

Victaulic® FireLock™ Series FL-SA/RE and FL-SA/DS Specific Application Low Flow Attic Scheme, Quick Response Upright, K5.6 (8.1)



FL-SA/RE, V5620



FL-SA/DS, V5621

1.0 PRODUCT DESCRIPTION

SPECIFIC APPLICATION ATTIC SPRINKLERS		
SIN	V5620	V5621
ORIENTATION	Upright	Upright
K-FACTOR ¹	5.6 Imp./8.1 S.I.	5.6 Imp./8.1 S.I.
CONNECTION	½" NPT	½" NPT
MAX. WORKING PRESSURE	175 psi (1200 kPa)	175 psi (1200 kPa)
GLOBE RE-DESIGNATION	GL5620	GL5621

AVAILABLE WRENCHES	
SPRINKLER	V56 Open End
Upright	■

Factory Hydrostatic Test: 100% @ 500 psi/3447 kPa/34 bar

Min. Operating Pressure: UL: 12.8 psi/88 kPa/0.9 bar

Temperature Rating: See tables in section 2.0

¹ For K-Factor when pressure is measured in bar, multiply S.I. units by 10.0.

2.0 CERTIFICATION/LISTINGS



Sprinkler Model	SIN	Nominal K Factor Imperial	Listing Agency/Approved Temperature Ratings	Area of Use	Roof Span ft	Roof Pitch
RE	V5620	5.6	cULus 200°F/93°C	Gable Roof	72' MAX	3:12 to 6:12
RE	V5620	5.6	cULus 200°F/93°C	HIP	NA	3:12 to 12:12
DS	V5621	5.6	cULus 200°F/93°C	Gable Roof	72' MAX	3:12 to 6:12
DS	V5621	5.6	cULus 200°F/93°C	HIP/Single Slope	NA	3:12 to 12:12 ²

² See Detailed Layout Criteria for specific approved designs for each available roof pitch

NOTES

- Listings and approval as of printing.
- Listed to be utilized per NFPA 13 in conformance with the New Technology and Equivalency Sections.
- If a flat sloped ceiling is present utilizing non combustible insulation, the insulation must completely fill the pockets between the joists, and the insulation must be secured in place with metal wire netting or equivalent. The metal wire netting is intended to hold the insulation in place should the insulation become wetted by the operation of the sprinkler. Attic sprinklers have not been evaluated for use with spray foam insulation.

ALWAYS REFER TO ANY NOTIFICATIONS AT THE END OF THIS DOCUMENT REGARDING PRODUCT INSTALLATION, MAINTENANCE OR SUPPORT.



3.0 SPECIFICATIONS – MATERIAL

Deflector: Bronze

Bulb Nominal Diameter: 3.0 mm

Load Screw: Brass

Pip Cap: Brass

Spring Seal Assembly: PTFE coated Beryllium nickel alloy

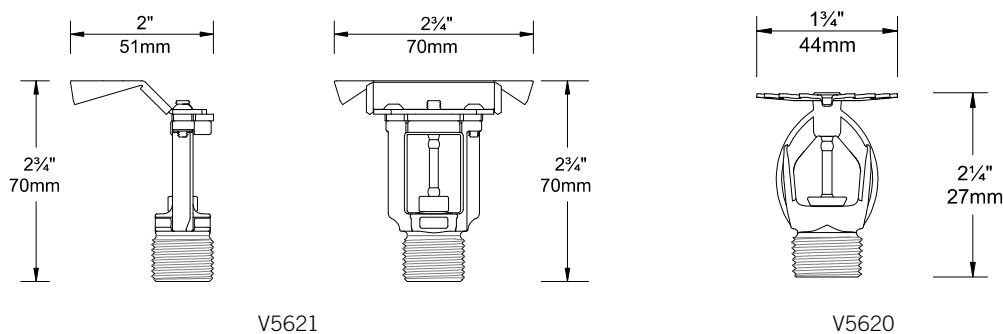
Frame: Brass

Lodgement Spring: Stainless steel

Installation Wrench: Ductile iron

Sprinkler Frame Finishes: Plain brass

4.0 DIMENSIONS



5.0 PERFORMANCE

Installation

The Specific Application Attic Sprinklers for Protecting Attics must be installed in accordance with this section. The FL-SA/RE and FL-SA/DS Specific Application Attic Sprinklers comprise an overall protection scheme which takes into account strategic positioning for activation sensitivity while providing unique distribution characteristics specifically designed for attic construction.

The protection methodology utilizing these sprinklers has been full scale fire tested in the built attic environment. As such, they must be installed in accordance with the guidelines set forth within this data sheet. The NFPA 13 Density/Area prescriptive spacing requirements do not apply as these sprinklers are not bound by the NFPA 13 "S x L Rules". The positioning and spacing requirements of this data sheet take precedence over any other prescriptive requirements that may exist in NFPA 13.

To install the Specific Application Attic Sprinklers, the following steps shall be taken:

Step 1. Sprinklers must be oriented correctly as follows:

- Series FL-SA/RE Sprinklers
 - At horizontal ridge (peak) – installed in the upright vertical position with deflector parallel to the ceiling below (i.e. sprinkler centerline perpendicular to the ridgeline).
 - Near eave or under hip type roofs – installed in the upright position with deflector parallel to roof deck (i.e. sprinkler centerline perpendicular to the roof slope).
- Series FL-SA/DS Sprinklers
 - These sprinklers are installed downslope from a ridgeline/peak (See FIGURE 7). Installed in the upright position with deflector parallel to roof deck (i.e. sprinkler centerline perpendicular to the roof slope). See FIGURE 2

Step 2. With pipe thread sealant applied to the pipe threads, hand tighten the sprinkler into the sprinkler fitting.

NOTE

- Do not grasp the sprinkler by the deflector.

Step 3. Wrench-tighten the sprinkler using only the appropriate wrench. Wrenches are only to be applied to the sprinkler wrench flats or wrench hex, as applicable.

NOTE

- Do not apply wrench to frame arms.

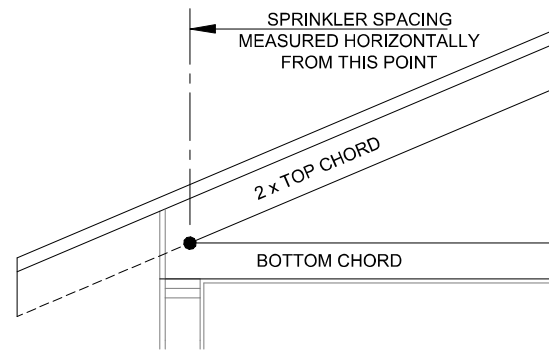


FIGURE 1A

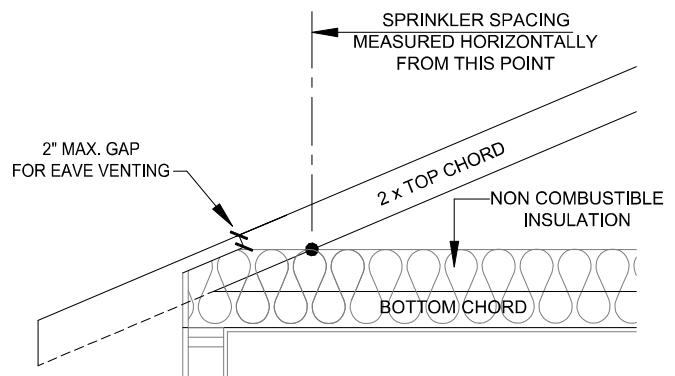


FIGURE 1B

FIGURE 1: DIMENSION FROM EAVE

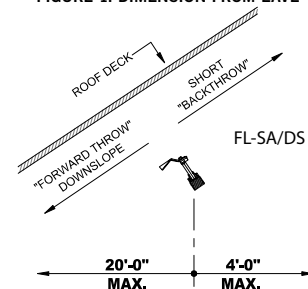


FIGURE 2: SPRINKLER FRAME ORIENTATION TO ROOF SLOPE

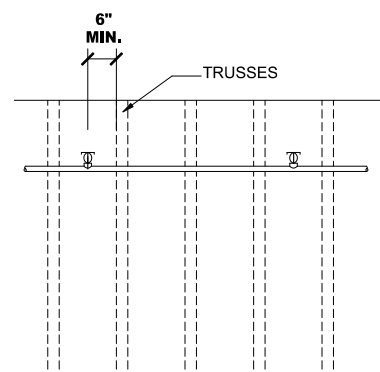


FIGURE 3: DIMENSION FROM TRUSS

5.0 PERFORMANCE (CONTINUED)

System Design Procedure

Gable Style Roof

Option 1: Ridge Sprinklers Only

- When utilizing this option Series FL-SA/RE sprinklers are used to protect the entirety of the attic space. The span of the attic is measured along the floor (or ceiling of floor below) of the attic space from the peak to the intersection of the bottom of the top chord of the roof joist and the non-combustible insulation or floor joist on the floor (or ceiling of floor below). The span is twice the longer of the two measured spans.
- The maximum span which can be protected by a single line of FL-SA/RE sprinklers at the peak is a total span of 24' or a maximum half span of 12'.

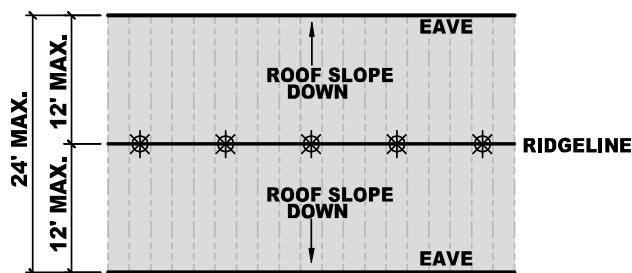


FIGURE 4A

Option 2: Ridgeline Sprinklers/Eave

Sprinklers (FL-SA/RE)

- This approach utilizes the FL-SA/RE sprinklers at the Ridgeline and downslope covering to the eave. (See FIGURE 6 for dimensional limitations)

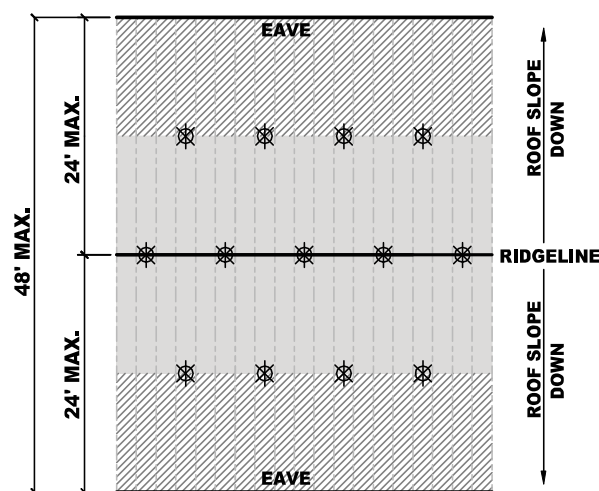


FIGURE 4B

Option 3: Ridgeline Sprinklers with Downslope

Sprinklers

- The maximum span of this approach is 72' or a half span of 36' as measured horizontally. (See FIGURE 6 and FIGURE 7 for dimensional limitations)

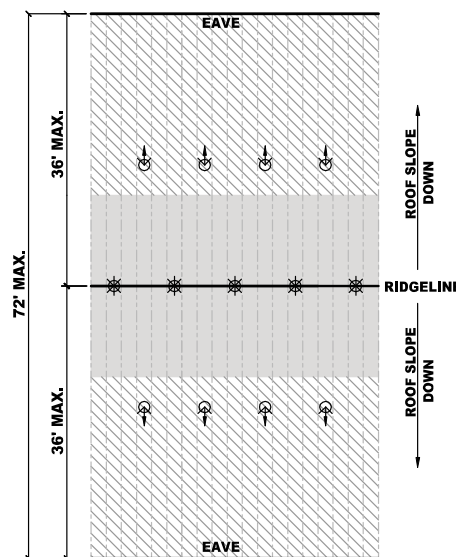


FIGURE 4C

FIGURE 4: GABLE SPRINKLER PLACEMENT OPTIONS



= Model FL-SA/RE

= Model FL-SA/DS

5.0 PERFORMANCE (CONTINUED)

Sprinkler Selection

Single Slope Roof Option 1:

FL-SA/DS Sprinklers at the Highpoint Only

- When utilizing this option, Model FL-SA/DS sprinklers are used to protect the entire width of the attic space from the eave to the vertical barrier of the single slope. The span of the attic is measured along the floor (or ceiling of floor below) of the attic space from the peak/vertical barrier to the intersection of the top chord and bottom chord of the roof trusses. See FIGURE 1.
- The maximum span that can be protected by a single line of FL-SA/DS sprinklers at the peak is 16' or 30' (measured horizontally from the sprinkler to eave).
- See FIGURE 11 for detailed sprinkler layout criteria.

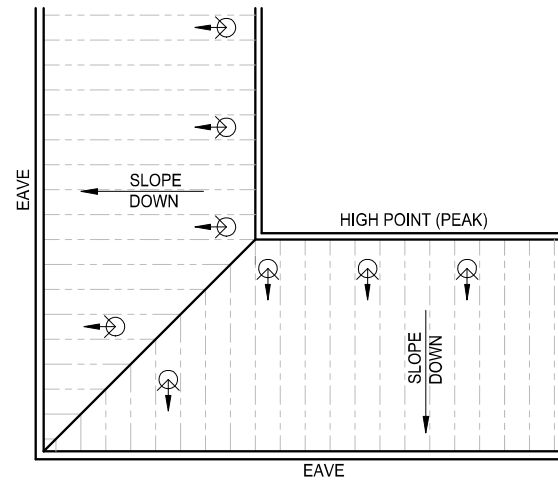


FIGURE 5A: 1 ROW SINGLE SLOPE CRITERIA

Single Slope Roof Option 2:

FL-SA/DS Sprinklers at the Highpoint and Downslope

- When utilizing this option, Model FL-SA/DS sprinklers are used to protect the entire width of the attic space from the eave to the vertical barrier of the single slope. The span of the attic is measured along the floor (or ceiling of floor below) of the attic space from the peak to the intersection of the top chord and bottom chord of the roof trusses. See FIGURE 1.
- The maximum span that can be protected by two lines of FL-SA/DS sprinklers at the peak is 29' + (depending on sprinkler placement).
- See FIGURE 11 for detailed sprinkler layout criteria.

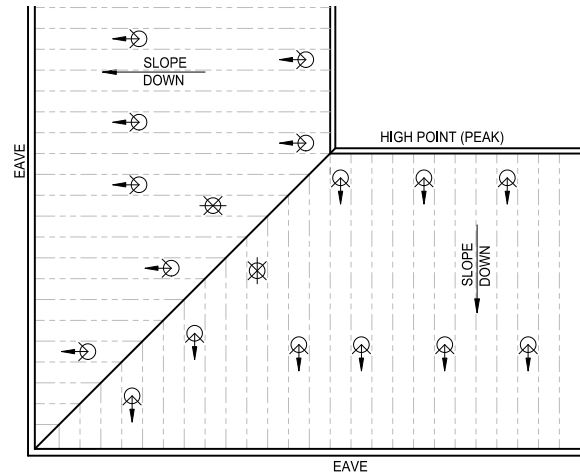


FIGURE 5B: 2 ROW SINGLE SLOPE

FIGURE 5: SINGLE SLOPE PROTECTION OPTIONS

- ⊗ = Series FL-SA/RE
- ⊙ = Series FL-SA/DS

5.0 PERFORMANCE (CONTINUED)

Ridgeline Design Criteria

Sprinkler Model

- FL-SA/RE

Slope

- 3:12 up to and including 6:12

Flow Rate

- 20 gpm

Distance Between Sprinklers Along Ridge

- Minimum 6'
- Maximum 8'

Minimum Distance to Downslope Sprinkler

- 6' (measured horizontally)

Maximum Distance to Downslope Sprinkler

- 16' (measured horizontally)

Deflector Distance Below Ceiling (At Ridgeline)

- Minimum 16"
- Maximum 24"

Deflector Distance Below Ceiling (When Downslope of Ridgeline)

- Install with deflector below bottom of top chord 1" minimum to 3" maximum.

Lateral Maximum Distance From Ridgeline

- 12"

Distance From Hip Peak

- Minimum 1'
- Maximum 4'

Installation

- When installed for Ridgeline protection, the FL-SA/RE Sprinkler has a zone of protection of 24' wide as measured horizontally across the ridgeline. The maximum zone of protection on either side of the ridgeline is 12' (as measured horizontally). The zone of protection along the ridgeline is 8' (4' maximum to either side of the FL-SA/RE Sprinkler).
- When a FL-SA/RE sprinkler is installed under a horizontal Ridge, the deflector is to be positioned parallel with the floor/ceiling below. (Regardless of allowed offset from directly below ridge)
- Maximum span for FL-SA/RE sprinkler to cover is 24' wide attic.
- Sprinklers must be installed with the frame arms parallel to the ridge.
- Centerline of sprinkler must be a minimum of 6" laterally from face of any truss. (see FIGURE 3)
- For obstruction criteria, see Obstruction section within this data sheet.
- When installed under a flat sloped ceiling (noncombustible insulation filled joist channels) maximum deflector to ceiling distance is the same as maximum distance below bottom of top chord or deflector distance below ridge.
- When spacing perpendicular to the slope under a smooth flat ceiling a minimum 2' lateral spacing perpendicular to the slope is required between sprinklers at the ridge and downslope sprinklers.

Hydraulic Calculations

- See Hydraulic Design Section

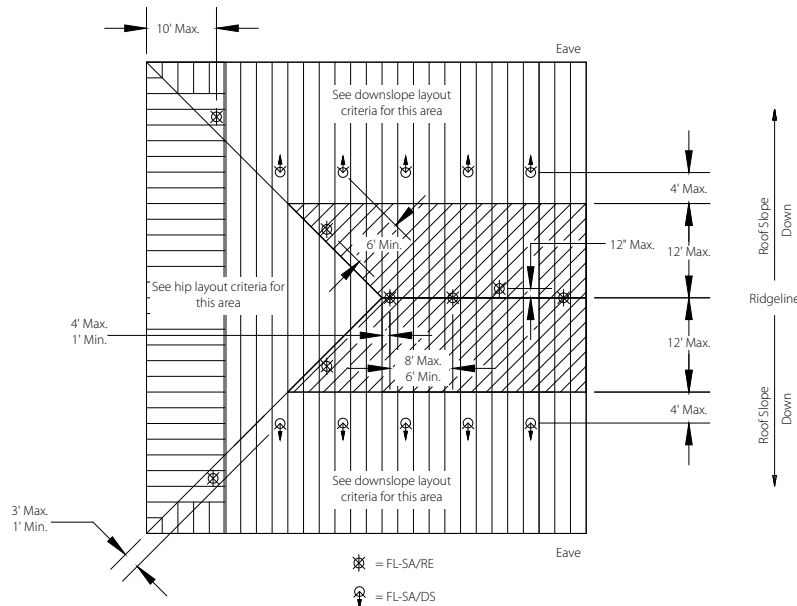


FIGURE 6: RIDGELINE LAYOUT CRITERIA

5.0 PERFORMANCE (CONTINUED)

Downslope Design Criteria

Sprinkler Model

- FL-SA/DS

Slope

- 3:12 up to and including 6:12

Flow Rate

- 20 gpm

Distance Between Sprinklers Perpendicular to Slope

- Minimum 4'
- Maximum 8'

Maximum Sprinkler Throw (measured horizontally)

- Upslope - 4'
- Downslope - 20'

Minimum Distance Between Sprinklers Downslope of the FL-SA/DS (Throw Direction)

- 15'

Deflector Distance Below Ceiling

- Install with deflector below bottom of top chord
- 1" minimum to 4" maximum.

Distance Away From Hip Line

- Minimum 1'
- Maximum 3'

Installation

- The FL-SA/DS Sprinkler has a zone of protection of 20' forward (measured on the horizontal); 4' backwards (measured on the horizontal); and 8' wide (4' laterally to either side of the sprinkler).
- Ensure that the sprinkler deflector is installed with the deflector parallel to the sloped roof above.
- Centerline of sprinkler must be a minimum of 6" laterally from face of truss (See FIGURE 3).
- Must be offset at least one channel laterally from any Ridgeline sprinkler or 2' minimum under smooth flat ceiling.
- Sprinklers must be installed with the frame arms perpendicular to the roof slope.
- For obstruction criteria, see Obstruction section within this data sheet.
- When installed under a flat sloped ceiling (noncombustible insulation filled joist channels) maximum deflector to ceiling distance is the same as maximum distance below bottom of top chord.
- When spacing perpendicular to the slope under a smooth flat ceiling a minimum 2' lateral spacing perpendicular to the slope is required between sprinklers at the ridge and downslope sprinklers.

Hydraulic Calculations

- See Hydraulic Design Section

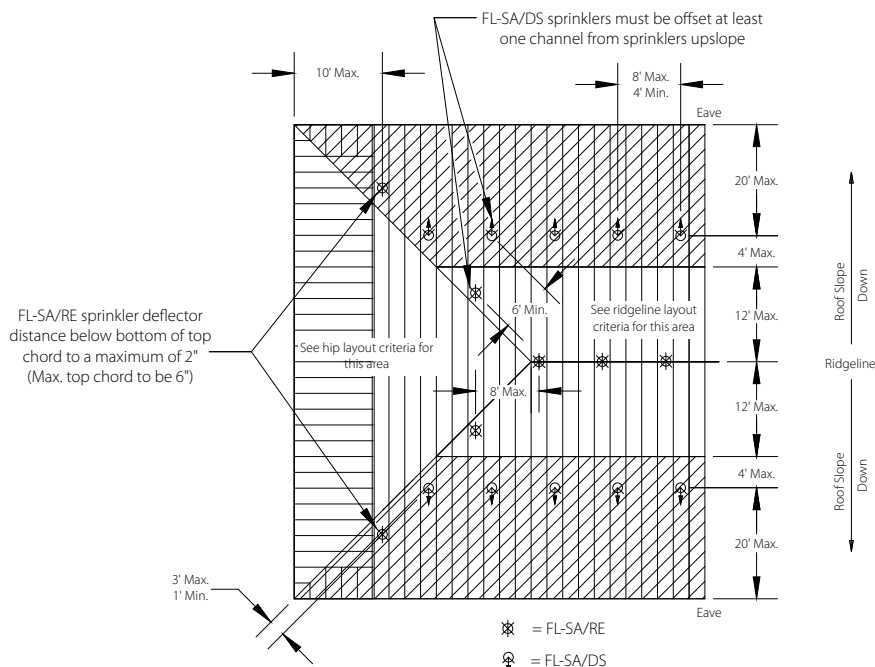


FIGURE 7: DOWNSLOPE LAYOUT CRITERIA

⊗ = Series FL-SA/RE
⊙ = Series FL-SA/DS

5.0 PERFORMANCE (CONTINUED)

Hip Area Sprinkler Design Criteria

Hip Truss/Jack Truss Construction

Sprinkler Model

- FL-SA/RE

Slope

- 3:12 up to and including 12:12

Flow Rate

- 20 gpm

Distance Between Sprinklers

First Row From Eave (measured horizontally)

- Minimum 6'
- Maximum 8'

Distance Between Sprinklers

All Other Rows Upslope (measured horizontally)

- Minimum 6'
- Maximum 12'

Distance From Eave To First Row (measured horizontally)

- Minimum 5'
- Maximum 12'

Distance Between Rows (measured horizontally)

- Minimum 6'
- Maximum 10'

Minimum Distance Between Sprinklers

- 6'

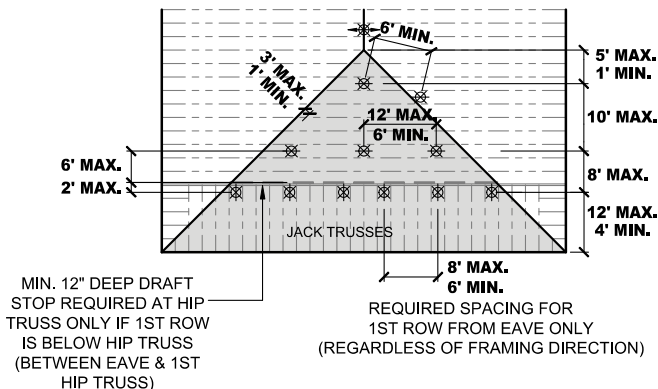


FIGURE 8A: HIP LAYOUT CRITERIA
WHEN FIRST ROW OF SPRINKLERS PLACED "WITHIN" JACK TRUSSES

Deflector Distance Below Ceiling

- Install with deflector below bottom of top chord 1" minimum to 3" maximum.

Sprinkler At Apex

- A FL-SA/RE Sprinkler must be installed between 1' to 5' down from the intersection of the ridgeline and hip lines (Apex).

Sprinklers Adjacent To Hip Line

- All FL-SA/RE Sprinklers directly adjacent to hip line shall be 1' to 3' from hip line (as measured perpendicular to hip line).

Installation

- Ensure that the sprinkler is installed with the deflector parallel to the sloped roof above.
- Sprinklers must be installed with the frame arms perpendicular to the roof slope (see FIGURE 2).
- For obstruction criteria, see Obstruction section within this data sheet.
- When installed under a flat sloped ceiling (noncombustible insulation filled joist channels) maximum deflector to ceiling distance is the same as maximum distance below bottom of top chord.

Hydraulic Calculations

- See Hydraulic Design Section

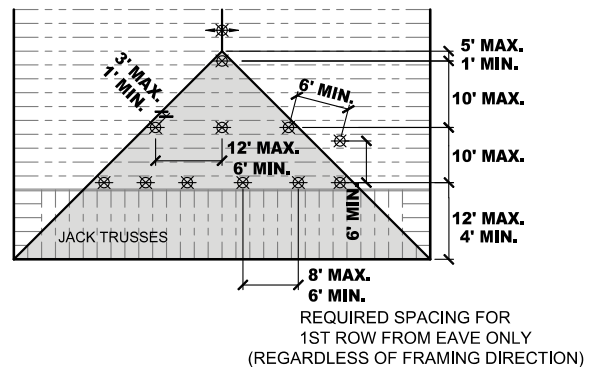
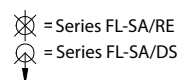


FIGURE 8B: HIP LAYOUT CRITERIA
WHEN FIRST ROW OF SPRINKLERS PLACED "BEYOND" JACK TRUSSES

FIGURE 8: HIP LAYOUT CRITERIA - HIP TRUSS/ JACK TRUSS CONSTRUCTION



5.0 PERFORMANCE (CONTINUED)

Hip Area Sprinkler Design Criteria

Framing Members Parallel to Roof Slope

Sprinkler Model

- FL-SA/RE

Slope

- 3:12 up to and including 12:12

Flow Rate

- 20 gpm

Distance From Eave to First Row (Measured Horizontally)

- Minimum 5'
- Maximum 12'

Maximum Distance Between Sprinklers

- See FIGURE 13

Deflector Distance Below Ceiling

- Install with deflector below bottom of top chord 1" minimum to 3" maximum.

Sprinkler at Apex

- A FL-SA/RE Sprinkler must be installed between 1' to 5' down from the intersection of the ridgetline and hip lines (Apex).

Sprinklers Adjacent To Hip Line

- All FL-SA/RE Sprinklers directly adjacent to hip line shall be 1' to 3' from hip line (as measured perpendicular to hip line).

Installation

- Ensure that the sprinkler is installed with the deflector parallel to the sloped roof above.
- Sprinklers must be installed with the frame arms perpendicular to the roof slope.
- For obstruction criteria, see Obstruction section within this data sheet.
- When installed under a flat sloped ceiling (noncombustible insulation filled joist channels) maximum deflector to ceiling distance is the same as maximum distance below bottom of top chord.

Hydraulic Calculations

- See Hydraulic Design Section

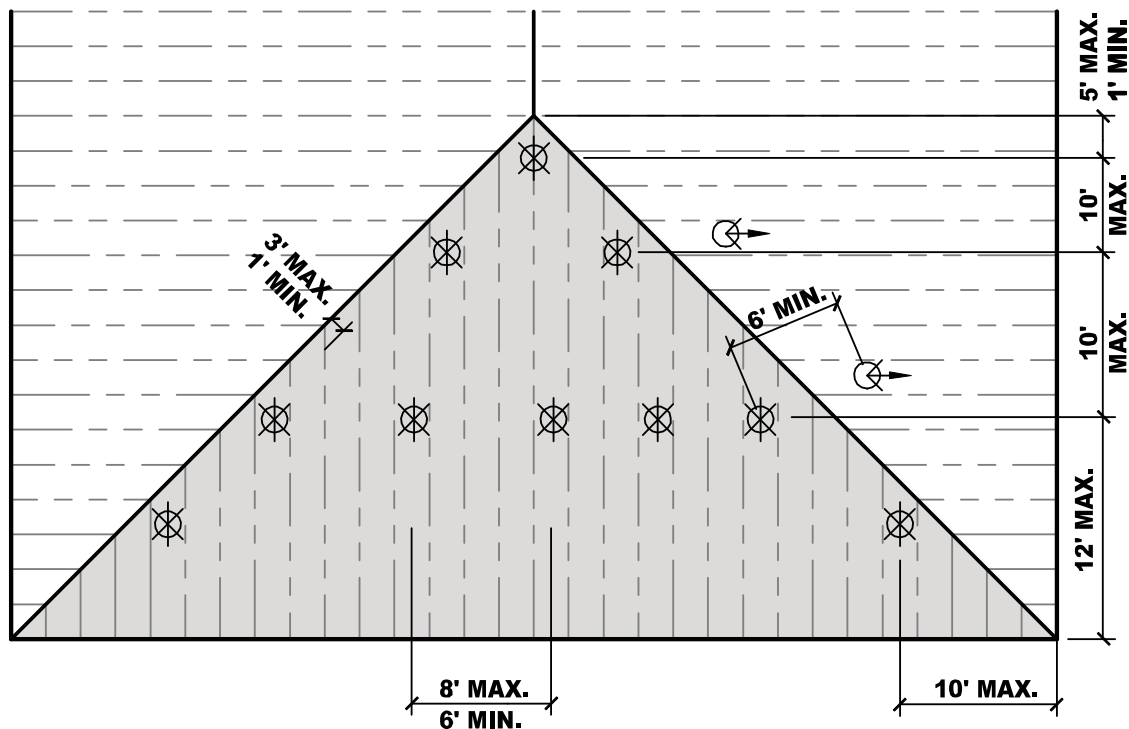


FIGURE 9: HIP LAYOUT CRITERIA
FRAMING MEMBERS PARALLEL TO ROOF SLOPE

⊗ = Series FL-SA/RE
⊙ = Series FL-SA/DS

5.0 PERFORMANCE (CONTINUED)

Hip Area Sprinkler Design Criteria

Framing Members Parallel to Roof Slope

Sprinkler Model

- FL-SA/DS (FL-SA/RE @ apex)

Slope

- 3:12 up to and including 12:12

Flow Rate

- 20 gpm

Distance Between Sprinklers (Laterally)

- Minimum 4'
- Maximum 8'

Distance From Eave To First Row (Measured Horizontally)

- Minimum 5'
- Maximum 20'

Deflector Distance Below Ceiling

- Install with deflector below bottom of top chord 1" minimum to 4" maximum.

Sprinkler At Apex

- A FL-SA/RE Sprinkler must be installed between 1' to 5' down from the intersection of the ridgeline and hip lines (Apex)

Sprinklers Adjacent To Hip Line

- All FL-SA/RE Sprinklers directly adjacent to hip line shall be 1' to 3' from hip line (as measured perpendicular to hip line)

Installation

- Ensure that the sprinkler is installed with the deflector parallel to the sloped roof above
- Sprinklers must be installed with the frame arms perpendicular to the roof slope.
- For obstruction criteria, see Obstruction section within this data sheet
- When installed under a flat sloped ceiling (noncombustible insulation filled joist channels) maximum deflector to ceiling distance is the same as maximum distance below bottom of top chord.

Hydraulic Calculations

- See Hydraulic Design Section

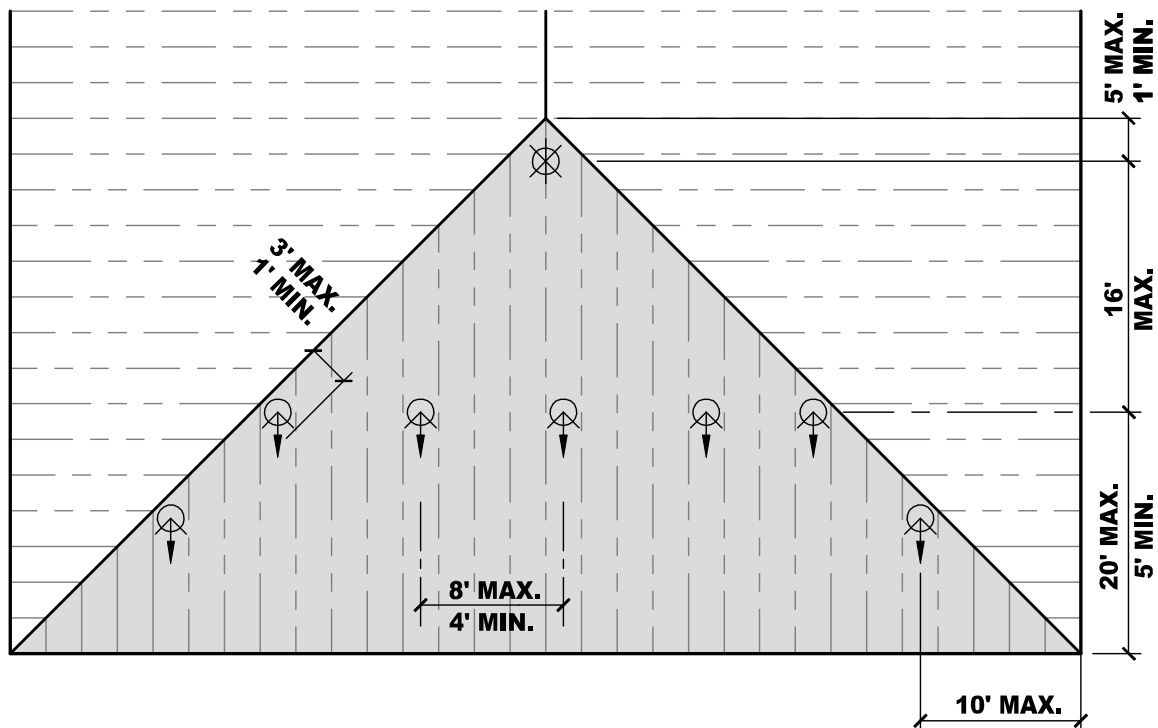


FIGURE 10: HIP LAYOUT CRITERIA
FRAMING MEMBERS PARALLEL TO ROOF SLOPE

⊗ = Series FL-SA/RE
⊙ = Series FL-SA/DS

5.0 PERFORMANCE (CONTINUED)

Single Slope Design Criteria

Sprinkler Model

- FL-SA/DS

Slope

- See Maximum Sprinkler Throw

Flow Rate

- 20 gpm Max Throw
- 26 gpm @ 30' Max Throw

NOTE

- See Max Sprinkler Throw Allowed

Deflector Distance Below Peak (See FIGURE 11A)

- Minimum 16".
- Maximum 24".

Deflector Distance Below Sloping Roof Deck (See Figure 11a)

- Install with deflector below bottom of top chord from 1" to a maximum of 4".

Distance Between Sprinklers Perpendicular to the Slope

- Minimum 4'
- Maximum 8'

Maximum Sprinkler Throw (Measured Horizontally)

- Downslope - 16' @ 20 gpm (3:12 to 12:12)
- >16' up to 30' @ 26 gpm (4:12 to 12:12- 1 row application only)

Minimum Distance Between Sprinklers Downslope Of The FL-SA/DS (Throw Direction)

- 15' (as measured on the slope)
- Note: 15' min not required if $\geq 4'$ lateral between sprinklers

Installation

- Ensure that the sprinkler deflector is installed with the deflector parallel to the sloped roof above.
- Centerline of sprinkler must be a minimum of 6" laterally from face of truss. See FIGURE 3.
- When two rows of FL-SA/DS sprinklers are utilized, the adjacent rows of sprinklers must be offset at least one channel laterally from each other or 2' min under smooth flat ceiling. See FIGURE 11C.
- Sprinklers must be installed with the frame arms perpendicular to the roof slope. See FIGURE 2.
- For obstruction criteria, see Obstruction section within this data sheet.
- When installed under a flat sloped ceiling (noncombustible insulation filled joist channels) maximum deflector to ceiling distance is the same as maximum distance below bottom of top chord.

Hydraulic Calculations

- See Hydraulic Design Section

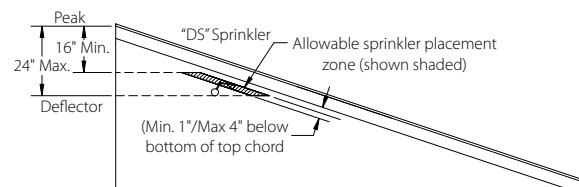


FIGURE 11A - SECTION VIEW DS SPRINKLER & DEFLECTOR PLACEMENT AT PEAK

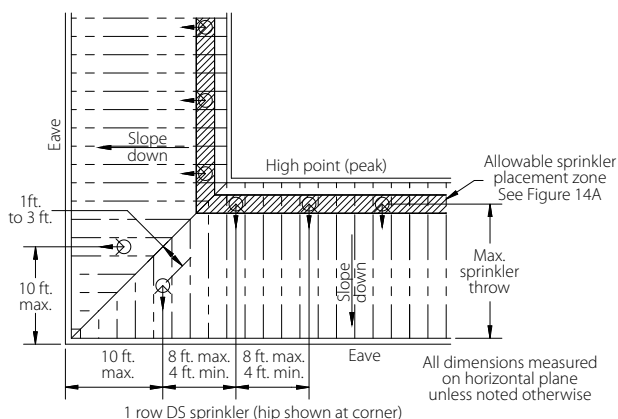


FIGURE 11B - 1 ROW DS SPRINKLER (HIP SHOWN AT CORNER)

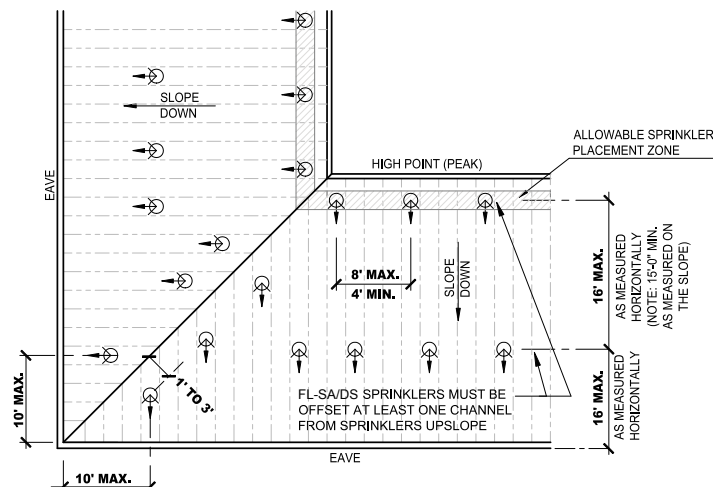


FIGURE 11C - 2 ROW DS SPRINKLER (HIP SHOWN AT CORNER)

FIGURE 11: SINGLE SLOPE LAYOUT CRITERIA

5.0 PERFORMANCE (CONTINUED)

Dormer Protection Criteria

The protection scheme for dormer roofs shall be in accordance with the following guidelines:

Dormers Built Entirely Over (on top) of Main Roof Sheathing – 4 Sprinklers or Less – Any Slope

- RE/DS Sprinklers allowed (CPVC allowance applies for wet systems only)
- Standard Spray Sprinklers allowed

Dormers Built Entirely Over (on top) of Main Roof Sheathing - More than 4 Sprinklers

- RE/DS Sprinklers allowed where the pitch is between 3:12 and 6:12. Protection scheme utilized shall be in accordance with this document
- Standard Spray Sprinklers allowed for any slope

Dormers Open to Attic Space Below – 4 Sprinklers or Less – Any Slope

- RE/DS Sprinklers allowed (CPVC allowance applies for wet systems only)
- Standard Spray Sprinklers allowed.

Dormers Open to Attic Space Below - More than 4 Sprinklers

- RE/DS Sprinklers allowed where the pitch is between 3:12 and 6:12. Protection scheme utilized shall be in accordance with this document
- Standard Spray Sprinklers allowed for any slope. (Required to calculate Attic in accordance with NFPA 13 (i.e. 2535 sq.' for Dry Systems)

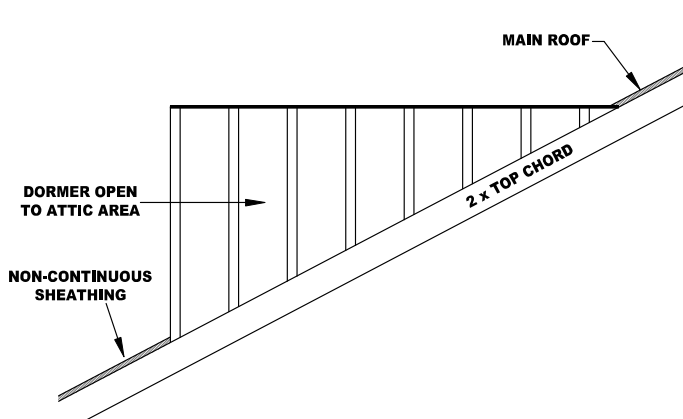


FIGURE 12A
DORMER OPEN TO ATTIC SPACE

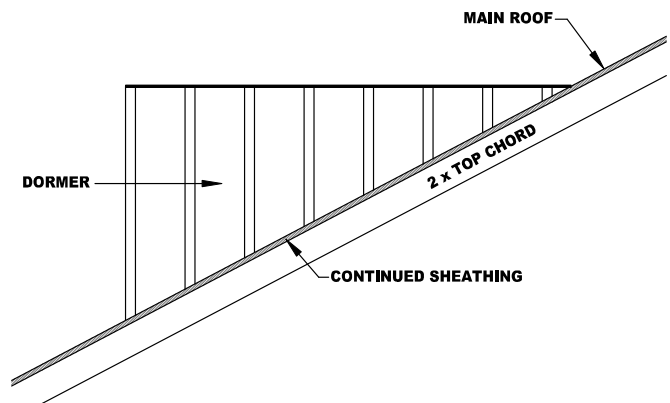


FIGURE 12B
DORMER ENTIRELY OVER MAIN ROOF SHEATHING

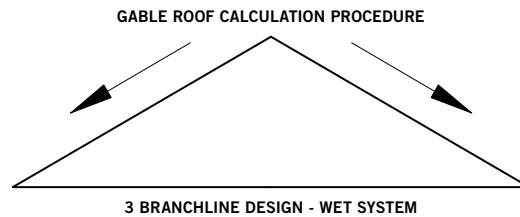
FIGURE 12: DORMERS SECTION VIEW

5.0 PERFORMANCE (CONTINUED)

Hydraulic Design

The Specific Application Attic protection scheme shall be hydraulically calculated in accordance with the following guidelines. These calculation guidelines are applicable only to the special Attic Protection scheme utilizing FL-SA/RE and FL-SA/DS sprinklers. These requirements are based on special full scale fire testing and in no way should be utilized when designing other than these specially listed and tested sprinklers for use in sloped combustible attic structures.

As with Hydraulic Calculations performed in accordance with NFPA 13, multiple areas of piping may need to be investigated and multiple calculations performed should it not be readily obvious of the hydraulically most demanding area due to non-typical pipe layout. Hose allowances must be included in the hydraulic calculations in accordance with NFPA 13.



3 Branchline Design – Wet System

Perform the following 2 calculations:

Calculation #1: Calculate the 5 most hydraulically demanding sprinklers consisting of 5 FL-SA/RE (Ridgeline) sprinklers. Minimum sprinkler flow is 20 gpm per sprinkler. See FIGURE 13A.

Calculation #2: Calculate the 5 most hydraulically demanding sprinklers consisting of 2 FL-SA/DS (Downslope) sprinklers and 3 FL-SA/RE (Ridgeline) sprinklers. Minimum sprinkler flow is 20 gpm per sprinkler. See FIGURE 13B.

Note: If additional sprinklers are required beyond an obstruction, calculate up to 2 additional sprinklers beyond the obstruction. See FIGURE 13B.

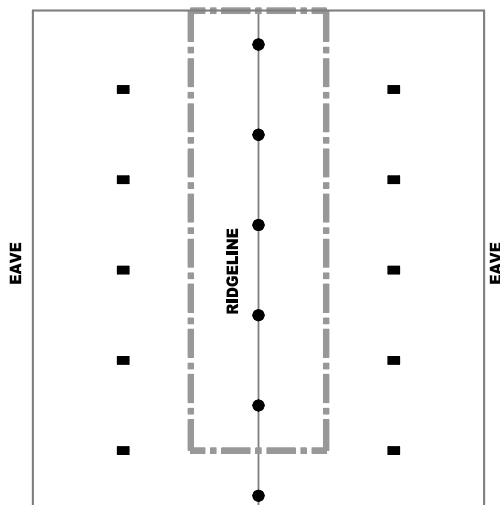


FIGURE 13A
DORMER OPEN TO ATTIC SPACE

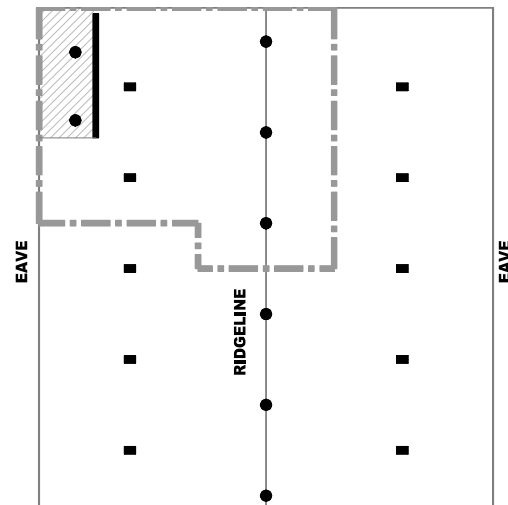


FIGURE 13B
2 ROW DS SPRINKLER
(HIP SHOWN AT CORNER)

FIGURE 13: HYDRAULIC CALCULATION REQUIRED FOR WET 3 BRANCHLINE SYSTEM

5.0 PERFORMANCE (CONTINUED)

Hydraulic Design

3 Branchline Design - Dry System

Perform the following 2 calculations:

Calculation #1: Calculate the 6 most hydraulically demanding sprinklers consisting of 6 FL-SA/RE (Ridgeline) sprinklers. Minimum sprinkler flow is 20 gpm per sprinkler. See FIGURE 14A.

Calculation #2: Calculate the 6 most hydraulically demanding sprinklers consisting of 2 FL-SA/DS (Downslope) sprinklers and 4 FL-SA/RE (Ridgeline) sprinklers. Minimum sprinkler flow is 20 gpm per sprinkler. See FIGURE 14B.

Note: If additional sprinklers are required beyond an obstruction, calculate up to 2 additional sprinklers beyond the obstruction. See FIGURE 14B.

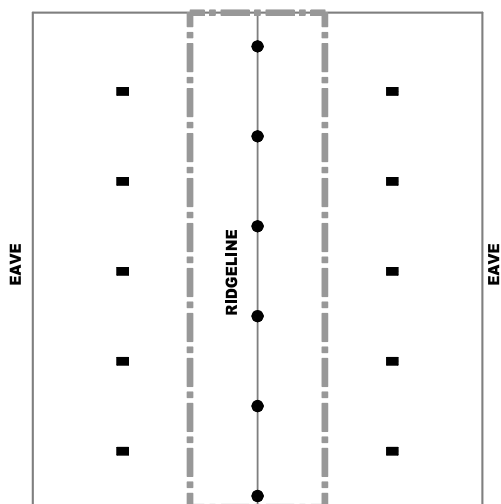


FIGURE 14A

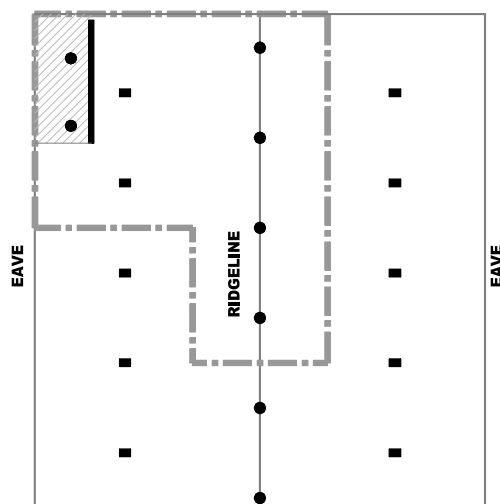


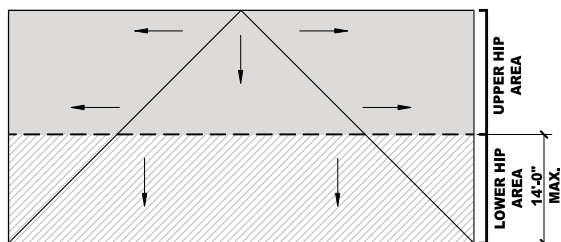
FIGURE 14B

FIGURE 14: HYDRAULIC CALCULATIONS REQUIRED FOR DRY 3 BRANCHLINE SYSTEM

5.0 PERFORMANCE (CONTINUED)

Hydraulic Design

Hip Roof Calculation Procedure



When a Hip is included in the design of the attic, there are three calculations required. One calculation for the "Ridge/Hip Transition" area. The second and third calculations determine the pipe sizing for the Hip area itself. For the purposes of these hydraulic calculations the Hip is broken into two areas; the "Lower Hip" area; and the "Upper Hip" area. See above figure.

Hip Calculation (Hip Truss/Jack Truss Construction) - Wet System

Calculation #1 – Ridge/Hip Transitions

- Calculate the most demanding 7 contiguous sprinklers with a maximum of 5 sprinklers along the ridge plus the 2 most demanding sprinklers within the hip area. See FIGURE 15A.
- Minimum sprinkler flow is 20 gpm per sprinkler.

Calculation #2 – Lower Hip Area

- Calculate up to the 7 most demanding contiguous sprinklers along the eave. This may include sprinklers on both sides of the hip line as shown. See FIGURE 15B.
- Minimum sprinkler flow is 20 gpm per sprinkler.

Calculation #3 – Upper Hip Area

If there are 4 sprinklers or less in the shaded area (FIGURE 15B):

- Calculate up to the 7 most demanding contiguous sprinklers in the "Upper Hip" area. This may include sprinklers on both sides of the hip line as shown.
- Minimum sprinkler flow is 20 gpm per sprinkler.

If there are more than 4 sprinklers in the shaded area (FIGURE 15C):

- Calculate the hydraulically most demanding 75% of the total number of sprinklers located within the "Upper Hip" area, rounding up to the nearest sprinkler. (Minimum number of sprinklers to be calculated is 7)
- Minimum sprinkler flow is 20 gpm per sprinkler.

– Example shown in FIGURE 15C results in 9 sprinklers to be calculated. ($12 \times 0.75 = 9$)

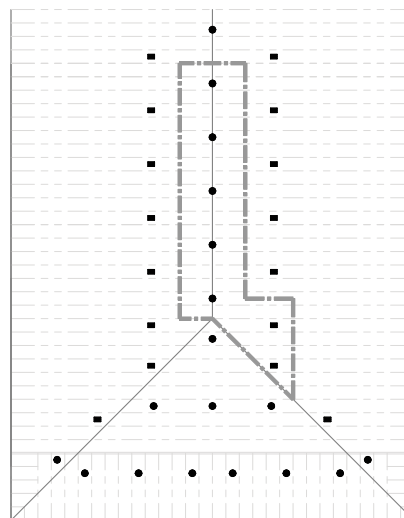


FIGURE 15A

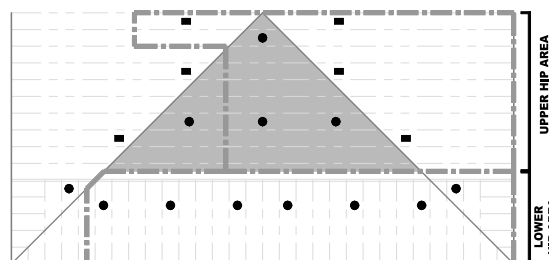


FIGURE 15B

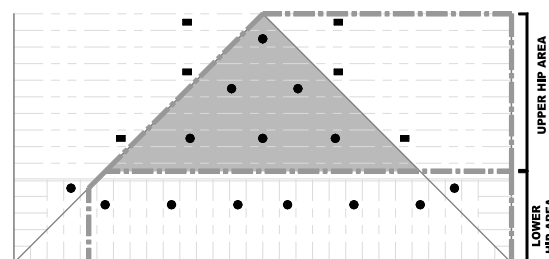


FIGURE 15C

FIGURE 15: HYDRAULIC CALCULATIONS REQUIRED FOR HIP - WET SYSTEM
(HIP TRUSS/JACK TRUSS CONSTRUCTION)

● = RE

■ = DS

5.0 PERFORMANCE (CONTINUED)

Hydraulic Design

Hip Calculation (Hip Truss/Jack Truss Construction - Dry System)

Calculation #1 – Ridge/Hip Transitions

- Calculate the most demanding 8 contiguous sprinklers with a maximum of 6 sprinklers along the ridge plus the 2 most demanding sprinklers within the hip area. See FIGURE 16A.
- Minimum sprinkler flow is 20 gpm per sprinkler.

Calculation #2 – Lower Hip Area

- Calculate the 8 most demanding contiguous sprinklers along the eave. This may include sprinklers on both sides of the hip line as shown. See FIGURE 16B.
- Minimum sprinkler flow is 20 gpm per sprinkler.

Calculation #3 – Upper Hip Area

If there are 4 sprinklers or less in the shaded area (FIGURE 16B):

- Calculate up to the 8 most demanding contiguous sprinklers in the "Upper Hip" area. This may include sprinklers on both sides of the hip line as shown. See FIGURE 16B.
- Minimum sprinkler flow is 20 gpm per sprinkler.

If there are more than 4 sprinklers in the shaded area (FIGURE 16C):

- Calculate all sprinklers in the "Upper Hip" area.
- Minimum sprinkler flow is 20 gpm per sprinkler.

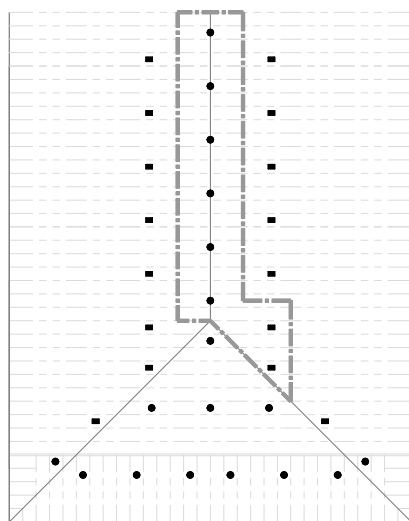


FIGURE 16A

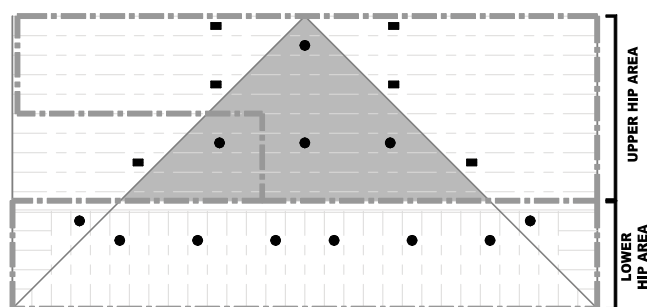


FIGURE 16B

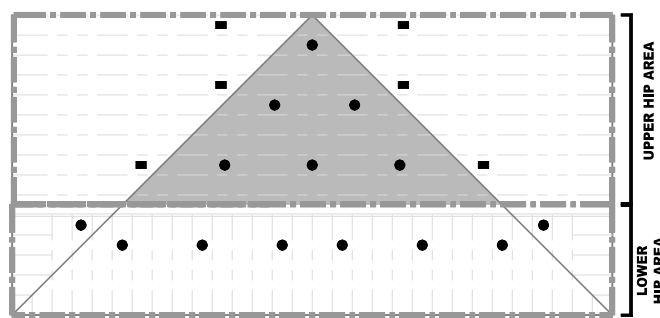


FIGURE 16C

FIGURE 16: HYDRAULIC CALCULATIONS REQUIRED FOR HIP - DRY SYSTEM
(HIP TRUSS/JACK TRUSS CONSTRUCTION)

● = RE

■ = DS

(Examples shown in these figures are for reference only. Actual sprinklers selected based on piping configuration which results in the most demanding hydraulic demand.)

5.0 PERFORMANCE (CONTINUED)

Hydraulic Design

Hip Calculation RE Sprinklers (Framing Members Parallel To Roof Slope) - Wet System

Calculation #1 – Ridge/Hip Transitions

- Calculate the most demanding 7 contiguous sprinklers with a maximum of 5 sprinklers along the ridge plus the 2 most demanding sprinklers within the hip area. See FIGURE 15A.
- Minimum sprinkler flow is 20 gpm per sprinkler.

Calculation #2 – Hip Area

- Calculate all sprinklers within the hip area shown shaded. See FIGURE 20.
- Minimum sprinkler flow is 20 gpm per sprinkler.

Hip Calculation RE Sprinklers (Framing Members Parallel To Roof Slope) - Dry System

Calculation #1 – Ridge/Hip Transitions

- Calculate the most demanding 8 contiguous sprinklers with a maximum of 6 sprinklers along the ridge plus the 2 most demanding sprinklers within the hip area. See FIGURE 16A.
- Minimum sprinkler flow is 20 gpm per sprinkler.

Calculation #2 – Hip Area

- Calculate all sprinklers within the hip area shown shaded. See FIGURE 17.
- Minimum sprinkler flow is 20 gpm per sprinkler.

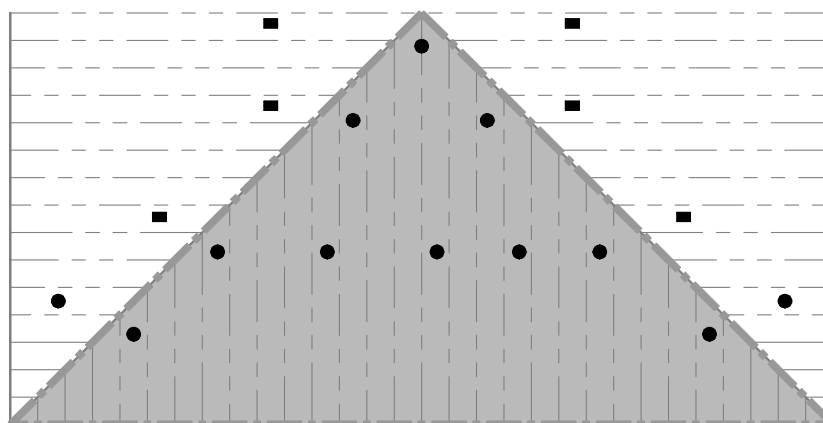


FIGURE 17: HYDRAULIC CALCULATIONS REQUIRED FOR RE @ HIP
(FRAMING MEMBERS PARALLEL TO SLOPE)

- = RE
- = DS

5.0 PERFORMANCE (CONTINUED)

Hydraulic Design

Hip Calculation DS Sprinklers (Framing Members Parallel To Roof Slope) - Wet System

Calculation #1 – Ridge/Hip Transitions

- Calculate the most demanding 7 contiguous sprinklers with a maximum of 5 sprinklers along the ridge plus the 2 most demanding sprinklers within the hip area. See FIGURE 15A.
- Minimum sprinkler flow is 20 gpm per sprinkler.

Calculation #2 – Hip Area

- Calculate all sprinklers within the hip area shown shaded. See FIGURE 18A.
- Minimum sprinkler flow is 20 gpm per sprinkler.

Hip Calculation DS Sprinklers (Framing Members Parallel To Roof Slope) - Dry System

Calculation #1 – Ridge/Hip Transitions

- Calculate the most demanding 8 contiguous sprinklers with a maximum of 6 sprinklers along the ridge plus the 2 most demanding sprinklers within the hip area. See FIGURE 16A.
- Minimum sprinkler flow is 20 gpm per sprinkler.

Calculation #2 – Hip Area

- Calculate all sprinklers within the hip area shown shaded. See FIGURE 18A.
- Minimum sprinkler flow is 20 gpm per sprinkler.

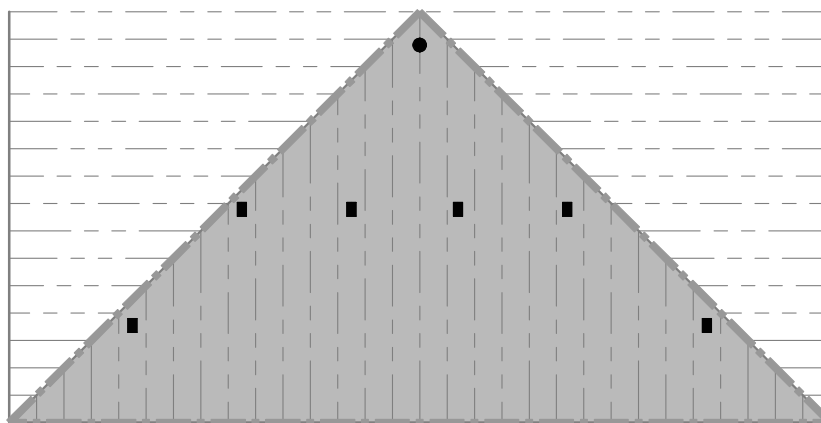


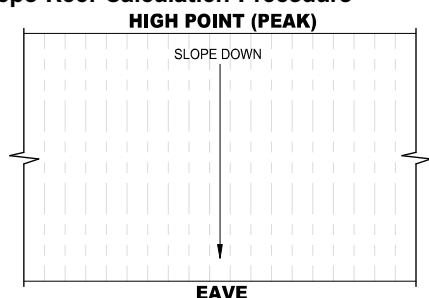
FIGURE 18A: HYDRAULIC CALCULATIONS REQUIRED FOR DS @ HIP
(FRAMING MEMBERS PARALLEL TO SLOPE)

- = RE
- = DS

5.0 PERFORMANCE (CONTINUED)

Hydraulic Design

Single Slope Roof Calculation Procedure



When a single slope roof area exists, the following calculation procedures shall be followed to size piping to the sprinklers protecting this area. NOTE: Single Slopes (with vertical shear walls) result in different fire dynamics than might be seen with gable and/or hip roof construction.

Single Slope Roof Calculation - Wet System

1: Row Protection

- Calculate the most hydraulically demanding 5 contiguous DS sprinklers. See FIGURE 19A.
- Minimum sprinkler flow is 20 gpm per sprinkler.

2: Row Protection

The following 2 sets of calculations shall be performed:

- Calculation #1: Calculate the most hydraulically demanding 5 contiguous sprinklers consisting of 3 at the high point and 2 on the adjacent slope. See FIGURE 19B.
- Calculation #2: Calculate the most hydraulically demanding 5 contiguous sprinklers along the high point. See FIGURE 19C.
- Minimum sprinkler flow is 20 gpm per sprinkler or 26 gpm per sprinkler (depending on sprinkler throw).

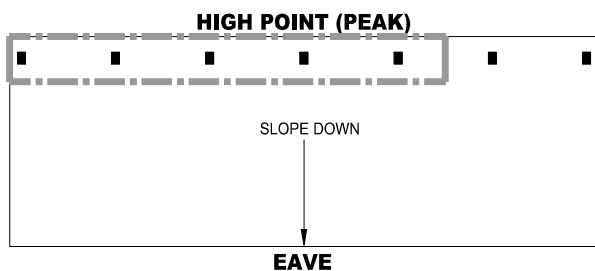


FIGURE 19A
1 ROW PROTECTION CALCULATION

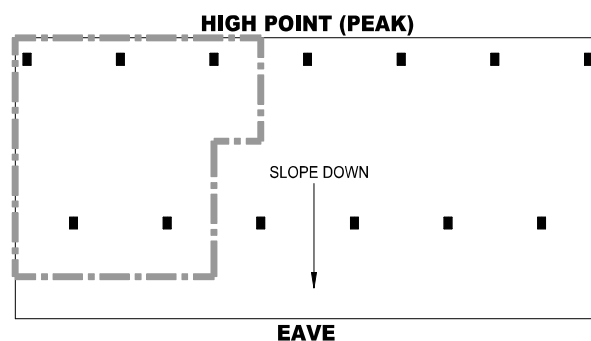


FIGURE 19B
2 ROW PROTECTION CALCULATION #1

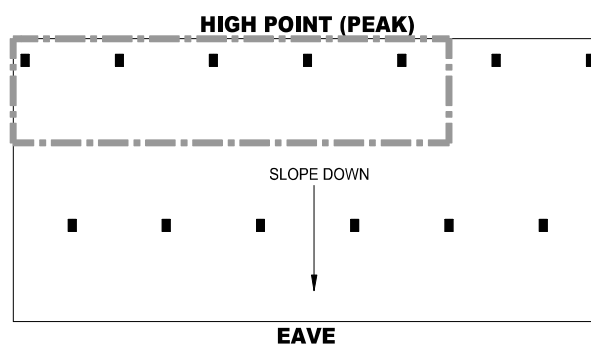


FIGURE 19C
2 ROW PROTECTION CALCULATION #2

FIGURE 19: HYDRAULIC CALCULATIONS REQUIRED FOR WET SYSTEM
SINGLE SLOPE DESIGN

5.0 PERFORMANCE (CONTINUED)

Hydraulic Design

Single Slope Roof Calculation Procedure

Single Slope Roof Calculation - Dry System

1: Row Protection

- Calculate the most hydraulically demanding 7 contiguous DS sprinklers. See FIGURE 20A.
- Minimum sprinkler flow is 20 gpm per sprinkler.

2: Row Protection

The following 2 sets of calculations shall be performed:

- Calculation #1: Calculate the 7 most hydraulically demanding contiguous DS sprinklers located along the high point (peak). See FIGURE 20B.
- Calculation #2: Calculate the 7 most hydraulically contiguous DS sprinklers consisting of 5 DS at the high point (peak) and 2 DS sprinklers on the adjacent downslope branchline. See FIGURE 20C.
- Minimum sprinkler flow is 20 gpm per sprinkler.

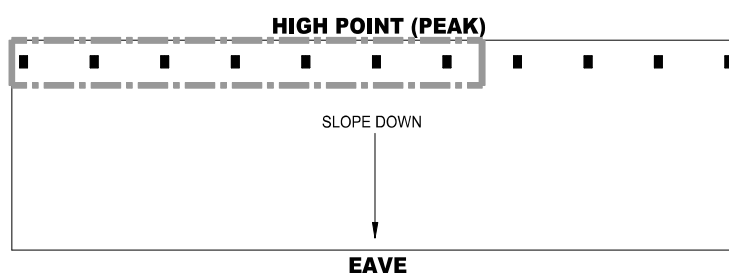


FIGURE 20A
1 ROW PROTECTION CALCULATION #1

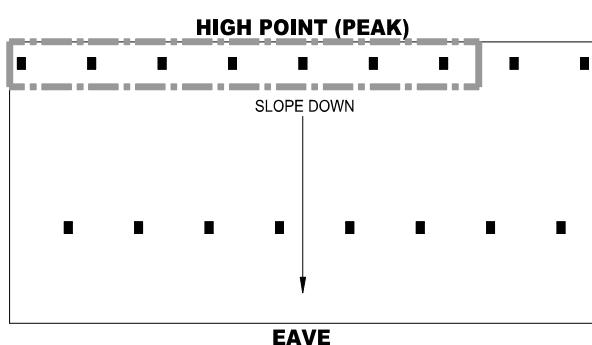


FIGURE 20B
1 ROW PROTECTION CALCULATION

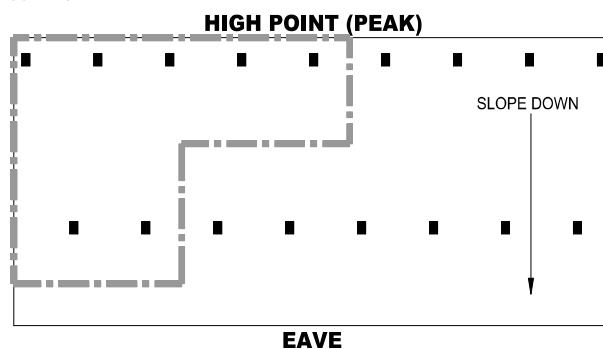


FIGURE 20C
1 ROW PROTECTION CALCULATION #2

FIGURE 20: HYDRAULIC CALCULATIONS REQUIRED FOR DRY SYSTEM
SINGLE SLOPE DESIGN

5.0 PERFORMANCE (CONTINUED)

Hydraulic Design

Single Slope Roof With Hip Calculation Procedure

Single Slope Roof Calculation - Wet System

1: Row Protection

- Calculate the 5 most hydraulically demanding contiguous DS sprinklers located along the high point plus the 2 most demanding sprinklers along the hip line. See FIGURE 21A.
- Minimum sprinkler flow is 20 gpm per sprinkler.

2: Row Protection

The following 3 sets of calculations shall be performed:

- Calculation #1: Calculate the 3 most hydraulically demanding contiguous DS sprinklers located along the high point (peak) plus the 2 most demanding sprinklers along the hip line. See FIGURE 21B.
- Calculation #2: Calculate the most hydraulically demanding 5 contiguous sprinklers along the high point. See FIGURE 21C.
- Calculation #3: Calculate all sprinklers within the shaded corner Hip area as shown. See FIGURE 21D.
- Minimum sprinkler flow is 20 gpm per sprinkler.

Note: The "plus 2" most demanding sprinklers along the hip line may vary from that shown in the figures depending on actual piping. Designer may need to investigate multiple options to determine the 2 most demanding sprinklers to incorporate into the calculations.

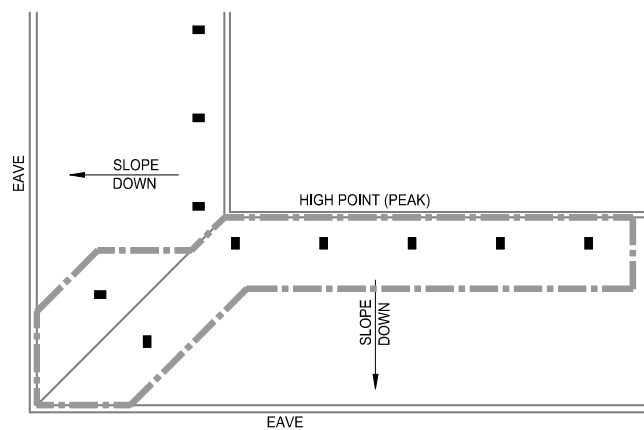


FIGURE 21A: 1 ROW PROTECTION CALCULATION

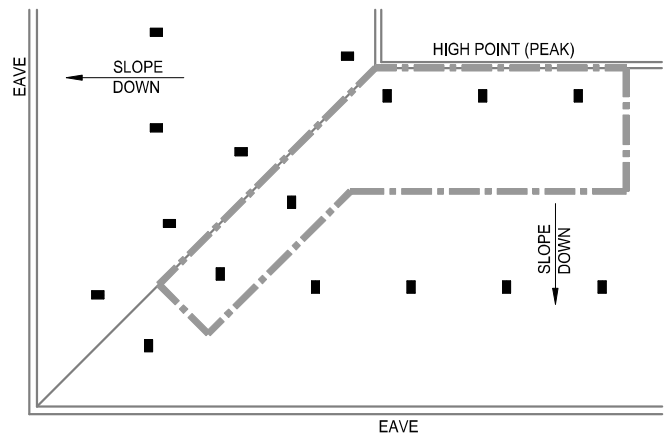


FIGURE 21B: 2 ROW PROTECTION CALCULATION #1

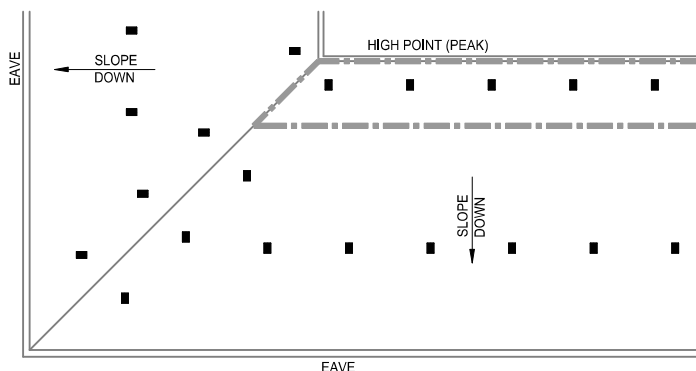


FIGURE 21C: 2 ROW PROTECTION CALCULATION #2

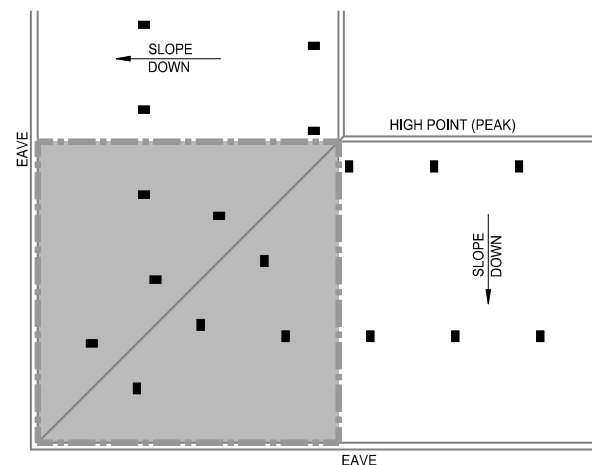


FIGURE 21D: 2 ROW PROTECTION CALCULATION #3

FIGURE 21: SINGLE SLOPE DESIGN

5.0 PERFORMANCE (CONTINUED)

Hydraulic Design

Single Slope Roof With Hip Calculation Procedure

Single Slope Roof Calculation - Dry System

1 Row Protection

- Calculate the 7 most hydraulically demanding contiguous DS sprinklers located along the high point plus the 2 most demanding sprinklers along the hip line. See FIGURE 22A.
- Minimum sprinkler flow is 20 gpm per sprinkler.

2 Row Protection

The following 2 sets of calculations shall be performed:

- Calculation #1: Calculate the 7 most hydraulically demanding contiguous DS sprinklers located along the high point (peak) plus the 2 most demanding sprinklers along the hip line. See FIGURE 22B.
- Calculation #2: Calculate all sprinklers within the shaded corner Hip area as shown. See FIGURE 22C.
- Minimum sprinkler flow is 20 gpm per sprinkler.

Note: The "plus 2" most demanding sprinklers along the hip line may vary from that shown in the figures depending on actual piping. Designer may need to investigate multiple options to determine the 2 most demanding sprinklers to incorporate into the calculations.

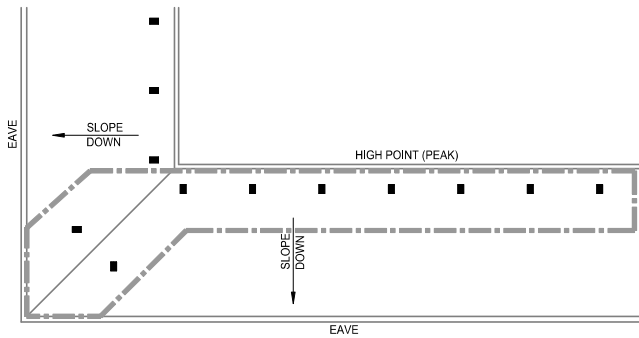


FIGURE 22A: 1 ROW PROTECTION CALCULATION

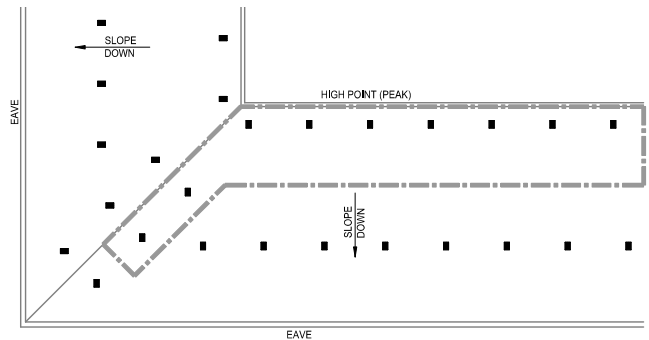


FIGURE 22B: 2 ROW PROTECTION CALCULATION #1

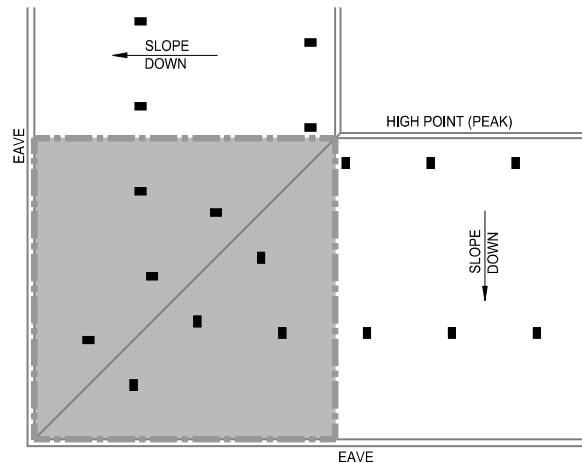


FIGURE 22C: 2 ROW PROTECTION CALCULATION #2

FIGURE 22: SINGLE SLOPE DESIGN

5.0 PERFORMANCE (CONTINUED)

Obstructions

The following guidelines outline criteria to minimize critical obstructions to spray pattern development and to maximize effectiveness in achieving control.

General

- Structural trusses and web members are not considered "obstructions" provided a minimum 6" lateral distance from sprinklers to side of truss/web member is maintained.
- FL-SA/RE and FL-SA/DS sprinklers may be installed directly on maximum nominal 2½" (DN65) pipe without the need for a "Sprig-up". For pipe larger than 2½" nominal, see NFPA 13 for Sprig requirements.
- Sprinklers shall be positioned away from obstructions a minimum distance of Four (4) times the maximum dimension of the obstruction (e.g. Ducts, pipe). This 4X requirement does not apply to truss web members provided the web members do not exceed 6" and the minimum lateral distance of 6" from sprinkler to side of member is maintained.

Obstruction criteria is otherwise grouped into three categories (See FIGURE 23, FIGURE 24 and FIGURE 25)

Vertical Obstructions

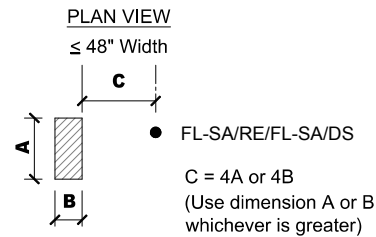
Those obstructions which run vertically through the attic. These may consist of fireplace flues, walls, vents, stacks, etc. These obstructions will typically run up to or penetrate the roof deck.

Suspended Horizontal Obstructions

Those obstructions which are typically "suspended" within the attic space itself and run horizontally. These obstructions will have clearance over and under the obstruction to allow discharge of water around the obstruction. These obstructions may consist of ductwork; walkways; etc. Horizontal obstructions located within 1'-0" vertically of the bottom chords or ceiling joists are not considered "Suspended" Horizontal Obstructions.

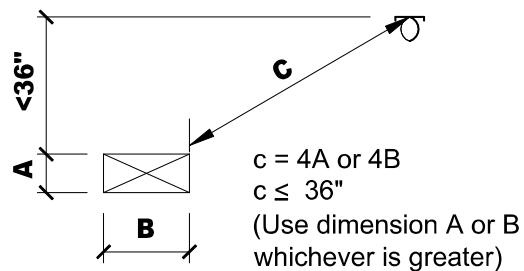
Obstructions at Upper Deck

Those obstructions which are either attached directly to the roof deck or to the top chords/joists of the roof framing in a manner that little to no discharge of water can pass/clear the top of the obstruction. These obstructions can have an impact on the upper portion of the spray pattern from sprinklers.



Should the sprinkler not be able to be located a distance of 4X away from obstruction, an additional sprinkler must be installed on the opposite side of the obstruction within 1'-0" from the opposite side of the obstruction.

**FIGURE 23: VERTICAL OBSTRUCTIONS
FL-SA/RE/FL-SA/DS SPRINKLERS**



No additional sprinkler required below, if equal to or less than 48" suspended obstruction.

FIGURE 24A

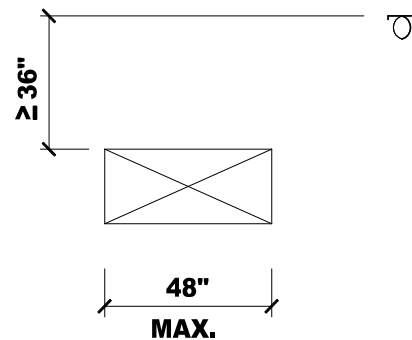
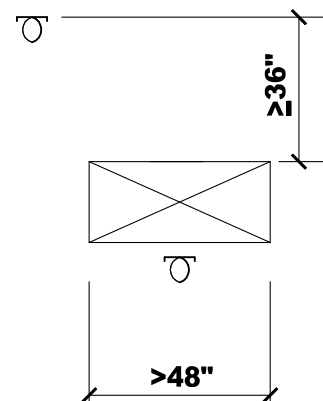


FIGURE 24B

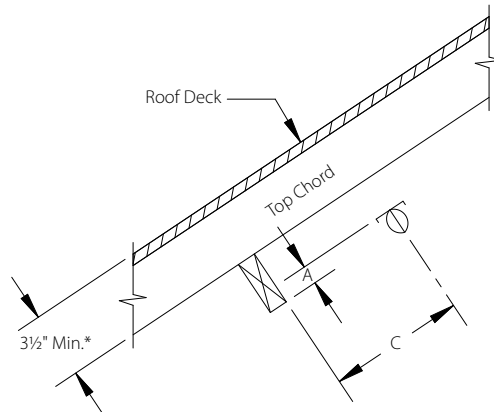


Additional sprinkler required below, if greater than 48" suspended obstruction.

FIGURE 24C

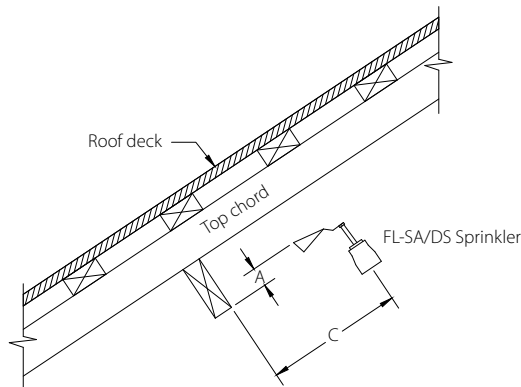
**FIGURE 24:
SUSPENDED HORIZONTAL OBSTRUCTIONS
FL-SA/RE/FL-SA/DS SPRINKLERS**

5.0 PERFORMANCE (CONTINUED)



DISTANCE FROM SPRINKLER TO SIDE OF OBSTRUCTION C inches (mm)	MAXIMUM ALLOWABLE DISTANCE OF DEFLECTOR ABOVE BOTTOM OF OBSTRUCTION A inches (mm)
Less than 1' 6". (457mm)	NOT ALLOWED
1' 6". (457mm) to less than 3' 0". (914mm)	1". (25)
3' 0". (914mm) to less than 4' 0". (120 mm)	3". (76)
4' 0". (120 mm) to less than 4' 6". (140 mm)	5". (127)
4' 6". (140 mm) to less than 6' 0". (180 mm)	7". (178)
6' 0". (180 mm) to less than 6' 6". (200 mm)	9". (229)
6' 6". (200 mm) to less than 7' 0". (210 mm)	11". (279)
7' 0". (210 mm) to less than 8' 0". (240 mm)	14". (356)
8' 0". (240 mm) to less than 8' 6". (260 mm)	15". (381)
8' 6". (260 mm) to less than 9' 0". (270 mm)	17". (429)

FIGURE 25A: OBSTRUCTIONS AT UPPER DECK FL-SA/RE SPRINKLER



DISTANCE FROM SPRINKLER TO SIDE OF OBSTRUCTION C feet (m)	MAXIMUM ALLOWABLE DISTANCE OF DEFLECTOR ABOVE BOTTOM OF OBSTRUCTION A inches (mm)
Less than 8' (2.4)	NOT ALLOWED
8' (2.4) to less than 10' (3)	1" (25)
10' (3.0) to less than 11' (3.3)	2" (51)
11' (3.3) to less than 12' (3.7)	3" (76)
12' (3.7) to less than 13' (4)	4" (102)
13' (4) to less than 14' (4.3)	6" (152)
14' (4.3) to less than 15' (4.6)	7" (178)
15' (4.6) to less than 16' (4.9)	9" (229)
16' (4.9) to less than 17' (5.2)	11" (279)
17' (5.2) or greater	14" (356)

FIGURE 25B: OBSTRUCTIONS AT UPPER DECK FL-SA/DS SPRINKLER

FIGURE 25: OBSTRUCTIONS AT UPPER DECK

5.0 PERFORMANCE (CONTINUED)

Obstructions

Piggyback Trusses

When trusses are stacked (“Piggyback”) at the peak, consideration to obstructions to the spray pattern of the RE sprinklers must be made. These “Piggyback” configurations will typically include 2X “Stiffeners” running perpendicular to the trusses. Additionally, these “stiffeners” will be sandwiched between the uppermost and lowermost horizontal chords of the two stacked trusses. In the event that all members are above the level of the FL-SA/RE deflector, no obstruction exists to the FL-SA/RE spray pattern. See FIGURE 26 and FIGURE 27.

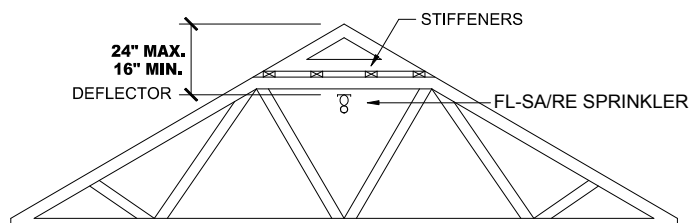


FIGURE 26: DEFLECTOR COMPLETELY BELOW STIFFENERS AND HORIZONTAL WEB MEMBERS (NO OBSTRUCTION)

In the event that the FL-SA/RE Deflector is located completely above the stiffeners and horizontal web members, the parameters of FIGURE 27 must be met for the spray pattern to be considered unobstructed.

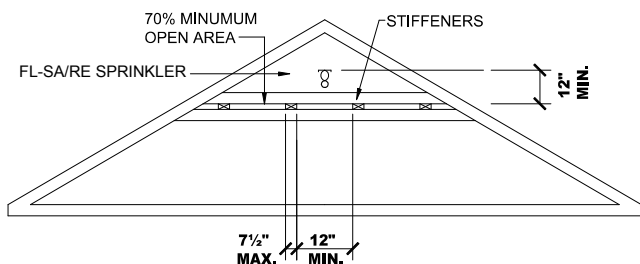


FIGURE 27: DEFLECTOR ABOVE STIFFENERS AND HORIZONTAL WEB MEMBERS (NO OBSTRUCTION)

5.0 PERFORMANCE (CONTINUED)

CPVC Guidelines

Use Of UL Listed CPVC Piping With Globe Specific Application Attic Sprinklers (Wet Systems Only)

UL Listed CPVC piping may be used in a combustible concealed attic space requiring sprinklers when installed in accordance with the following guidelines. For clarity, the following guidelines reference both "Ridgeline/ Downslope" areas as well as "Hip" areas.

Notice: For installations in accordance with FIGURE 28, where the use of non-combustible insulation is specified, verify with the insulation manufacturer as to the non-combustibility of the insulation. The non-combustible insulation (fiberglass) may be faced or unfaced. Where faced, the facing need not be non-combustible. The insulation is to have a flame spread index of not more than 25. Verify chemical compatibility of the insulation with the UL Listed CPVC by consulting the CPVC Manufacturer's literature.

CPVC At Bottom Chords To Feed Ceiling Sprinklers Below

UL Listed CPVC may be used to feed the wet system ceiling sprinklers on the floor below when adhering to the following guidelines: (See FIGURE 28)

- There must be 6 in. (152.4 mm) of non-combustible insulation covering the horizontal or vertical pipe extending 12 in. (304.8 mm) on each side away from the centerline of the pipe. Refer to FIGURE 28A.
- The area above the pipe must be protected with FL-SA/RE and FL-SA/DS Special Application Attic Sprinklers. If the pipe is located inside the ceiling joist, the joist channel must be covered or filled with 6 in. (152.4 mm) of non-combustible insulation on top of the pipe and the area above must be protected by FL-SA/RE and/or FL-SA/DS Sprinklers. Refer to FIGURE 28B. Insulation is for fire protection purposes. It is not freeze protection. CPVC must be installed in accordance with the CPVC Manufacturer's installation guide instructions.

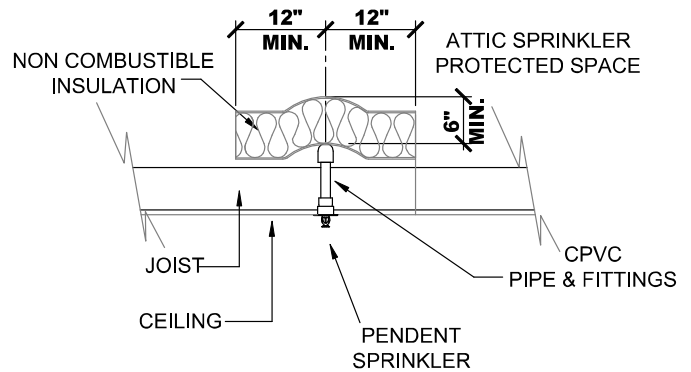


FIGURE 28A

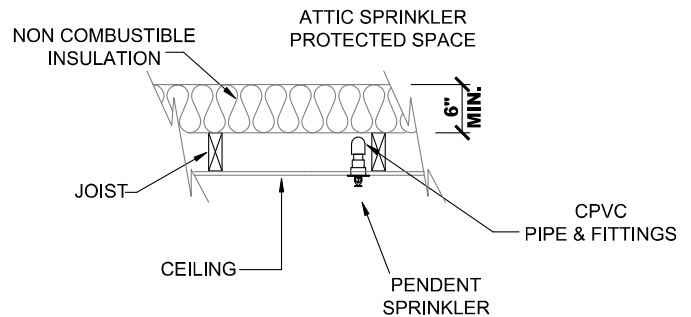


FIGURE 28B

FIGURE 28: NON-COMBUSTIBLE INSULATION FOR THE PROTECTION OF CPVC PIPE

5.0 PERFORMANCE (CONTINUED)

CPVC Guidelines

Use of UL Listed CPVC Piping with Specific Application Attic Sprinklers (Wet Systems Only)

Exposed CPVC at Ridgeline/Downslope Areas Only

UL Listed CPVC Pipe and Fittings may be used to feed the FL-SA/RE and FL-SA/DS sprinklers protecting the attic space when adhering to the following guidelines: (See FIGURE 29)

- Wet Systems only
- Risers are vertical and protected by FL-SA/RE or FL-SA/DS Sprinklers located at a maximum lateral distance of 12". (304.8 mm) from the riser centerline.
- FL-SA/RE or FL-SA/DS Sprinklers are directly mounted on the branchline.
- FL-SA/RE or FL-SA/DS Sprinklers are on arm-overs and located at a maximum lateral distance of 6". (152.4 mm) from the branchline centerline.
- FL-SA/RE or FL-SA/DS Sprinklers are on vertical sprigs attached to the branchline.

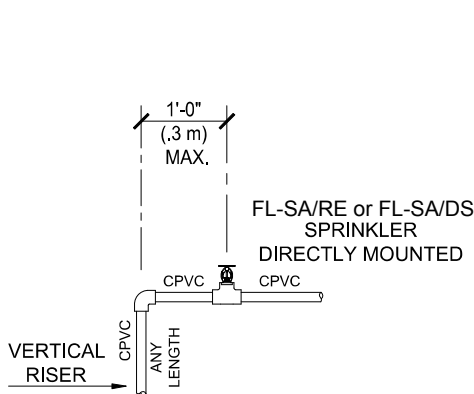


FIGURE 29A
VERTICAL RISER DIRECT MOUNT

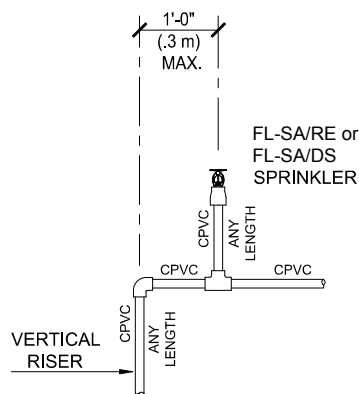


FIGURE 29B
VERTICAL RISER SPRIG UP

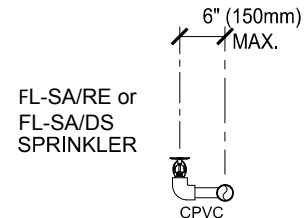


FIGURE 29C
DIRECT MOUNT
ARM-OVER

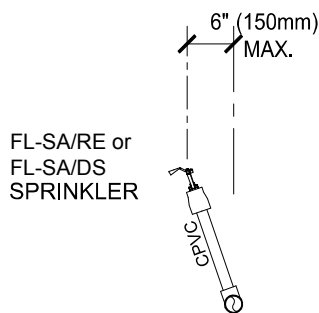


FIGURE 29D
ANGLED SPRIG

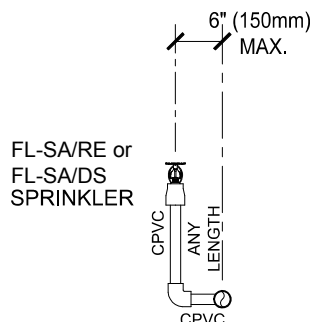


FIGURE 29E
ARM OVER SPRIG

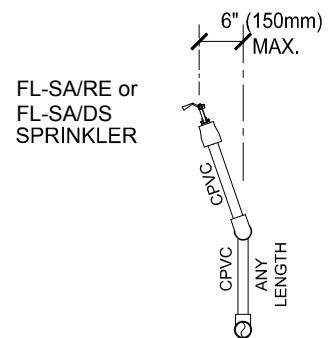


FIGURE 29F
VERTICAL SPRIG WITH
SWING JOINT

FIGURE 29: CPVC ALLOWANCE GUIDELINES
WET SYSTEMS ONLY
(DIRECTLY FEEDING FL-SA/RE / FL-SA/DS SPRINKLERS)

5.0 PERFORMANCE (CONTINUED)

CPVC Guidelines

CPVC at Hip Areas

Listed CPVC may be used to feed the FL-SA/RE and FL-SA/DS sprinklers protecting the Hip areas when adhering to the following guidelines:

- Wet systems only
- When the horizontal branchline piping feeding sprinklers within the hip roof areas is run over the bottom chords of the trusses, it shall be covered with a minimum of 6" (152.4 mm) in depth of non-combustible insulation (See FIGURE 31). This insulation must extend nominally 12" (304.8 mm) on each side away from the centerline of the CPVC branchline. Insulation is for fire protection purposes. It is not freeze protection.
- When the horizontal CPVC branchline piping feeding the sprinklers within the hip roof areas is located within the ceiling joist, the joist channel must be covered or filled with a minimum of 6" (152.4 mm) depth of noncombustible insulation on top of the branchline feeding the sprigs (See FIGURE 30). Insulation is for fire protection purposes. It is not freeze protection.
- A minimum lateral distance of 18" (450 mm) is maintained between the CPVC pipe and a heat producing device such as heat pumps, fan motors, and heat lamps.
- The sprinklers (RE or DS) may be fed by exposed vertical sprigs directly to a sprinkler or exposed angled sprigs directly to a sprinkler provided:
 - Vertical sprigs have no maximum exposed length, the RE or DS Sprinkler is located at a maximum lateral distance of 12" (3304.8 mm) from the sprig centerline.
 - Angled sprigs with a maximum exposed length of 3' (0.9 m).

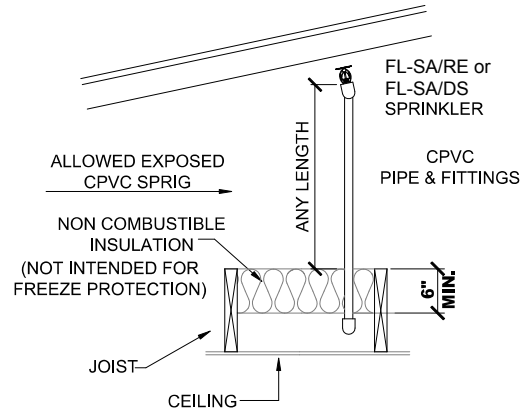


FIGURE 30A
VERTICAL SPRIG

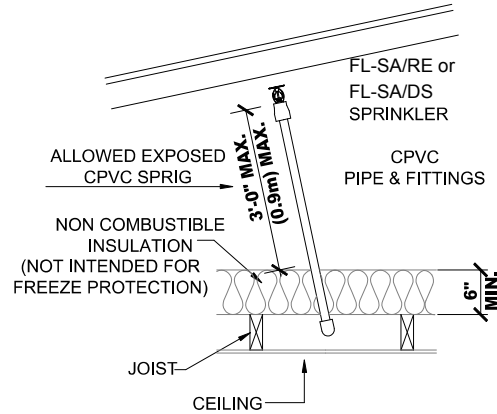


FIGURE 30B
ANGLED SPRIG

FIGURE 30: EXPOSED CPVC AT HIP ROOF AREAS
(HORIZONTAL BRANCHLINE WITHIN JOISTS)
WET SYSTEMS ONLY

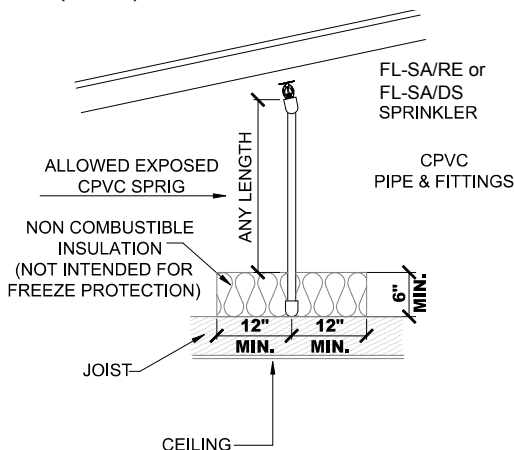


FIGURE 31A
VERTICAL SPRIG

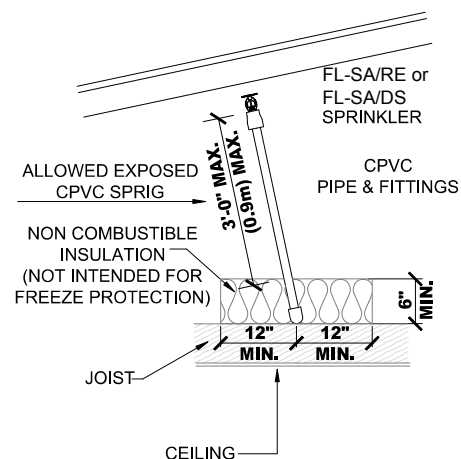


FIGURE 31B
ANGLED SPRIG

FIGURE 31: CPVC AT HIP ROOF AREAS
(HORIZONTAL BRANCHLINE OVER JOISTS)
WET SYSTEMS ONLY

5.0 PERFORMANCE (CONTINUED)

Slope to Flat Transition

When transitioning from a flat-to-slope roof, a draft curtain shall be installed as shown, and the area under the flat roof shall be hydraulically calculated in accordance with the requirements of NFPA 13.

NOTE

- The use of CPVC piping under the flat roof section would only be allowed if Specially Listed sprinklers are being used which allow for such use of CPVC. All specially Listed guidelines must be met.

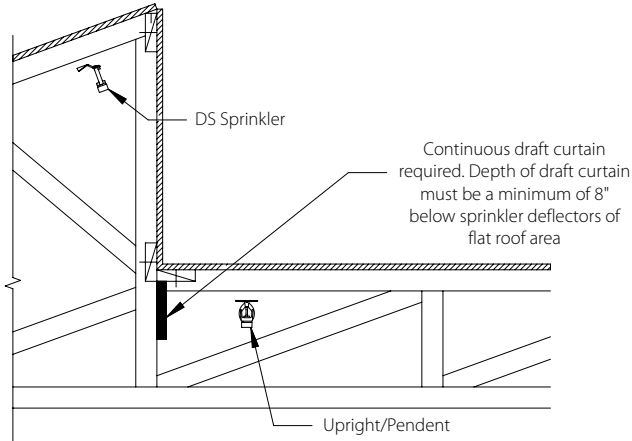


FIGURE 32A: SINGLE SLOPE TRANSITION WITH FLAT ROOF BELOW PEAK

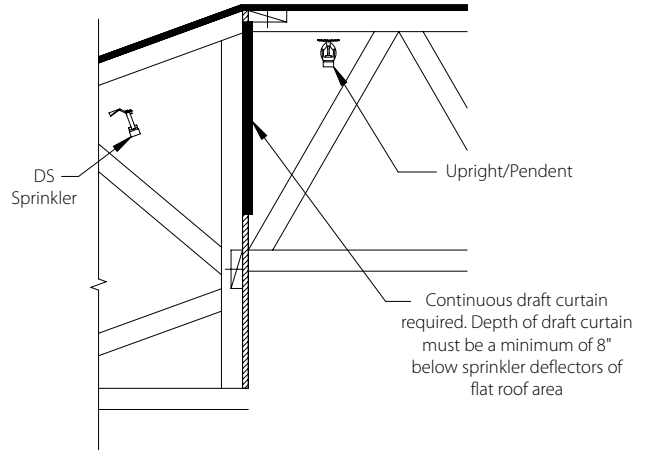


FIGURE 32B: SINGLE SLOPE TRANSITION WITH FLAT ROOF AT OR ABOVE PEAK

FIGURE 32: SLOPE TO FLAT TRANSITION

6.0 NOTIFICATIONS

WARNING



- Read and understand all instructions before attempting to install any Victaulic products.
- Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.
- Wear safety glasses, hardhat, and foot protection.

Failure to follow these instructions could result in death or serious personal injury and property damage.

- These products shall be used only in fire protection systems that are designed and installed in accordance with current, applicable National Fire Protection Association (NFPA 13, 13D, 13R, etc.) standards, or equivalent standards, and in accordance with applicable building and fire codes. These standards and codes contain important information regarding protection of systems from freezing temperatures, corrosion, mechanical damage, etc.
- The installer shall understand the use of this product and why it was specified for the particular application.
- The installer shall understand common industry safety standards and potential consequences of improper product installation.
- It is the system designer's responsibility to verify suitability of materials for use with the intended fluid media within the piping system and external environment.
- The material specifier shall evaluate the effect of chemical composition, pH level, operating temperature, chloride level, oxygen level, and flow rate on materials to confirm system life will be acceptable for the intended service.

Failure to follow installation requirements and local and national codes and standards could compromise system integrity or cause system failure, resulting in death or serious personal injury and property damage.

7.0 REFERENCE MATERIALS

Ratings: All glass bulbs are rated for temperatures from -67°F/-55°C.

[I-40: Victaulic FireLock™ Automatic Sprinklers](#)

User Responsibility for Product Selection and Suitability

Each user bears final responsibility for making a determination as to the suitability of Victaulic products for a particular end-use application, in accordance with industry standards and project specifications, and the applicable building codes and related regulations as well as Victaulic performance, maintenance, safety, and warning instructions. Nothing in this or any other document, nor any verbal recommendation, advice, or opinion from any Victaulic employee, shall be deemed to alter, vary, supersede, or waive any provision of Victaulic Company's standard conditions of sale, installation guide, or this disclaimer.

Intellectual Property Rights

No statement contained herein concerning a possible or suggested use of any material, product, service, or design is intended, or should be construed, to grant any license under any patent or other intellectual property right of Victaulic or any of its subsidiaries or affiliates covering such use or design, or as a recommendation for the use of such material, product, service, or design in the infringement of any patent or other intellectual property right. The terms "Patented" or "Patent Pending" refer to design or utility patents or patent applications for articles and/or methods of use in the United States and/or other countries.

Note

This product shall be manufactured by Victaulic or to Victaulic specifications. All products to be installed in accordance with current Victaulic installation/assembly instructions. Victaulic reserves the right to change product specifications, designs and standard equipment without notice and without incurring obligations.

Installation

Reference should always be made to the Victaulic installation handbook or installation instructions of the product you are installing. Handbooks are included with each shipment of Victaulic products, providing complete installation and assembly data, and are available in PDF format on our website at www.victaulic.com.

Warranty

Refer to the Warranty section of the current Price List or contact Victaulic for details.

Trademarks

Victaulic and all other Victaulic marks are the trademarks or registered trademarks of Victaulic Company, and/or its affiliated entities, in the U.S. and/or other countries.