

SIMON Property Group requires all tenants to employ the respective mall or shopping center's current sprinkler contractor. This specified sprinkler company in turn is required to comply with Landlord's Fire Protection Design Requirements.

A. GENERAL REQUIREMENTS

1. The fire protection system shall be designed, fabricated, and installed by a Licensed or NICET Fire Protection System Contractor. The Engineer shall provide specifications and diagrams to allow letting of a design-build contract for the fire protection portion of the project. The entire system design, material use and installation shall comply with the current NFPA Standards and Codes as a minimum.
2. Plan submissions for SIMON Tenant Improvement Projects must be emailed to Global Risk Consultants (GRC) at SimonProjects@tuvsud.com. This also includes all other sprinkler submittals for new construction, mall renovations, common areas, mall offices, etc. that are not paid for by a tenant. For all emailed submissions, the contractors will need to include the following information in the email subject line:

For Mall Plan Reviews: "SIMON MPR – GRC File # (for site) - Site Name, City, State"

For Tenant Sprinkler Reviews: "SIMON TPR – GRC File # (for site) - Site Name, City, State"

For Roof Reviews: "SIMON Roof – GRC File # (for site) - Site Name, City, State"

- SimonProjects@tuvsud.com is the only path to submit plans for review.
- Do not send these requests to individual employees at GRC.
- Submit the reviews at least 30 days in advance of the construction start date.

Route any questions/concerns to the GRC Account Engineer for SIMON:

Nora London

District Manager – Fire Practice. Senior Consultant/Account Engineer/Fire Protection Engineering

Office- 312-223-1523

Direct- 630-418-6672

Email address: nora.london@tuvsud.com

The following items must be submitted to conduct a prompt and thorough review of the sprinkler system:

Submit the following information in PDF format by email as detailed above:

- Sprinkler Shop Drawings with section view
 - Hydraulic Calculations (required for all submittals)
 - Seismic calculations for all Earthquake Zones
 - Catalog Cut Sheets for materials being used (i.e. sprinklers, fittings, pipe, valves, etc.)
 - Owner's Certificate (ref. NFPA-13, section 4.3) including the Occupancy Details needed to ensure adequate protection, the occupancy details should include, but not be limited to, stored materials, storage height, storage arrangement (shelves, racks, mobile storage units), processes present, etc.
3. The typical sprinkler system shall be a wet pipe system serving all areas of the building. Portions of the project that are unheated or exposed to freezing temperatures shall be provided with an automatic dry pipe type system complying with the current edition of NFPA-13. Glycol systems will not be permitted without permission from SIMON.
 4. The minimum size of any incoming, underground (fire) water lateral into a tenant space shall be 8" and the minimum riser size shall be 6" unless approved by SIMON.
 5. Piping shall be fastened to the structural system of the building and concealed in areas having a suspended ceiling. Install seismic sway bracing where required for earthquake zones per local codes and the current

edition of NFPA-13.

6. Drain piping is required at low points of piping systems. Drain down locations shall be extended to locations that are accessible to Mall staff or stubbed out of the building into an area that will not be subject to freezing or stain the finished surfaces. For dry type systems, drip drums shall be installed against columns and out of usable space.

B. FIRE PROTECTION GUIDELINES FOR NEW/RENOVATED TENANT SHELL SPACES

1. The minimum allowable riser and main size for delivery of water to tenant spaces shall be 6" plus, be capable of providing 1000 GPM at a residual pressure of 45 PSI at the most remote ends of the sprinkler system mains.
2. When required, Landlord will install an upright sprinkler system within tenant shell spaces hydraulically designed for 0.25 GPM per square foot over 2000 sq. ft. based upon the installation requirements of NFPA-13 with head spacing at a maximum of 130 sq. ft.
For contractors performing tenant improvement projects inside these retail spaces the sprinkler density must conform to the NFPA-13 standard of 0.2 GPM over 1500 sq. ft. within the space at the conclusion of construction.

C. FIRE PROTECTION FOR EXISTING TENANT SPRINKLER SYSTEMS

1. Whenever an existing sprinkler system is being renovated, the integrity and reliability of the existing system must be maintained. Original sprinkler shop drawings shall be acquired through the mall manager/project manager. However, the Sprinkler Contractor must verify the existing sprinkler system in the field. If the Sprinkler Contractor discovers a discrepancy from the original sprinkler shop drawings and actual field conditions, he shall note the discrepancy on his renovated shop drawings.
2. The hydraulic design criteria as a minimum shall match the hydraulic criteria originally intended for the facility. At no time shall the hydraulic criteria be less than Ordinary Hazard Group 2 occupancy as defined by NFPA-13. The latest site water flow data to be used for hydraulic calculations shall be obtained from Global Risk Consultants or local Mall Management.
3. UL Listed and/or FM Approved materials for NFPA-13 Ordinary Hazard Group 2 (OH-2) occupancy must be used, including but not limited to sprinkler piping, hangers, sprinkler heads, etc. Seismic bracing must be UL Listed and designed to the current edition of NFPA- 13.
4. Sprinkler head spacing requirements for Ordinary Hazard Group 2 occupancies shall be used.
5. The current edition of NFPA-13 shall be the minimum design requirements along with any state and local requirements. That means that tenant contractors performing improvement projects inside existing retail spaces must meet 0.2 GPM over 1500 sq. ft. inside those spaces or comply with the center's pre-existing hydraulic design at the conclusion of construction. It also necessitates that the tenant's contractor upgrade/replace piping and add heads as necessary in order to achieve compliance.

D. SPECIAL PROVISIONS FOR MILLS OR SIMILAR OPEN PLAN PROPERTIES

1. Sprinkler heads at the roof deck of Mills "open plan" malls must remain in place at all times due to the lack of full height fire barrier walls between in-line tenant spaces. Roof level sprinklers must not be plugged or replaced by arm-overs regardless of the presence of sprinklers below.
2. Sprinklers installed below suspended ceiling systems must be hydraulically designed to match the original sprinkler design. Malls constructed with a roof level sprinkler design of 0.25 gpm/sq ft over 3000 sq.ft. were intended for the future extension of sprinklers below suspended ceilings using a minimum design of 0.20 gpm/sq.ft. over 3000 sq.ft. with 250 gpm hose allowance.
3. Storage of Class I to Class IV commodities is limited to 12 ft. and Cartoned Group A Plastic commodities is limited to 10 ft. with these original sprinkler densities. Please contact Global Risk Consultants for specific design

requirements to protect stockrooms exceeding the aforementioned height or commodity limitations.

4. Sprinklers must be installed below all isolated obstructions such as clouds, ductwork, soffits, lighting banks, etc. where roof level sprinklers provide the primary protection. Calculations will not be required when the following schedule is used: 1 head = 1" pipe; 2 heads = 1-1/4" pipe; 3 heads = 1-1/2" pipe, 4-5 heads = 2" pipe. Hydraulic calculations will be required to supply systems of 6 or more sprinklers below an obstruction.
5. Sprinklers in small rooms <800sq.ft. closets, offices, fitting rooms that are fully enclosed with complete ceiling and walls may be omitted from hydraulic calculations.
6. Solid ceiling panels cannot obstruct more than 90% of the suspended ceiling area of any tenant space in malls where smoke exhaust systems are located at the roof level. The 10% free area may be decorated with open grid (egg crate) ceiling panels supported by the ceiling grid system. Open grid (egg crate) ceiling panels must be minimum 70% open area and no greater than 1/4" thickness or deep to allow sprinkler discharge to pass through. The open grid (egg crate) ceiling panels must be installed at least 3ft. below the roof level sprinklers.

NOTE: As appropriate, the Occupancy Classes throughout this entire section "D" should reference NFPA as follows:

- NFPA-13 Light Hazard
- NFPA-13 Ordinary Hazard Group 2
- NFPA-13 Extra Hazard Group 1

E. FIRE PROTECTION DESIGNCRITERIA

1. Sprinkler head arrangement shall be in conjunction with architectural finishes and provide allowance for partitions, columns, light fixtures, air diffusers, etc. The Sprinkler Contractor shall submit dimensioned head layout plans showing all other trade equipment for SIMON review prior to installation. SIMON and the Architect reserve the right to modify head locations to create an aesthetic design.
2. Sprinkler Shop Drawings shall not be considered final until all requirements of SIMON, and all Local and State Building Codes having authority have been met, and the approval of each has been tendered.
3. Extended coverage sprinkler heads may be used in all finished areas. Extended coverage heads may not be used in new shell construction. Minimum and maximum sprinkler spacing shall be in accordance with NFPA-13 and sprinkler listings.
4. NFPA-13 required density for Sales/Retail spaces and Common areas will be 0.20 gpm per sq. ft. over the most hydraulically remote 1500 sq. ft., using ordinary or intermediate temperature rated heads.
5. Stockroom/storage areas over 200 sq. ft. must be protected for the maximum storage height and configuration (bin-box/gondola/shelf or rack) per NFPA-13, Chapters 12-17. Classify the commodities in tenant spaces as minimum Class IV commodities for sprinkler design purposes. Tenants with candles, crafts, electronics, footwear, furniture, hardware, housewares, luggage, novelties, party supplies, plastic totes, sporting goods, etc. shall be protected as "cartoned" or "exposed plastics". Contact Global Risk Consultants to discuss specific design requirements.
6. Big Box Stores require unique sprinkler system designs to meet the requirements of FM Global Data Sheet 8-9. However, if compliance with the more stringent FM Global standards necessitates the installation of a fire pump then sprinkler system design for big boxes can be dialed back to compliance with NFPA-13, Chapters 12-17.

F. SPRINKLER EQUIPMENT

1. Only sprinkler equipment bearing the UL Listing and/or FM Approval mark shall be installed. Provide equipment as manufactured by: Automatic Sprinkler, Victaulic, TYCO, Reliable, Viking or equal.
2. Sprinkler heads shall be glass bulb type of a configuration as required for each particular location. All heads on

concealed piping shall be painted white with white painted escutcheon plates. Operating temperature shall be as required for the type of occupancy.

3. Sprinkler heads in janitor's closets, mechanical rooms, electrical rooms and those mounted less than 8 feet above finished floor shall be protected with a wire cage type guard.
4. Above ground sprinkler piping shall be standard weight Schedule 10 or Schedule 40 black steel pipe. Schedule 10 piping shall be joined by roll grooving and shall incorporate UL Listed and/or FM approved grooved fittings only. Schedule 40 pipe shall utilize threaded cast iron or steel fittings as well as UL Listed and/or FM approved grooved fittings. All dry system piping components (pipes/fittings) shall be FM Approved galvanized for corrosion resistance.
5. Non-standard piping such as threadable "light-wall" (XL) and "thin-wall" pipe may not be utilized under any circumstances.
6. Anchor underground mains at turns and hydrants, consisting of concrete thrust blocks, yokes, tie rods, pipe clamps, etc. per the requirements of NFPA-13 and NFPA-24.
7. Hangers shall be UL Listed and/or FM Approved, and adaptable to various types of construction. Hangers shall be supported from building structure and structural steel headers shall be installed for supporting cross-main hangers where main is not directly below structural member. All hangers shall comply with NFPA-13. Seismic bracing may be UL Listed.
8. Wall plates shall be provided on exposed piping where pipe passes through walls, partitions, ceilings, etc. and secured by setscrews.
9. All valves and fittings shall be UL Listed and/or FM Approved and rated 175 lb. minimum. All hose valves, hydrants, siamese connections, etc., shall be provided with connection facilities which match hose threads of the Fire Department serving the site.

G. SYSTEM ACTIVATION, TESTING & CERTIFICATION

1. Sprinkler Contractor shall install, activate and flow test the entire sprinkler system prior to the Certificate of Occupancy.
2. Existing sprinkler systems shall be shut down and "red" tagged in strict accordance with SIMON Property Group Impairment Procedures. Under no circumstances should a sprinkler system be left out of operation overnight without an appropriate "fire watch" in place.
3. All fire protection systems shall be tested as required by local authorities and Global Risk Consultants before any systems are concealed.
4. Contractor shall conduct hydrostatic tests in compliance with the current edition of NFPA-13 (two hours at 200 psi or 50 psi over normal system pressure minimum). Piping subject to freezing during test period shall be tested with compressed air.
5. The hydrostatic testing and dry pipe valve trip full flow testing (as applicable) shall be documented with a *Contractor's Material and Test Certificate for Aboveground Piping* similar to NFPA-13, Figure 24.1.
6. Certificates of approval of installation shall be obtained from the Authority having Jurisdiction and forwarded to SIMON.
7. After tests are conducted and any repairs completed; completely flush the piping systems with water until discharge shows no discoloration.

H. TENANT DISPLAY FIXTURES, RACK/SHELVING/STORAGE UNIT REQUIREMENTS

- Tenant display fixtures in the retail space and rack/shelving/storage units in the stockroom must be designed to provide adequate clearance for the automatic (fire) sprinkler system. No displays or storage should exceed 12 ft. and ceilings must be installed to provide at least 18 in. of clearance between the top of storage and sprinkler deflectors.
- Tenant displays or storage higher than 12 ft. are classified as “high piled storage”, which requires high hazard automatic (fire) sprinkler protection designed per NFPA-13-Chapter 12 for the storage of “Group A Plastic” commodities. High piled storage also requires at least 36 in. of clearance between the top of storage and sprinkler deflectors.
- Tenant mobile (compact) storage systems should be constructed of wire mesh shelves. However, if constructed with solid shelves (steel, wood), the units must be equipped with 3 in. spacers to provide flue spaces at 4 ft. to 5 ft. maximum intervals.
- Tenant’s Architect/General Contractor must provide the following information to the Sprinkler Contractor regarding stock/storage area:
 - Type of storage units (Details of storage unit)
 - Type of shelving (wire mesh, solid, steel, wood, etc.)
 - Type of commodities (plastics, aerosol's, clothing, etc.)
 - Elevation of highest shelf

Tenant shall be solely responsible for the design, installation and utilization of any display or storage system within the Premises and must ensure compliance with applicable fire codes plus, the requirements of any insurance rating bureaus. If any activity, action and/or lack of action on the part of a Tenant associated with Tenant's display or storage systems shall result in a fire code violation, the Tenant in question is required to take appropriate measures to rectify the situation (i.e., bring the condition into compliance). If the Tenant fails to take corrective action and/or pay any associated fine or fees, regardless of whether assessed against Tenant or Landlord, within the prescribed time period, then Tenant shall be entirely liable for all costs and expenses, including legal fees, resulting from such violation. Furthermore, Landlord shall have the right to correct any such unresolved violation/condition at Tenant's expense.