

Element D Services

Plumbing

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. Refer to 2.01.O for required system type by area covered.
- C. 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.
- D. 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.
- E. 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 & Safety, Sustainability and Emergency Management department is obtained.
- F. 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.
- G. 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.
- H. Consider two-stage fire pumps or variable speed controllers to serve buildings having over twenty-five (25) floors.
- I. 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.

Element D Services

Plumbing

D4010 Wet Standpipe and Sprinkler Systems

2. The 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 high and low tank level alarm controls and monitoring shall be from emergency source.
- J. Provide full line size bypass with double-check valve assembly around surge tank and fire pump.
- K. Provide adequate spaces for the installation, servicing and inspection of all equipment, controls, valves and appurtenances.
- L. 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.
- M. Sprinkler systems shall not be fed by the same standpipe on two adjacent floors.
- N. 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 & Safety, Sustainability and Emergency Management and before installation of fire protection system.
- O. Required Sprinkler System Type by Area Covered.
1. Diagnostic equipment and sensitive equipment installations in rooms or areas are required to be evaluated at schematic design phase for double interlocking pre-action fire sprinkler system protection to minimize the risk of accidental water discharge in lieu of a common wet fire sprinkler system. Approval for the use of a common wet fire sprinkler system must be received from the Project Management team, Environmental Health & Safety, Sustainability and Emergency Management and MD Anderson Cancer Center stakeholders
 - i Electrical Vaults/Switch Gear Rooms
 - ii CT

Element D Services

Plumbing

D4010 Wet Standpipe and Sprinkler Systems

- iii PET
- iv PET/CT
- v LINAC
- vi CT Simulator
- vii C-ARM
- viii Mammography
- ix Proton
- x MDF/IDF
- xi Precious Storage
- xii Other areas containing sensitive equipment which would be considered a major loss due to accidental fire sprinkler discharge or leakage

2. Pre-action Fire Sprinkler System (Double Interlock):

- i MRI's

3. Wet Fire Sprinkler System:

- i Offices
- ii Conference Rooms
- iii Corridors and Lobbies
- iv Dining Areas/Break Rooms
- v Supply Rooms
- vi Library (Non-Precious Items)
- vii Patient Rooms
- viii Mechanical
- ix Generator Rooms
- x Elevator Shafts/Elevator Rooms
- xi Sky Bridges
- xii Nurse Stations
- xiii Stairwells

Element D Services

Plumbing

D4010 Wet Standpipe and Sprinkler Systems

- xiv Waiting Areas
- xv Staff Locker Rooms
- xvi Animal Areas
- xvii Restrooms/Shower

4. Dry Fire Sprinkler System:

- i Loading Docks
- ii Parking Garages
- iii Valet Areas
- iv Non-Climate Controlled Warehouses

5. Clean Agent System:

- i Data Centers

6. Dry Chemical System (Ansul)

- i Cooking Areas/Kitchen Hoods
- ii Paint Booths
- iii Chemical Storage

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.

Element D Services

Plumbing

D4010 Wet Standpipe and Sprinkler Systems

- 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.

END OF ELEMENT

FOR MDACC USE ONLY. DELETE THIS PAGE BEFORE ISSUING DOCUMENTS.

DOCUMENT REVISION HISTORY					
Issue	Date	Revision Description	Author or SME	Approved By	Edited By
Rev. 1	20190301	Original Issuance	Shah Smith	FPDC Engineering Services	FPDC
Rev. 2	20191101	Added table for Sprinkler System Type by Area Covered	Bryan Galloy	Bryan Galloy	Richard Fitzgerald
Rev. 3	20201014	Revised 2.01.B and 2.01.C to refer to 2.01.O, Revised EH&S to Environmental Health & Safety. Sustainability and Energy Management, Revised 2.01.x for consistent terminology, Removed table for Sprinkler System Type by Area Covered and replaced with 2.01.O with additional detail.	Bryan Galloy	Bryan Galloy	Richard Fitzgerald
Rev. 4					
Rev. 5					