

# ABBREVIATIONS

ADJ	Adjustable
AF	Above Finished Floor
AHJ	Authority Having Jurisdiction
ANSI	American National Standards Institute
AS	Automatic Sprinklers
ASME	American Society of Mechanical Engineers
ASR	Automatic Sprinkler Riser
ASTM	American Society for Testing and Materials
ATR	All Thread Rod
AUX	Auxiliary
AV	Alarm Valve
AW	American Welding Society
BB	Below Beam
BD	Below Deck
BFP	Backflow Preventor
BFV	Butterfly Valve
BJ	Below Joist
BL	Branchline
BLDG	Building
BDR	Base Of Riser
BR	Brass
CH	Chrome
CI	Cast Iron
CL	Centerline
CDJ	Cut Dn Job
CDL	Column
CDNC	Concrete
CDUP	Coupling
CPVC	Chlorinated Polyvinyl Chloride
CSP	Combination Standpipe
CSR	Coach Screw Rod
CTR	Center
CV	Check Valve
DCV	Detector Check Valve
DI	Ductile Iron
DN	Down
DSP	Dry Standpipe
E	Existing
EC	Extended Coverage
EFS	Engineered Fire Systems
ELEV	Elevation
ELL	Elbow Fitting
EQB	Earthquake Brace
EXP	Exposed
F	Flanged
FDC	Fire Department Connection
FH	Fire Hydrant
FHC	Fire Hose Cabinet
FHV	Fire Hose Valve
FLR	Floor
FM	Factory Mutual Research
FDW	Face Of Wall
FP	Fire Protection
FS	Flow Switch
FT	Foot
FTD	Field To Order
G	Grooved
GA	Gauge
GALV	Galvanized
GB	Glass Bulb
GDE	Groove Dne End
GDL	Groove-D-Let
GPM	Gallons Per Minute
GRC	Grooved Reducing Coupling
GV	Gate Valve
HDI	Hi-Let Drop-in Anchor
HSW	Horizontal Sidewall
HT	Height
HV	Hose Valve
ID	Inside Diameter
MECH	Mechanical
MJ	Mechanical Joint
MRA	Most Remote Area
MT	Mechanical Tee
NFPA	National Fire Protection Association
NIC	Not In Contract
ND	Number
NPT	National Pipe Thread
NTS	Not To Scale
OC	On Center
OD	Outside Diameter
OH	Ordinary Hazard
OS&Y	Outside Screw & Yoke
P	Plain End
PIV	Post Indicator Valve
PL	Property Line
PDC	Point Of Connection
PRV	Pressure Regulating Valve
PS	Pressure Switch
PSI	Pounds Per Square Inch
PVC	Polyvinyl Chloride
QR	Quick Response
RES	Residential
RN	Riser Nipple
SBB	Side Beam Bracket
SCH	Schedule
SHT	Sheet
SP	Standpipe
SPK	Sprinkler
SQ	Square
SSP	Standard Spray Pendent
SSU	Standard Spray Upright
SW	Switch
T	Thread
TEE	Tee Fitting
TLW	Threaded Lightwall
TDE	Thread Dne End
TDR	Top Of Riser
TW	Thinwall
TYP	Typical
UBC	Uniform Building Code
UFC	Uniform Fire Code
UG	Underground
UL	Underwriters Laboratories
UN	Unless Otherwise Noted
VA	Valve
VSW	Vertical Sidewall
WMG	Water Motor & Gong
WDL	Weld-D-Let
WSP	Wet Standpipe
WTR	Water

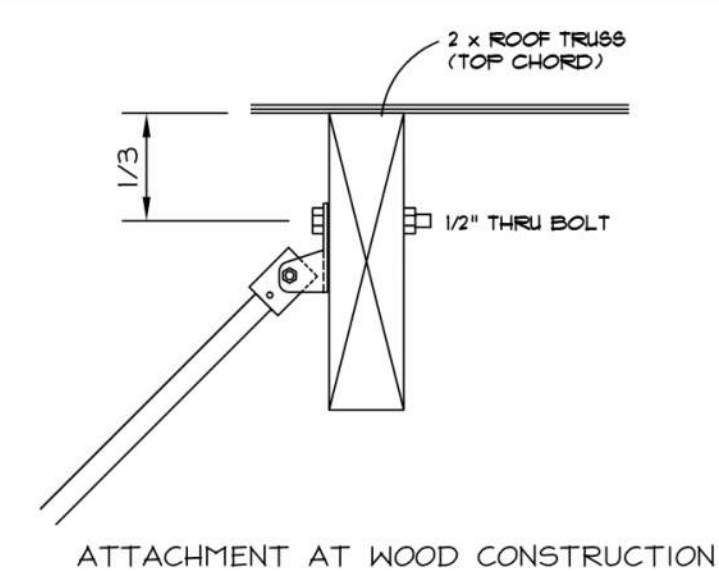
# SYMBOL LEGEND

	QR Upright Sprinkler on Line		Change in Pipe Elevation
	QR Dry Pendent Sprinkler on Drop		System Riser
	QR Upright Sprinkler on Sprig		Branchline Hanger Location See Hanger Detail For Additional Info
	Upright Head over Pendent Head		Hydraulic Reference Point
	QR Pendent Sprinkler on 1" Drop		Grooved Coupling
	QR Sidewall Sprinkler		Screwed Coupling
	Sprinkler Branchline		Grooved Cap
	Sprinkler Main		Threaded Cap
	2 Way/4 Way Earthquake Brace		
	Short Rod Substitute for Bracing		
	U-Hook Substitute for Bracing		

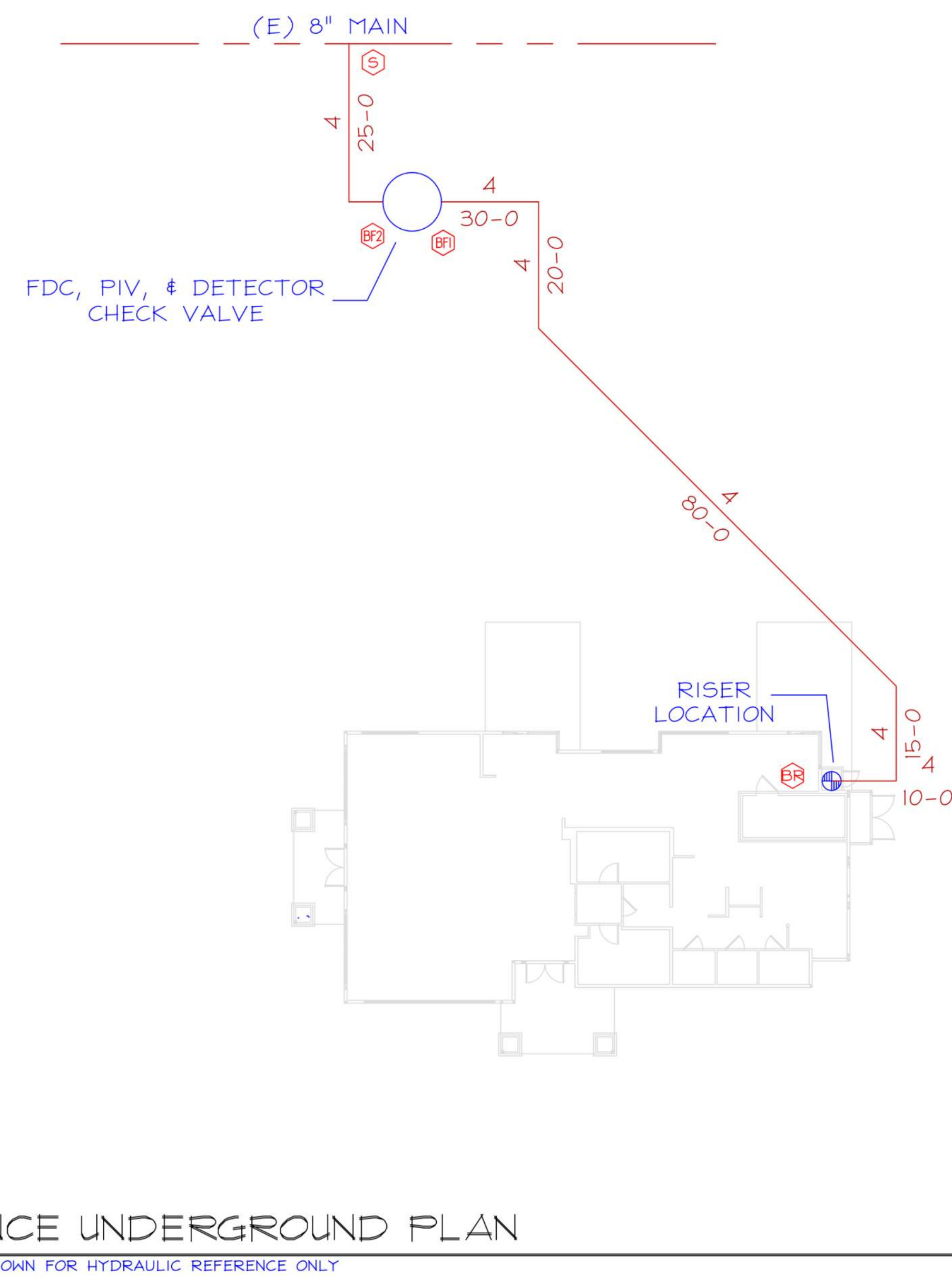
SEE HEAD LEGEND ON PIPING PLANS FOR ADDITIONAL INFO

# EARTHQUAKE BRACING DETAILS & CALCULATIONS

LATERAL BRACE (4x4)  
NO LOAD CALCULATIONS REQUIRED  
ALL PIPING IS BEING SUPPORTED  
FRONT U-HOOK HANGERS W/ LEGS BENT @ 30°  
FROM VERTICAL



Tol-Brace Seismic Calculations (Longitudinal)		
<b>Brace Information</b> Maximum Spacing = 40 Feet(12.2m) Length of Brace = 7'-0"(2.1m) Bracing Material = 1in. (25mm) Sch.40 Angle from Vertical = 45° Min. Least Radius of Gyration = 0.42"(10.668mm) L/R Value = 200 Maximum Horizontal Load = 2499 lbs.(1134Kg.)		
<b>Tolco Brace Components</b> Fig.4A Sway Brace Clamp = 1425 lbs.(646 Kg.) Fig.980 Universal Swivel = 1955 lbs.(887 Kg.) Calculation based on CONCENTRIC Loading *Please Note: These calculations are for Tolco components only. Use of any other components voids these calculations and the listing of the assembly.		
<b>Assembly Detail</b> 		
<b>Fastener Information</b> Fastener Orientation = NFPA Type H Type of Fastener = Through-Bolt Diameter of Fastener = 1/2in. (12.7mm) Length of Fastener = 2in. (50mm) Maximum Load = 296 lbs.(134Kg.)		
<b>Load Information</b> Size, Type, and Length of Pipe with Assigned Load		
3"(75mm) Sch.10 Pipe	40 Ft.(12.2m)	158.8 lbs.(72Kg.)
Percentage added for Fittings and Sprinklers	15%	23.85 lbs.(11Kg.)
Total Assigned Load of all Pipe within Zone Of Influence		183 lbs.(83Kg.)



# REFERENCE UNDERGROUND PLAN

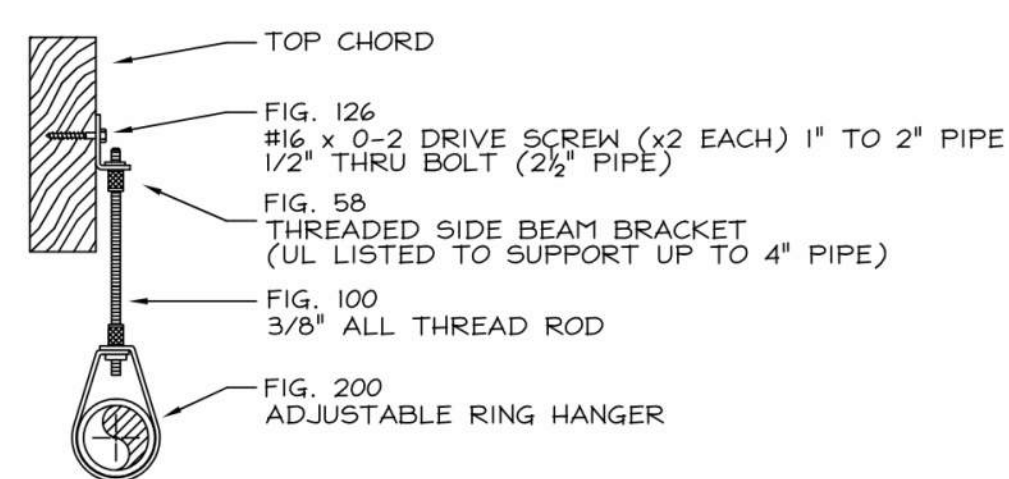
UNDERGROUND IS SHOWN FOR HYDRAULIC REFERENCE ONLY



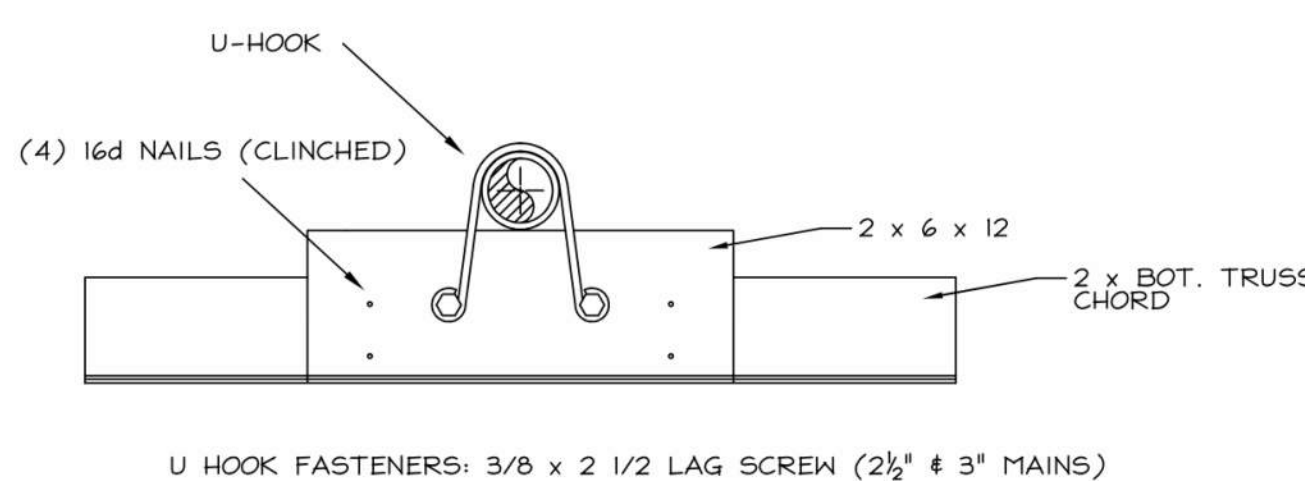
1" = 16'-0"

# HANGER DETAILS

\*HANGER RODS TO BE INSTALLED TIGHT TO PIPE TO PREVENT UPWARD MOVEMENT\*



HANGER #1 ( / )  
THREADED SIDE BEAM BRACKET, ROD & RING  
WOOD CONSTRUCTION  
ADD BLOCKING IF REQUIRED



HANGER #2 ( x )  
INVERTED "U" HANGER  
WOOD CONSTRUCTION  
ADD BLOCKING IF REQUIRED

MAXIMUM DISTANCE BETWEEN HANGERS									
NOMINAL PIPE SIZE (in.)	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	3-1/2"	4"
STEEL PIPE EXCEPT THREADED LIGHTWALL	N/A	12-0	12-0	15-0	15-0	15-0	15-0	15-0	15-0
THREADED LIGHTWALL STEEL PIPE	N/A	12-0	12-0	12-0	12-0	12-0	12-0	N/A	N/A
HANGER ROD SIZES									
NOMINAL PIPE SIZE (in.)	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	3-1/2"	4"
STEEL PIPE EXCEPT THREADED LIGHTWALL	N/A	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"
THREADED LIGHTWALL STEEL PIPE	N/A	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"

# HEAD LEGEND

16	TYCO *RF11* QR CONCEALED PENDENT (TY3531)	4
155"	1/2" ORIFICE 1/2" NPT	K=5.60
29	TYCO *TY-FRB* QR PENDENT (TY3231)	
155"	1/2" ORIFICE 1/2" NPT USE #401 EXTENDED CANOPY	K=5.60
73	TYCO *TY-FRB* QR UPRIGHT (TY3131)	
200"	1/2" ORIFICE 1/2" NPT	K=5.60
2	TYCO *DS-1* QR DRY PENDENT (TY3235)	
155"	1/2" ORIFICE 1/2" NPT	K=5.60

# GENERAL NOTES

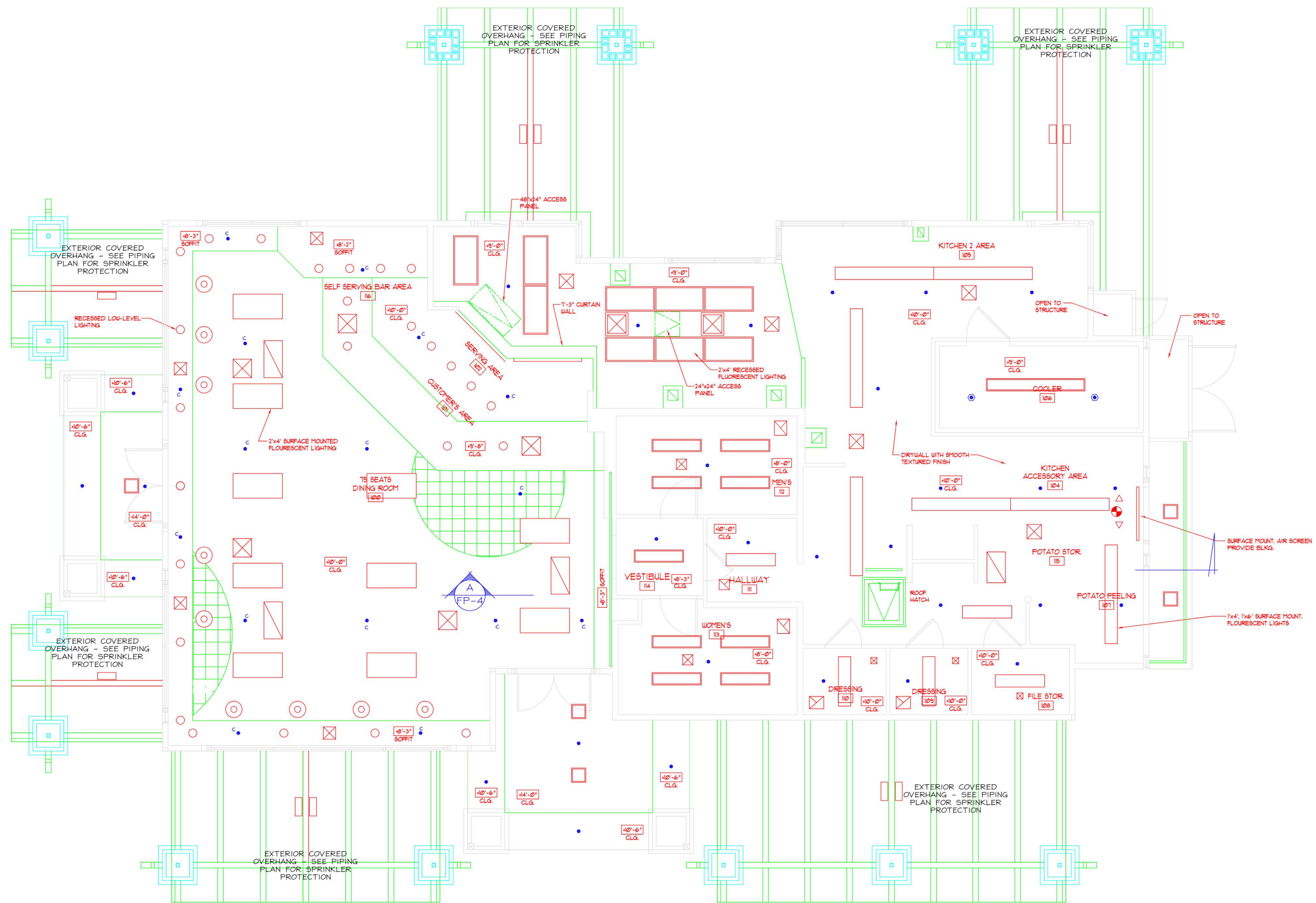
- The system design and installation shall comply with NFPA 13 and the requirements of the Authority Having Jurisdiction.
- New Building design is for:  
Restaurant Service Area - Ordinary Hazard I - .15/900 sq. ft.  
Area has been adjusted for "QR" heads @ 10'-0" ceilings  
Seating areas & restrooms are designed and spaced for light hazard
- All piping shall be as follows:  
All threaded piping to be DynaThread or equal.  
All grooved piping to be DynaFlow or equal.
- All screwed fittings shall be cast iron or equal.
- All threaded pipe and fittings shall have threads cut to ANSI/ASME standard B1.20.1.
- All hanger components and installation shall be in accordance with NFPA 13 chapter 6.
- Electrical wiring and any painting of the pipe that may be required shall be by others.
- All piping is to be hydrostatically tested at 200 psi for a period not less than two hours.
- All wiring is by others.
- A 6 head spare sprinkler and wrench box to be located near riser.
- Water flow information:  
Static - 61 psi  
Residual - 58 psi  
GPM Flowing - 1190 gpm

REVISIONS	BY


ENGINEERED FIRE SYSTEMS, INC.  
AUTOMATIC SPRINKLER "SPECIALISTS"  
13457 COLEMAN HWY. GRASS VALLEY, CA 95945, (530) 274-9400

FAST FOOD RESTAURANT

DRAWN  
H. MORGADO  
DATE  
05-03-26  
SCALE  
1/4" = 1'-0"  
FILE NUMBER  
10112  
SHEET  
FP-1  
1 OF 4 SHEETS

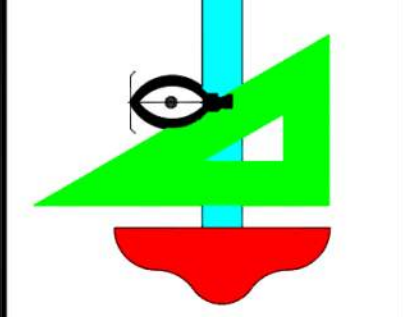


REFLECTED CEILING PLAN

1/4" = 1'-0" 

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FAST FOOD RESTAURANT

DRAWN
H. MORGADO
DATE
05-03-26
SCALE
1/4" = 1'-0"
FILE NUMBER
10112
SHEET
FP-2
2 OF 4 SHEETS

REVISIONS	BY

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**FAST FOOD RESTAURANT**

DRAWN
H. MORGADO
DATE
05-03-26
SCALE
1/4" = 1'-0"
FILE NUMBER
10112
SHEET
<b>FP-3</b>
3 OF 4 SHEETS

**HYDRAULIC SYSTEM**  
 This building is protected by a Hydraulically Designed Automatic Sprinkler System.

Location: **REMOTE AREA**

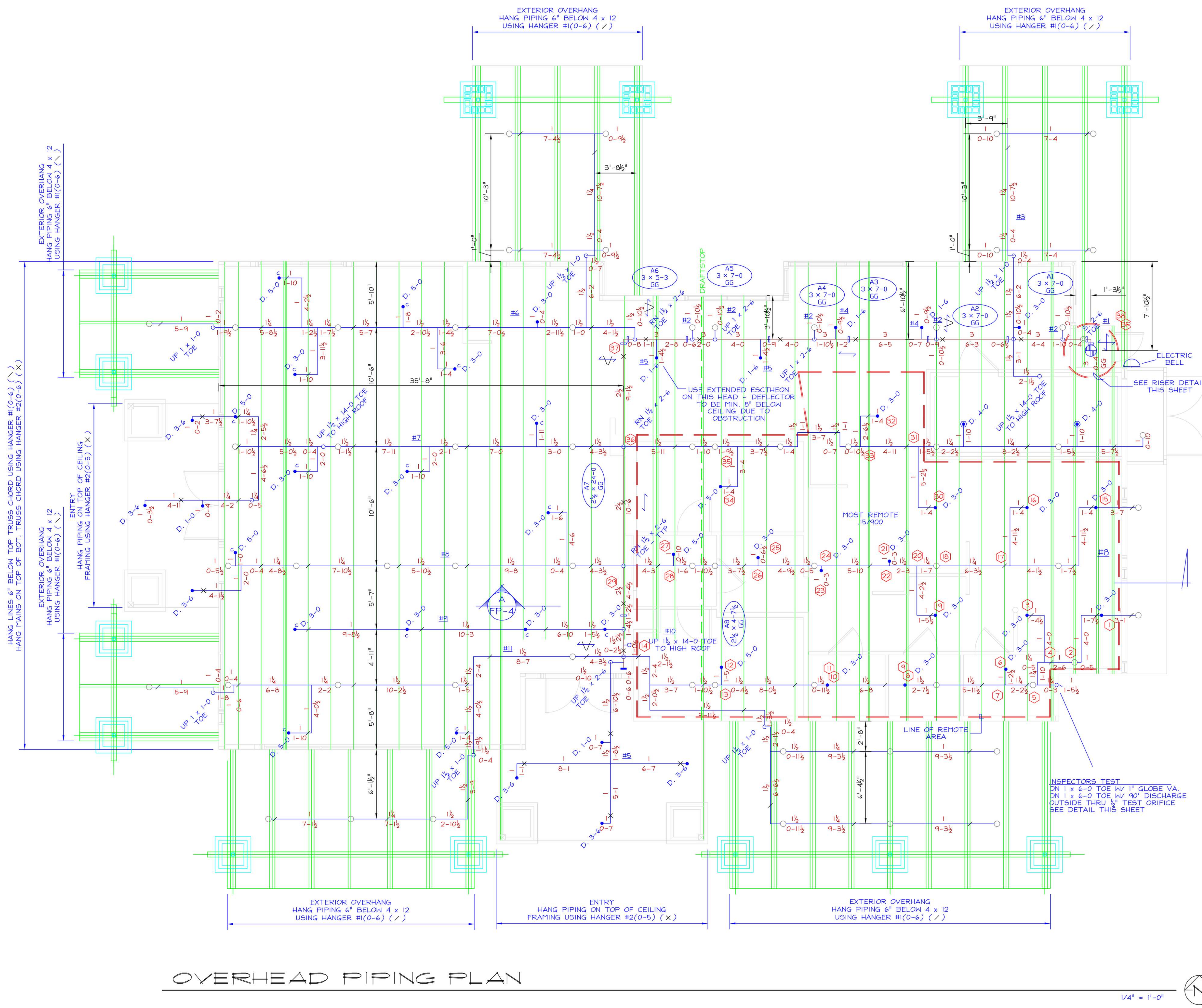
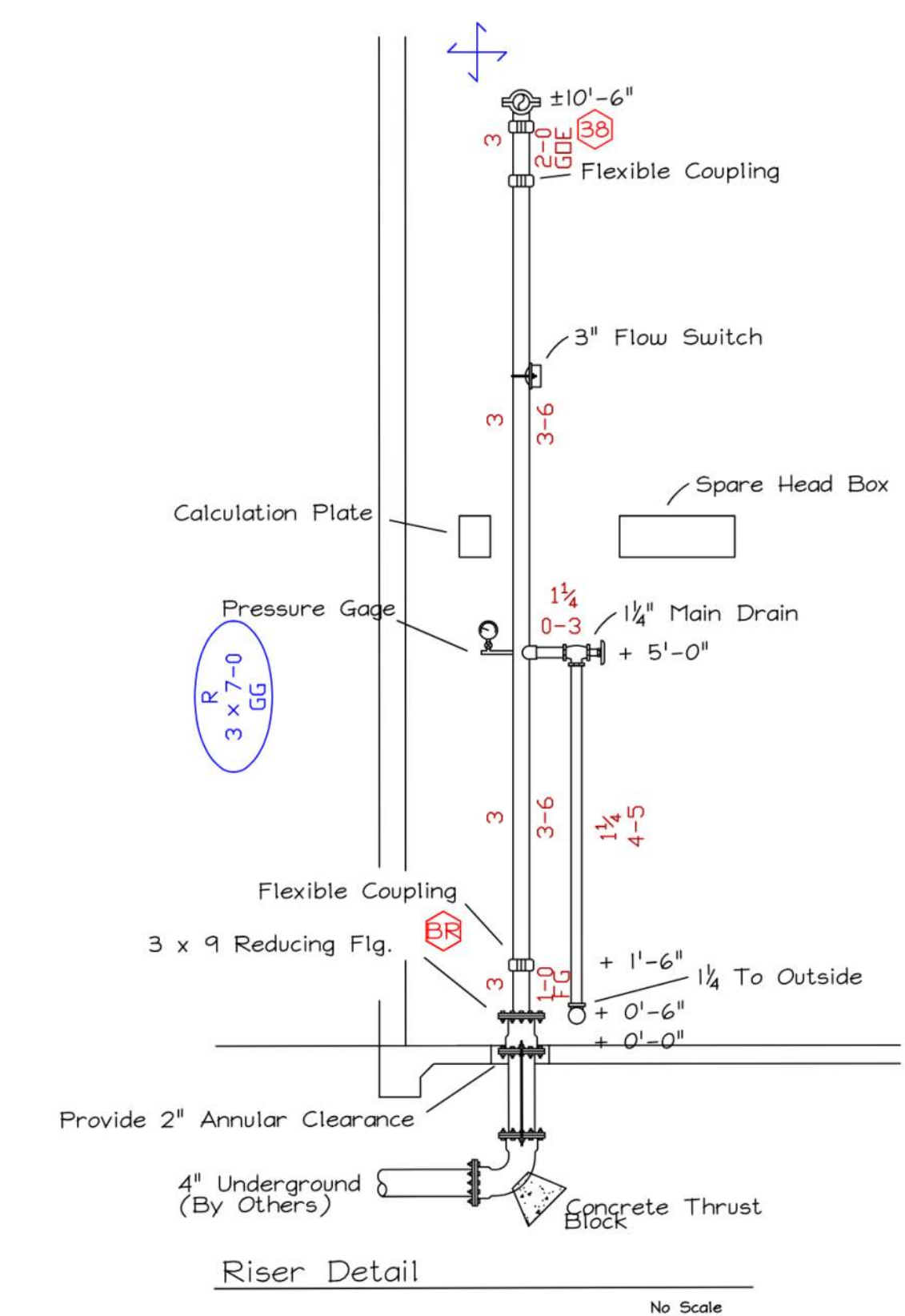
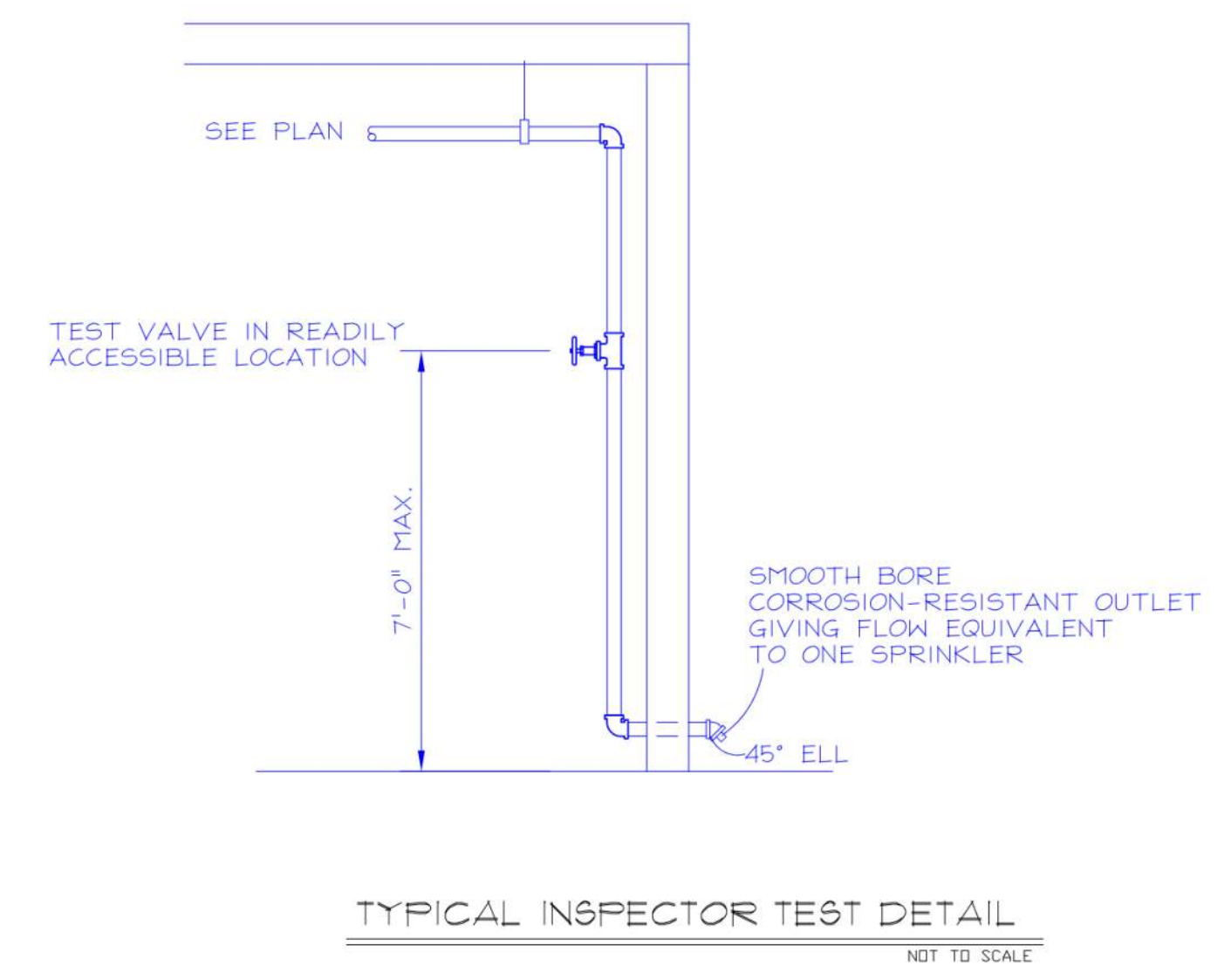
No. of Sprinklers: **16**

Basis of Design

- DENSITY: **.15 GPM/SQ. FT.**
- DESIGNED AREA OF DISCHARGE: **900 SQ. FT.**

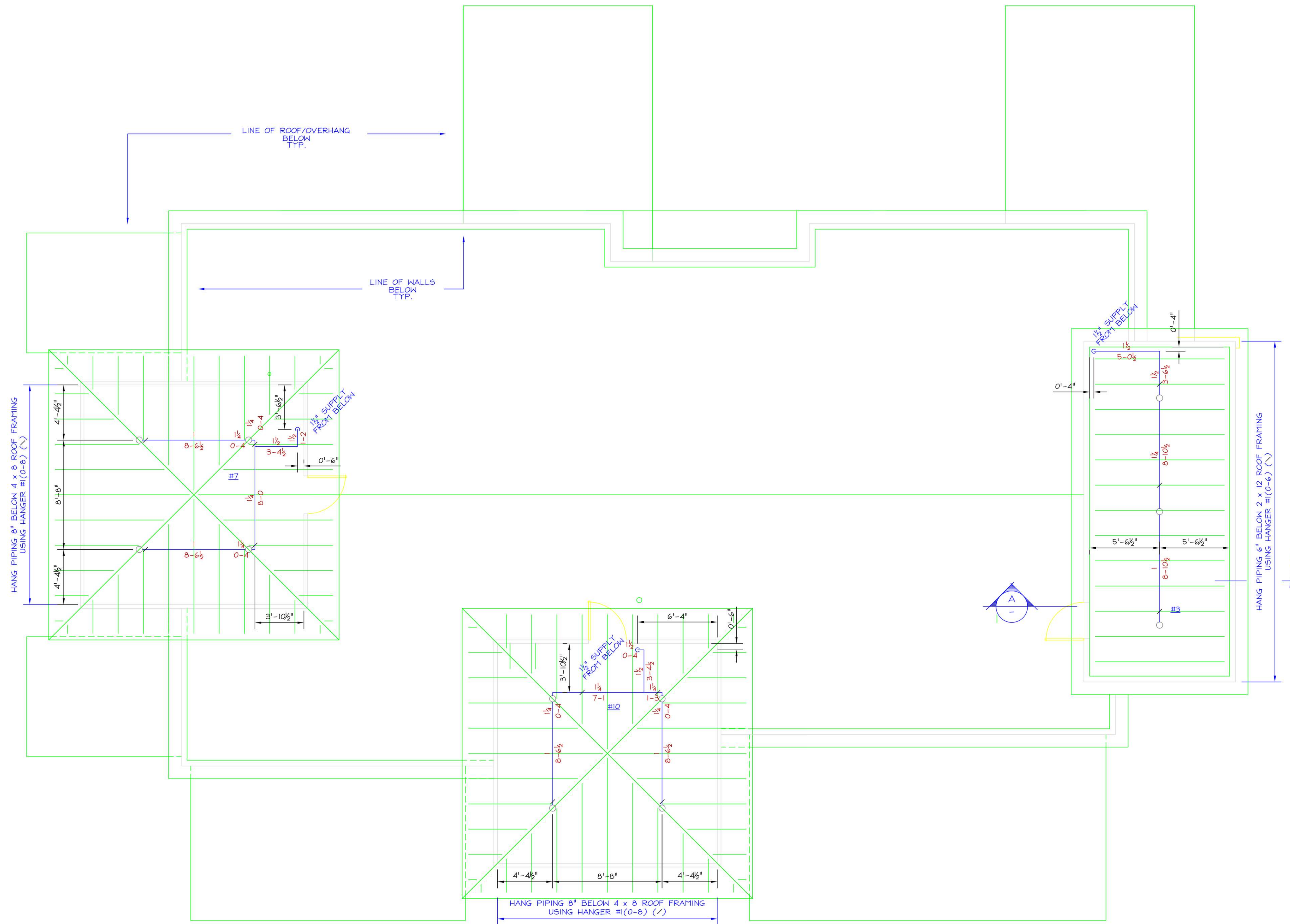
System Demand

- GPM DISCHARGE: **297.7 GPM**
- RESIDUAL PRESSURE AT THE BASE OF THE RISER: **40.0 PSI**



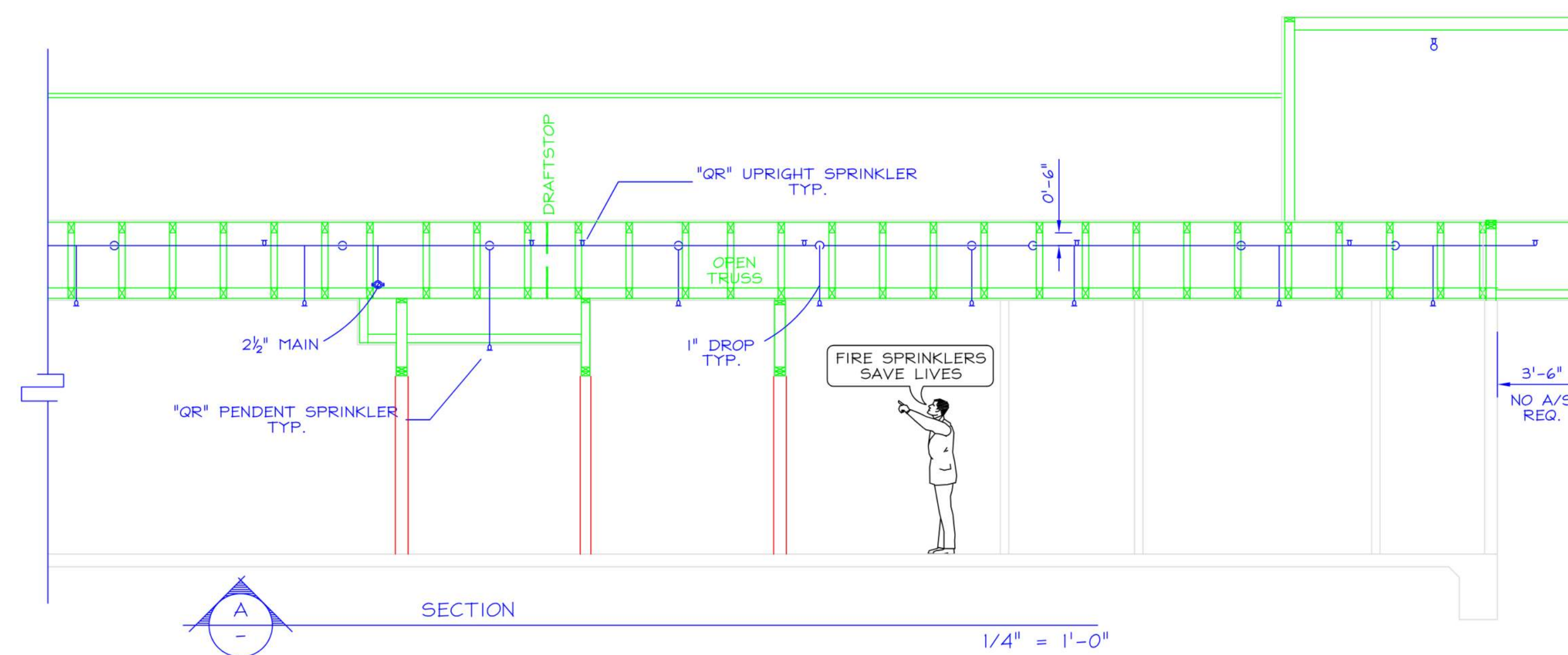
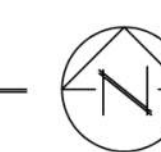
**OVERHEAD PIPING PLAN**

1/4" = 1'-0"



HIGH ROOF PIPING PLAN

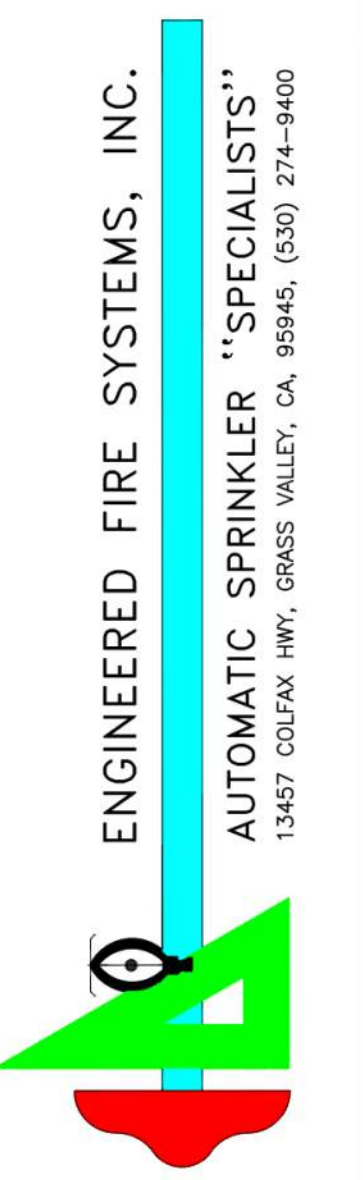
1/4" = 1'-0"



SECTION

1/4" = 1'-0"

REVISIONS	BY
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FAST FOOD RESTAURANT

DRAWN	H. MORGADO
DATE	05-03-26
SCALE	1/4" = 1'-0"
FILE NUMBER	10112
SHEET	FP-4
4 OF 4 SHEETS	