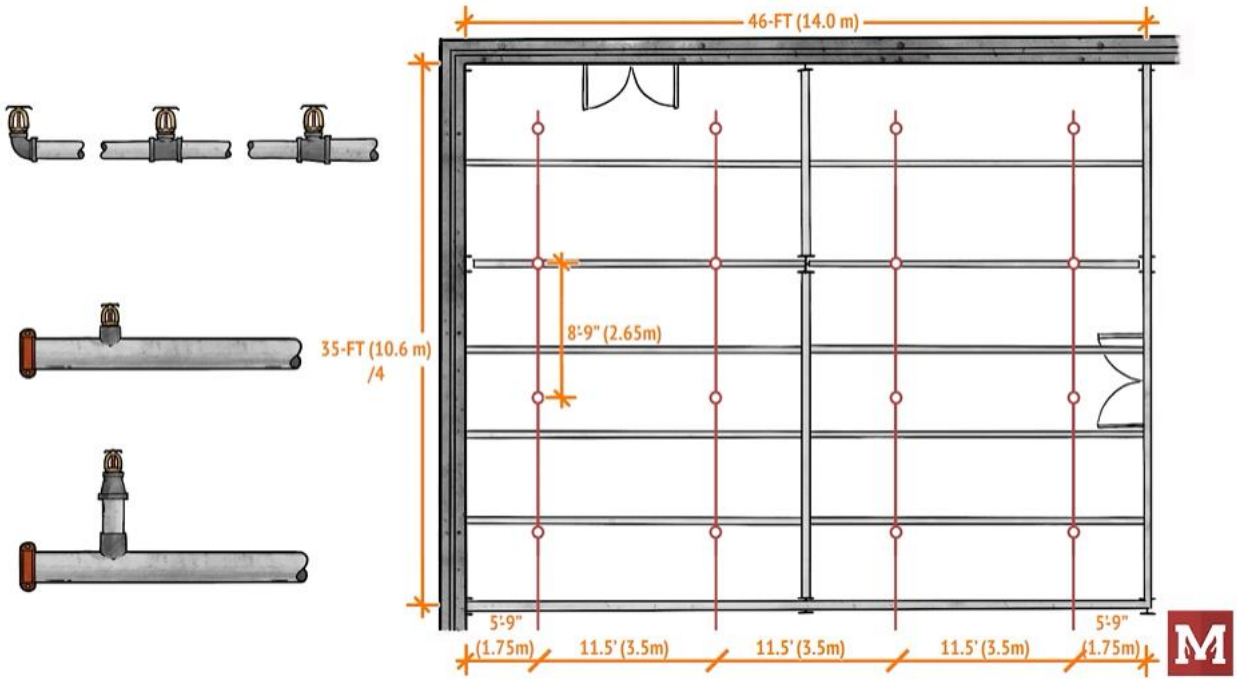
LAYOUT EXAMPLE: MECHANICAL ROOM (II)

UNDERSTANDING SPRINKLER LAYOUT SERIES BY MEYERFIRE UNIVERSITY | JANUARY 2023

SUMMARY

Here, we're continuing the design of a mechanical room by laying out sprinkler and pipe. The thought process for laying out sprinklers and pipe are:

- **#1 How many sprinklers?** We take the area of the space and divide it by the maximum area per sprinkler.
  - This is 1,610 sqft / 130 sqft/sprinkler (148 sqm / 12 sqm/sprinkler) = 12.4 sprinklers, or 13 sprinklers needed for the space.
- **#2 Which direction does branch pipe run?** Typically perpendicular to structure. This gives many more points to hang the pipe from.
- **#3 How many branch lines?** We take the width of the space and divide it by the maximum spacing per sprinkler.
  - This is 46-ft / 15-ft (14.0 m / 4.6 m) = 3.05 branch lines, or a minimum of 4 branch lines needed for the space.
- **#4 Branch line spacing?** Use the width of the space and divide it by the number of branch lines. 46-ft / 4 (14.0 m / 4) = 11.5-ft or 3.5 m spacing.
- **#5 How many sprinklers per branch line?** Take the total amount of sprinklers (#1) and divide by the number of branch lines (#3).
  - 13 sprinklers / 4 branch lines = 3.25 sprinklers per branch line, or a minimum of 4 sprinklers per branch line.
- **#6 Sprinkler spacing?** Use the length of the space and divide it by the number of sprinkler per branch line (#5). 35-ft (10.6 m) / 4 = 8'-9" (2.65 m).
- **#7 Height of the sprinklers?** The rules come from our last segment; obstructed construction allows sprinkler deflectors 1-6" (25-150 mm) below the bottom of structure and maximum 22" (550 mm) from the deck. Here, we set them as high as possible, which is 1" below the 12-inch deep beams, which ends up 3" below the 10-inch deep beams, at a deflector elevation of 10'-8" above the floor.
- **#8 Height of the pipe?** We have flexibility here.
  - If we have sprinklers on threaded fittings or directly onto welded outlets, then the pipe height will be immediately below the sprinklers.
  - If sprinklers are on sprigs, then the branch lines can be at a lower elevation of our choosing and provide flexibility for the field/future.



Optimized Sprinkler Layout for a Mechanical Room Example
(left-hand side shows examples of types of sprinkler connections to the pipe)

VIDEO LINK

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