

Sprinkler Design Data

Project Name:	CAROLINA DIESEL TRUCK	System:	WET
Project Street Address:	62 PROGRESS DR., FUQUAY-VARINA, NC 27526	Sys. Sq. Ft.:	14191 +/-
Suite:	1 + MEZZANINE	Floor#:	1
Designed By:	J&D SPRINKLER CO., INC.	Phone:	919.553.2356
Occupancy:	BUSINESS	Hazard:	ORDINARY HAZARD GRP II - SHOP LIGHT HAZARD - OFFICE

Design Summary

	System #1	System #2	System #3	System #4	System #5
Design Method	CALCULATED	CALCULATED	CALCULATED	CALCULATED	CALCULATED
Design Area #	A	B	C	-	-
Location	SHOP	STAIRWAY	OFFICE	-	-
Type of System	WET	WET	WET	-	-
Hazard Class	OH GRP II	LIGHT	LIGHT	-	-
Criteria From	NFPA 13 (2013)	NFPA 13 (2013)	NFPA 13 (2013)	-	-
Design Area	1500 SF	1500 SF	1500 SF	-	-
Sprinkler Spacing	130 MAX	400 MAX	225 MAX	-	-
Density	0.20	10	10	-	-
K-factor	8	11.2	5.6	-	-
Hose Allowance	250	100	100	-	-
# Design Sprinklers	13	2	12	-	-
Special Application Spk.	-	-	-	-	-
Requirement @ BASE					
G.P.M. Req'd	350.07	83.41	238.88	-	-
P.S.I. Req'd	23.707	28.174	25.703	-	-
Requirement @ TEST					
GPM Required	600.07	183.41	338.88	-	-
PSI Required	42.431	45.854	43.838	-	-
Safety factor @ Test	13.552	11.122	12.854	-	-
Dry Sys. Volume (gal)	-	-	-	-	-

Water Supply Information

Tested by	J&D SPRINKLER CO.	Date/Time	08.03.2022 @ 10AM	Pressure Hydrant	-
Hydrant Elevation	-	Flow Hydrant #1	-	Flow Hydrant #2	-
Static (PSI)	57.1	Residual (PSI)	53.5	Flow (gpm)	1130

Copy of Water Test Data Included with Calculation is required

Fire Pump Data

Rated G.P.M.	---	Rated Pressure	---	Horsepower	---
Diesel/Electric	---	Churn Pressure	---	Style of pump	---
Combined Discharge	---	150%/100% Flow (uction)	---	150%/100% Flow (gpm)	---

Certified pump curve required

If Storage Is Greater than 12 Feet Complete Commodity Storage Design Information

Commodity Description	Storage Height	Storage Type (Rack, Bin, Pile)	Clearance
Stable/Unstable	Open/Close		Wet/Dry
	Array		System

Figure #	Curve #	Density	Height	Clear Factor	Array Factor	Dry Penalty	Design	Minimum Design	Final Design
-	-	Initial	-	-	-	-	-	-	-
-	-	Secundary	-	-	-	-	-	-	-

Is system compliant with Chapter 23 (FFC) Is storage area layout, rack, and pile plan included?

HANGER INSTALLATION REQUIREMENTS

NOMINAL PIPE SIZE	MAXIMUM DISTANCE BETWEEN HANGERS									
	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"	6"	
BLAZEMASTER CPVC	5' 6"	6' 0"	6' 6"	7' 0"	8' 0"	9' 0"	10' 0"	N/A	N/A	
THREADABLE LIGHTWALL	N/A	12' 0"	12' 0"	12' 0"	12' 0"	12' 0"	12' 0"	N/A	N/A	
STEEL PIPE (10' 40)	N/A	12' 0"	12' 0"	15' 0"	15' 0"	15' 0"	15' 0"	15' 0"	15' 0"	

100 PSI STATIC PRESSURE ON SYSTEM REQUIRES UP-LIFT RESTRAINT WITHIN 12 INCHES HORIZONTALLY OF HEAD FOR ARM-OVERS AND END OF BRANCH LINE
 THE UNSUPPORTED LENGTH BETWEEN THE END SPRINKLER AND THE LAST HANGER ON THE LINE SHALL NOT EXCEED 36" FOR 1" PIPE, 48" FOR 1 1/4" PIPE AND 60" FOR 1 1/2" PIPE OR LARGER
 THE CUMULATIVE HORIZONTAL LENGTH OF AN UNSUPPORTED ARM OVER TO A SPRINKLER, SPRINKLER DROP, OR SPRIG-UP SHALL NOT EXCEED 24"

TRAPEZE INSTALLATION REQUIREMENTS

SPAN OF TRAPEZE (Schedule 10)	NOMINAL PIPE SIZE SUPPORTED									
	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"	6"		
1 FT. 6 IN.	1"	1"	1"	1"	1"	1"	1-1/4"	1-1/4"		
2 FT. 0 IN.	1"	1"	1"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/2"		
2 FT. 6 IN.	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/2"	2"		
3 FT. 0 IN.	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/2"	1-1/2"	1-1/2"	2"		
4 FT. 0 IN.	1-1/2"	1-1/2"	1-1/2"	1-1/2"	2"	2"	2"	2-1/2"		
5 FT. 0 IN.	2"	2"	2"	2"	2"	2"	2-1/2"	2-1/2"		
6 FT. 0 IN.	2"	2"	2"	2"	2"	2-1/2"	2-1/2"	3"		
7 FT. 0 IN.	2"	2"	2"	2-1/2"	2-1/2"	2-1/2"	2-1/2"	3"		
8 FT. 0 IN.	2-1/2"	2-1/2"	2-1/2"	2-1/2"	2-1/2"	2-1/2"	2-1/2"	3"		
9 FT. 0 IN.	2-1/2"	2-1/2"	2-1/2"	2-1/2"	2-1/2"	2-1/2"	3"	4"		
10 FT. 0 IN.	2-1/2"	2-1/2"	2-1/2"	2-1/2"	2-1/2"	3"	3"	4"		

GENERAL NOTES:

1. MATERIALS AND INSTALLATION SHALL COMPLY WITH APPLICABLE NFPA CODES (2013), STATE BUILDING CODE, LOCAL AUTHORITY HAVING JURISDICTION, AND INSURANCE UNDERWRITER'S REQUIREMENTS.

2. ALL MATERIALS AND EQUIPMENT SHALL BE NEW, UL LISTED FOR THE INTENDED USE AND SHALL BE INSTALLED IN FULL COMPLIANCE WITH MANUFACTURER'S RECOMMENDATIONS.

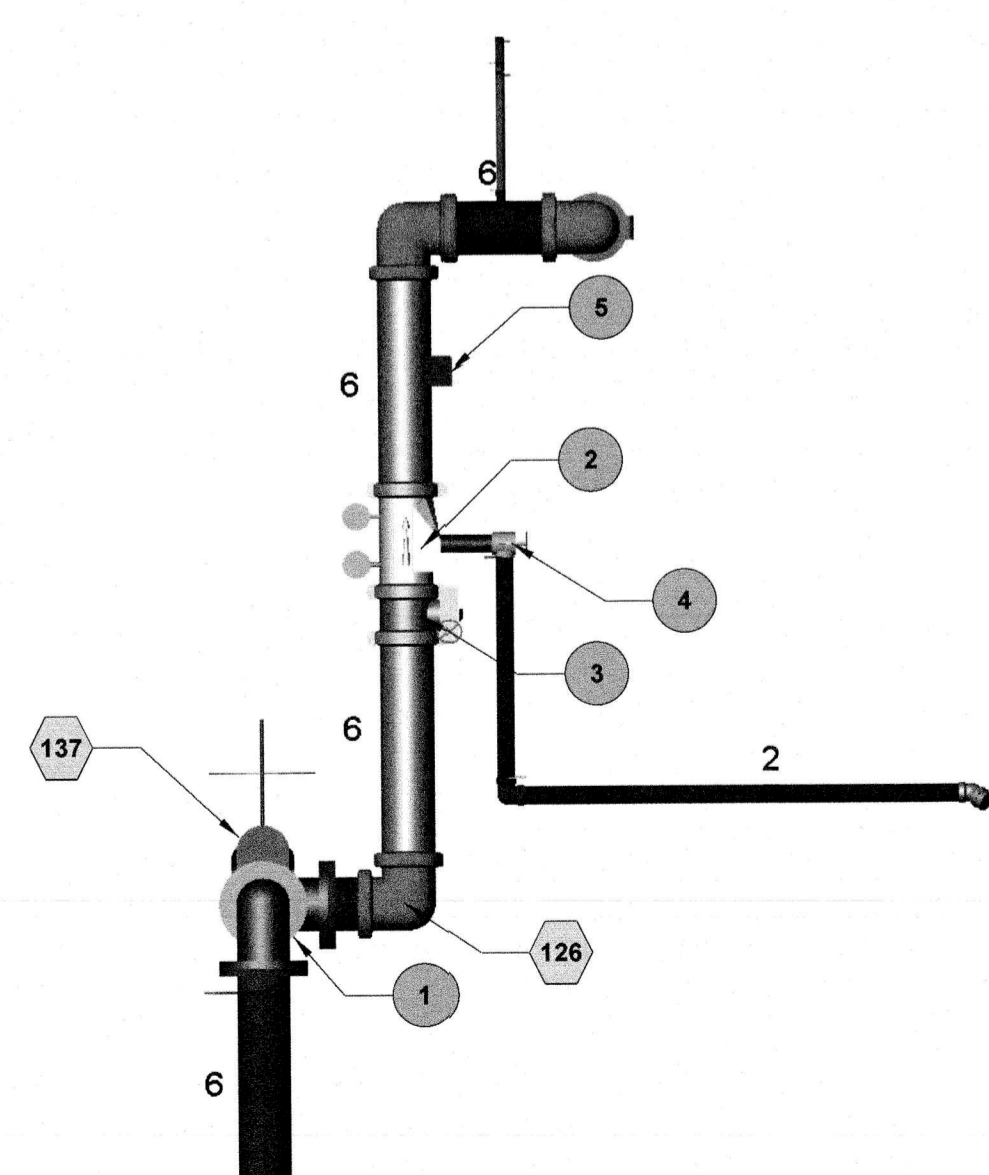
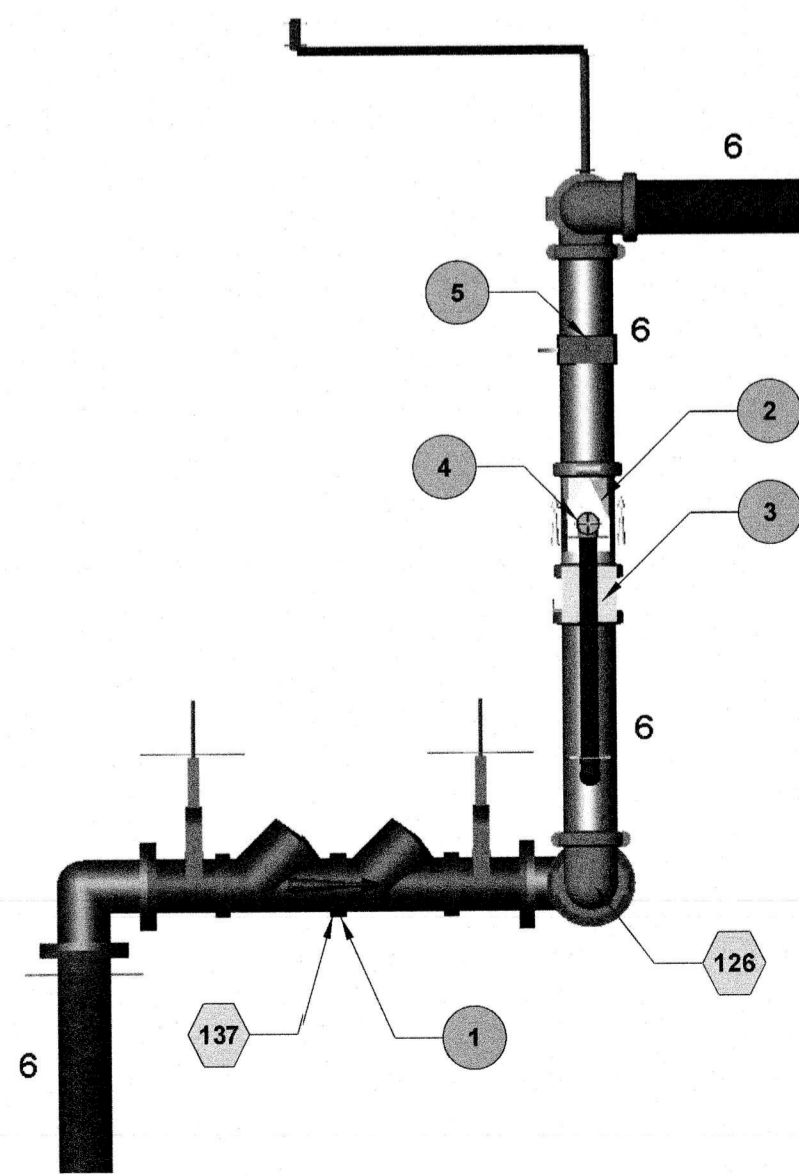
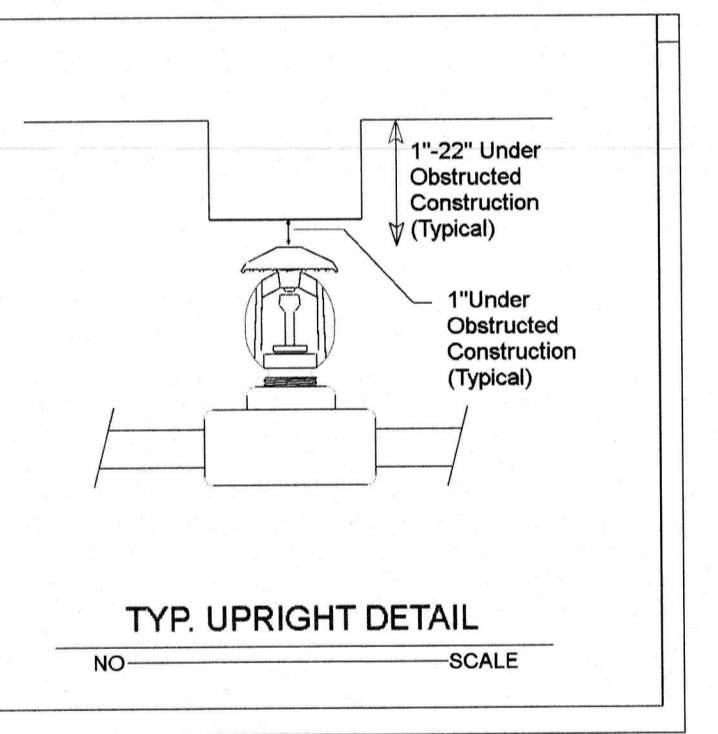
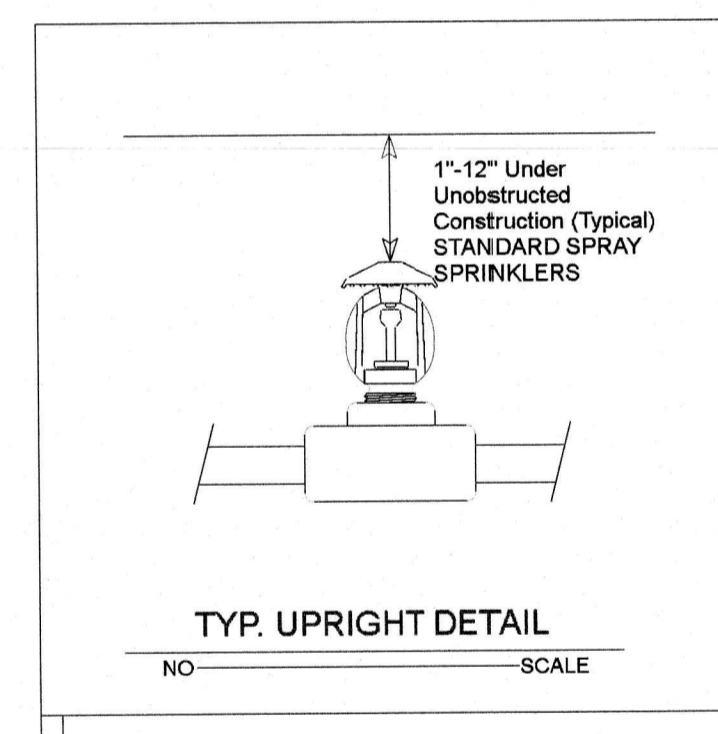
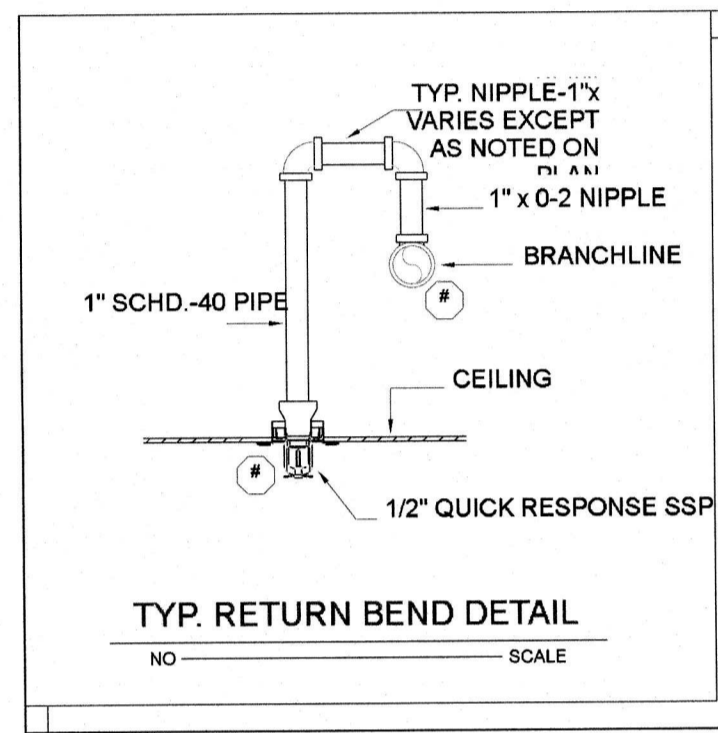
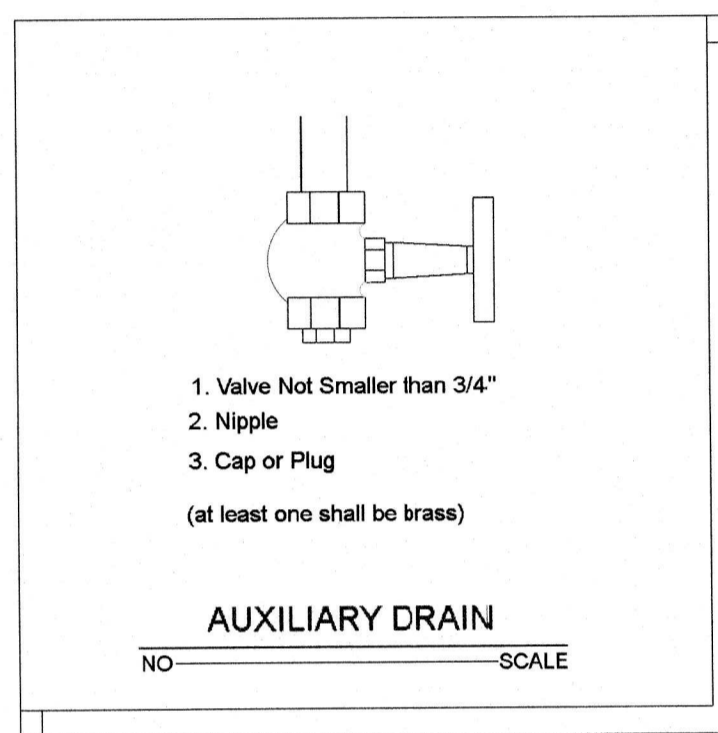
3. ALL NEW SPRINKLER PIPE 1 1/4" AND SMALLER IS SCHEDULE-40 BLACK STEEL WITH THREADED ENDS AND FITTINGS. ALL NEW SPRINKLER PIPE 1 1/2" AND LARGER IS SCHEDULE-10 BLACK STEEL WITH GROOVED ENDS AND FITTINGS.

4. SPRINKLER HEAD SPACING IN SHOP AREA IS BASED ON THE NFPA 13 2013 STANDARDS FOR ORDINARY HAZARD GROUP II OCCUPANCIES ALLOWING A MAXIMUM HEAD SPACING OF 130 S.F. PER HEAD. SPRINKLER HEAD SPACING IN OFFICE AREA IS BASED ON NFPA 13 2013 STANDARDS FOR LIGHT HAZARD OCCUPANCIES ALLOWING A MAXIMUM HEAD SPACING OF 225 S.F. PER HEAD.

5. LOCATIONS OF PIPING AS SHOWN ON THE DRAWINGS ARE APPROXIMATE AND SUBJECT TO MINOR ADJUSTMENTS IN THE FIELD.

6. THE WATER TEST INFORMATION HAS BEEN PROVIDED BY J&D SPRINKLER CO. DATED 08.03.2022 INDICATES THE FOLLOWING...

STATIC: 57.1 PSI
 RESIDUAL: 53.5 PSI
 FLOW: 1130 GPM



Key Note	Size	Description
1	6	Backflow, Wilkins 375ASTDA Flanged
2	6	Valve, G-G Riser Check (Viking Easy Riser w/ Trim)
3	6	Valve, G-G Butterfly
4	2	Valve, T-T Angle (Main Drain)
5	6 x 2	Waterflow Detector

TEST AT PROGRESS DR:
 STATIC - 57.1 PSI
 RESIDUAL - 53.5 PSI
 FLOW - 1130 GPM

SITE PLAN

FOR HYDRAULIC REFERENCE ONLY

System No. W-L-1054

ANSI/UL1479 (ASTM E814)	CANULC S115
F Rating - 1 and 2 Hr (See Items 1 and 3)	F Rating - 1 and 2 Hr (See Items 1 and 3)
T Rating - 0 Hr	FT Rating - 0 Hr
L Rating at Ambient - Less Than 1 CFM/sq ft	FH Rating - 1 and 2 Hr (See Items 1 and 3)
L Rating at 400 F - Less Than 1 CFM/sq ft	FTH Rating - 0 Hr
	L Rating at Ambient - Less Than 1 CFM/sq ft
	L Rating at 400 F - Less Than 1 CFM/sq ft

1. Wall Assembly - The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
 A. Studs - Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 2-1/2 in. (64 mm) wide and spaced max 24 in. (610 mm) CC. When steel studs are used and the diam of opening exceeds the width of stud cavity, the opening shall be framed on all sides using lengths of steel stud installed between the vertical studs and screw-attached to the steel studs at each end. The framed opening in the wall shall be 4 to 6 in. (102 to 152 mm) wider and 4 to 6 in. (102 to 152 mm) higher than the diam of the penetrating item such that, when the penetrating item is installed in the opening, a 2 to 3 in. (51 to 76 mm) clearance is present between the penetrating item and the framing on all four sides.
 B. Gypsum Board - 5/8 in. (16 mm) thick, 4 ft (122 cm) wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 32-1/4 in. (819 mm) for steel stud walls. Max diam of opening is 14-1/2 in. (368 mm) for wood stud walls.
 The F and FH Ratings of the firestop system are equal to the fire rating of the wall assembly.
 2. Through-Penetrants - One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. The annular space shall be min 0 in. to max 2-1/4 in. (57 mm). Pipe may be installed with continuous point contact. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
 A. Steel Pipe - Nom 30 in. (762 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
 B. Iron Pipe - Nom 30 in. (762 mm) diam (or smaller) cast or ductile iron pipe.
 C. Conduit - Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing or 6 in. (152 mm) diam steel conduit.
 D. Copper Tubing - Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.
 E. Copper Pipe - Nom 6 in. (152 mm) diam (or smaller) regular (or heavier) copper pipe.
 3. Fill, Void or Cavity Material - Sealant - Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. At the point or continuous contact locations between pipe and wall, a min 1/2 in. (13 mm) diam bead of fill material shall be applied at the pipe wall interface on both surfaces of wall.
 HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC - FS-ONE Sealant or FS-ONE MAX Intumescent Sealant
 * Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

System No. C-AJ-1154

ANSI/UL1479 (ASTM E814)	CANULC S115
F Rating - 3 Hr	F Rating - 3 Hr
T Rating - 1/4 Hr	FT Rating - 1/4 Hr
L Rating At Ambient - Less Than 1 CFM/sq ft	FH Rating - 3 Hr
L Rating At 400 F - 4 CFM/sq ft	FTH Rating - 1/4 Hr
	L Rating At Ambient - Less Than 1 CFM/sq ft
	L Rating At 400 F - 4 CFM/sq ft

1. Floor or Wall Assembly - Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m3) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Max diam of opening is 14 in. (356 mm). See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.
 2. Through-Penetrants - One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. The annular space shall be min 0 in. to max 3-1/4 in. (83 mm). Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
 A. Steel Pipe - Nom 10 in. (254 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
 B. Conduit - Nom 4 in. (254 mm) diam (or smaller) steel electrical metallic tubing or steel conduit.
 C. Copper Tubing - Nom 4 in. (102 mm) diam (or smaller) Type L (or heavier) copper tubing.
 D. Copper Pipe - Nom 4 in. (102 mm) diam (or smaller) Regular (or heavier) copper pipe.
 3. Firestop System - The firestop system shall consist of the following:
 A. Packing Material - Mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or from both surfaces of wall to accommodate the required thickness of fill material. As an option to the above, backer rod and/or foamed plastic backer material may be used.
 B. Fill, Void or Cavity Material - Sealant - Min 1/2 in. (13 mm) thickness of fill material applied within the annulus, flush with top surface of floor or with both surfaces of wall. At the point contact location between pipe and concrete, a min 1/2 in. (13 mm) diam bead of fill material shall be applied at the concrete/pipe interface on the top surface of floor and on both surfaces of wall.
 HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC - FS-ONE Sealant or FS-ONE MAX Intumescent Sealant
 * Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

CAROLINA DIESEL TRUCKS
 62 PROGRESS DRIVE
 FUQUAY VARINA, NC 27526

J & D SPRINKLER CO., INC.
 315 W. MAIN ST., CLAYTON, NC 27520
 PHONE: (919)553-2356 FAX: (919) 359-0622

SHEET TITLE:
 NOTES AND DETAILS

This fire sprinkler planning and design drawing has been prepared by J & D Sprinkler Co. as a licensed fire sprinkler contractor under Article 2 of Chapter 87 of the General Statutes of the State of North Carolina. J & D Sprinkler Co. must perform any and all installation work and other work performed in reliance on this drawing pursuant to G.S. § 55B-15(a)(2). Installation work or any other work performed by any other person or entity in reliance on this drawing or any copy thereof is strictly prohibited.
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DANA GRAHAM
 NC # 16269FS CERT # 71075
 NICET LEVEL III
 JASON GRAHAM
 NC # 16269FS CERT # 121842
 NICET LEVEL III

REVISION:
 NO. DATE

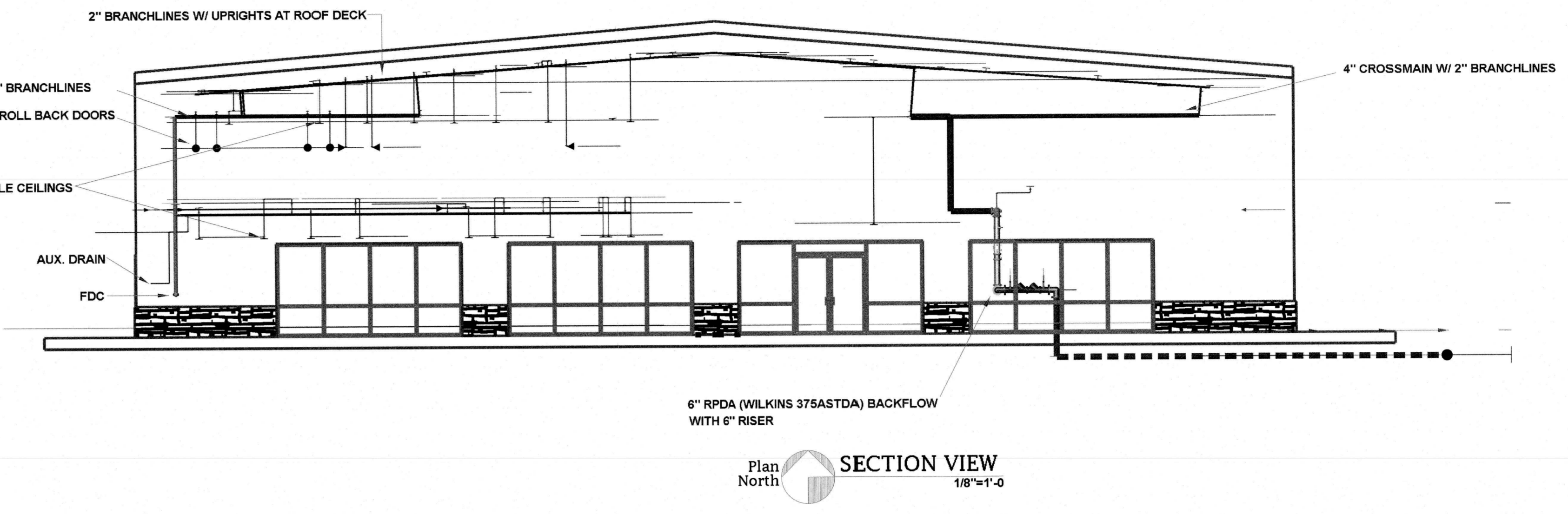
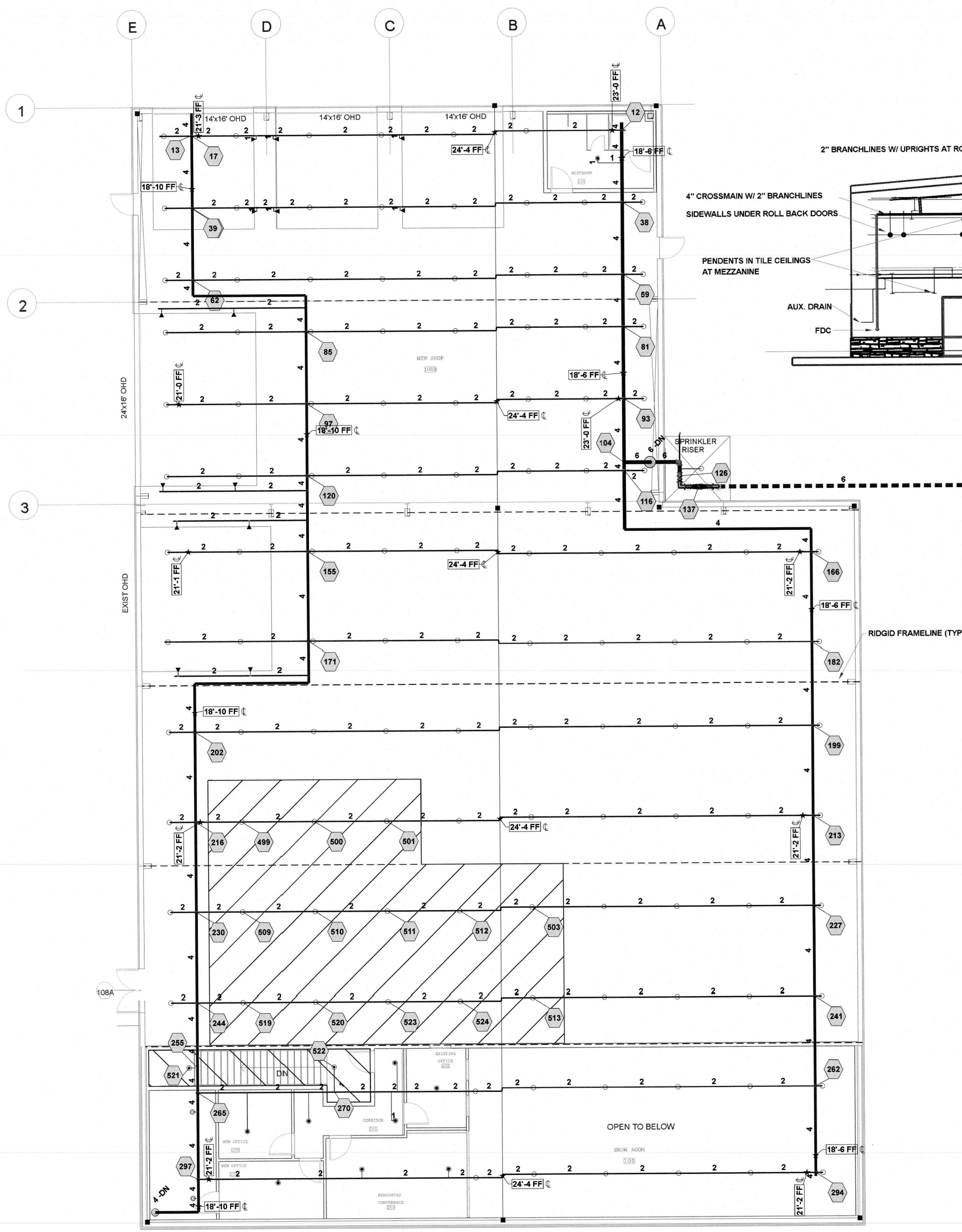
Date:
 10.11.2022

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

Job Number:
 JM22197

Drawn By:
 BKB

Sheet Number
 FP1 OF 3



Plan North SECTION VIEW
1/8"=1'-0"

Sprinkler Legend

Symbol	Manufacturer	SIN	Quantity	K-Factor	Type	Size	Response	Finish	Temperature	Note
○	Viking	VK350	118	8	Upright	1/2	Quick	Brass	155°F	
●	Viking	VK3021	19	5.6	Pendent	1/2	Quick	White Polyester	155°F	
○	Viking	VK3001	4	5.6	Upright	1/2	Quick	Brass	155°F	
◐	Viking	VK305	15	5.6	Sidewall	1/2	Quick	Brass	155°F	
◑	Viking	VK534	2	11.2	Pendent	3/4	Quick	White Polyester	155°F	20x20 EC
			Total = 158							

Hydraulic Information

Remote Area A	
OCCUPANCY CLASSIFICATION	Ordinary Group II
DENSITY (gpm/ft²)	0.20 for 1500ft² (Actual 1566ft²)
TOTAL HOSE STREAMS	250.00
TOTAL HEADS FLOWING	13
K-FACTOR	8
TOTAL WATER REQUIRED	600.07
TOTAL PRESSURE REQUIRED	42.431
BASE of RISER (gpm)	350.07
BASE of RISER (psi)	23.707
SAFETY MARGIN (psi)	+13.652 (24.2%)

Ordinary Group II=0.20gpm/ft² for 1566ft²

Hydraulic Information

Remote Area B	
OCCUPANCY CLASSIFICATION	Light Hazard
DENSITY (gpm/ft²)	0.10 for 1500ft² (Actual 167ft²)
TOTAL HOSE STREAMS	100.00
DRY CAPACITY	0.00gal
TOTAL HEADS FLOWING	2
K-FACTOR	11.2
TOTAL WATER REQUIRED	183.41
TOTAL PRESSURE REQUIRED	45.854
BASE of RISER (gpm)	83.41
BASE of RISER (psi)	28.174
SAFETY MARGIN (psi)	+11.122 (19.5%)

Light Hazard=0.10gpm/ft² for 167ft²
ENTIRE AREA CALCULATED

SEE FP1 FOR CONTINUATION OF UNDERGROUND PIPING AND HYDRAULIC REFERENCE POINTS

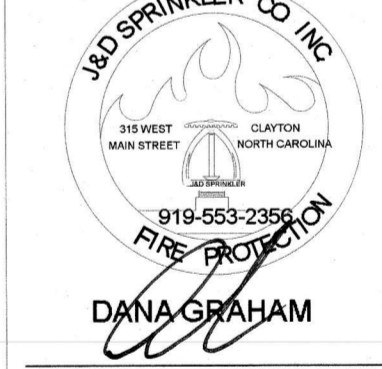
Plan North PIPING PLAN
1/8"=1'-0"

CAROLINA DIESEL TRUCKS
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J & D SPRINKLER CO., INC.
315 W. MAIN ST., CLAYTON, NC 27520
PHONE: (919)553-2356 FAX: (919) 359-0622

SHEET TITLE:
PIPING PLAN

This fire sprinkler planning and design drawing has been prepared by J & D Sprinkler Co., a licensed fire sprinkler contractor under the jurisdiction of the State of North Carolina, and shall be used in accordance with the provisions of the National Fire Protection Association (NFPA) 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 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NC # 16269FS CERT # 71075
NICET LEVEL III
JASON GRAHAM

NC # 16269FS CERT # 121842
NICET LEVEL III
REVISION:
NO. DATE

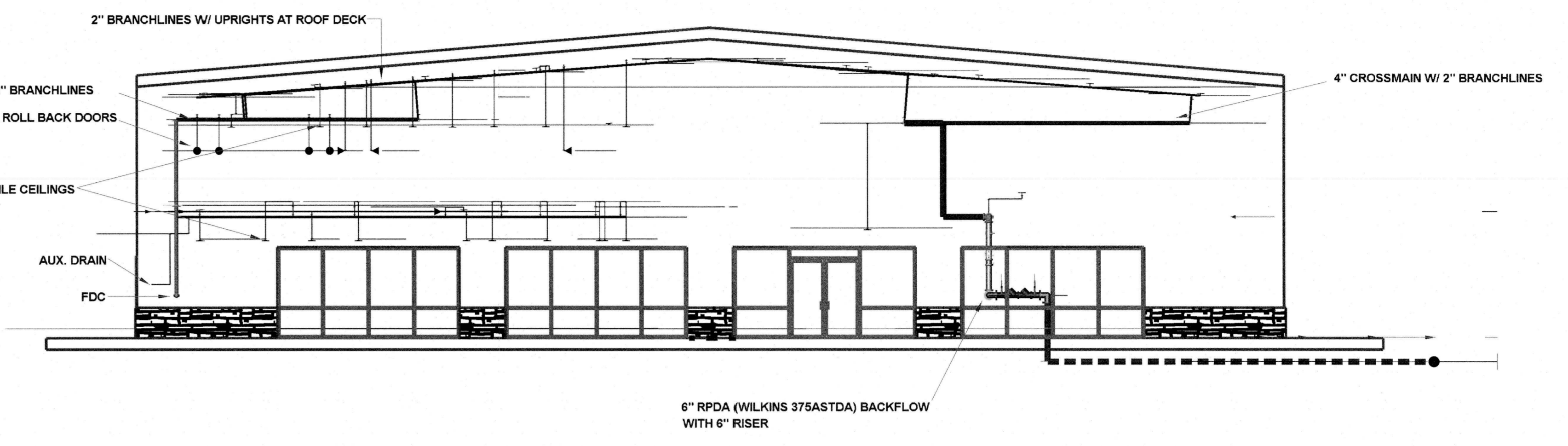
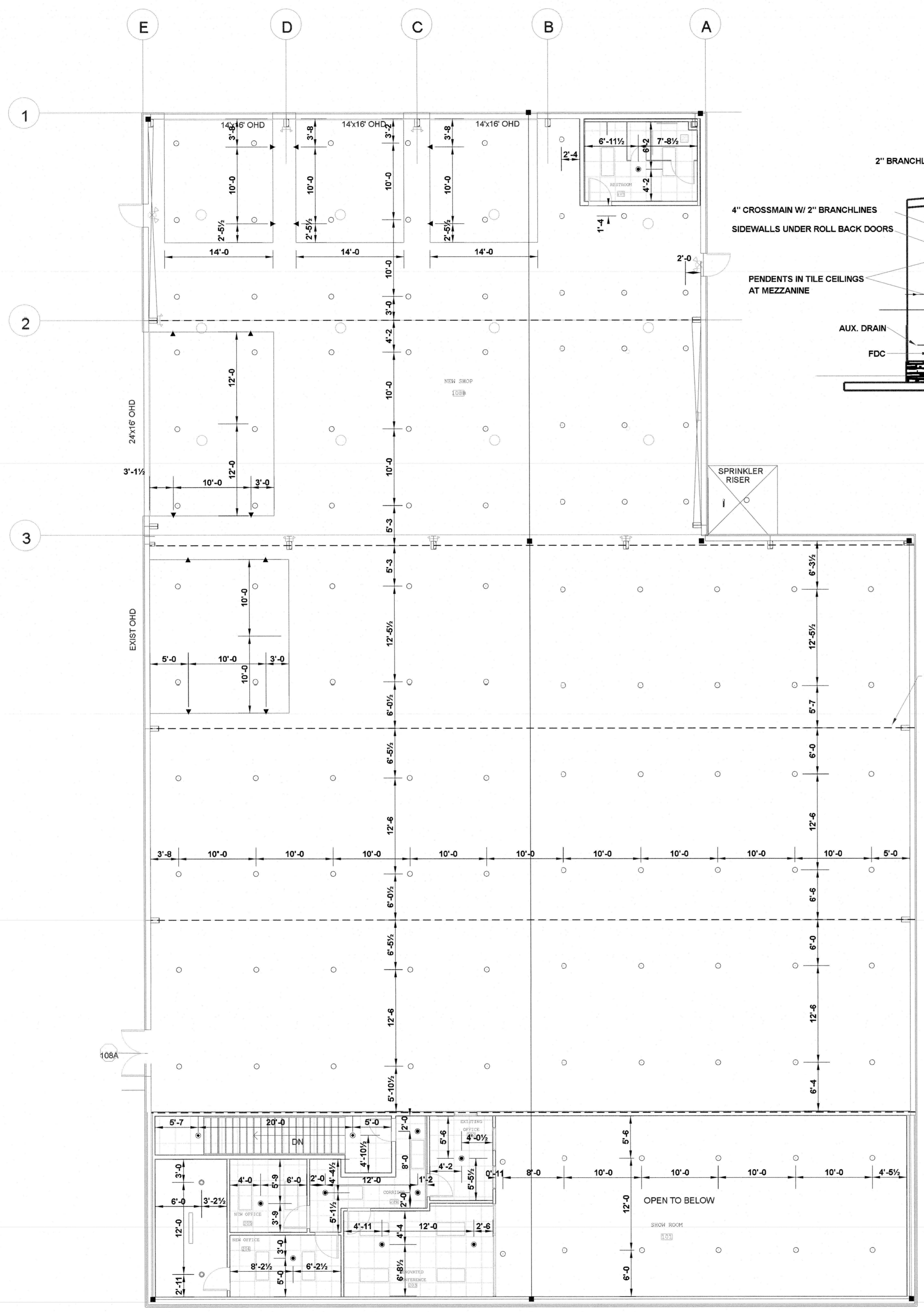
Date:
10.11.2022

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

Job Number:
JM22197

Drawn By:
BKB

Sheet Number
FP2 OF 4



Plan North SECTION VIEW
1/8"=1'-0"

Sprinkler Legend										
Symbol	Manufacturer	SIN	Quantity	K-Factor	Type	Size	Response	Finish	Temperature	Note
○	Viking	VK350	118	8	Upright	1/2"	Quick	Brass	155°F	
●	Viking	VK3021	19	5.6	Pendent	1/2"	Quick	White Polyester	155°F	
○	Viking	VK3001	4	5.6	Upright	1/2"	Quick	Brass	155°F	
◐	Viking	VK305	15	5.6	Sidewall	1/2"	Quick	Brass	155°F	
◑	Viking	VK534	2	11.2	Pendent	1/2"	Quick	White Polyester	155°F	20x20 EC
			Total = 158							

Plan North CEILING PLAN
1/8"=1'-0"

CAROLINA DIESEL TRUCKS
62 PROGRESS DRIVE
FUGUAY VARINA, NC 27526

J & D SPRINKLER CO. INC.
315 W. MAIN ST., CLAYTON, NC 27520
PHONE: (919)553-2356 FAX: (919) 359-0622

SHEET TITLE:
CEILING PLAN

This fire sprinkler planning and design drawing has been prepared by J & D Sprinkler Co., Inc. as a licensed fire protection engineer under the authority of the State of North Carolina. The design is based on the General Code of the State of North Carolina, Chapter 919, and the National Fire Protection Association (NFPA) Code 13. J & D Sprinkler Co., Inc. is not responsible for any work performed in reliance on this drawing pursuant to G.S. § 55B-15(a)(2). Installation work or any other work performed by any other person or entity in reliance on this drawing or any copy thereof is strictly prohibited.
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J & D SPRINKLER CO. INC.
919-553-2356
FIRE PROTECTION
DANA GRAHAM

NC # 16269FS CERT # 71075
NICET LEVEL III
JASON GRAHAM

NC # 16269FS CERT # 121840
NICET LEVEL III
REVISION:
NO. DATE

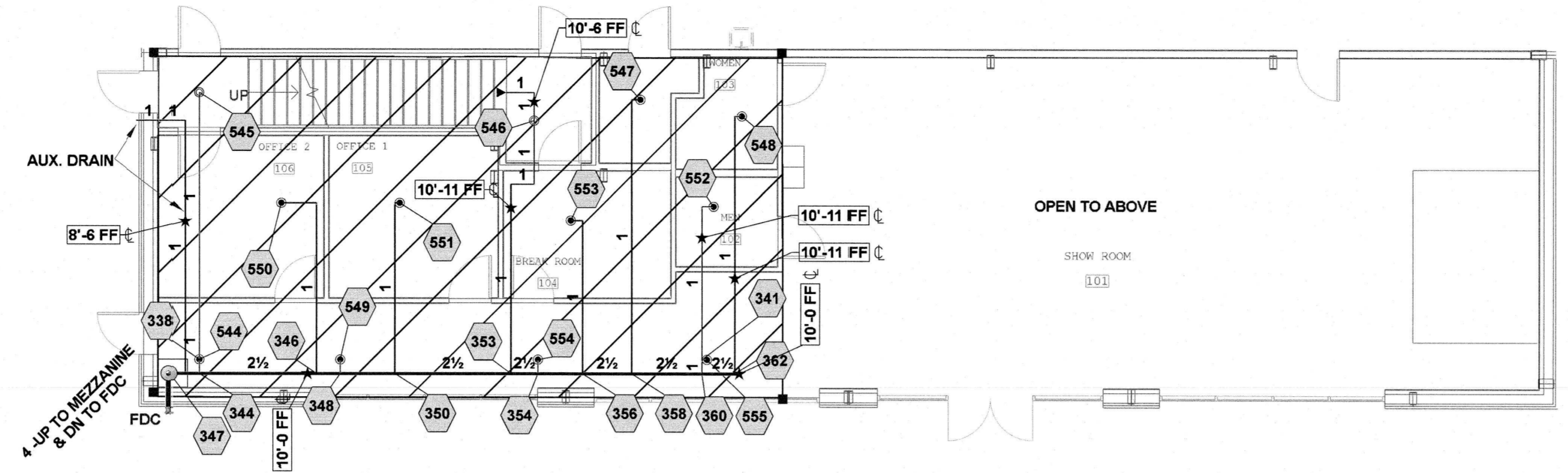
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Job Number:
JM22197

Drawn By:
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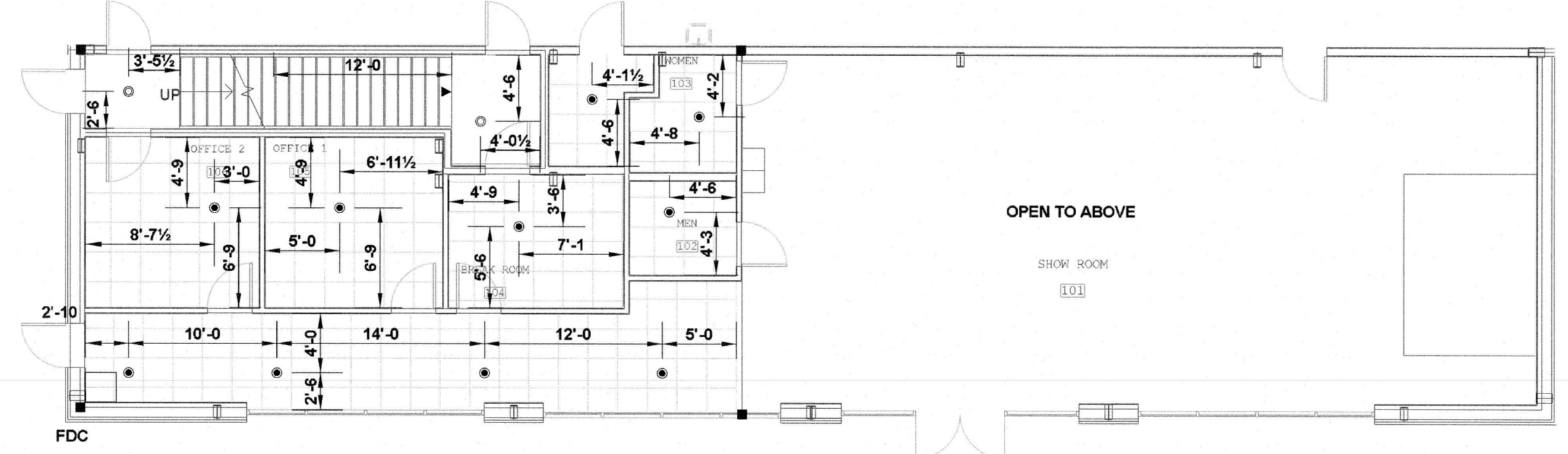
Sheet Number
FP3 OF 4



Hydraulic Information	
Remote Area C	
OCCUPANCY CLASSIFICATION	Light Hazard
DENSITY (gpm/ft ²)	0.10 for 1500ft ² (Actual 1069ft ²)
TOTAL HOSE STREAMS	100.00
DRY CAPACITY	0.00gal
TOTAL HEADS FLOWING	12
K-FACTOR	5.6
TOTAL WATER REQUIRED	338.88
TOTAL PRESSURE REQUIRED	43.858
BASE of RISER (gpm)	238.88
BASE of RISER (psi)	25.703
SAFETY MARGIN (psi)	+12.854 (22.7%)

Light Hazard=0.10gpm/ft² for 1069ft²
ENTIRE AREA CALCULATED

Plan North
BELOW MEZZANINE PIPING PLAN
1/8"=1'-0"



Plan North
BELOW MEZZANINE CEILING PLAN
1/8"=1'-0"

CAROLINA DIESEL TRUCKS
62 PROGRESS DRIVE
FUQUAY VARINA, NC 27526

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SHEET TITLE:
BELOW MEZZANINE PIPING AND CEILING PLAN

This fire sprinkler planning and design drawing has been prepared by the undersigned in accordance with the Fire Protection Code of the State of North Carolina, Chapter 27 of the General Statutes for J & D Sprinkler's exclusive use pursuant to G.S. § 89C-25(6), and J & D Sprinkler must perform any and all installation work and other work performed in reliance on this drawing pursuant to G.S. § 89B-15(a)(2). Installation work or any other work on this drawing or any copy thereof is strictly prohibited.
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NC # 16269FS CERT # 71075
NICET LEVEL III
JASON GRAHAM

NC # 16269FS CERT # 121842
NICET LEVEL III

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BKB

Sheet Number
FP4 OF 4