

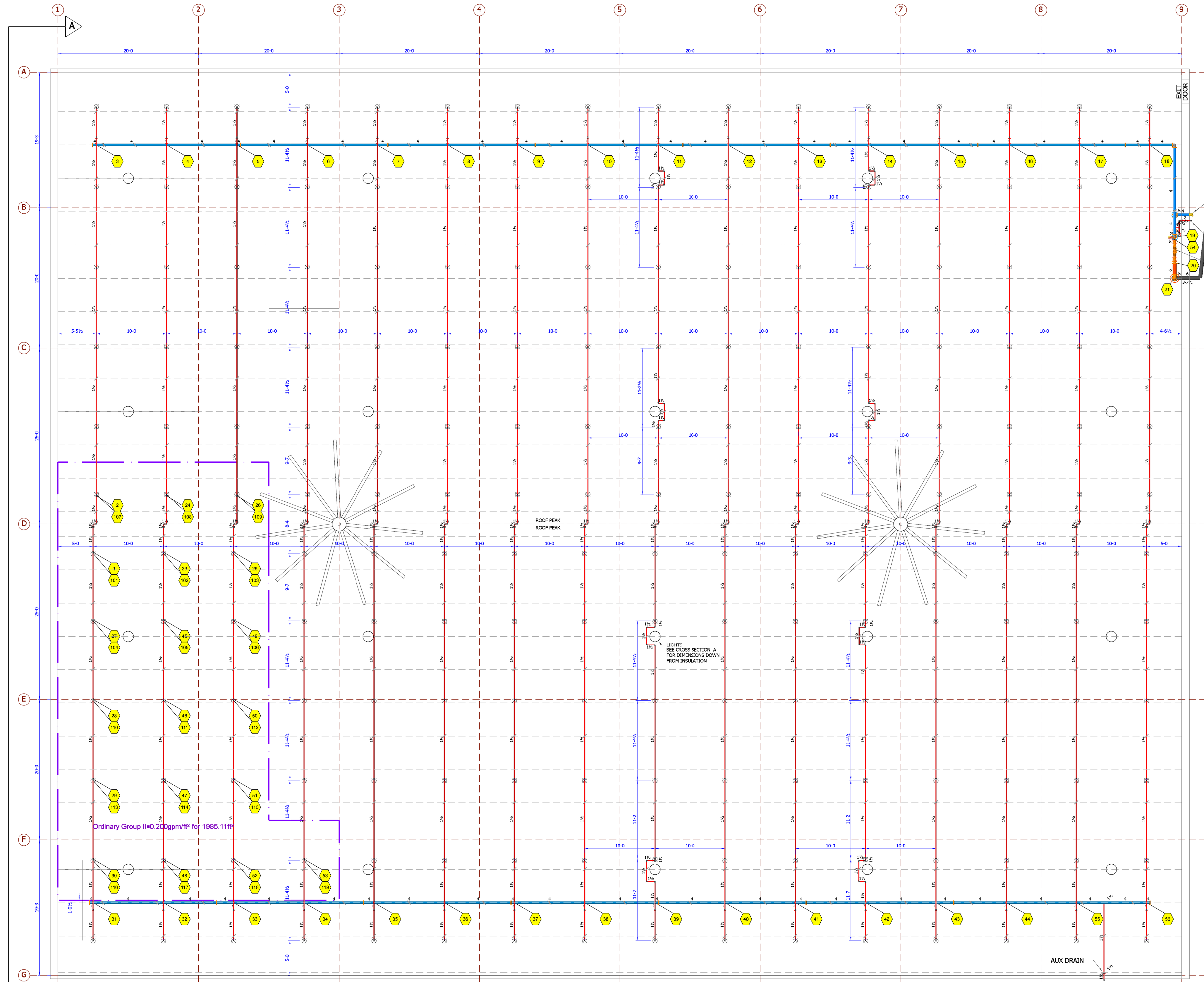
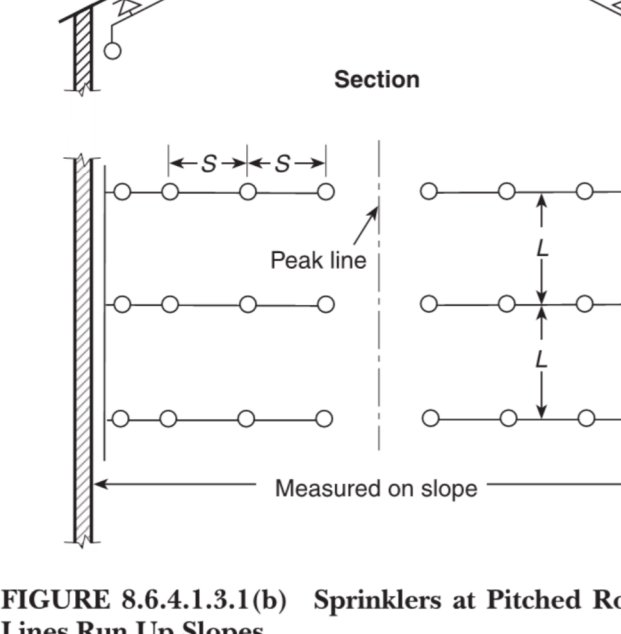
Hydraulic Information	
OCCUPANCY CLASSIFICATION	Ordinary Group II
DENSITY (gpm/ft ²)	0.20 for 1950.00ft ² (Actual 1985.11ft ²)
TOTAL HOSE STREAMS	250.00
TOTAL HEADS FLOWING	19
K-FACTOR	8
TOTAL WATER REQUIRED	817.08
TOTAL PRESSURE REQUIRED	76.148
SAFETY MARGIN (psi)	+19.079 (20.0%)

ORIGINAL REMOTE AREA = 1,500 FT²
30% INCREASE DUE TO SLOPED CEILING = 1,950 FT²

HYDRAULIC PIPE SIZING
4" - FEED RISER
4" - FEED AND FLOAT MAIN
1 1/2" - GRID LINES
1 1/2" - OUTRIGGERS - 1 SPRINKLER
1" - SPRIGS



FIGURE 8.6.4.1.3.1(b) Sprinklers at Pitched Roof; Branch Lines Run Up Slopes.



NEW DUCTILE IRON CLASS 52 6" UNDERGROUND OFF EXISTING UNDERGROUND LOOP BY OTHERS; NOT TO SCALE SEE TOTAL LENGTH UNDER PIPE SIZE LABEL FOR LENGTHS USED IN HYDRAULIC CALCULATIONS

GATE VALVE
WATER SUPPLY

WATER SUPPLY
HYDRANT FLOW TEST
TAKEN ON 3/14/2019 BY SPRINKLER FIRE PROTECTION
SEE FLOW TEST REPORT
RESULTS:
STATIC: 119 PSIG
RESIDUAL: 79 PSIG
FLOW: 1,662 GPM

FLOW TEST ADJUSTED 10%
PER PROJECT SPECIFICATIONS
STATIC: 107 PSIG
RESIDUAL: 71 PSIG
FLOW: 1,495 GPM

MAIN HANGER STRUCTURAL LOADS:
LENGTH BETWEEN HANGERS: 10'-0" DEPENDING ON BEAM CLAMP SIDE
WEIGHT OF 1'-0" OF 4" SCHEDULE 10 STEEL PIPE WITH WATER: 11.78lb
WEIGHT OF 10'-6" OF 4" SCHEDULE 10 STEEL PIPE WITH WATER: 37.8lb

4" x 10'-6" HANGER LOAD CALCULATION ON STRUCTURAL MEMBER (PURLIN): 123.69lb
MAXIMUM STRUCTURAL LOAD = TBD BY STRUCTURAL ENGINEER

GRID HANGER STRUCTURAL LOAD:
LENGTH BETWEEN HANGERS: 10'-0" TYPICAL 10'-6" FOR SECOND HANGER
WEIGHT OF 1'-0" OF 1 1/2" SCHEDULE 40 STEEL PIPE WITH WATER: 3.6lb
WEIGHT OF 10'-6" OF 1 1/2" SCHEDULE 40 STEEL PIPE WITH WATER: 37.8lb

1 1/2" x 10'-6" HANGER LOAD ON STRUCTURAL MEMBER (PURLIN): 37.8lb
MAXIMUM STRUCTURAL LOAD = TBD BY STRUCTURAL ENGINEER

* TO BE REVIEWED AND APPROVED BY STRUCTURAL ENGINEER OF RECORD.

- GENERAL NOTES:**
- ALL WORK TO BE PERFORMED ACCORDING TO NFPA 13 - 2016 EDITION FOR ORDINARY HAZARD GROUP 2 OCCUPANCY U.N.O.
 - ALL NEW 1" - 2" PIPE IS SCHEDULE 40 BLACK STEEL WITH THREADED ENDS FOR USE WITH CAST IRON CLASS 125 THREADED FITTINGS U.N.O.
 - ALL NEW 4" - 6" MAIN PIPE IS SCHEDULE 10 BLACK STEEL WITH GROOVED ENDS WITH GROOVED FITTINGS U.N.O.
 - ALL NEW 6" MAIN AND FITTINGS ON THE SUPPLY SIDE OF THE BACKFLOW PREVENTER IS GALVANIZED. THE MAIN IS SCHEDULE 10 WITH GROOVED ENDS WITH GROOVED FITTINGS U.N.O.
 - ALL NEW MAIN OUTLETS ARE BLACK STEEL WELDED OUTLETS U.N.O.
 - ALL SPRINKLER PIPE TO BE BANDED WITH SAFETY RED PAINT.
 - ALL SPRINKLER PIPE HANGER LOCATIONS SHALL BE INSTALLED PER NFPA 13. SEE NOTES AND DETAILS ON THIS DRAWING.

HANGER NOTES:

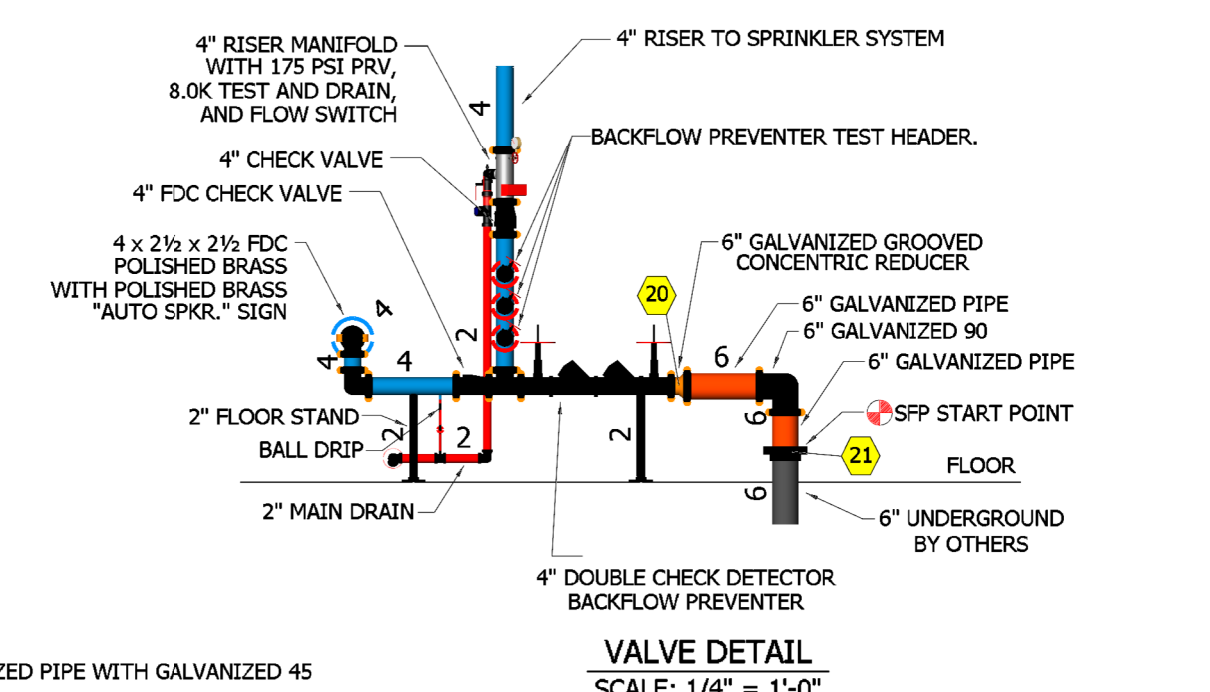
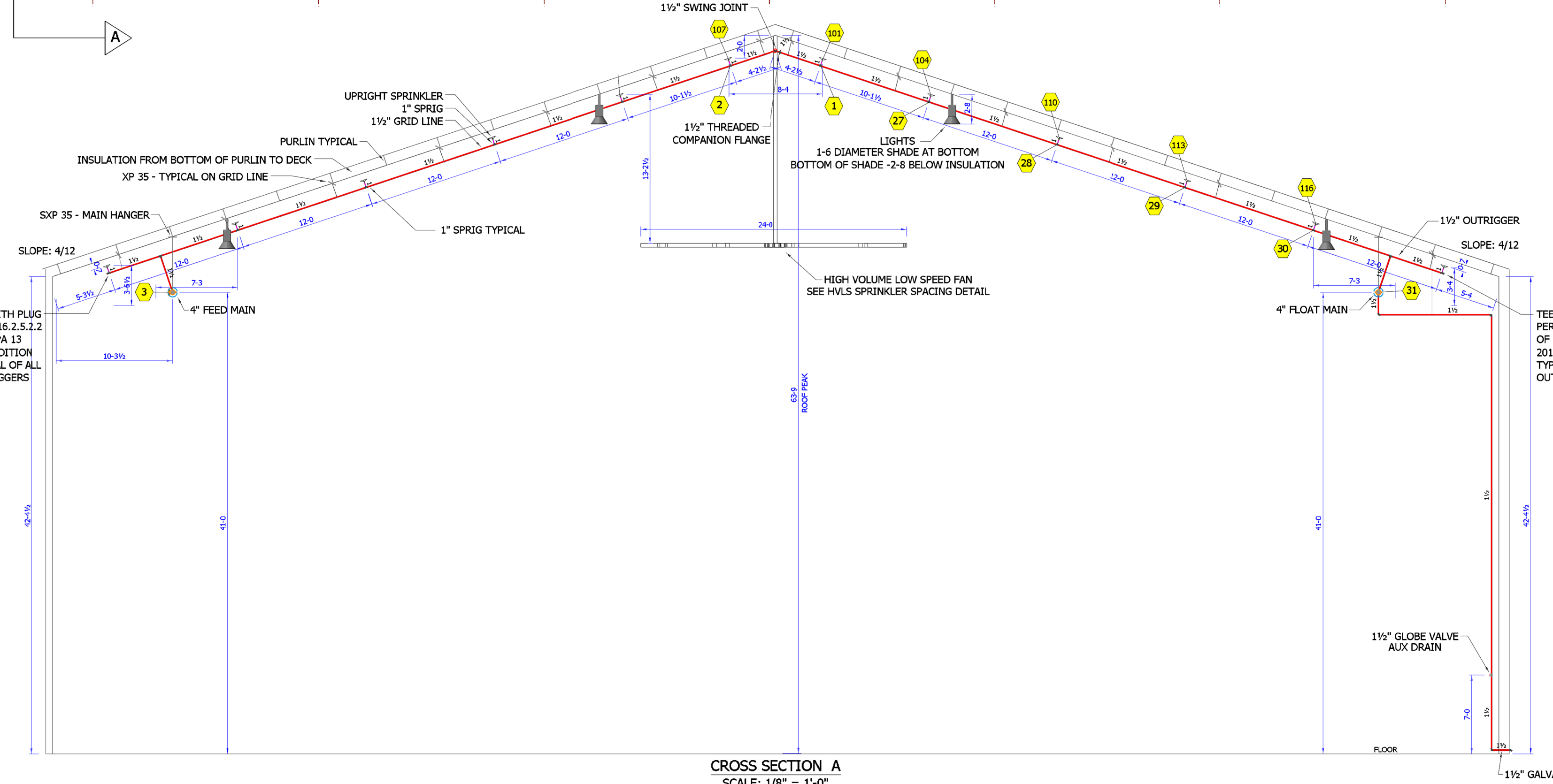
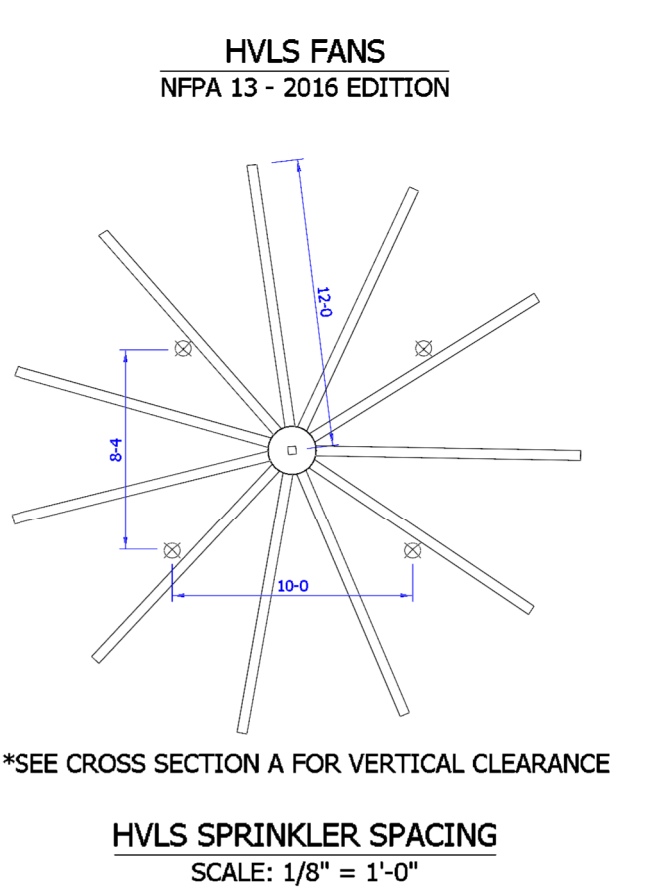
4" MAIN TO BE HUNG FROM EVERY STEEL BEAM 20'-0" ON CENTER. SEE DETAIL.

4" MAIN TO BE HUNG FROM PURLIN BETWEEN EVERY BEAM AT THE CENTER MARK (10'-0") TYPICAL. END HANGERS ARE 2 HANGERS OFF OF PURLIN. SEE NOTES AND DETAIL.

NFPA 13 2016 ED.
TABLE 9.2.2.1(a) Maximum Distance Between Hangers (ft.-in.)

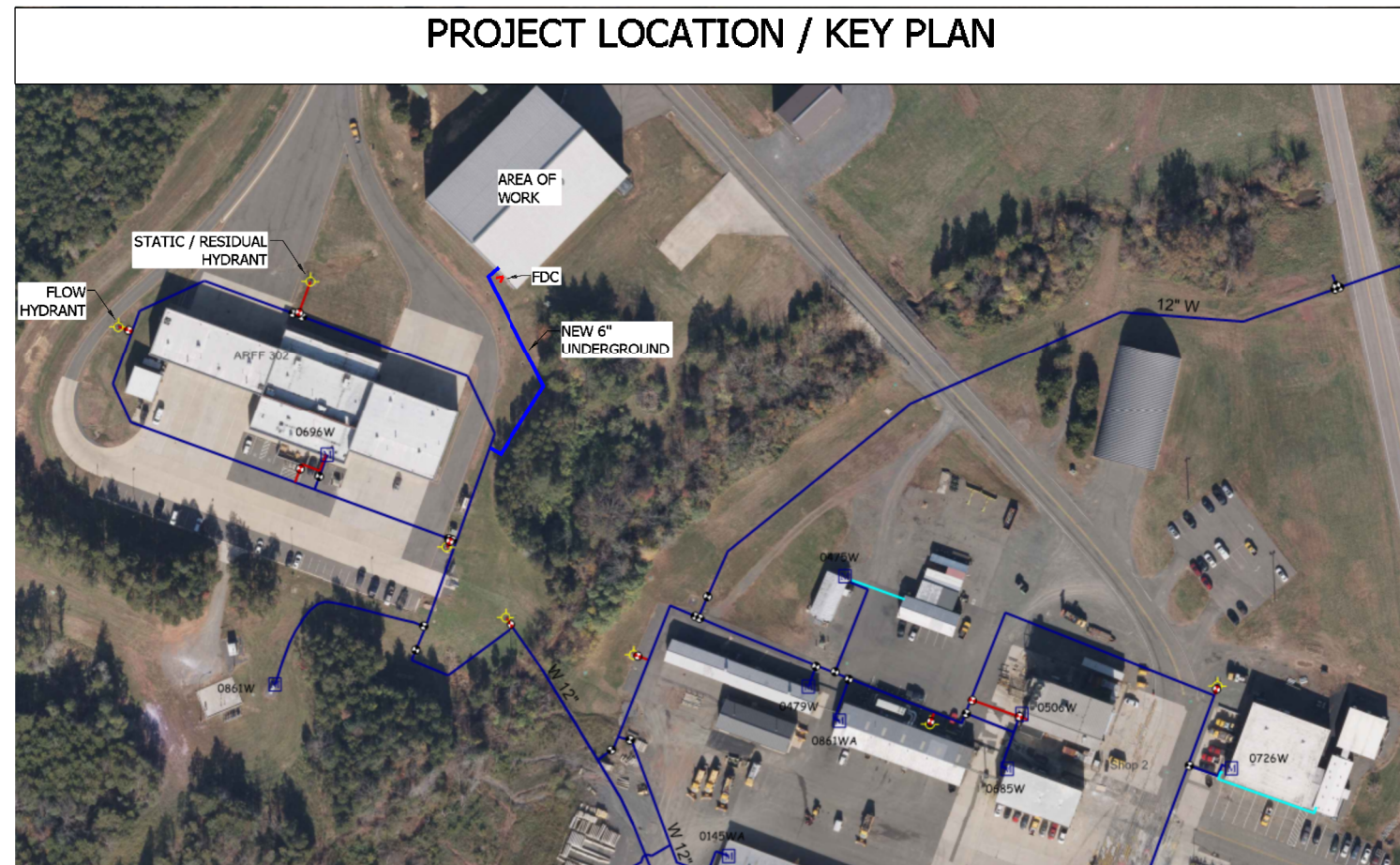
Nominal Pipe Size (in.)	Steel Pipe Except Threaded Lightwall
1" 1/4"	15'-0"
1 1/2"	15'-0"
2"	15'-0"
2 1/2"	15'-0"
3"	15'-0"
3 1/2"	15'-0"
4"	15'-0"
5"	15'-0"
6"	15'-0"
8"	15'-0"

- 11.1.7* High Volume Low Speed (HVLS) Fans.** The installation of HVLS fans in buildings equipped with sprinklers, including ESFR sprinklers, shall comply with the following:
- The maximum fan diameter shall be 24 ft (7.3 m).
 - The HVLS fan shall be centered approximately between four adjacent sprinklers.
 - The vertical clearance from the HVLS fan to sprinkler deflector shall be a minimum of 3 ft (0.9 m).
 - All HVLS fans shall be interlocked to shut down immediately upon receiving a waterflow signal from the alarm system in accordance with the requirements of NFPA 72.



SYMBOL LEGEND

(Solid line)	WALL
(Dashed line)	BEAM
(Dotted line)	PURLIN
(Thin solid line)	HANGER
(Circle with cross)	UPRIGHT SPRINKLER
(Circle with dot)	SPRINKLER PIPE
(Circle with X)	SPR START POINT
(Circle with Y)	HYDRAULIC NODE POINT



IMPORTANT:

IN LOCALITIES SUBJECT TO FREEZING CONDITIONS IT IS THE OWNER'S RESPONSIBILITY TO PROVIDE HEAT THROUGHOUT WET PIPE SPRINKLER SYSTEM AREAS AND IN ENCLOSURES FOR DRY PIPE, DELUGE, AND OTHER TYPES OF VALVES CONTROLLING WATER SUPPLIES TO SPRINKLER SYSTEMS.

SCALE: 0 1" = 2' 4"

REVISIONS

NO.	DATE	BY	DESCRIPTION

ABBREVIATIONS

BOB	BOTTOM OF BEAM
BOD	BOTTOM OF DECK
CIF	CUT IN FIELD
CL	CENTERLINE
FMV	FIRE HOSE VALVE
N&C	NIPPLE AND CAP
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OB	OPEN BAR JOISTS
SP	STANDPIPE
TOJ	TOP OF JOIST
TSD	TOP OF STEEL
UNO	UNLESS NOTED OTHERWISE

SPRINKLER LEGEND

Symbol	Manufacturer	SIN	Quantity	K-Factor	Type	Response	Finish	Temperature	Escutcheon
(Circle with X)	Viking	W350	192	8	Upright	Quick	Brass	200°F	N/A
Total = 192									

SHOP DRAWING REVIEW

<input checked="" type="checkbox"/>	WET
<input type="checkbox"/>	DRY
<input type="checkbox"/>	DELUGE
<input type="checkbox"/>	PREACTION
<input checked="" type="checkbox"/>	HYD. CALC.
<input type="checkbox"/>	PIPE SCHED.

SYSTEM TYPE

SPRINKLER FIRE PROTECTION
3 TIGER WAY, TOWSON, MD

PROJECT: BUTLER BUILDING STORAGE
721 STORAGE PLACE
ROCKVILLE, MARYLAND
NEW SPRINKLER SYSTEM

CONTRACT WITH: STORAGE HOUSE
7800 CAPITOL STREET
ANNAPOLIS, MARYLAND

SUBMITTAL

DATE: 5/6/2019

SCALE: 1/8" = 1'-0"

DRAWN BY: R.H.

DRAWING NO: 1 OF 1

CONTRACT NO: 197800