# SPRINKLER SYSTEM PLANS AND CALCULATIONS CHECK LIST

**1. Working plans shall be drawn to an indicated scale, on sheets of uniform size, with a plan of each floor, and shall show those items from the following list that pertain to the design of the system.**

- ☐ Name of owner and occupant
- ☐ Location, including street address
- ☐ Point of compass.
- ☐ Full height cross section, or schematic diagram, including structural member information if required for clarity and including ceiling construction and method of protection for nonmetallic piping.
- ☐ Location of partitions.
- ☐ Location of fire walls.
- ☐ Occupancy class of each area or room
- ☐ Location and size of concealed spaces, closets, attics, and bathrooms.
- ☐ Any small enclosures in which no sprinklers are to be installed.
- ☐ Size of city main in street and whether dead end or circulating; if dead end, direction and distance to nearest circulating main; and city main test results and system elevation relative to test hydrant.
- ☐ Other sources of water supply, with pressure or elevation
- ☐ Make, type, model, and nominal K-factor of sprinklers.
- ☐ Temperature rating and location of high-temperature sprinklers.
- ☐ Total area protected by each system on each floor.
- ☐ Number of sprinklers on each riser per floor.
- ☐ Total number of sprinklers on each dry pipe system, preaction system, combined dry pipe-preaction system, or deluge system.
- ☐ Approximate capacity in gallons of each dry pipe system.
- ☐ Pipe type and schedule of wall thickness.

- ☐ Nominal pipe size and cutting lengths of pipe. Where typical branch lines prevail, it shall be necessary to size only one typical line.

- ☐ Location and size of riser nipples.

- ☐ Type of fittings and joints and location of all welds, and bends. The contractor shall specify on drawing any sections to be shop welded and the type of fittings or formations to be used.

- ☐ Type and locations of hangers, sleeves, braces, and methods of securing sprinklers when applicable.

- ☐ All control valves, check valves, drain pipes, and test connections.

- ☐ Make, type, model, and size of alarm or dry pipe valve.

- ☐ Make, type, model, and size of preaction or deluge valve.

- ☐ Kind and location of alarm bells.

- ☐ Size and location of standpipe risers, hose outlets, hand hose, monitor nozzles, and related equipment.

- ☐ Private fire service main sizes, lengths, locations, weights, materials, point of connection to city main; the sizes, types and locations of valves, valve indicators, regulators, meters, and valve pits; and the depth that the top of the pipe is laid below grade.

- ☐ Piping provisions for flushing

- ☐ Where the equipment is to be installed as an addition to an existing system, enough of the existing system indicated on the plans to make all conditions clear.

- ☐ For hydraulically designed systems, the information on the hydraulic data nameplate.

- ☐ A graphic representation of the scale used on all plans.

- ☐ Name and address of contractor.

- ☐ Hydraulic reference points shown on the plan that correspond with comparable reference points on the hydraulic calculation sheets.

- ☐ The minimum rate of water application (density), the design area of water application, in-rack sprinkler demand, and the water required for hose streams both inside and outside.

- ☐ The total quantity of water and the pressure required noted at a common reference point for each system.

- ☐ Relative elevations of sprinklers, junction points, and supply or reference points.

- ☐ If room design method is used, all unprotected wall openings throughout the floor protected.

- ☐ Calculation of loads for sizing and details of sway bracing.

- ☐ The setting for pressure-reducing valves.

- ☐ Information about backflow preventers

- ☐ Information about antifreeze solution used.

- ☐ Size and location of hydrants, showing size and number of outlets and if outlets are to be equipped with independent gate valves. Whether hose houses and equipment are to be provided, and by whom, shall be indicated. Static and residual hydrants that were used in flow tests shall be shown.

- ☐ Size, location, and piping arrangement of fire department connections.

2. **Water Supply Capacity Information: The following information shall be included.**

- ☐ Location and elevation of static and residual test gauge with relation to the riser reference point.
- ☐ Flow location.
- ☐ Static pressure, psi (bar)
- ☐ Residual pressure, psi
- ☐ Flow, gpm (L/min)
- ☐ Date
- ☐ Time
- ☐ Test conducted by or information supplied by
- ☐ Other sources of water supply, with pressure or elevation.

3. **Summary Sheet. The summary sheet shall contain the following information, where applicable.**

- ☐ Date
- ☐ Location
- ☐ Name of owner and occupant
- ☐ Building number or other I.D.
- ☐ Description of hazard
- ☐ Name and address of contractor or designer.
- ☐ Name of approving agency

- ☐ System design requirements as follows:
  - ____Design area of water application, ft² (m²)
  - ____Minimum rate of water application (density), gpm/ft² (mm/min)
  - ____Area per sprinkler, ft²(m²)
- ☐ Total water requirements as calculated, including allowance for inside hose, outside hydrants, and water curtain and exposure sprinklers.
- ☐ Allowance for in-rack sprinklers, gpm (L/min)
- ☐ Limitations (dimension, flow, and pressure) on extended coverage or other listed special sprinklers.

**4**. **Detailed Work Sheets: Detailed work sheets or computer printouts shall contain the following information.**

- ☐ Sheet number
- ☐ Sprinkler description and discharge constant (K)
- ☐ Hydraulic reference points
- ☐ Flow in gpm (l/min)
- ☐ Pipe size
- ☐ Pipe lengths, center-to-center of fittings
- ☐ Equivalent pipe lengths for fittings and devices
- ☐ Friction loss in psi/ft of pipe
- ☐ Total friction loss between reference points
- ☐ In-rack sprinkler demand balanced to ceiling demand
- ☐ Elevation head in psi between reference points
- ☐ Required pressure in psi at reference point
- ☐ Velocity pressure and normal pressure if included in calculations
- ☐ Notes to indicate starting points or reference to other sheets or to clarify data shown
- ☐ Diagram to accompany gridded system calculations to indicate flow quantities and directions for lines with sprinklers operating in the remote area.
- ☐ Combined K-factor calculations for sprinklers on drops, armovers, or sprigs where calculations do not begin at the sprinkler.

**5. Graph Sheet: A graphic representation of the complete hydraulic calculation shall be plotted on semi-exponential graph paper and shall include the following.**

- ☐ Water supply curve
- ☐ Sprinkler system demand

- ☐ Hose demand (where applicable)
- ☐ In-rack sprinkler demand (where applicable)