systems.

PART 2 - DESIGN CRITERIA

2.01 GENERAL

A. Refer to Design Guideline Element Z2005 for Codes and Applicable Regulatory Agencies

B. All portions of the building shall be provided with standpipe protection and 100 percent sprinkler protection. All conditioned portions of the building shall be protected with wet pipe sprinkler systems. All areas of the building subject to temperatures of less than 40 degrees Fahrenheit shall be protected by either dry pendent type sprinklers from a wet pipe system or by dry pipe systems.

C. Areas containing sensitive equipment which would be considered a major loss due to accidental fire sprinkler discharge or leakage shall be protected by a double-interlock preaction type sprinkler system.

D. Design shall comply with codes and standards referenced within these Design Guideline Elements and include, but not be limited to, calculations, specifications and detailing fire and jockey pumps, in-coming water service, fire department connections, pipe penetrations, and any special requirements.

E. Provide automatically controlled fire pumps for all fire protection systems where hydraulic calculations indicate that the municipal water pressure is not adequate to supply the building sprinklers and/or standpipes. Lower level sprinkler systems may be served by municipal water pressure when water pressures are proven adequate.

F. Fire pump size shall be based on the requirements of NFPA. Water supply to fire pumps shall meet the requirements of NFPA. A single fire pump system may feed multiple buildings, provided special approval from the Owner's Environmental Health and Safety Department is obtained.

G. A jockey pump shall be provided for pressure maintenance to keep the fire pump from operating due to sprinkler flow switch alarm testing and minor losses in the system.

H. If electric, the fire pump shall be a horizontal split case pump with high efficiency motor. The fire pump controller shall include an automatic transfer switch for backup operation from the emergency power system and incorporate reduced voltage solid state starting.
I. Consider two-stage fire pumps or variable speed controllers to serve buildings having over twenty-five (25) floors.

J. Pumps installed within the City of Houston shall draw water from a break tank provided in accordance with City of Houston requirements.
   1. Fire tank may be combined with domestic pump water storage with the fire water separated from the domestic water with a double wall partition.
   2. The fire water break tank shall be sized in accordance with NFPA 20.
   3. Provide two fill valves for fire water storage compartment. Provide individual manual shutoff valves with tamper switches to isolate each fill valve to accommodate servicing.
   4. Provide full line size valved bypass around block and fill valves for fire water tank compartment to allow manual filling.
   5. Electrical power serving tank level control and monitoring shall be from emergency source.

K. Provide full line size bypass with double-check valve assembly around surge tank and fire pump.

L. Provide adequate spaces for the installation, servicing and inspection of all equipment, controls, valves and appurtenances.

M. Where the height of the building dictates, divide the floors into separate zones of fire water service such that the number of pressure reducing valves required is minimized.

N. Sprinkler systems shall not be fed by the same standpipe on two adjacent floors.

O. Inspector’s test valves shall be installed for each sprinkler control valve assembly equipped with a flow switch and piped to a stairwell drain test riser within the building. When used in combination with the drain and test riser requirements for testing standpipes equipped with pressure-regulating hose valves, the drain test riser size shall be a minimum size of 3 in. Each drain test riser discharge shall be piped to the exterior of the building. The exterior discharge point shall not discharge on a sidewalk, driveway or any other area that could result in staining, water accumulation or soil erosion. When exterior piping is not feasible, the drain test riser shall be piped to a suitable drain having sufficient capacity to accept full flow of pressure-regulating hose valves. When a project cannot meet this requirement, an alternative plan must be submitted for approval by the Project Management team and Environmental Health and Safety, before installation of fire protection system.

P. Required Sprinkler System Type by Area Covered.
PART 3 - SPECIAL CONTRACT DOCUMENT REQUIREMENTS

3.01 GENERAL

A. Develop plans, schedules, system schematic and details indicating all information required to clearly illustrate the intent of system design, including but not limited to, location and size of In-coming water supply, building fire department connection(s), Fire pump and controller, jockey pump, test header, test loop, risers, standpipes, standpipe mains, zone control valves, water flow switches, drain discharge locations, fire department valves and fire hose cabinets.

B. Graphically identify each standpipe and fire hose connection on plans and riser schematic. Identification on riser schematic shall correspond to Identification on plans. Graphically indicate floor levels and floor elevations on riser schematic.

C. Details shall be provided for, pumps, water storage tanks and all other components that require installation explanation beyond the information included within plans and riser schematic.

D. Schedules shall clearly identify: Capacity, size, model, options and other requirements for pump equipment.

E. Match smoke zone to sprinkler zone demarcation.
PART 4 - PRODUCTS

4.01 GENERAL

A. Refer to Owner’s Master Construction Specifications. These are available on the Owner’s Design Guidelines website: http://www2.mdanderson.org/depts/cpm/standards/specs.html

B. System design and piping specified for renovation of existing facilities shall be compatible with existing installation.

PART 5 - DOCUMENT REVISION HISTORY

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