

1 SITE PLAN  
F101 SCALE: 1" = 50'-0"

**GENERAL INFORMATION**

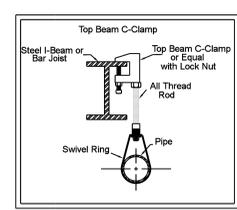
- INTERNATIONAL BUILDING CODE (2018)
  - OCCUPANCY: TYPE B-1: BUSINESS
  - TYPE OF CONSTRUCTION: II-B (NON-COMBUSTIBLE CONSTRUCTION)
  - SPRINKLERED AREAS (APPROXIMATE - SEE ARCHITECTURAL PLANS FOR ACTUAL)
  - DESIGN & INSTALLATION STANDARDS: NFPA-13 (2022), UFC 3-600-01 (2021)
- SPRINKLER PIPE TYPES:
  - WET-
  - 2.1 1" PIPE TO BE SCHEDULE 40 BLACK STEEL W/ THREADED FITTINGS
  - 2.2 1-1/4" THROUGH 2-1/2" MAINS & BRANCH LINES TO BE BLK SCHEDULE 40 W/ GROOVED FITTINGS
  - 2.3 MAINS & BRANCH LINES TO BE ROLL-GROOVED BLK SCHEDULE 40
  - 2.4 2" AND LARGER TO USE GROOVED SHORT RADIUS FITTINGS
- DESIGN CRITERIA:
  - LIGHT HAZARD AREAS INCLUDE OFFICE/ADMINISTRATIVE, RESTROOMS, CORRIDORS, AND SIMULATORS
  - ORDINARY HAZARD CLASSIFICATION AREAS INCLUDE MECHANICAL, ELECTRICAL, AND SIMULATOR ROOMS, AND WORK AREAS
- NOTES:
  - ALL MATERIAL TO BE NEW AND MEET U.L. STANDARDS
  - HANGERS TO BE INSTALLED IN ACCORDANCE WITH NFPA 13 - SEE PLAN FOR HANGING
- SYMBOLS USED ON DRAWINGS:
  - OH PIPE ELEVATION ABOVE FINISH FLOOR
  - ROOM ORDINARY HAZARD CLASSIFICATION (ALL ROOMS ARE CONSIDERED LIGHT HAZARD U.N.O.)
  - HYDRAULIC CALCULATION JUNCTION POINT
  - CEILING HEIGHT
  - BAR JOIST
  - WET BLACK STEEL PIPE
  - 6" UNDERGROUND PIPE
  - SIMULATOR OUTLINE
- SCOPE OF WORK:
  - INSTALL A COMPLETE SINGLE ZONE WET FIRE SPRINKLER SYSTEM TO COVER ALL AREAS OF BUILDING
  - ALL AREAS OF THE BUILDING TO BE INSTALLED AND COVERED IN ACCORDANCE WITH THE LOCAL AUTHORITY HAVING JURISDICTION AND PER NFPA 13

**Table 9-3 Sprinkler Design Demand and Minimum K-Factor**

Hazard Classification		(gpm/ft <sup>2</sup> /ft <sup>2</sup> (mm/min)/m <sup>2</sup> /minimum K factor)							
		Ceiling Height up to 30 ft (9.1 m)		Ceiling Height >30-45 ft (9.1 m - 13.7 m)		Ceiling Height >45-60 ft (13.7 m - 18.3 m)		Ceiling Height >60 - 100 ft (18.3 m - 30.5 m)	
		Wet	Dry	Wet	Dry	Wet	Dry	Wet	Dry
Light	Design	0.1/1500 (4/140)	0.1/1500 (4/140)	0.2/2500 (8/230)	0.2/3500 (8/330)	0.2/2500 (8/230)	0.2/3500 (8/330)	12 @ 7 psi	NA
	K-factor	5.6 (80)	5.6 (80)	11.2 (160)	11.2 (160)	11.2 (160)	11.2 (160)	25.2 (360)	NA
Ordinary	Design	0.2/2500 (8/230)	0.2/3500 (8/330)	0.2/2500 (8/230)	0.2/3500 (8/330)	0.2/2500 (8/230)	0.2/3500 (8/330)	12 @ 7 psi	NA
	K-factor	8.0 (115)	8.0 (115)	11.2 (160)	11.2 (160)	11.2 (160)	11.2 (160)	25.2 (360)	NA
Extra	Design	0.3/2500 (12/230)	0.3/3500 (12/330)	0.3/3600 (12/340)	0.3/4600 (12/430)	0.5/3000 (20/280)	0.5/4000 (20/370)	12 @ 7 psi	NA
	K-factor	11.2 (160)	11.2 (160)	11.2 (160)	11.2 (160)	11.2 (160)	11.2 (160)	25.2 (360)	NA

Note: For ceiling heights > 60 feet, the design demand is based on the number of sprinklers at an end sprinkler pressure (i.e. 12 sprinklers at 7 psi end pressure).

Symbol	Manufacturer	SIN	Model	Quantity	K-Factor	Type	Size	Response	Finish	Temp	Note
●	Tyco	TY3231	TY-FRB	36	5.6	Pendent	1/2"	Quick	Chrome	200 °F	N/A
●	Tyco	TY4231	TY-FRB	95	8	Pendent	3/4"	Quick	Chrome	200 °F	N/A
○	Tyco	TY4131	TY-FRB	27	8	Upright	3/4"	Quick	White	200 °F	N/A
▶	Tyco	TY3331	TY-FRB	16	5.6	Horizontal Sidewall	1/2"	Quick	Chrome	200 °F	SEMI-REC.
▶	Tyco	TY3521	RFI	1	5.6	Horizontal Concealed Sidewall	1/2"	Quick	Black	212 °F	CONC. COLOR TO MATCH CLG
				Total = 175							

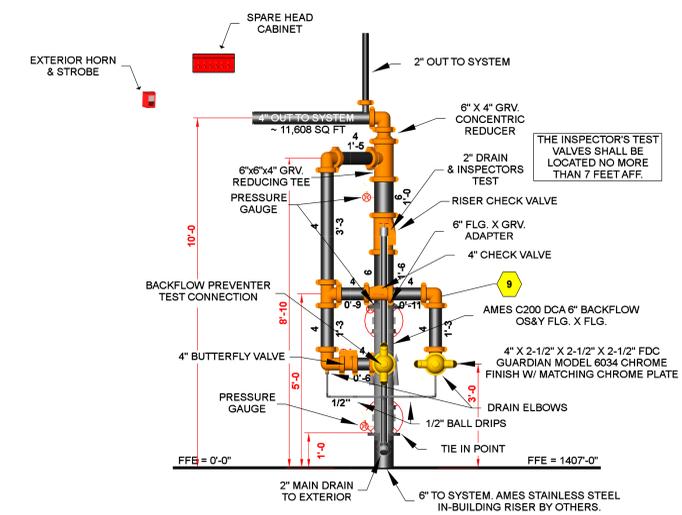


**HANGER DETAILS**

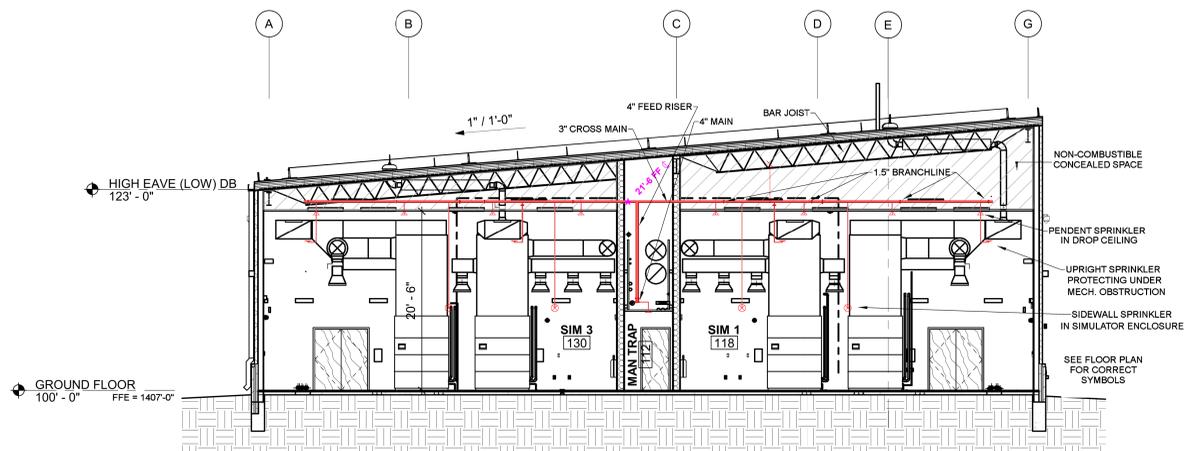
PIPE SIZE	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	6"	8"
STEEL PIPE EXCEPT THREADED LIGHTWALL	NA	12-0	12-0	15-0	15-0	15-0	15-0	15-0	15-0	15-0

**AIR VENT NOTE**  
PROVIDE AUTOMATIC AIR VENTS AT HIGH POINTS OF PIPING TO VENT MINIMUM 98% OF THE SYSTEM'S VOLUMETRIC CAPACITY. SLOPE PIPING TO RISER, DRAIN TRAPPED PIPING.

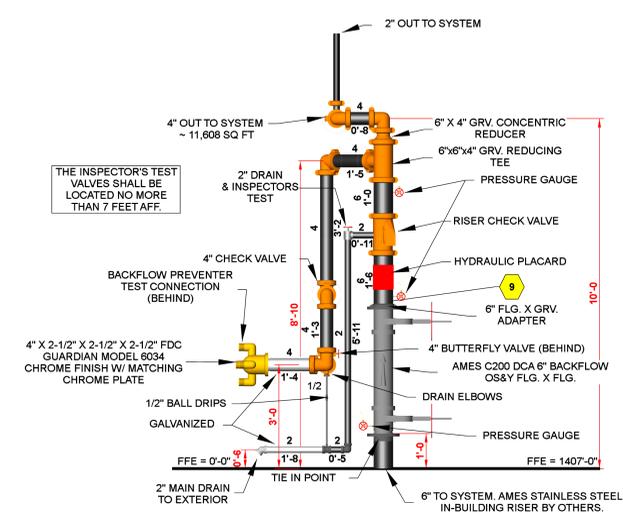
2 HANGER DETAILS  
F101 SCALE: 1/8" = 1'-0"



3 RISER DETAIL 1  
F101 SCALE: 1/2" = 1'-0"



A BUILDING SECTION A (FACING EAST)  
F101 SCALE: 1/8" = 1'-0"



4 RISER SECTION  
F101 SCALE: 1/2" = 1'-0"

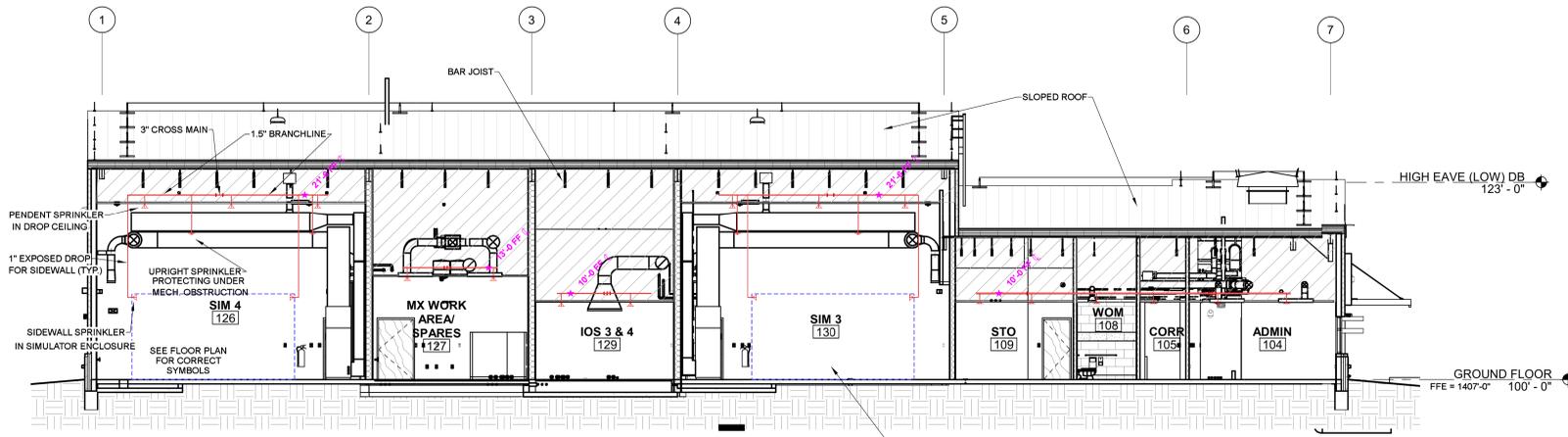
F-16 MISSION TRAINING CENTER  
114th FW - SOUTH DAKOTA AIR  
NATIONAL GUARD BASE

JOE FOSS FIELD,  
Sioux Falls, SD 57104

**FIRE PROTECTION PLANS**

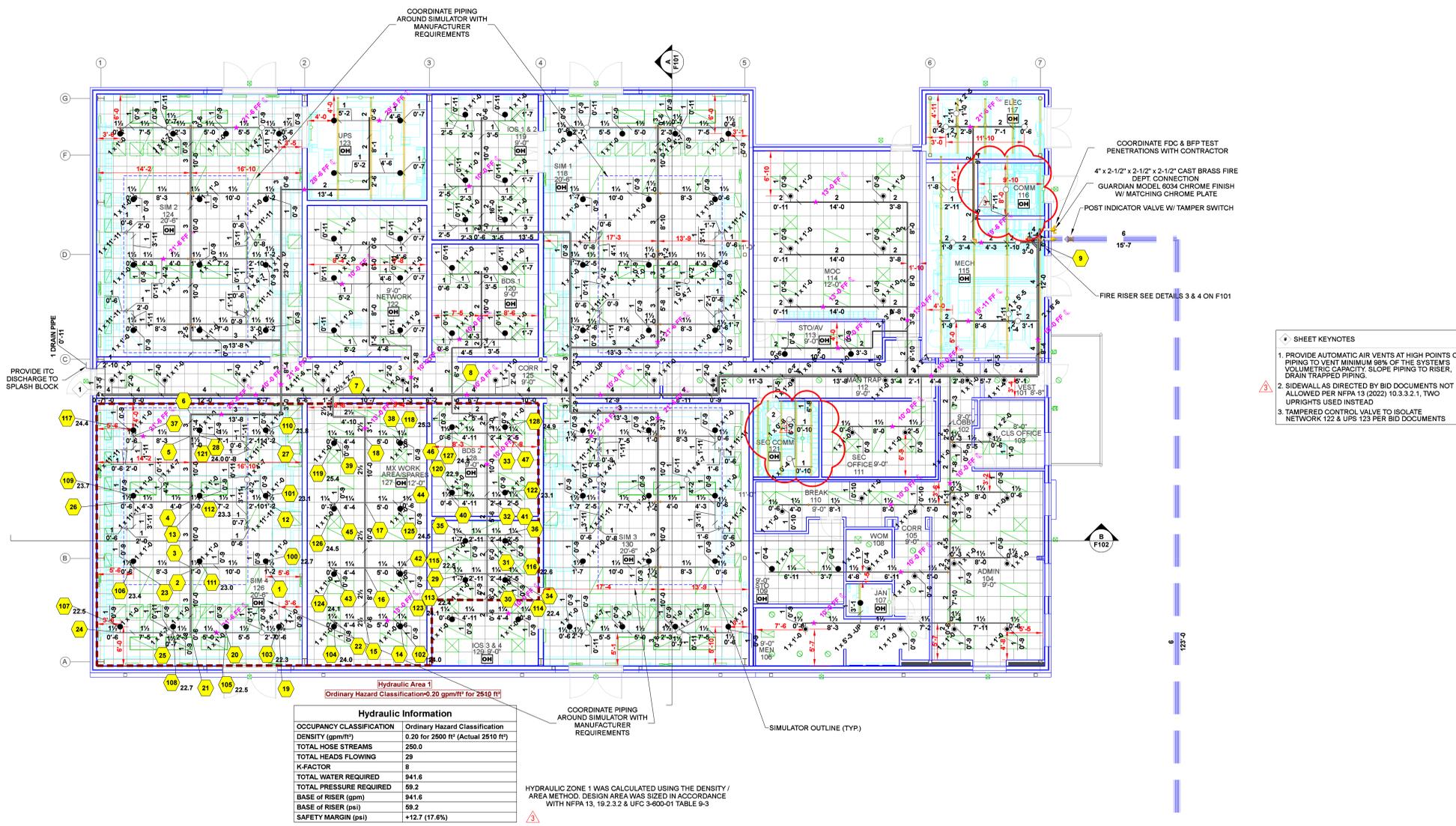
PROJECT NUMBER: DRAWN BY:  
DATE: 02/08/24 CHECKED BY:  
SHEET NUMBER: DS

F101



**B BUILDING SECTION FACING SOUTH**  
 F102 SCALE: 1/8" = 1'-0"

SIMULATOR ROOMS ARE ORDINARY HAZARD, BUT THE SIMULATORS ARE LIGHT HAZARD



- SHEET KEYNOTES**
1. PROVIDE AUTOMATIC AIR VENTS AT HIGH POINTS OF PIPING TO VENT MINIMUM 98% OF THE SYSTEM'S VOLUMETRIC CAPACITY. SLOPE PIPING TO RISER, DRAIN TRAPPED PIPING.
  2. SIDEWALL AS DIRECTED BY BID DOCUMENTS NOT ALLOWED PER NFPA 13 (2022) 10.3.3.2.1, TWO UPRIGHTS USED INSTEAD.
  3. TAMPERED CONTROL VALVE TO ISOLATE NETWORK 122 & UPS 123 PER BID DOCUMENTS.

**Hydraulic Information**

OCCUPANCY CLASSIFICATION	Ordinary Hazard Classification
DENSITY (gpm/ft²)	0.20 for 2500 ft² (Actual 2510 ft²)
TOTAL HOSE STREAMS	250.0
TOTAL HEADS FLOWING	29
K-FACTOR	8
TOTAL WATER REQUIRED	941.8
TOTAL PRESSURE REQUIRED	59.2
BASE OF RISER (gpm)	941.6
BASE OF RISER (psi)	59.2
SAFETY MARGIN (psi)	+12.7 (17.6%)

HYDRAULIC ZONE 1 WAS CALCULATED USING THE DENSITY / AREA METHOD. DESIGN AREA WAS SIZED IN ACCORDANCE WITH NFPA 13, 19.2.3.2 & UFC 3-600-01 TABLE 9-3

**2 GROUND LEVEL FIRE PROTECTION PLANS**  
 F102 SCALE: 1/8" = 1'-0"

**Sprinkler Legend**

Symbol	Manufacturer	SIN	Model	Quantity	K-Factor	Type	Size	Response	Finish	Temp	Note
●	Tyco	TY4231	TY-FRB	36	5.6	Pendent	1/2"	Quick	Chrome	200 °F	N/A
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▶	Tyco	TY3521	RPI	1	5.6	Horizontal Concealed Sidewall	1/2"	Quick	Black	212 °F	CONC. COLOR TO MATCH CLG
Total = 175											

F-16 MISSION TRAINING CENTER  
 114th FW - SOUTH DAKOTA AIR  
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**FIRE PROTECTION PLANS**

PROJECT NUMBER: DRAWN BY:  
 02/08/24 ZBS

DATE: CHECKED BY:  
 02/08/24 DS

SHEET NUMBER: