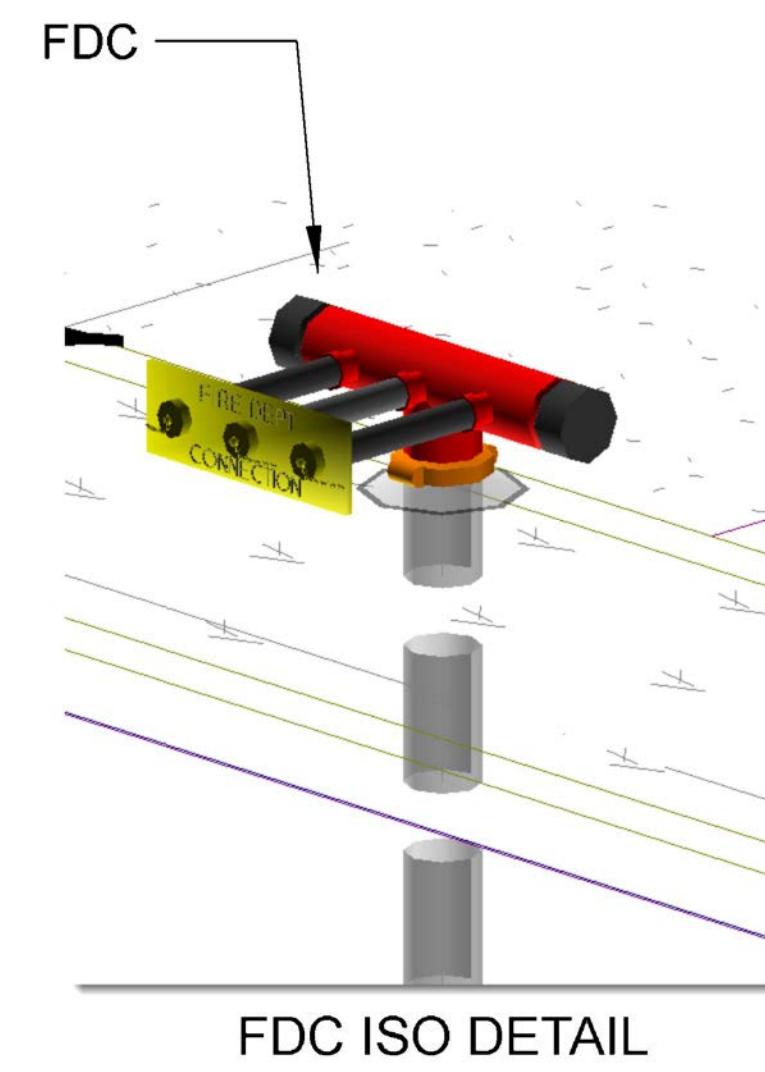
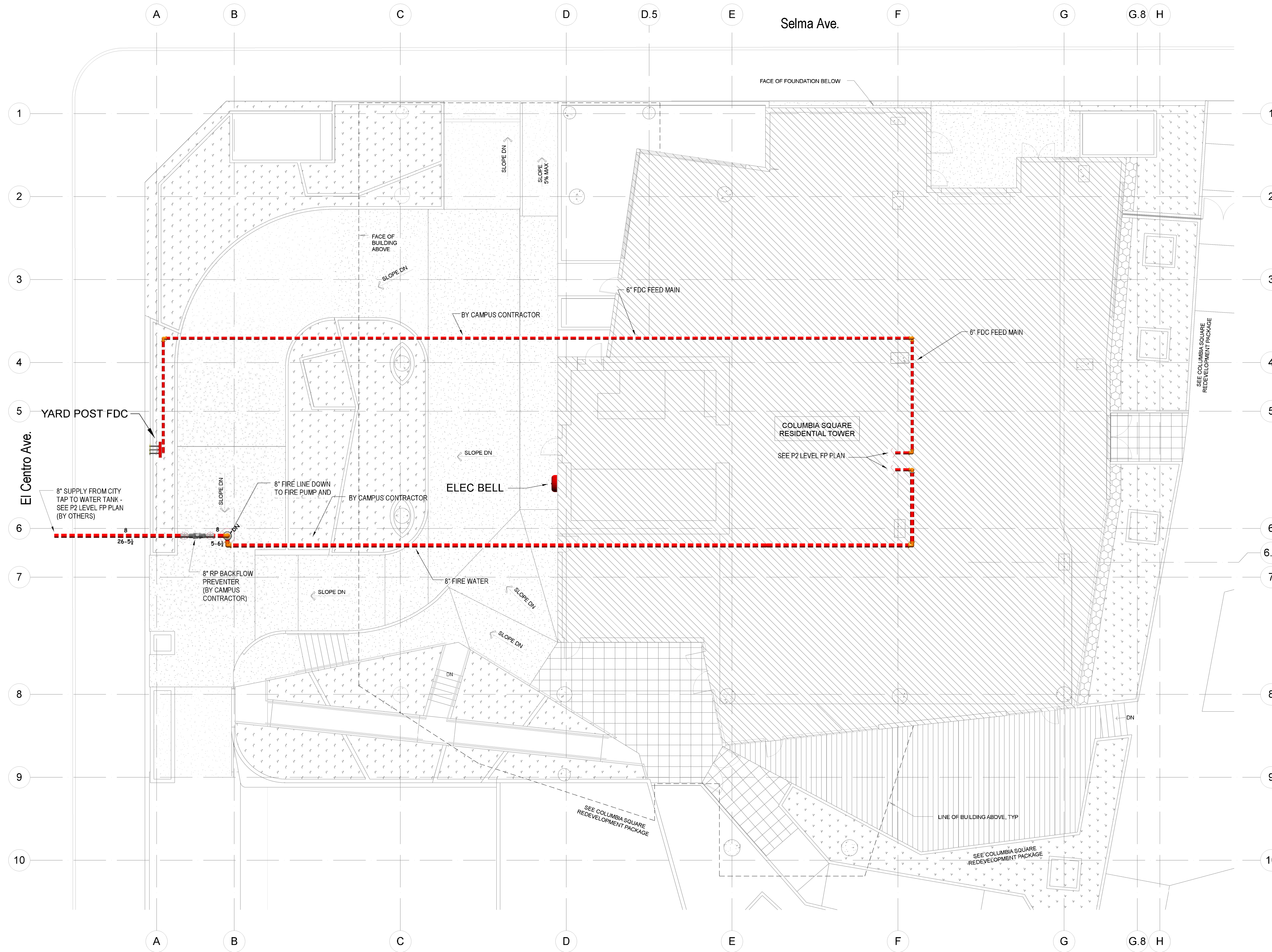


SECTION VIEW AT FDC LOCATION



FDC ISO DETAIL

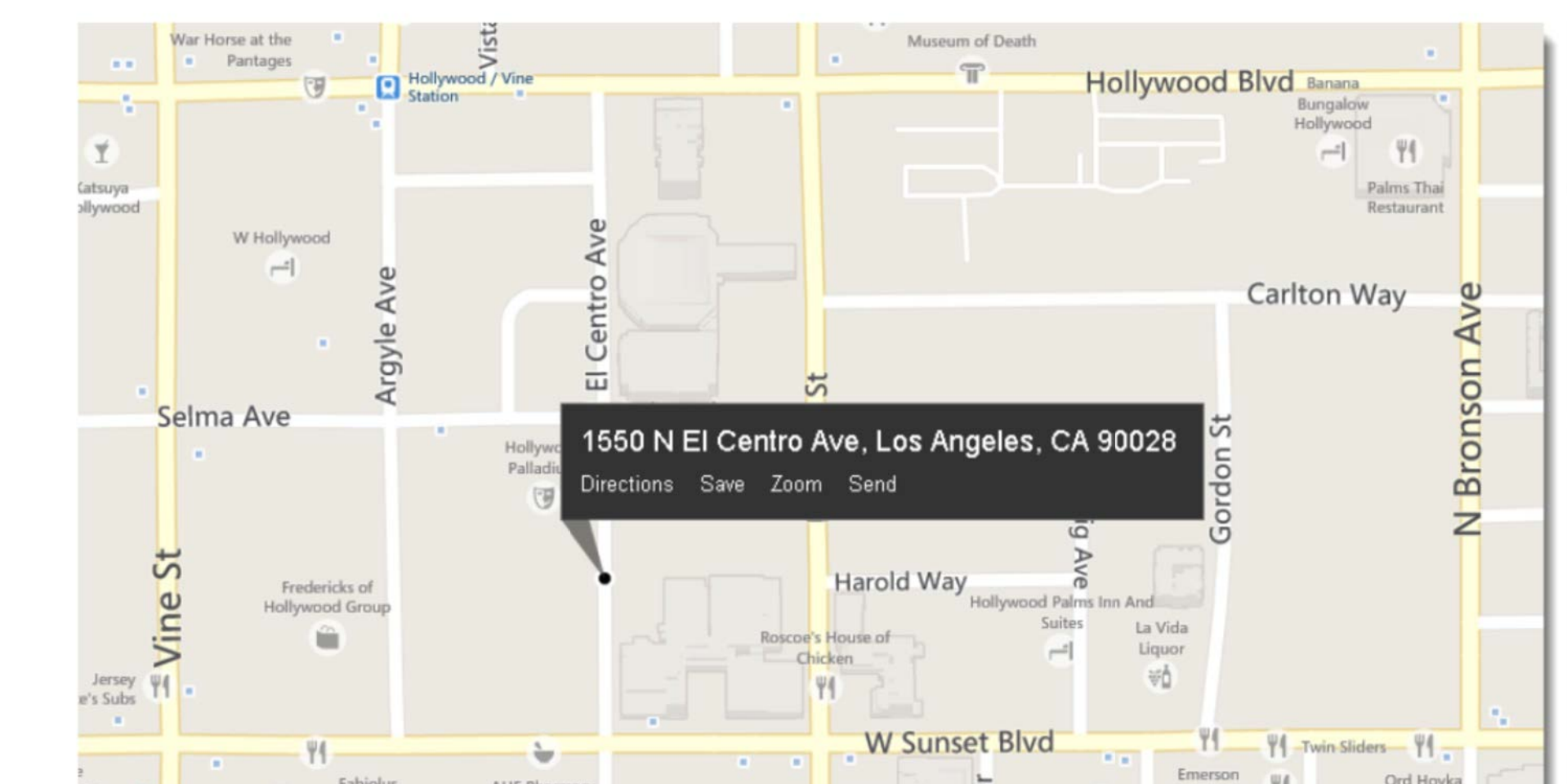
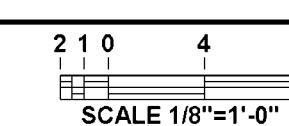


GENERAL NOTES:

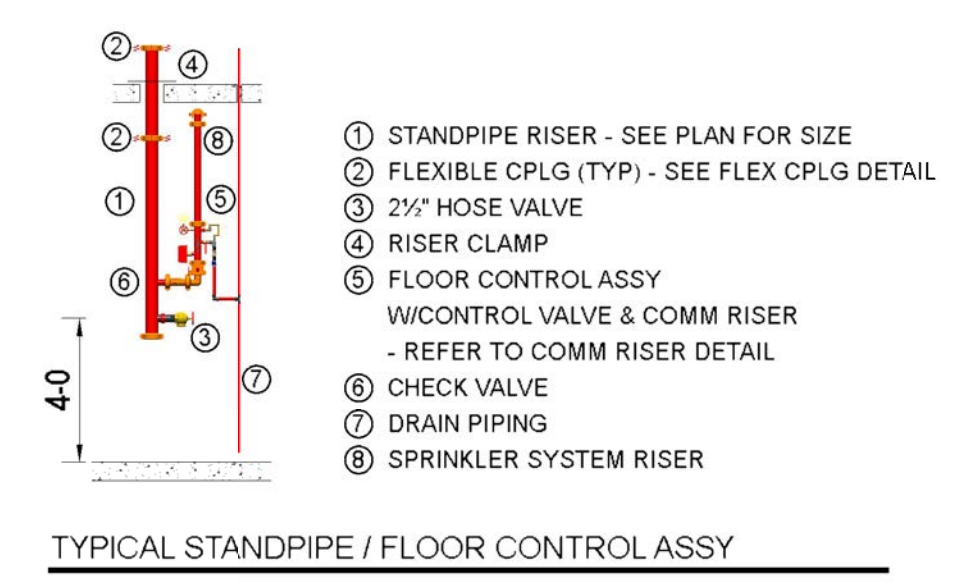
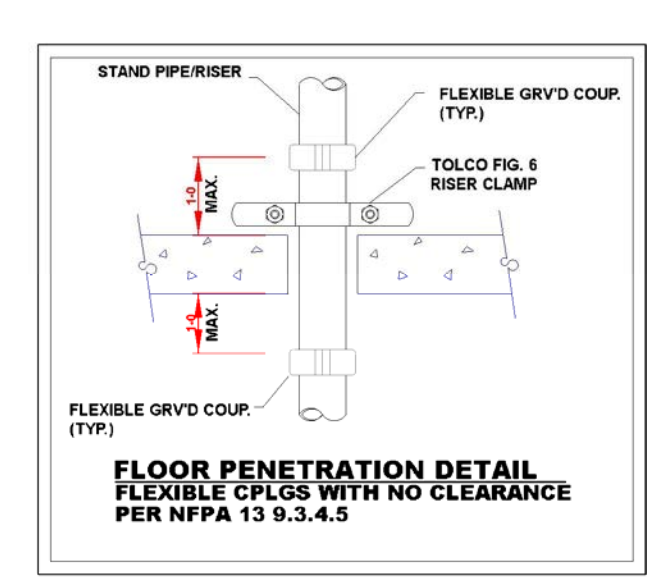
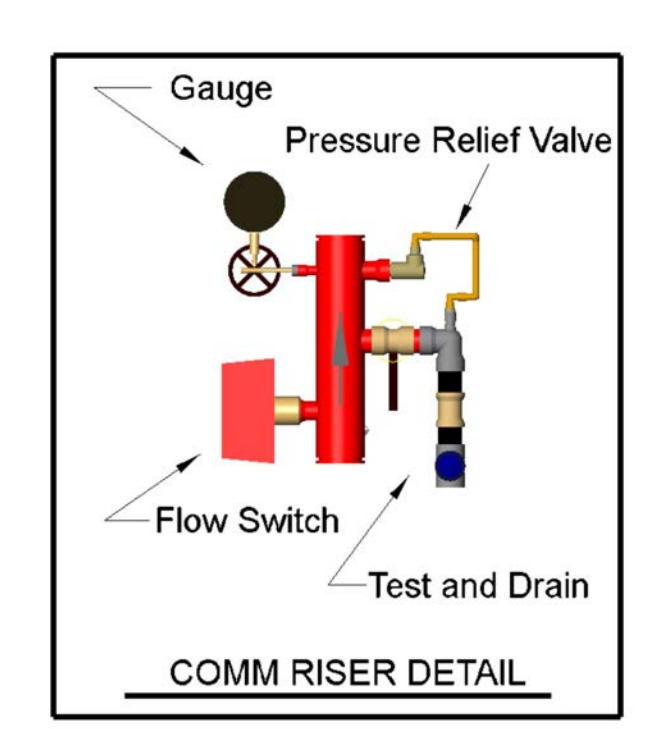
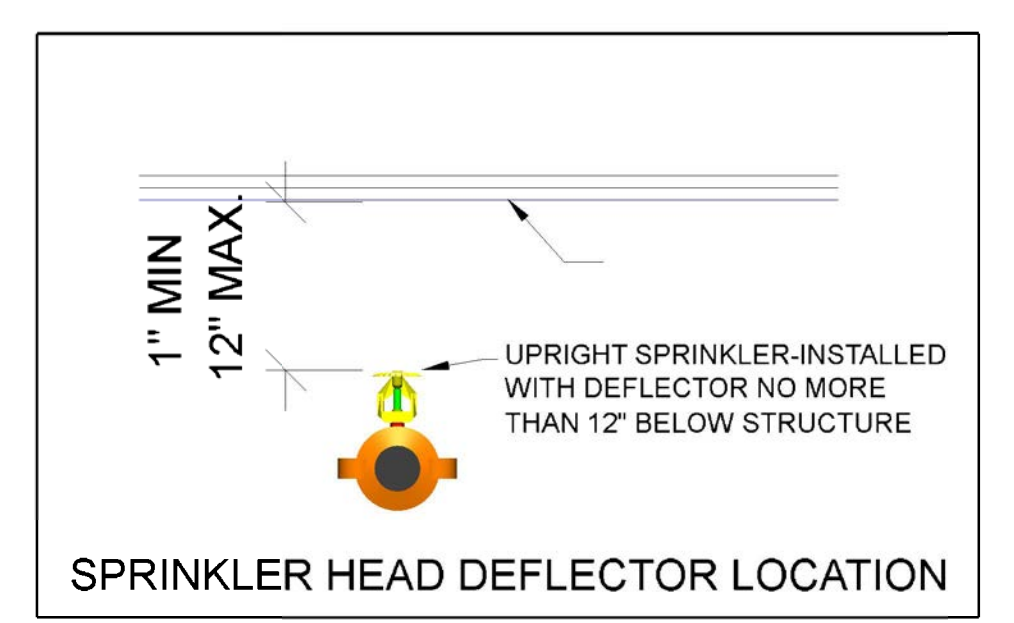
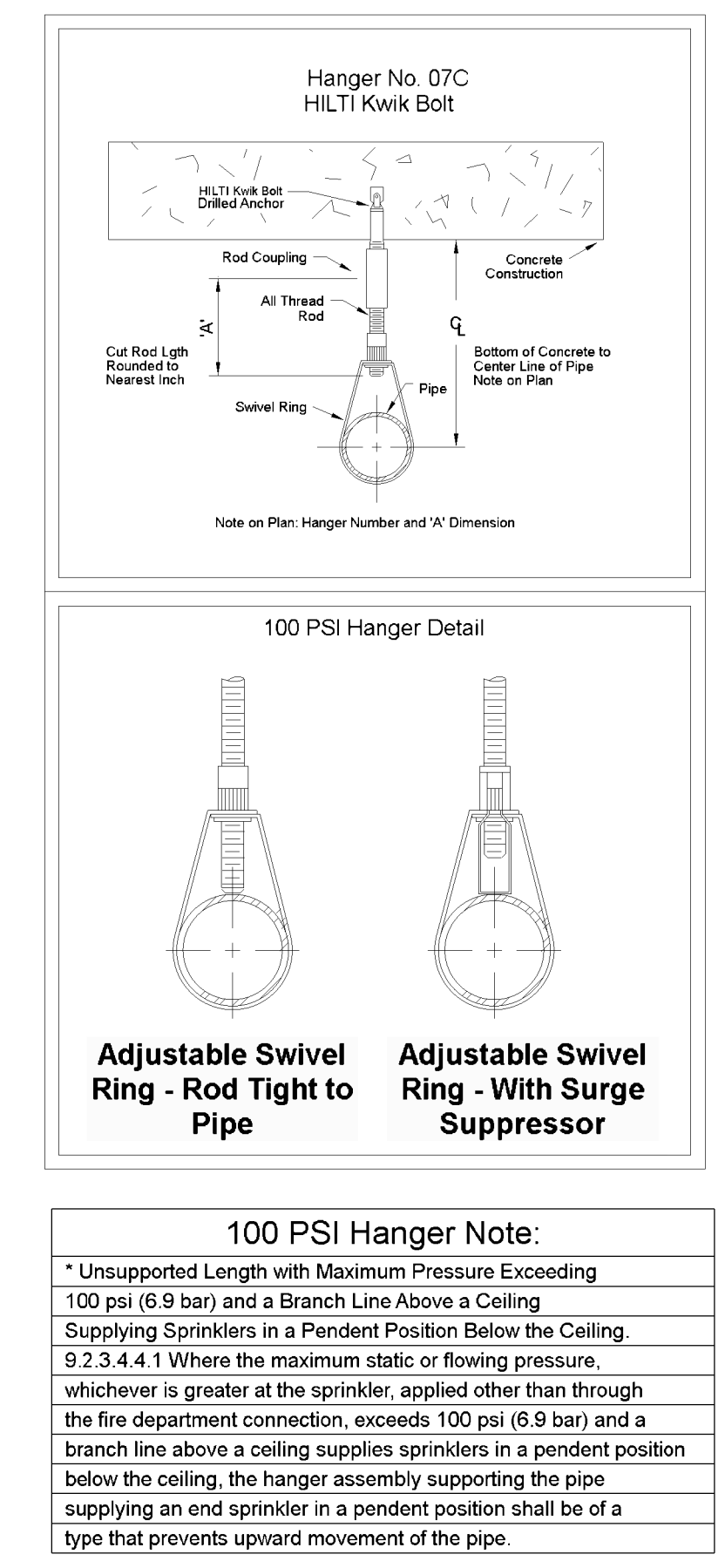
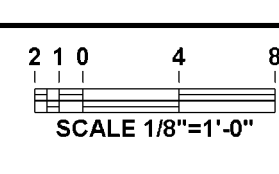
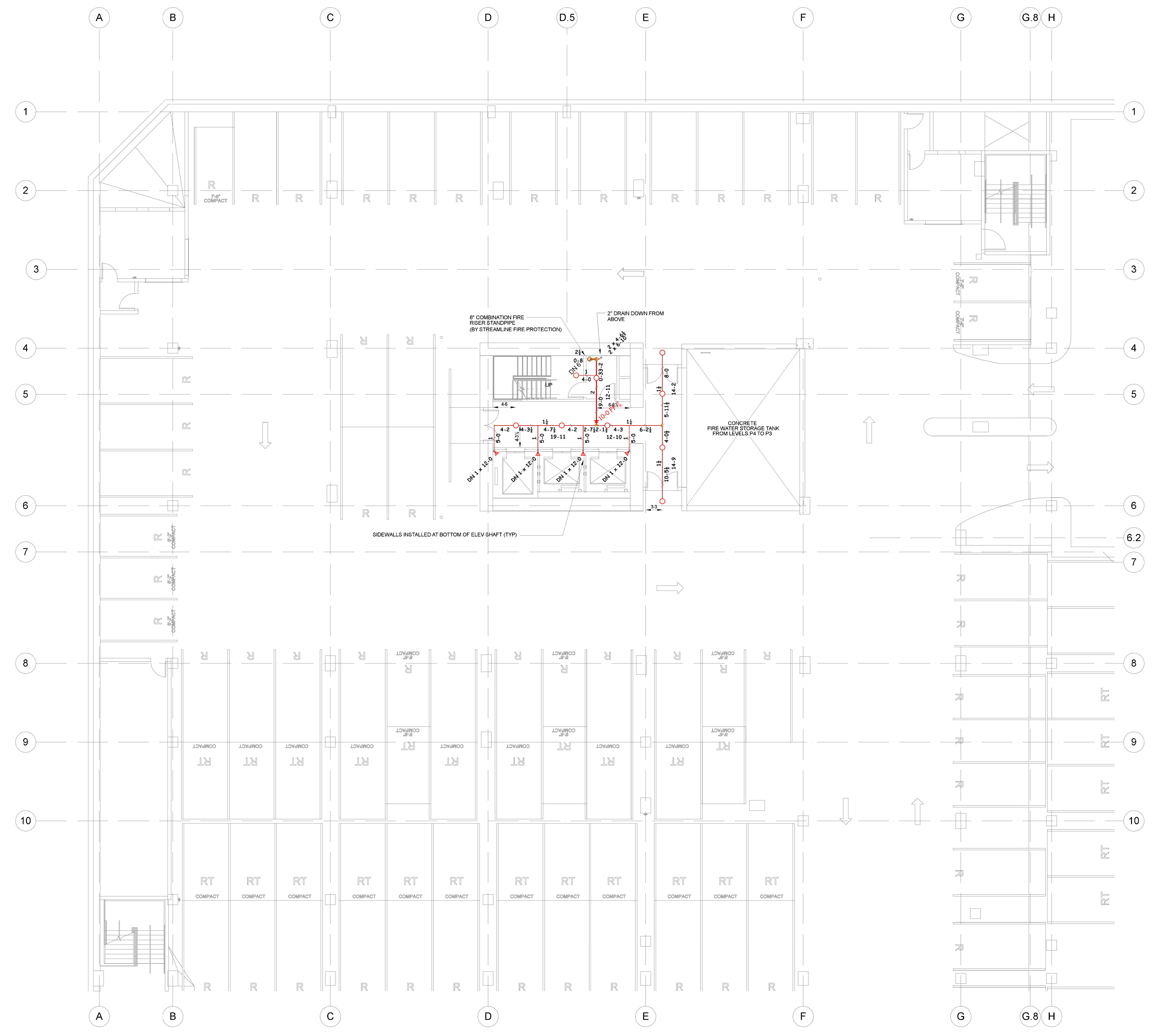
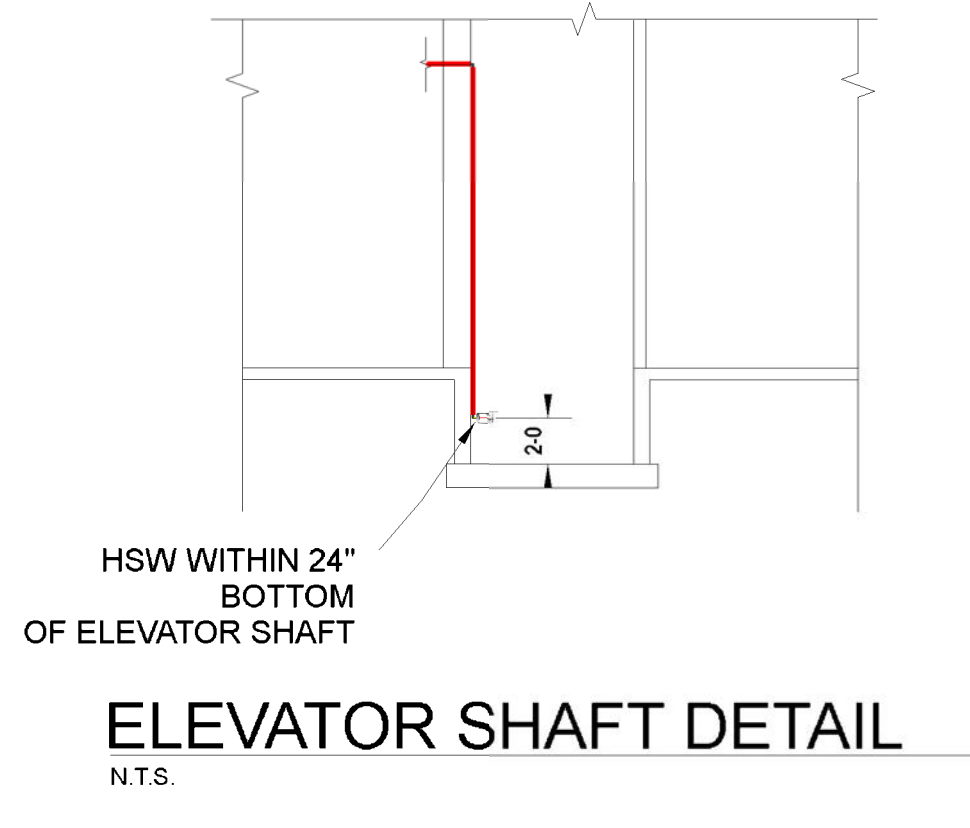
- 1) THE SPRINKLER SYSTEM DESIGN AS SHOWN ON THESE DRAWINGS SHALL CONFORM TO NFPA 13 2010, AND ALL STATE AND LOCAL CODES.
- 2) A FIRE ALARM SYSTEM IS PART OF THIS PROJECT (BY OTHERS), AND WILL REQUIRE A SEPARATE PERMIT TO BE TAKEN OUT BY THE ALARM CONTRACTOR.
- 3) PIPING AND FITTINGS:
ALL PIPE 1" TO 2" SHALL BE SCH. 40, 2-1/2" AND LARGER SHALL BE SCH. 10
1" FITTINGS WILL BE THREADED U.N.O. 2" AND LARGER WILL BE GROOVED U.N.O.
- 4) ITEMS EXCLUDED FROM OUR SCOPE OF WORK INCLUDE BUT ARE NOT LIMITED TO:
ALL ELECTRICAL WIRING (ALARM DEVICES, AIR COMPRESSORS ECT.) FIRE EXTINGUISHERS

FIRE SPRINKLER PIPING AND DEVICES SHOWN ON THIS PLAN FOR REFERENCE ONLY - REFER TO PARKING LEVELS 1 AND 2 FOR DETAILS (PROVIDED AND INSTALLED BY CAMPUS CONTRACTOR).

SITE PLAN



<p>STREAMLINE FIRE PROTECTION INC. 3700 INDUSTRY AVE. # 104 LAKEWOOD CA. 90712 (714)625-8203 FAX: (714)369-8235 STATE LICENSE #931653 C-16</p>	<p>COLUMBIA SQUARE RESIDENTIAL TOWER 1550 N EL CENTRO AVENUE LOS ANGELES, CA 90028</p>	<p>DATE: 08/07/14 SCALE: AS NOTED DRAWN: David W. Shroy CHK: [Signature] SHEET: SITE PLAN FP1</p>																									
<p>APPROVAL BY: [Signature]</p>	<p>CONTRACT WITH: [Signature]</p>	<p>CONTRACT WITH: [Signature]</p>																									
<p>SPRINKLER LEGEND</p> <table border="1"> <tr> <th>SYMBOL</th> <th>MANUFACTURER</th> <th>SIZE</th> <th>MODEL</th> <th>QUANTITY</th> <th>CRITICAL FINISH</th> <th>TEMPERATURE</th> <th>NOSE</th> </tr> <tr> <td>[Symbol]</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	SYMBOL	MANUFACTURER	SIZE	MODEL	QUANTITY	CRITICAL FINISH	TEMPERATURE	NOSE	[Symbol]								<p>REV / DATE DESCRIPTION</p> <table border="1"> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>										<p>BY: [Signature]</p>
SYMBOL	MANUFACTURER	SIZE	MODEL	QUANTITY	CRITICAL FINISH	TEMPERATURE	NOSE																				
[Symbol]																											



REVISION	DATE	DESCRIPTION	BY

APPROVAL BY:			CONTRACT WITH:			OFFICE:		

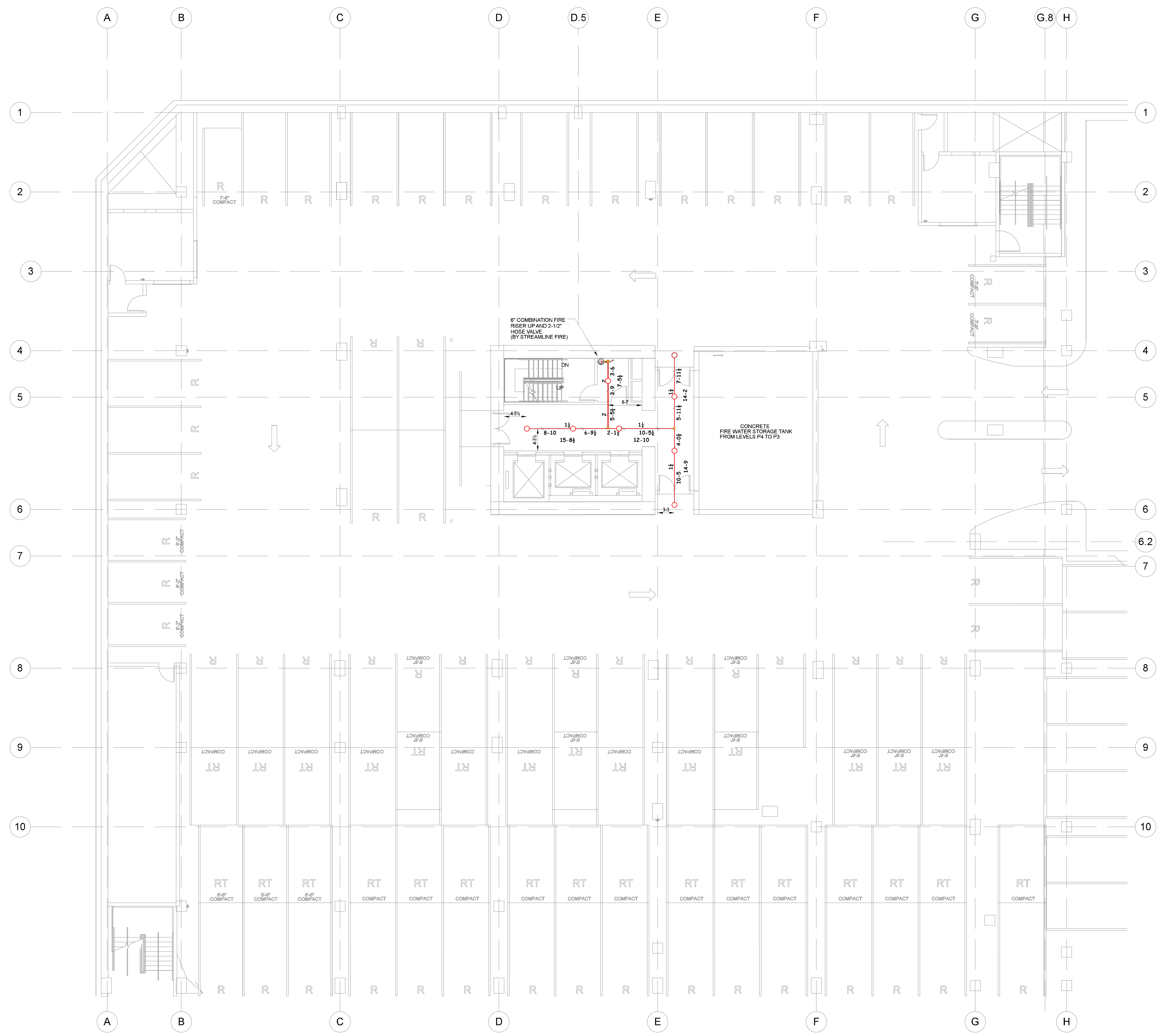
STREAMLINE FIRE PROTECTION INC. # 104			STATE LICENSE # 931653 C-16		
3700 INDUSTRY AVE. # 104			LAKEWOOD CA. 90712		
(714)625-8203			FAX: (714)369-8235		

COLUMBIA SQUARE RESIDENTIAL TOWER			1650 N. EL CENTRO AVENUE		
LOS ANGELES, CA 90028					

DATE:		DRAWN:		SCALE:	AS NOTED

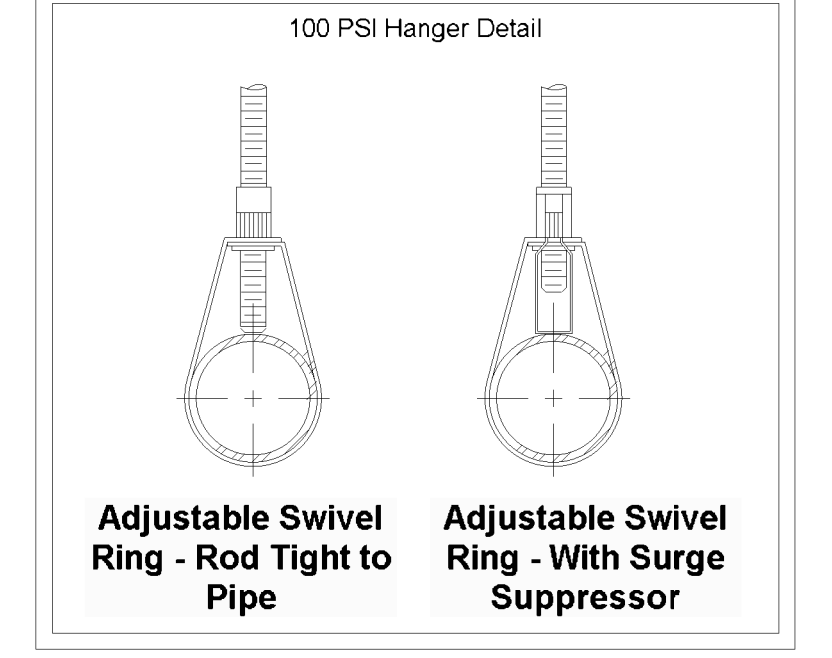
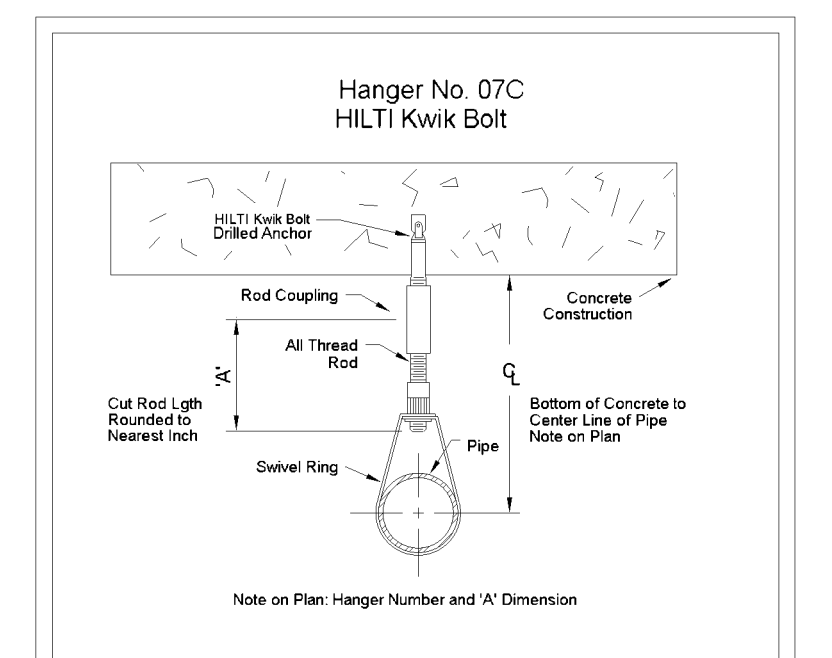
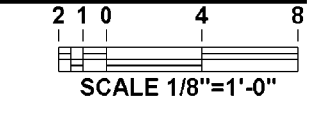
DRAWN BY: [Signature]
CHECKED BY: [Signature]
DATE: [Date]

PROJECT: P4 LEVEL FP PLAN
SHEET: FP2

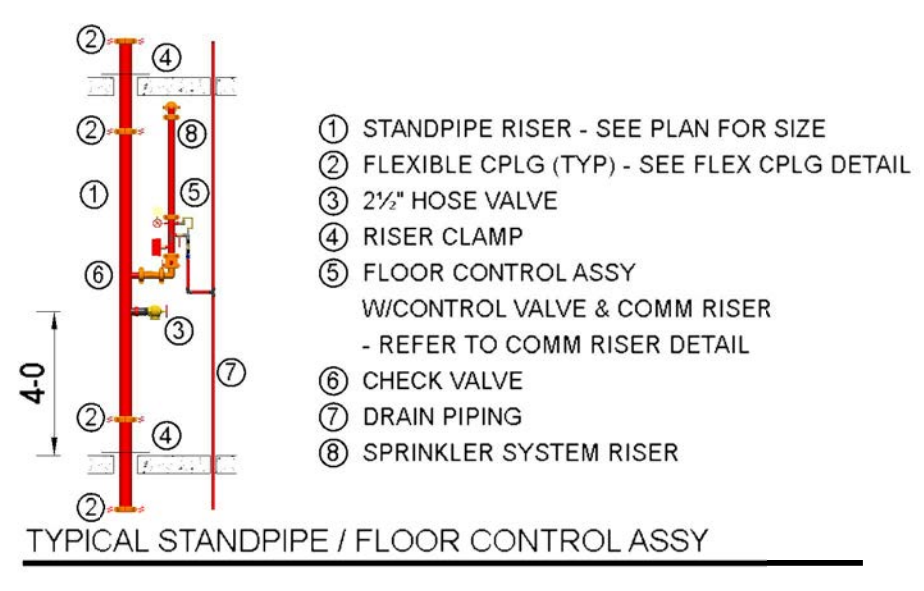
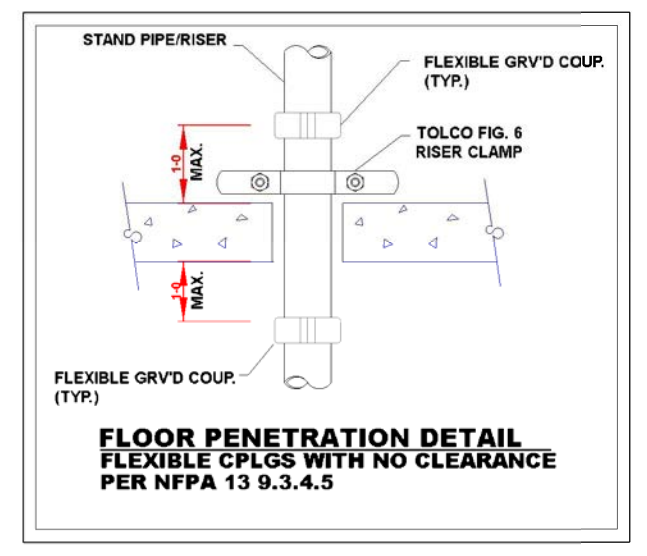
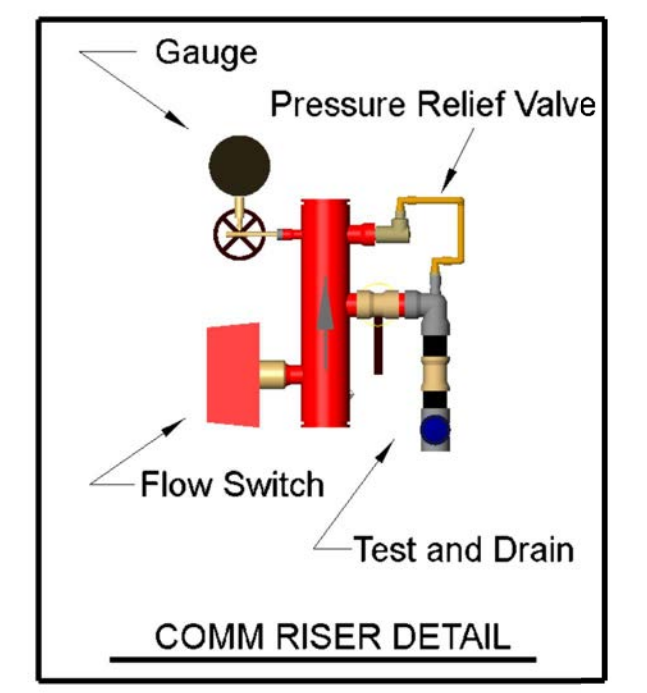
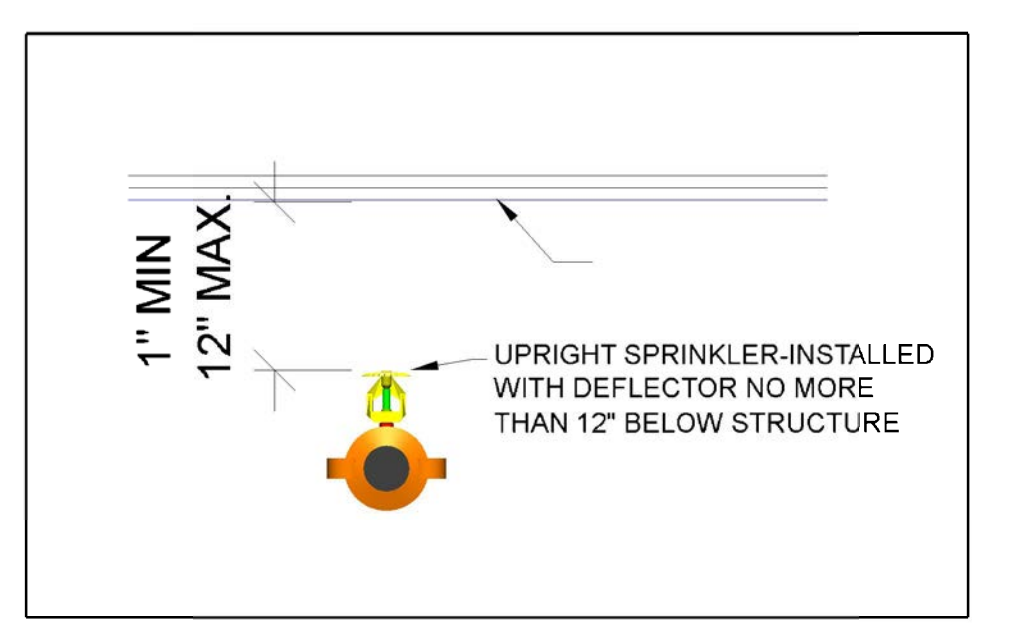


PIPE SIZING BASED ON P2 LEVEL CALCS

P3 LEVEL PARKING FP PIPING PLAN



100 PSI Hanger Note:
 * Unsupported Length with Maximum Pressure Exceeding 100 psi (6.9 bar) and a Branch Line Above a Ceiling
 Supplying Sprinklers in a Pendant Position Below the Ceiling
 9.2.3.4.4.1: Where the maximum static or flowing pressure, whichever is greater at the sprinkler, applied other than through the fire department connection, exceeds 100 psi (6.9 bar) and a branch line above a ceiling supplies sprinklers in a pendant position below the ceiling, the hanger assembly supporting the pipe supplying an end sprinkler in a pendant position shall be of a type that prevents upward movement of the pipe.



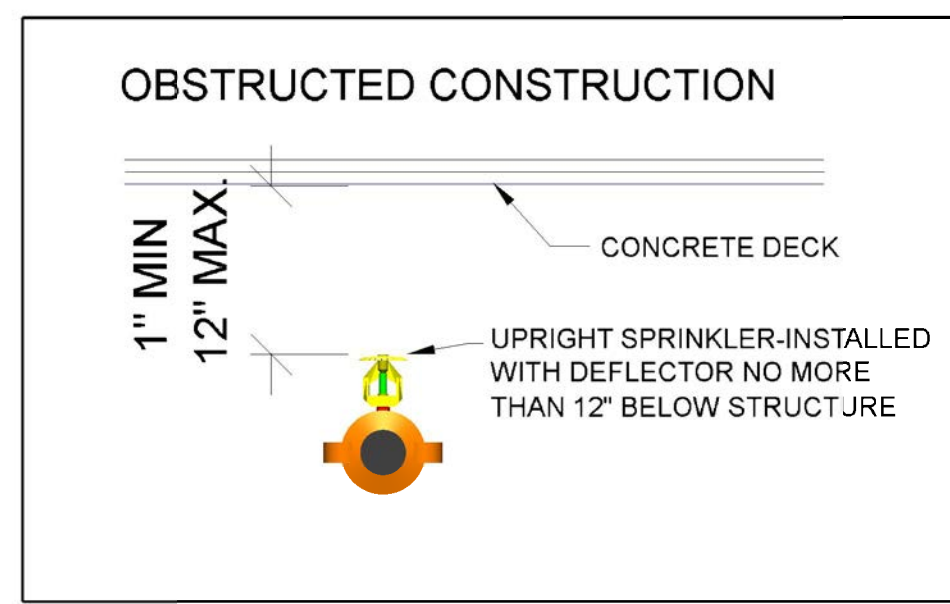
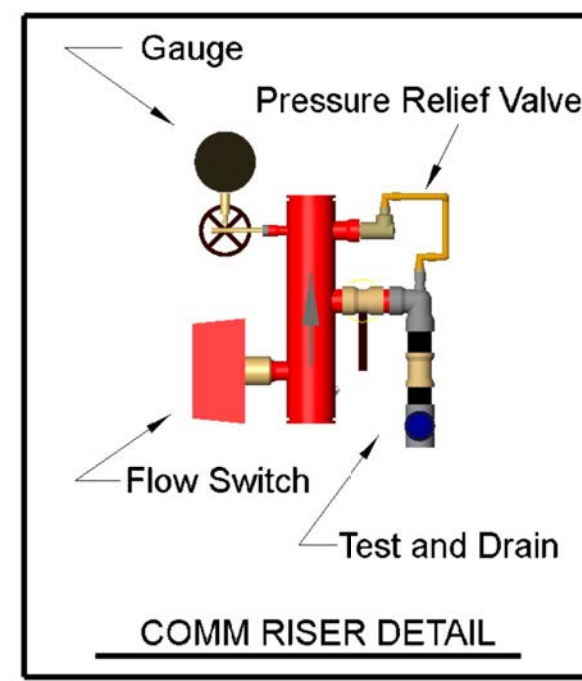
REV / DATE	DESCRIPTION	BY

SYMBOLS: (S) Sprinkler, (R) Riser, (V) Valve, (C) Check Valve, (D) Drain, (F) Floor Control, (W) W/Control Valve & Comm Riser, (CL) Riser Clamp, (FGC) Flexible Girth Coupler, (T) Test and Drain, (G) Gauge, (PRV) Pressure Relief Valve, (FS) Flow Switch.	SPRINKLER LEGEND: (S) Sprinkler, (R) Riser, (V) Valve, (C) Check Valve, (D) Drain, (F) Floor Control, (W) W/Control Valve & Comm Riser, (CL) Riser Clamp, (FGC) Flexible Girth Coupler, (T) Test and Drain, (G) Gauge, (PRV) Pressure Relief Valve, (FS) Flow Switch.
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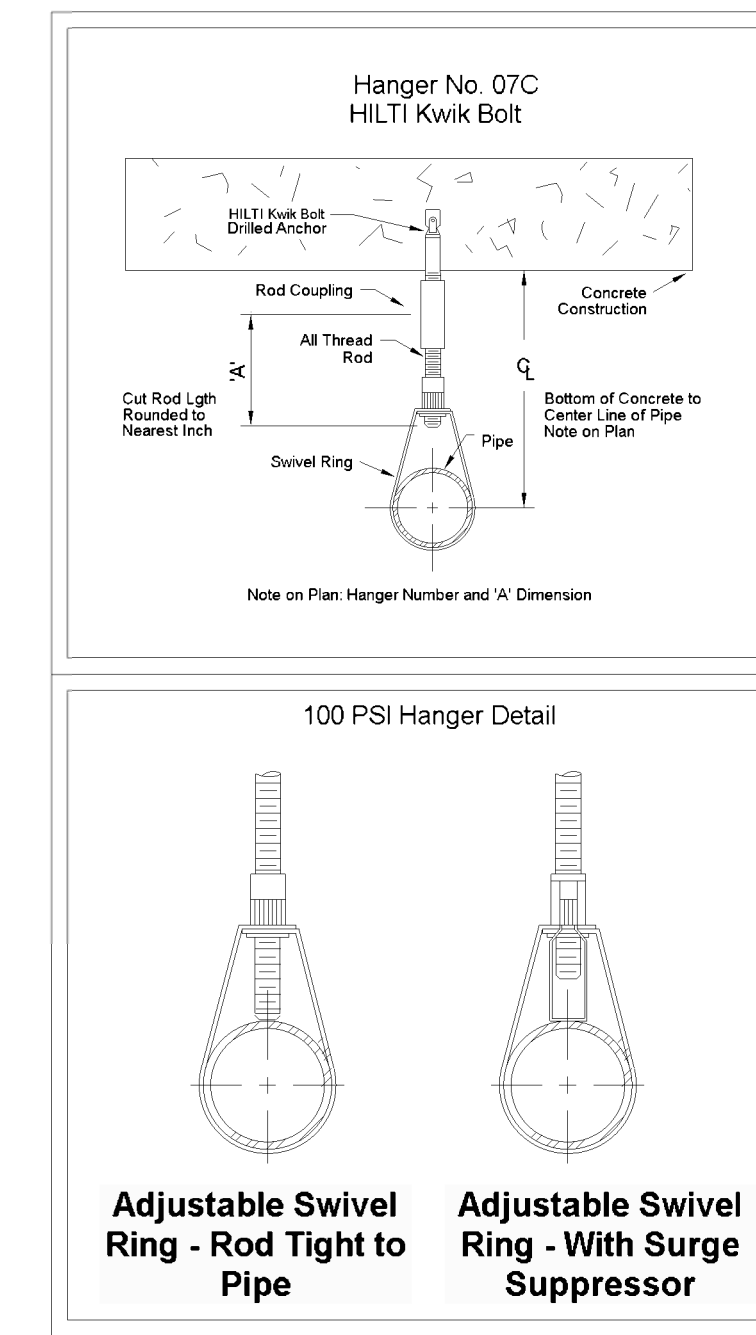
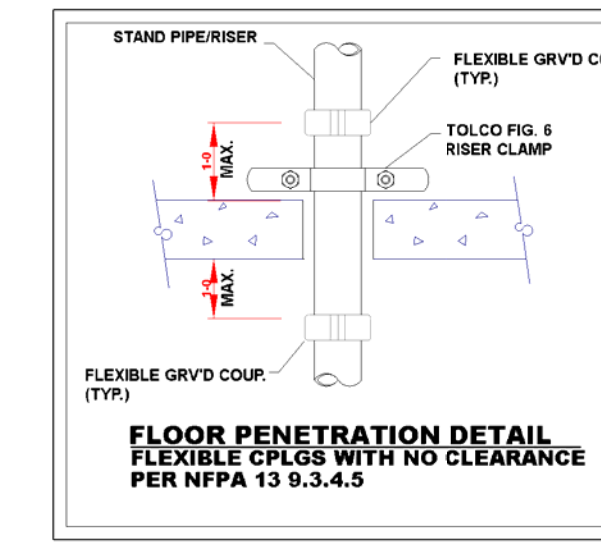
APPROVAL BY: _____ CONTRACT WITH: _____ OFFICE: _____ FAX: _____	STREAMLINE FIRE PROTECTION INC. # 104 3700 INDUSTRY AVE. LAKEWOOD CA, 90712 (714) 625-8203 FAX: (714) 369-8235 STATE LICENSE # 931653 C-16
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COLUMBIA SQUARE RESIDENTIAL TOWER 1650 N. EL CENTRO AVENUE LOS ANGELES, CA 90028	LICENSED FIRE PROTECTION ENGINEER C-16 931653 DETROIT, MI
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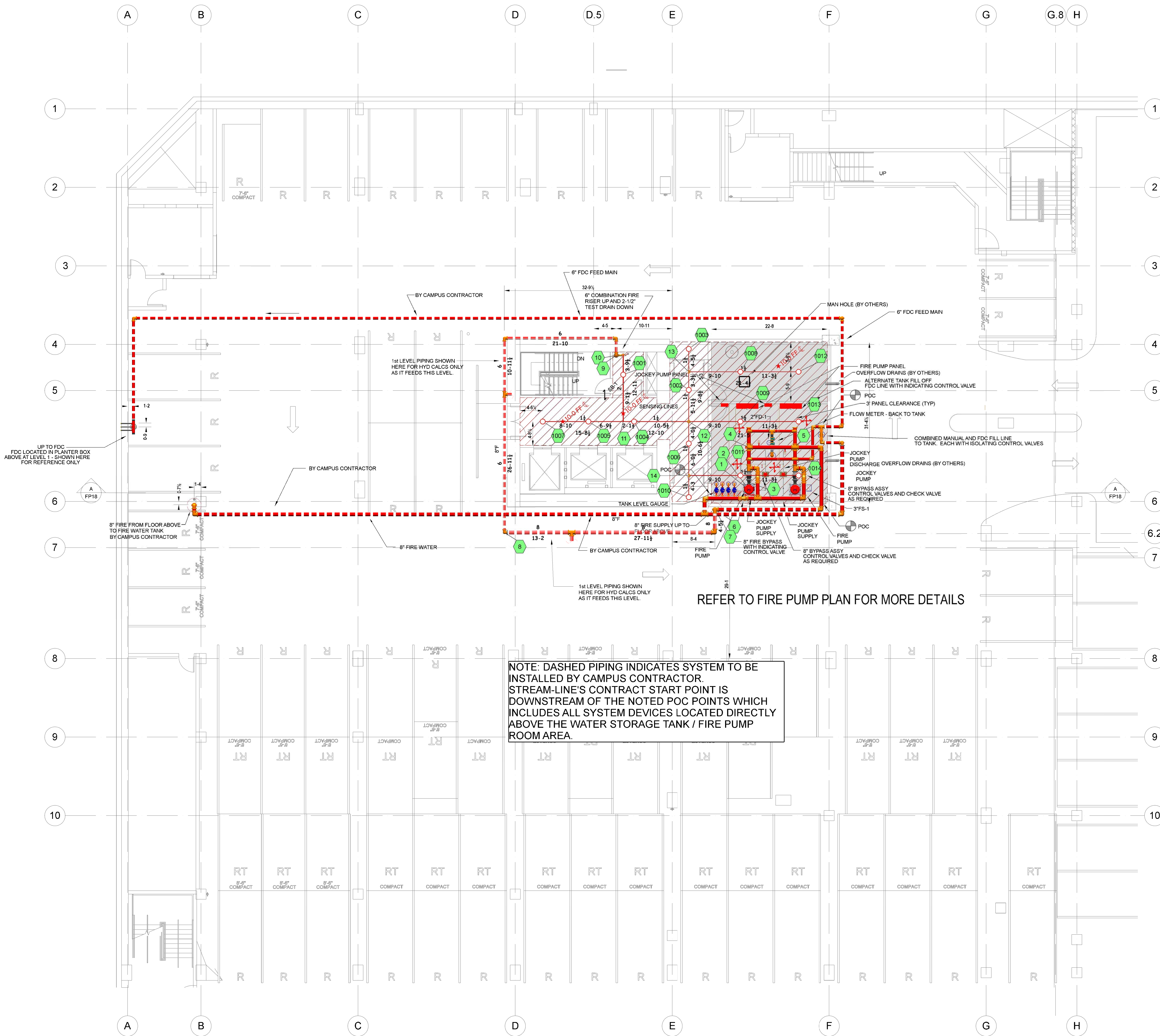
DATE: 06/17/14 SCALE: AS NOTED DRAWN: Daniel W. Shing INK: GDT SHEET: P3 LEVEL FP PLAN PROJECT: FP3	THESE DRAWINGS ARE THE PROPERTY OF STREAMLINE FIRE PROTECTION INC. AND ARE TO BE USED ONLY FOR THE PROJECT AND CONTAINED HEREIN. NO PART HEREOF IS TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN CONSENT OF STREAMLINE FIRE PROTECTION INC.
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Hydraulic Information	
OCCUPANCY CLASSIFICATION	Remote Area 1
DENSITY	0.150 gpm/ft ² for 1500.00ft ² (Actual 1285.51ft ²)
TOTAL HEADS FLOWING	14
K-FACTOR	5.6
TOTAL WATER REQUIRED	388.14
TOTAL PRESSURE REQUIRED	130.816
BASE OF RISER (gpm)	388.14
BASE OF RISER (psi)	128.258
SAFETY MARGIN (psi)	+172.047 (56.8%)

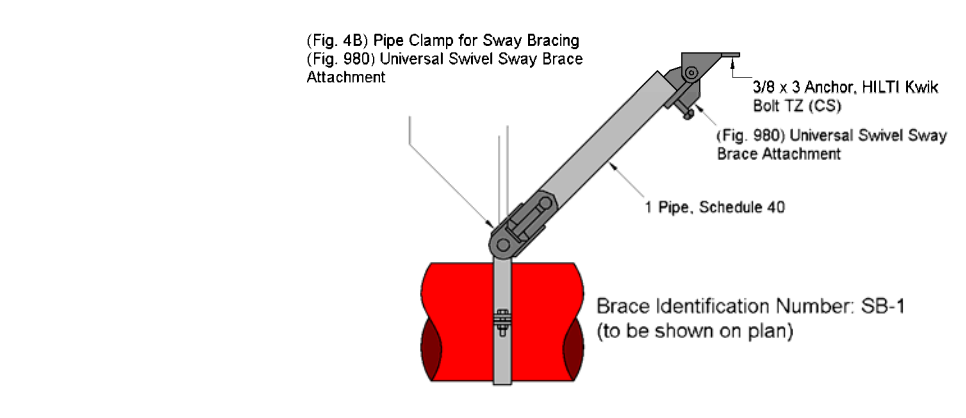


- 100 PSI Hanger Note:**
- * Unsupported Length with Maximum Pressure Exceeding 100 psi (6.9 bar) and a Branch Line Above a Ceiling
 - Supplying Sprinklers in a Pendant Position Below the Ceiling
 - 2.3.3.4.4.1 Where the maximum static or flowing pressure, whichever is greater at the sprinkler, applied other than through the fire department connection, exceeds 100 psi (6.9 bar) and a branch line above a ceiling supplies sprinklers in a pendant position below the ceiling, the hanger assembly supporting the pipe supplying an end sprinkler in a pendant position shall be of a type that prevents upward movement of the pipe.



NOTE: DASHED PIPING INDICATES SYSTEM TO BE INSTALLED BY CAMPUS CONTRACTOR. STREAM-LINE'S CONTRACT START POINT IS DOWNSTREAM OF THE NOTED POC POINTS WHICH INCLUDES ALL SYSTEM DEVICES LOCATED DIRECTLY ABOVE THE WATER STORAGE TANK / FIRE PUMP ROOM AREA.

REFER TO FIRE PUMP PLAN FOR MORE DETAILS

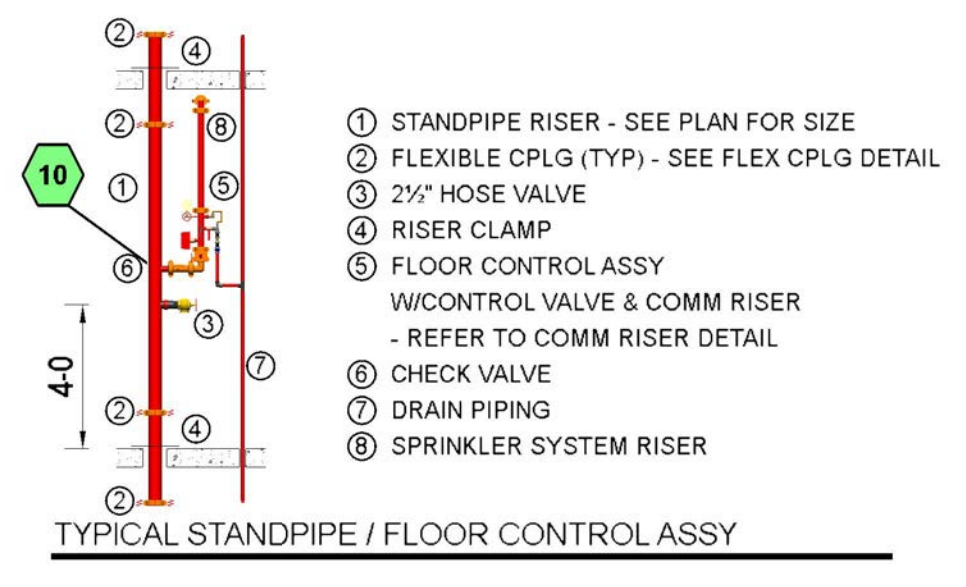
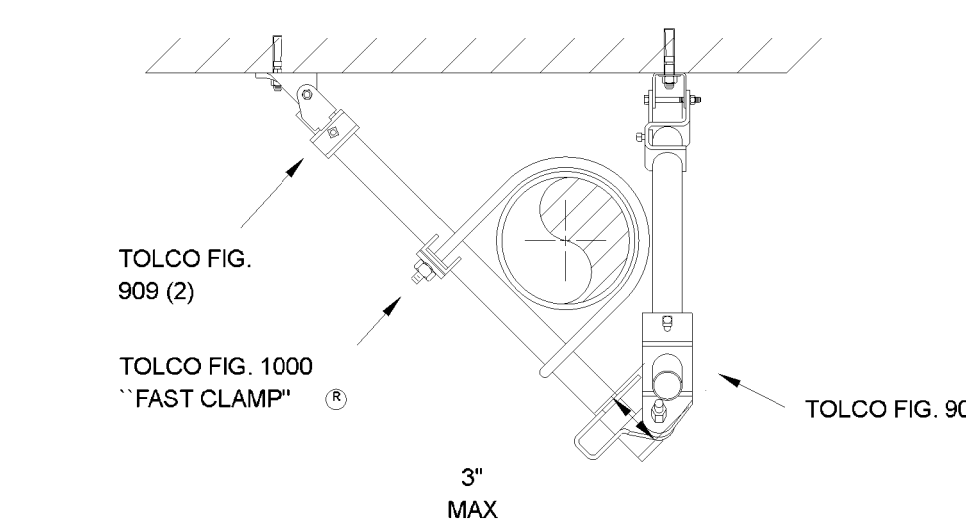


SEISMIC NOTES:

BRANCHLINES - NFPA 13.9.3.6.5 Where the branch lines are supported by rods less than 6 in. (152 mm) long measured between the top of the pipe and the point of attachment to the building structure, the requirements of 9.3.6.1 through 9.3.6.4 shall not apply and additional restraint shall not be required for the branchlines.

MAINS - NFPA 13.9.3.5.3.9 The requirements of 9.3.5.3 shall not apply to pipes individually supported by rods less than 6 in. (152 mm) long measured between the top of the pipe and the point of attachment to the building structure.

LONGITUDINAL BRACING IS STILL REQUIRED. REFER TO P1 FOR SEISMIC CALCUS



APPROVAL BY: _____

CONTRACT WITH: STREAMLINE FIRE PROTECTION INC. # 104 LAKEWOOD CA. 90712 (714)625-8203 FAX: (714)369-8235 OFFICE: STATE LICENSE #931653 C-16

DATE: 06/07/14 SCALE: AS NOTED DRAWN: Daniel W. Shroy

PROJECT: P2 LEVEL PIPING PLAN SHEET: FP4

COLUMBIA SQUARE RESIDENTIAL TOWER 1550 N. EL CENTRO AVENUE LOS ANGELES, CA 90028

REGISTERED FIRE PROTECTION ENGINEER C-16 931653 DETROIT, MI

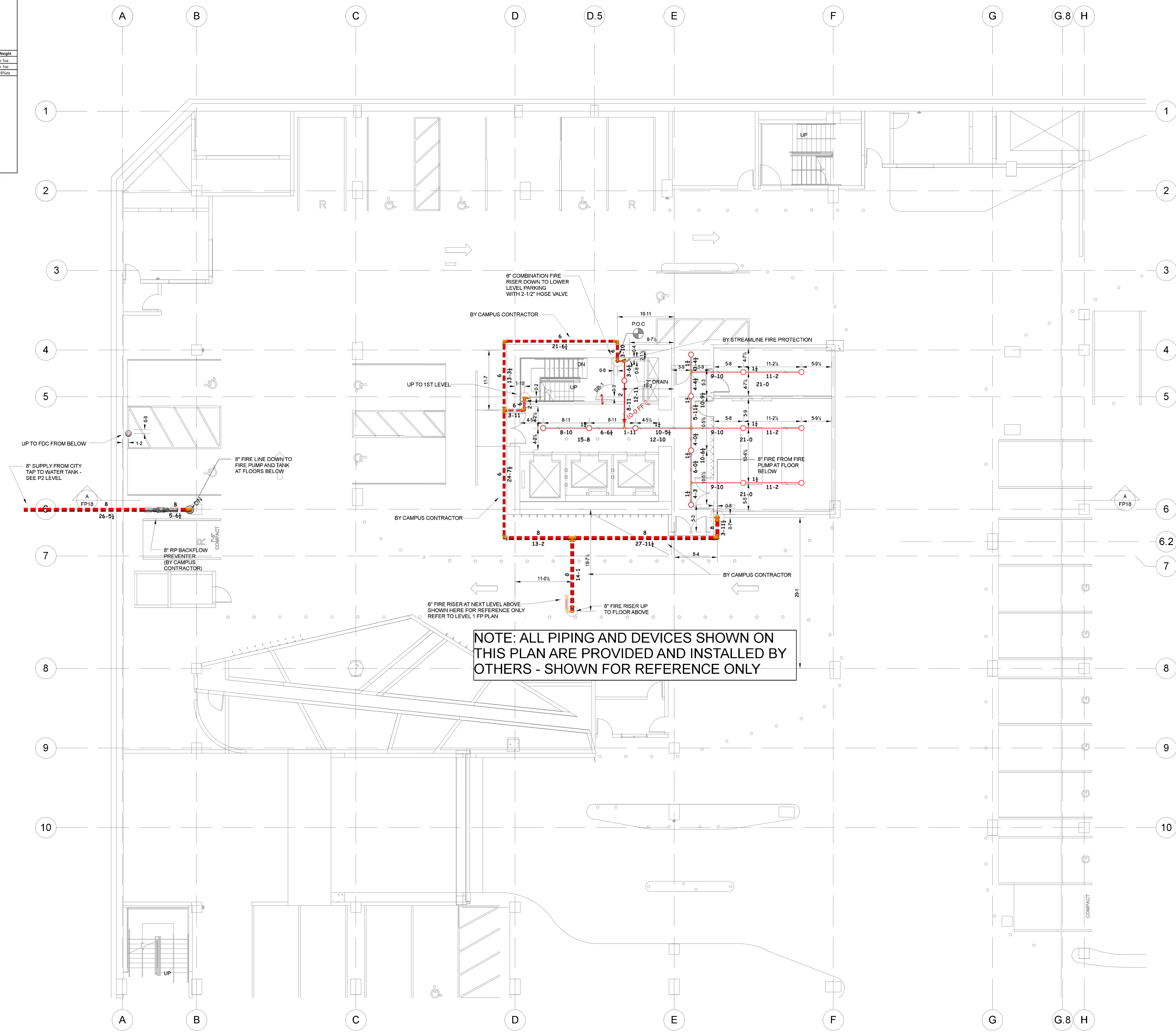
Seismic Bracing Calculations	
Project: COLUMBIA SQUARE RESIDENTIAL TOWER	Contractor: Streamline Fire Protection Inc.
Address: 1550 N. EL CENTRO AVENUE LOS ANGELES, CA 90028	Address: 2912 8th St. Lakewood, Ca 90712
Phone: 562-618-1741	
FAX:	
Brace Information	
Length of Brace: 3.0	Structure Attachment: Seismic Bracing System
Diameter of Brace: 1	Make: Teco Inc. Model: M4000 Universal Steel Slony Brace Attach
Type of Brace: Pipe, Schedule 40	Linker Load Rating: 27500 Lbs. Adjusted Load Rating: 13825 Lbs.
Angle of Brace: 30	Slony Brace (pipe attachment) Filing
Linker Rating of System: 6.42	Make: Teco Inc. Model: fig. 49 Pipe Clamp for Slony Bracing
Linker Load Rating: 27500 Lbs.	Linker Load Rating: 4425 Lbs. Adjusted Load Rating: 2200 Lbs.
Fastener Information	
Orientation of Connecting Surface: NFPA Type 'X'	
Fastener: 3/8" Dia. Steel Hex Head Bolt	3/8" Dia. Steel Hex Head Bolt
Construction Type: Normal Weight Concrete (15000psi)	3/8" Dia. Steel Hex Head Bolt
Type: Anchor HLT/KB-8	3/8" Dia. Steel Hex Head Bolt
Size: 3/8 x 3	
Min. Embedment: 0.2	
Maximum Load: 6300 Lbs.	
Longitudinal Brace	
Diameter: 2	Description: Pipe, Schedule 40
Unit Quantity: 40-0	Quantity: 40-0
Unit Weight: 49.70 Lbs.	Total Weight: 1988 Lbs.
	Total Weight: 1988 Lbs.
	Fig. x 1100000 2176 lbs

SEISMIC NOTES:

BRANCHLINES
NFPA 13 9.3.2.5 Where the branch lines are supported by rods less than 6 in. (152 mm) long measured between the top of the pipe and the point of attachment to the building structure, the requirements of 9.3.6.1 through 9.3.6.4 shall not apply and additional restraint shall not be required for the branchlines.

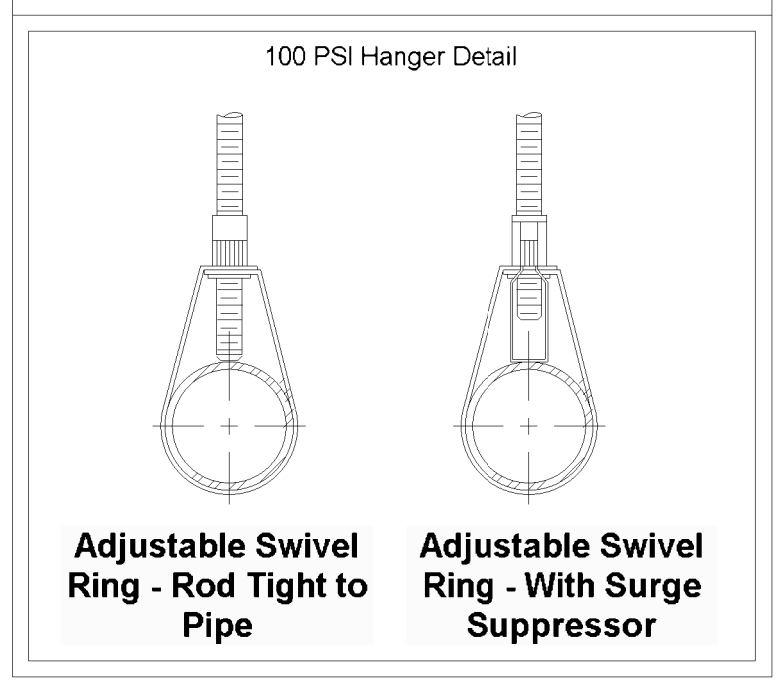
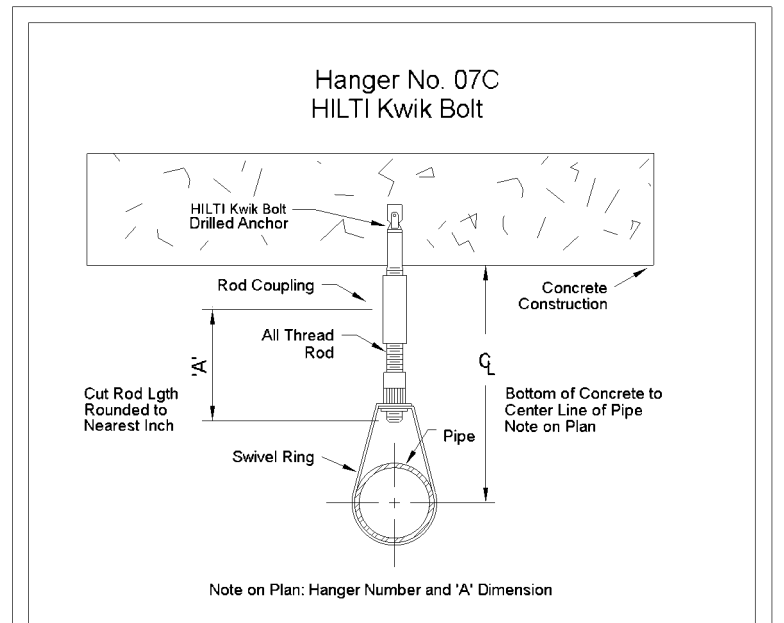
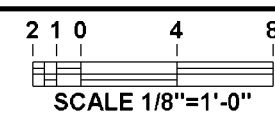
MAINS
NFPA 13 9.3.5.9 The requirements of 9.3.5.3 shall not apply to pipes individually supported by rods less than 6 in. (152 mm) long measured between the top of the pipe and the point of attachment to the building structure.

LONGITUDINAL BRACING IS STILL REQUIRED.

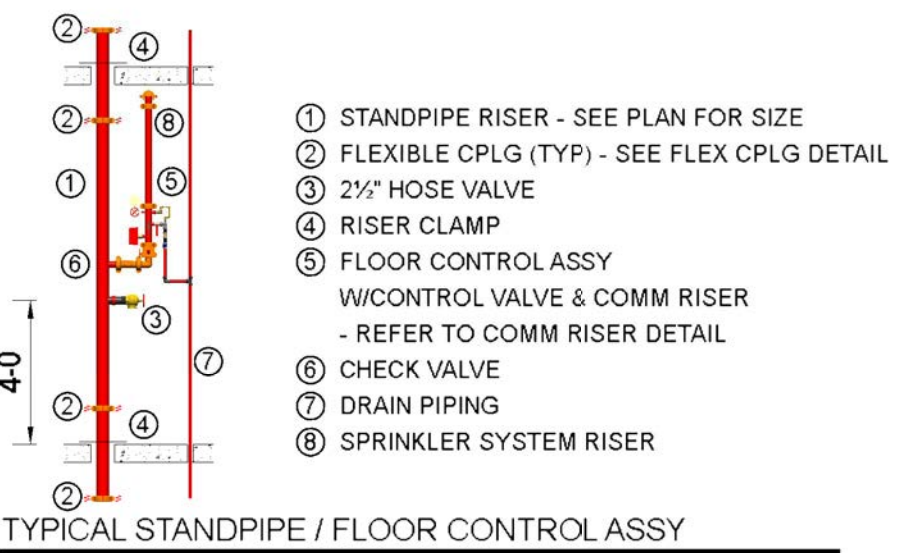
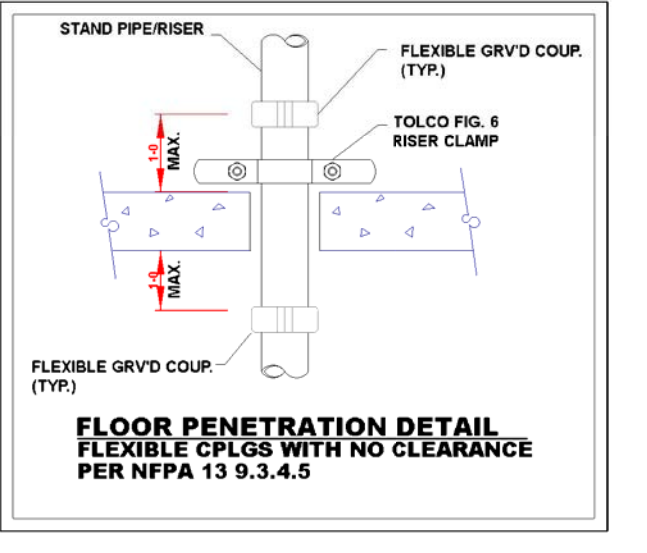
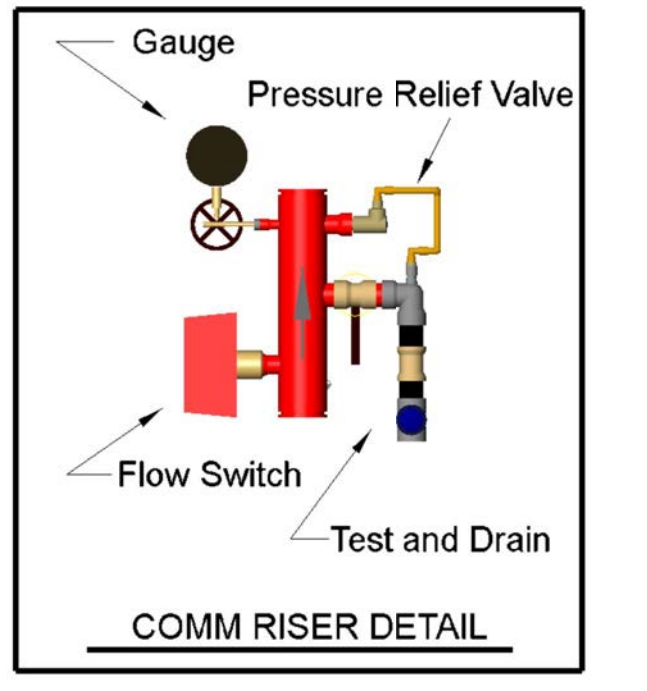
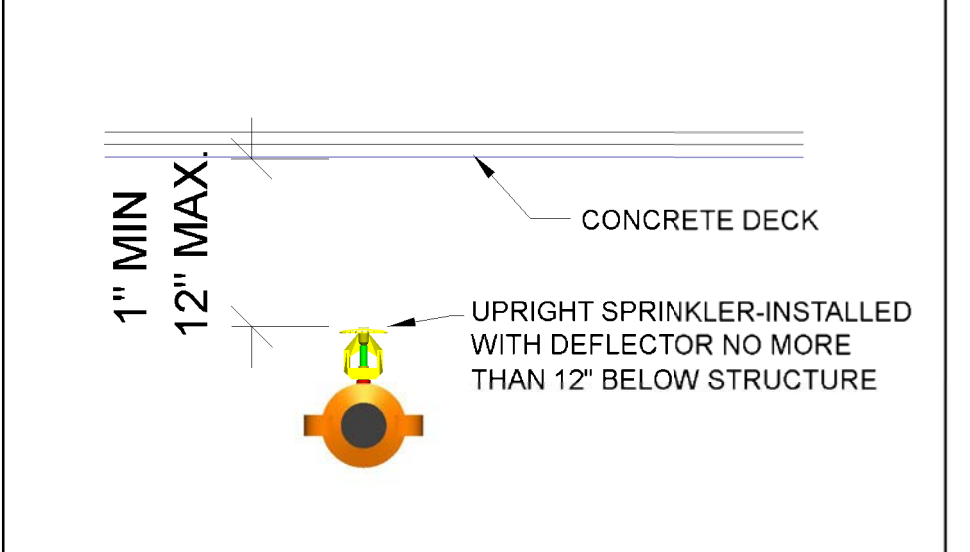


PIPE SIZING BASED ON P2 LEVEL CALCS

P1 LEVEL FP PLAN



100 PSI Hanger Note:
* Unsupported Length with Maximum Pressure Exceeding 100 psi (6.9 bar) and a Branch Line Above a Ceiling
Supplying Sprinklers in a Pendant Position Below the Ceiling
9.2.3.4.4.1 Where the maximum static or flowing pressure whichever is greater at the sprinkler, applied other than through the fire department connection, exceeds 100 psi (6.9 bar) and a branch line above a ceiling supplies sprinklers in a pendant position below the ceiling, the hanger assembly supporting the pipe supplying an end sprinkler in a pendant position shall be of a type that prevents upward movement of the pipe.



REV	DATE	DESCRIPTION

APPROVAL BY: _____
 CONTRACT WITH: STREAMLINE FIRE PROTECTION INC.
 CONTRACTOR'S QUANTITY TAKE OFF SHEET

SYMBOLS: (S) Sprinkler, (V) Valve, (R) Riser, (C) Check Valve, (D) Drain, (P) Pipe, (H) Hanger, (B) Bolt, (N) Nut, (W) Weld, (C) Clamp, (F) Filing, (E) Embedment, (I) Installation, (M) Material, (S) Size, (T) Type, (U) Unit, (W) Weight, (X) Quantity, (Y) Yield, (Z) Zone, (AA) Area, (BB) Base, (CC) Code, (DD) Detail, (EE) Equipment, (FF) Finish, (GG) Grade, (HH) Height, (II) Identification, (JJ) Joint, (KK) Key, (LL) Label, (MM) Member, (NN) Name, (OO) Object, (PP) Point, (QQ) Position, (RR) Reason, (SS) Section, (TT) Title, (UU) Use, (VV) Value, (WW) Way, (XX) X-axis, (YY) Y-axis, (ZZ) Z-axis.

APPROVAL BY: _____
 CONTRACT WITH: _____
 OFFICE: _____

STREAMLINE FIRE PROTECTION INC.
 3700 INDUSTRY AVE. # 104
 LAKEWOOD CA. 90712
 (714) 625-8203 FAX: (714) 369-8235
 STATE LICENSE # 931653 C-16

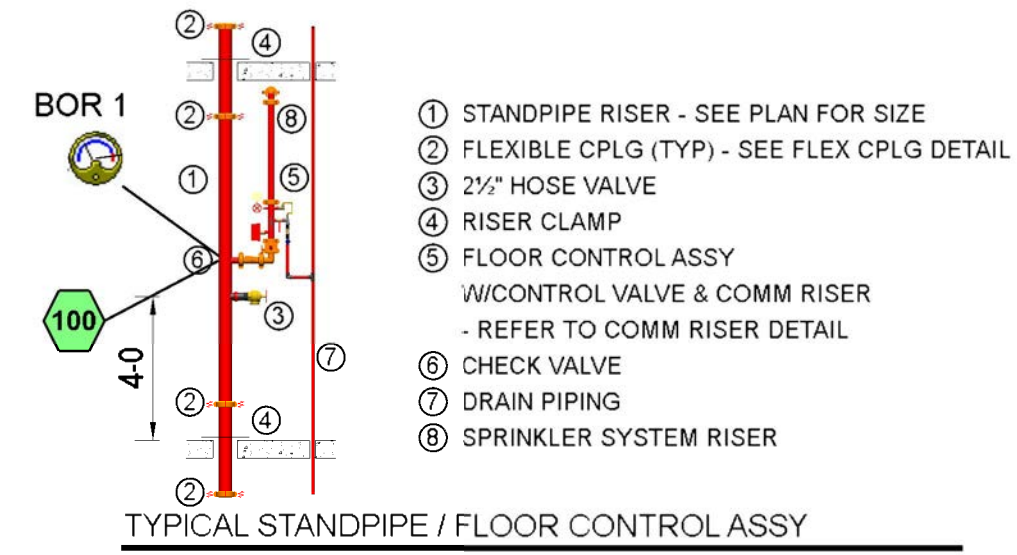
COLUMBIA SQUARE RESIDENTIAL TOWER
 1550 N. EL CENTRO AVENUE
 LOS ANGELES, CA 90028

DATE: 05/07/14
 SCALE: AS NOTED
 DRAWN: CHAD W. SHAW
 INK: COT
 SHEET: 02 PARKING LEVEL
 PFS

Seismic Bracing Calculations		Seismic Bracing Calculations	
Project: COLUMBIA SQUARE RESIDENTIAL TOWER Address: 1550 N. EL CENTRO AVENUE LOS ANGELES, CA 90028	Client: Streamline Fire Protection, Inc. Address: 2017 Main St. LABORERS CA 90712	Project: COLUMBIA SQUARE RESIDENTIAL TOWER Address: 1550 N. EL CENTRO AVENUE LOS ANGELES, CA 90028	Client: Streamline Fire Protection, Inc. Address: 2017 Main St. LABORERS CA 90712
Brace Information	Seismic Brace Attachments	Brace Information	Seismic Brace Attachments
Length of Brace: 15.0 Number of Braces: 2 Type of Brace: Steel Rod Clearance from Wall: 1.0 Clearance from Ceiling: 1.0 Clearance from Floor: 1.0 Clearance from Other: 1.0	Brace Attachment Type: Welded to Steel Deck Weld Length: 12.0 Weld Size: 1/2 Weld Spacing: 12.0 Weld Type: Fillet Weld Orientation: Parallel to Brace Weld Orientation: Perpendicular to Brace Weld Orientation: 45 Degree Weld Orientation: 90 Degree	Length of Brace: 15.0 Number of Braces: 2 Type of Brace: Steel Rod Clearance from Wall: 1.0 Clearance from Ceiling: 1.0 Clearance from Floor: 1.0 Clearance from Other: 1.0	Brace Attachment Type: Welded to Steel Deck Weld Length: 12.0 Weld Size: 1/2 Weld Spacing: 12.0 Weld Type: Fillet Weld Orientation: Parallel to Brace Weld Orientation: Perpendicular to Brace Weld Orientation: 45 Degree Weld Orientation: 90 Degree
Factor Information	Seismic Brace Assembly Detail	Factor Information	Seismic Brace Assembly Detail
Seismic Design Category: B Seismic Risk Category: II Seismic Design Spectral Acceleration at Short Period: 0.33 Seismic Design Spectral Acceleration at Long Period: 0.16 Seismic Design Spectral Acceleration at Intermediate Period: 0.25 Seismic Design Spectral Acceleration at Very Long Period: 0.12 Seismic Design Spectral Acceleration at Very Short Period: 0.12 Seismic Design Spectral Acceleration at Very Long Period: 0.12	Seismic Brace Assembly Detail (Provide Detail On Plans)	Seismic Design Category: B Seismic Risk Category: II Seismic Design Spectral Acceleration at Short Period: 0.33 Seismic Design Spectral Acceleration at Long Period: 0.16 Seismic Design Spectral Acceleration at Intermediate Period: 0.25 Seismic Design Spectral Acceleration at Very Long Period: 0.12 Seismic Design Spectral Acceleration at Very Short Period: 0.12 Seismic Design Spectral Acceleration at Very Long Period: 0.12	Seismic Brace Assembly Detail (Provide Detail On Plans)

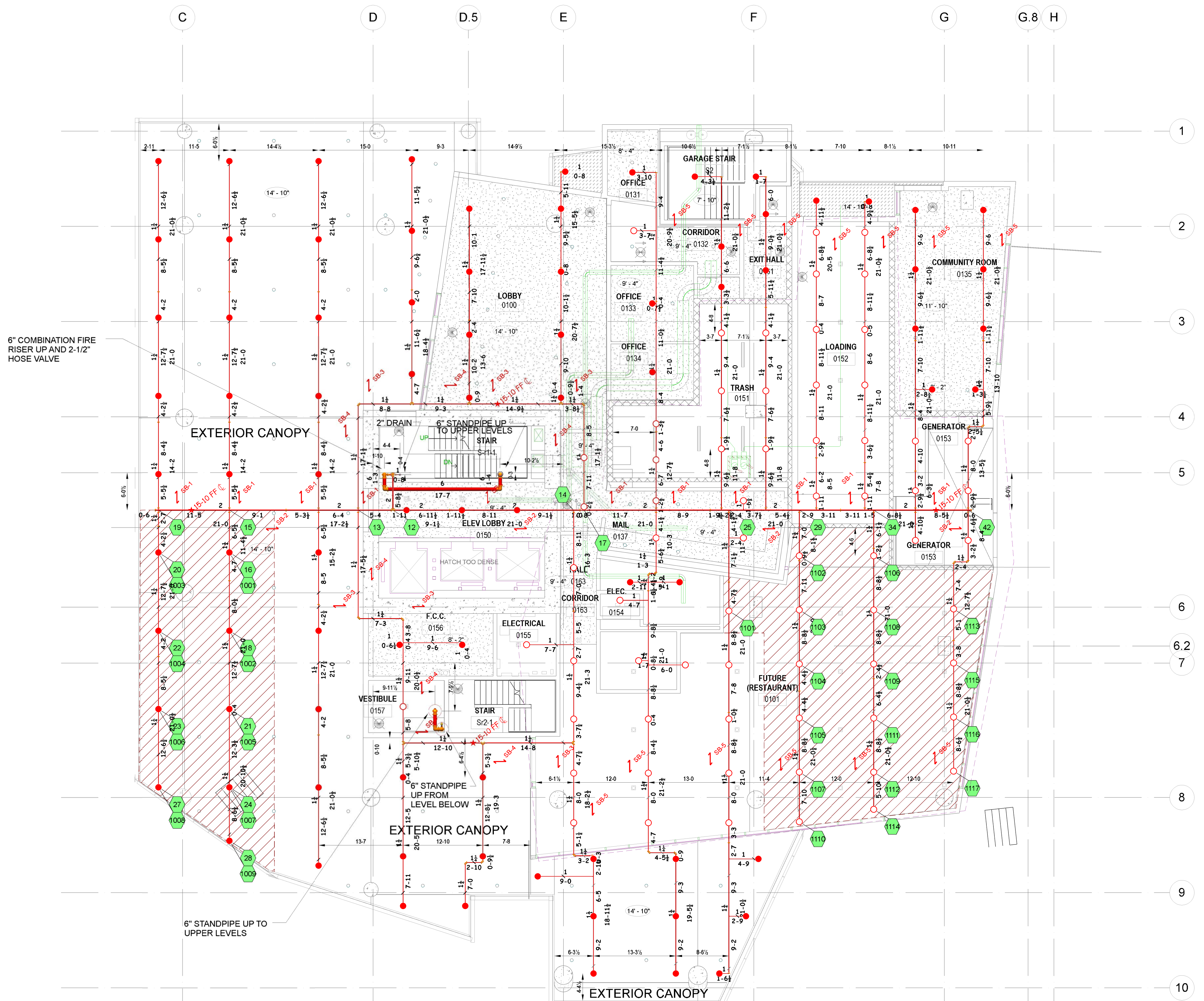
Seismic Bracing Calculations		Seismic Bracing Calculations	
Project: COLUMBIA SQUARE RESIDENTIAL TOWER Address: 1550 N. EL CENTRO AVENUE LOS ANGELES, CA 90028	Client: Streamline Fire Protection, Inc. Address: 2017 Main St. LABORERS CA 90712	Project: COLUMBIA SQUARE RESIDENTIAL TOWER Address: 1550 N. EL CENTRO AVENUE LOS ANGELES, CA 90028	Client: Streamline Fire Protection, Inc. Address: 2017 Main St. LABORERS CA 90712
Brace Information	Seismic Brace Attachments	Brace Information	Seismic Brace Attachments
Length of Brace: 15.0 Number of Braces: 2 Type of Brace: Steel Rod Clearance from Wall: 1.0 Clearance from Ceiling: 1.0 Clearance from Floor: 1.0 Clearance from Other: 1.0	Brace Attachment Type: Welded to Steel Deck Weld Length: 12.0 Weld Size: 1/2 Weld Spacing: 12.0 Weld Type: Fillet Weld Orientation: Parallel to Brace Weld Orientation: Perpendicular to Brace Weld Orientation: 45 Degree Weld Orientation: 90 Degree	Length of Brace: 15.0 Number of Braces: 2 Type of Brace: Steel Rod Clearance from Wall: 1.0 Clearance from Ceiling: 1.0 Clearance from Floor: 1.0 Clearance from Other: 1.0	Brace Attachment Type: Welded to Steel Deck Weld Length: 12.0 Weld Size: 1/2 Weld Spacing: 12.0 Weld Type: Fillet Weld Orientation: Parallel to Brace Weld Orientation: Perpendicular to Brace Weld Orientation: 45 Degree Weld Orientation: 90 Degree
Factor Information	Seismic Brace Assembly Detail	Factor Information	Seismic Brace Assembly Detail
Seismic Design Category: B Seismic Risk Category: II Seismic Design Spectral Acceleration at Short Period: 0.33 Seismic Design Spectral Acceleration at Long Period: 0.16 Seismic Design Spectral Acceleration at Intermediate Period: 0.25 Seismic Design Spectral Acceleration at Very Long Period: 0.12 Seismic Design Spectral Acceleration at Very Short Period: 0.12 Seismic Design Spectral Acceleration at Very Long Period: 0.12	Seismic Brace Assembly Detail (Provide Detail On Plans)	Seismic Design Category: B Seismic Risk Category: II Seismic Design Spectral Acceleration at Short Period: 0.33 Seismic Design Spectral Acceleration at Long Period: 0.16 Seismic Design Spectral Acceleration at Intermediate Period: 0.25 Seismic Design Spectral Acceleration at Very Long Period: 0.12 Seismic Design Spectral Acceleration at Very Short Period: 0.12 Seismic Design Spectral Acceleration at Very Long Period: 0.12	Seismic Brace Assembly Detail (Provide Detail On Plans)

Seismic Bracing Calculations		Seismic Bracing Calculations	
Project: COLUMBIA SQUARE RESIDENTIAL TOWER Address: 1550 N. EL CENTRO AVENUE LOS ANGELES, CA 90028	Client: Streamline Fire Protection, Inc. Address: 2017 Main St. LABORERS CA 90712	Project: COLUMBIA SQUARE RESIDENTIAL TOWER Address: 1550 N. EL CENTRO AVENUE LOS ANGELES, CA 90028	Client: Streamline Fire Protection, Inc. Address: 2017 Main St. LABORERS CA 90712
Brace Information	Seismic Brace Attachments	Brace Information	Seismic Brace Attachments
Length of Brace: 15.0 Number of Braces: 2 Type of Brace: Steel Rod Clearance from Wall: 1.0 Clearance from Ceiling: 1.0 Clearance from Floor: 1.0 Clearance from Other: 1.0	Brace Attachment Type: Welded to Steel Deck Weld Length: 12.0 Weld Size: 1/2 Weld Spacing: 12.0 Weld Type: Fillet Weld Orientation: Parallel to Brace Weld Orientation: Perpendicular to Brace Weld Orientation: 45 Degree Weld Orientation: 90 Degree	Length of Brace: 15.0 Number of Braces: 2 Type of Brace: Steel Rod Clearance from Wall: 1.0 Clearance from Ceiling: 1.0 Clearance from Floor: 1.0 Clearance from Other: 1.0	Brace Attachment Type: Welded to Steel Deck Weld Length: 12.0 Weld Size: 1/2 Weld Spacing: 12.0 Weld Type: Fillet Weld Orientation: Parallel to Brace Weld Orientation: Perpendicular to Brace Weld Orientation: 45 Degree Weld Orientation: 90 Degree
Factor Information	Seismic Brace Assembly Detail	Factor Information	Seismic Brace Assembly Detail
Seismic Design Category: B Seismic Risk Category: II Seismic Design Spectral Acceleration at Short Period: 0.33 Seismic Design Spectral Acceleration at Long Period: 0.16 Seismic Design Spectral Acceleration at Intermediate Period: 0.25 Seismic Design Spectral Acceleration at Very Long Period: 0.12 Seismic Design Spectral Acceleration at Very Short Period: 0.12 Seismic Design Spectral Acceleration at Very Long Period: 0.12	Seismic Brace Assembly Detail (Provide Detail On Plans)	Seismic Design Category: B Seismic Risk Category: II Seismic Design Spectral Acceleration at Short Period: 0.33 Seismic Design Spectral Acceleration at Long Period: 0.16 Seismic Design Spectral Acceleration at Intermediate Period: 0.25 Seismic Design Spectral Acceleration at Very Long Period: 0.12 Seismic Design Spectral Acceleration at Very Short Period: 0.12 Seismic Design Spectral Acceleration at Very Long Period: 0.12	Seismic Brace Assembly Detail (Provide Detail On Plans)

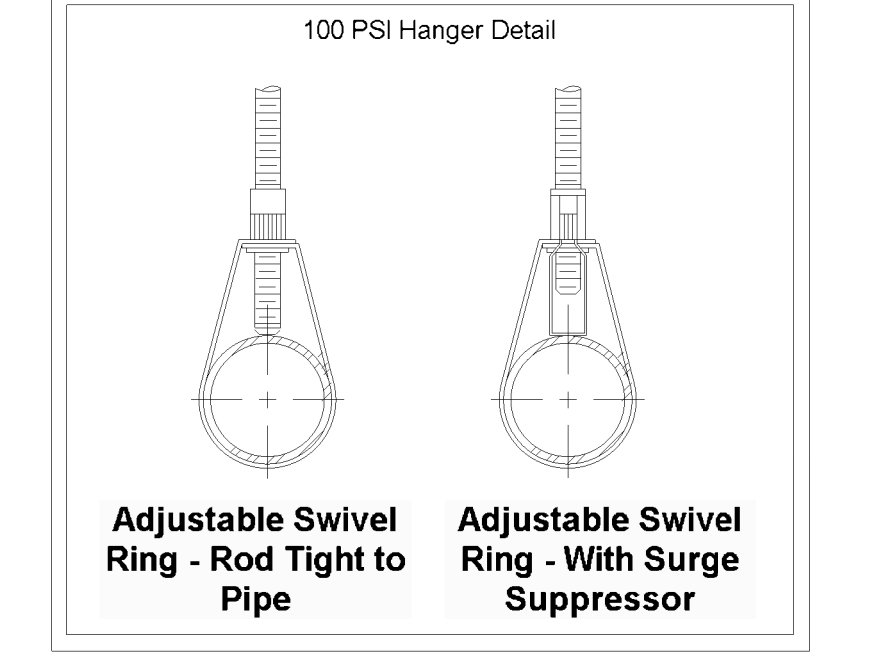
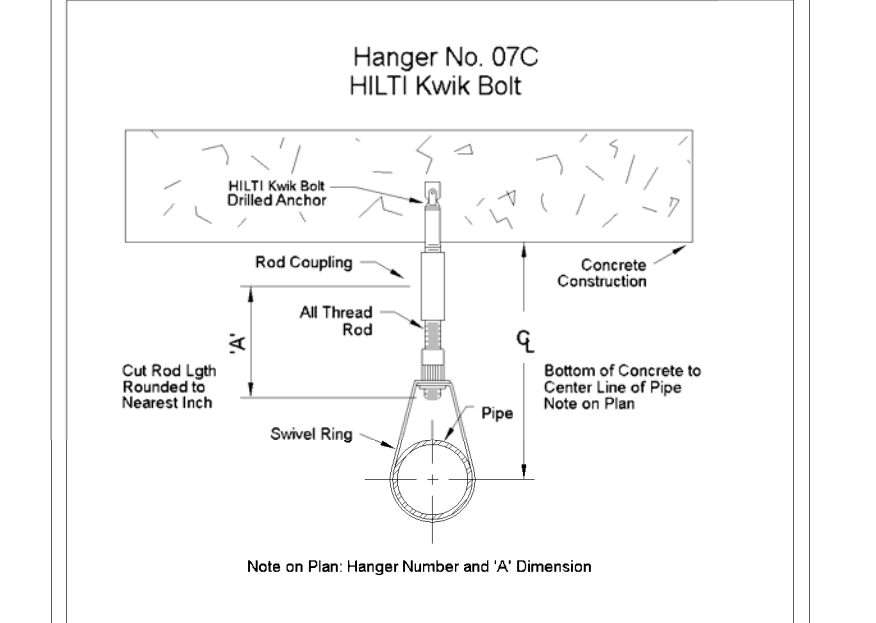
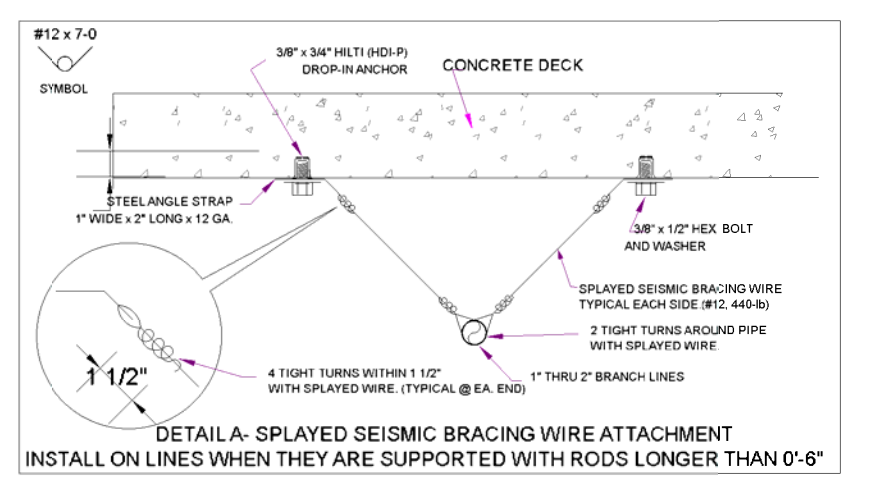
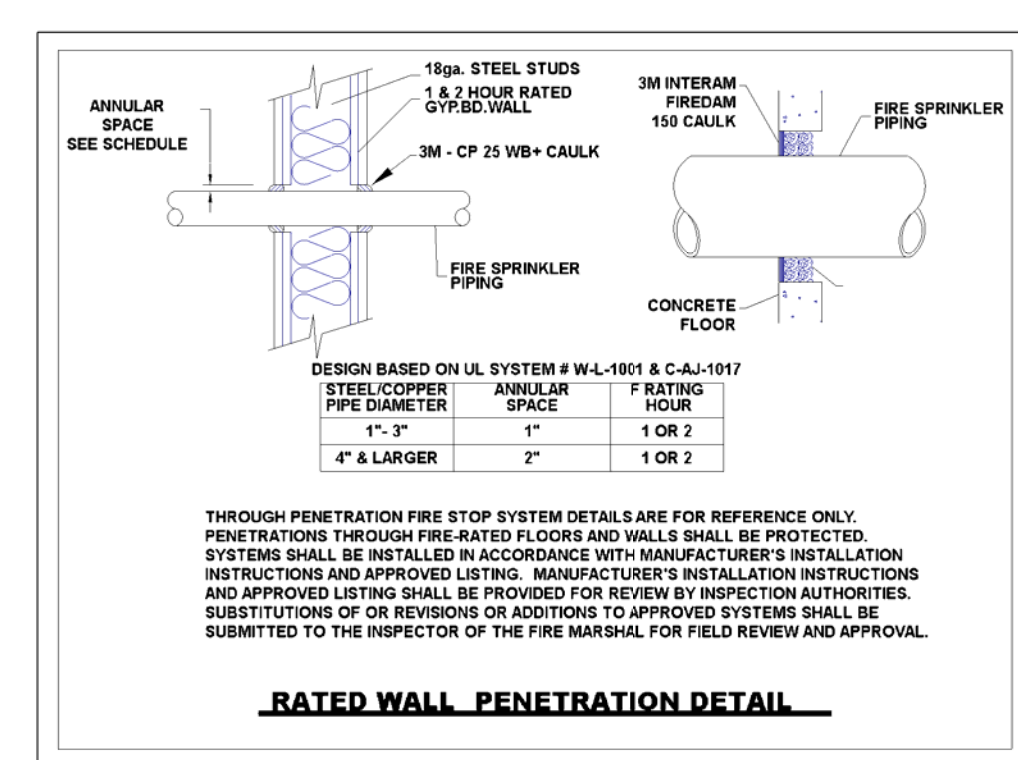
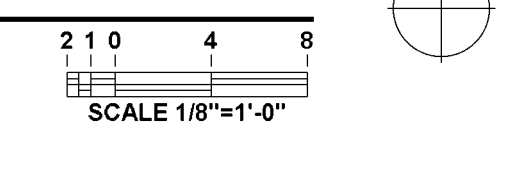


Hydraulic Information	
OCCUPANCY CLASSIFICATION	Remote Area 1 Light Hazard
DENSITY	0.100gpm/ft² for 900.00ft² (Actual 1108.24ft²)
TOTAL HEADS FLOWING	9
K-FACTOR	5.6
TOTAL WATER REQUIRED	232.16
TOTAL PRESSURE REQUIRED	92.699
BASE OF RISER (ppm)	232.16
BASE OF RISER (psi)	80.781
SAFETY MARGIN (psi)	+215.704 (69.9%)
BASED ON 225 SQFT MAX	

Hydraulic Information	
OCCUPANCY CLASSIFICATION	Remote Area 2 Ordinary Group 1
DENSITY	0.150gpm/ft² for 1500.00ft² (Actual 1511.14ft²)
TOTAL HEADS FLOWING	17
K-FACTOR	5.6
TOTAL WATER REQUIRED	362.13
TOTAL PRESSURE REQUIRED	158.584
BASE OF RISER (ppm)	362.13
BASE OF RISER (psi)	146.218
SAFETY MARGIN (psi)	+145.366 (47.8%)
BASED ON 130 SQFT MAX	

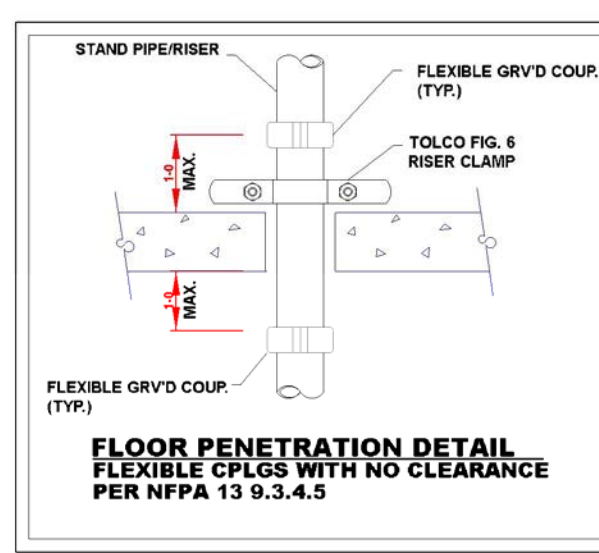
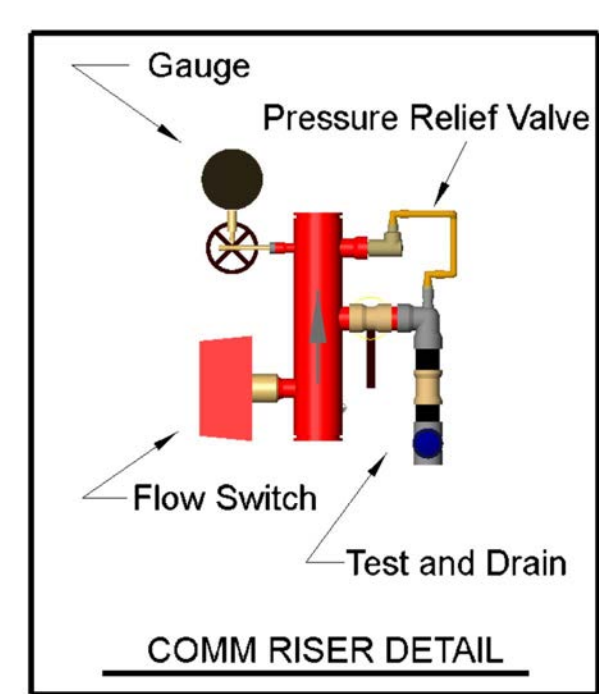
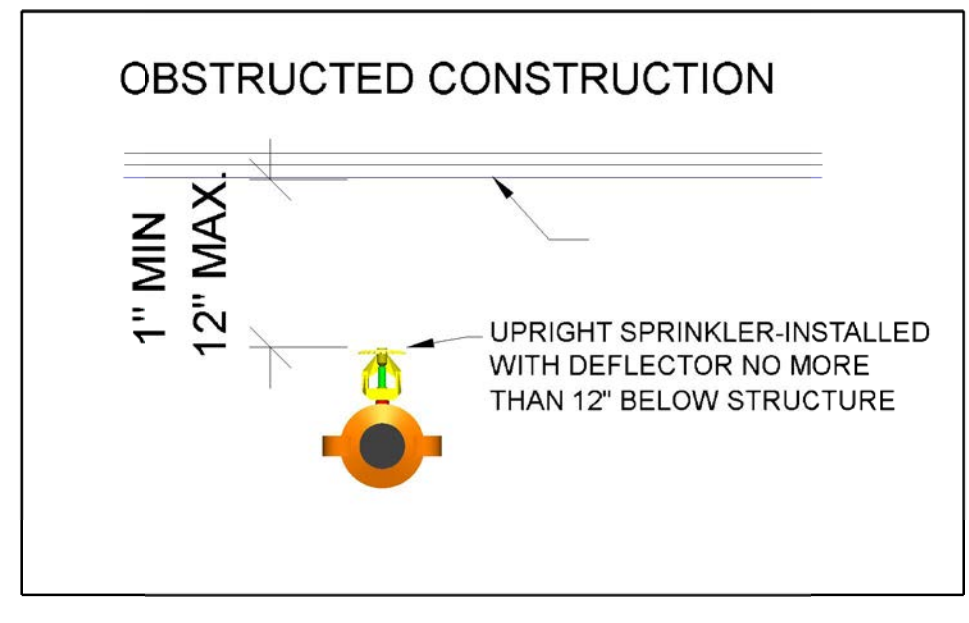


LEVEL 01 FP PLAN



100 PSI Hanger Note:

* Unsupported Length with Maximum Pressure Exceeding 100 psi (6.9 bar) and a Branch Line Above a Ceiling Supplying Sprinklers in a Pendant Position Below the Ceiling, 9:2.3.4.1.1 Where the maximum static or flowing pressure, whichever is greater at the sprinkler, applied other than through the fire department connection, exceeds 100 psi (6.9 bar) and a branch line above a ceiling supplies sprinklers in a pendant position below the ceiling, the hanger assembly supporting the pipe supplying an end sprinkler in a pendant position shall be of a type that prevents upward movement of the pipe.



REV / DATE DESCRIPTION

APPROVAL BY: _____

CONTRACT WITH: STREAMLINE FIRE PROTECTION, INC. 3700 INDUSTRY AVE. # 104 LAKEWOOD CA. 90712 (714)625-8203 FAX: (714)369-8235

OFFICE: _____

STATE LICENSE # 931653 C-16

COLUMBIA SQUARE RESIDENTIAL TOWER 1550 N. EL CENTRO AVENUE LOS ANGELES, CA 90028

SCALE: AS NOTED

DRAWN: CHANG W. SHING

CHECK: GUY

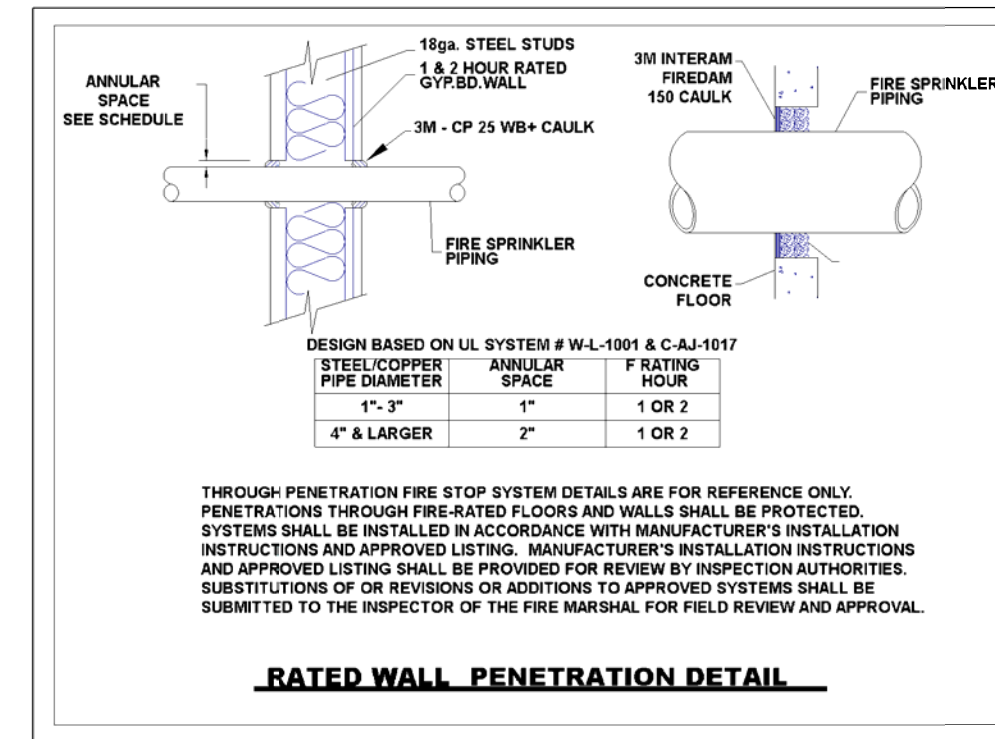
DATE: 06/17/2014

PROJECT: COLUMBIA SQUARE RESIDENTIAL TOWER

SHEET: 01 TOWER LEVEL 01

FP6

REGISTERED FIRE PROTECTION ENGINEER
C-16
931653
CALIFORNIA



Technical Data: F18ES 49 Pendant and Recessed Pendant**
 For Flat Ceilings & NFPA #13D Sloped Ceilings per TIA #1028 (see page 4)

Deflector - no ceiling			Deflector - no ceiling		
Max. Sprinkler Spacing ft (m)	Flow (gpm) (Lpm)	Pressure (psi) (Bar)	Max. Sprinkler Spacing ft (m)	Flow (gpm) (Lpm)	Pressure (psi) (Bar)
12 x 12 (3.6 x 3.6)	13 (49)	7.0 (0.48)	15 (57.0)	9.4 (0.65)	
14 x 14 (4.3 x 4.3)	13 (49)	7.0 (0.48)	16 (60.5)	10.6 (0.73)	
16 x 16 (4.9 x 4.9)	13 (49)	7.0 (0.48)	17 (64.3)	12.0 (0.83)	
18 x 18 (5.5 x 5.5)	17 (64.3)	12.0 (0.83)	19 (72.0)	15.0 (1.00)	
20 x 20 (6.1 x 6.1)	20 (75.7)	16.7 (1.14)	22 (83.2)	20.2 (1.40)	

Note: The F18ES 49 pendant and recessed pendant residential sprinklers can be installed per NFPA 13 in recessed ceilings meeting the following criteria:
 1. Maximum beam depth = 7" (178mm)
 2. Beam spacing of or greater than 7" (178mm) on center
 3. Refer to Bulletin 035 for additional details
****Note:** The above pressures and flows utilize the Model F1 and F2 Recessed Enclosures

Technical Data: F18ES 44 HSW and HSW/F2
 For Flat Ceilings & NFPA #13D Sloped Ceilings per TIA #1028 (see page 4)

Deflector - no ceiling			Deflector - no ceiling		
Max. Sprinkler Spacing ft (m)	Flow (gpm) (Lpm)	Pressure (psi) (Bar)	Max. Sprinkler Spacing ft (m)	Flow (gpm) (Lpm)	Pressure (psi) (Bar)
12 x 12 (3.6 x 3.6)	12 (45.4)	7.5 (0.52)	14 (53.0)	10.2 (0.71)	
14 x 14 (4.3 x 4.3)	14 (53.0)	10.2 (0.71)	16 (60.5)	13.3 (0.92)	
16 x 16 (4.9 x 4.9)	16 (60.5)	13.3 (0.92)	17 (64.3)	15.0 (1.04)	
18 x 18 (5.5 x 5.5)	18 (68.1)	16.8 (1.16)	20 (75.7)	20.7 (1.43)	
18 x 18 (5.5 x 5.5)	19 (72.0)	18.7 (1.29)	22 (83.2)	27.4 (1.89)	

Note: The above pressures and flows utilize the Model F2 Recessed Enclosure

NFPA 13 2010 8.15.8 Dwelling Units.
 8.15.8.1 Bathrooms.
 8.15.8.1.1 Unless sprinklers are required by 8.15.8.1.2 or 8.15.8.1.3, sprinklers shall not be required in bathrooms that are located within dwelling units, that do not exceed 55 ft² (5.1 m²) in area, and that have walls and ceilings of noncombustible or limited-combustible materials with a 15-minute thermal barrier rating, including the walls and ceilings behind any shower enclosure or tub.

NFPA 13 2010 8.15.8.1.3 Sprinklers shall be required in bathrooms opening directly onto public corridors or exitways.

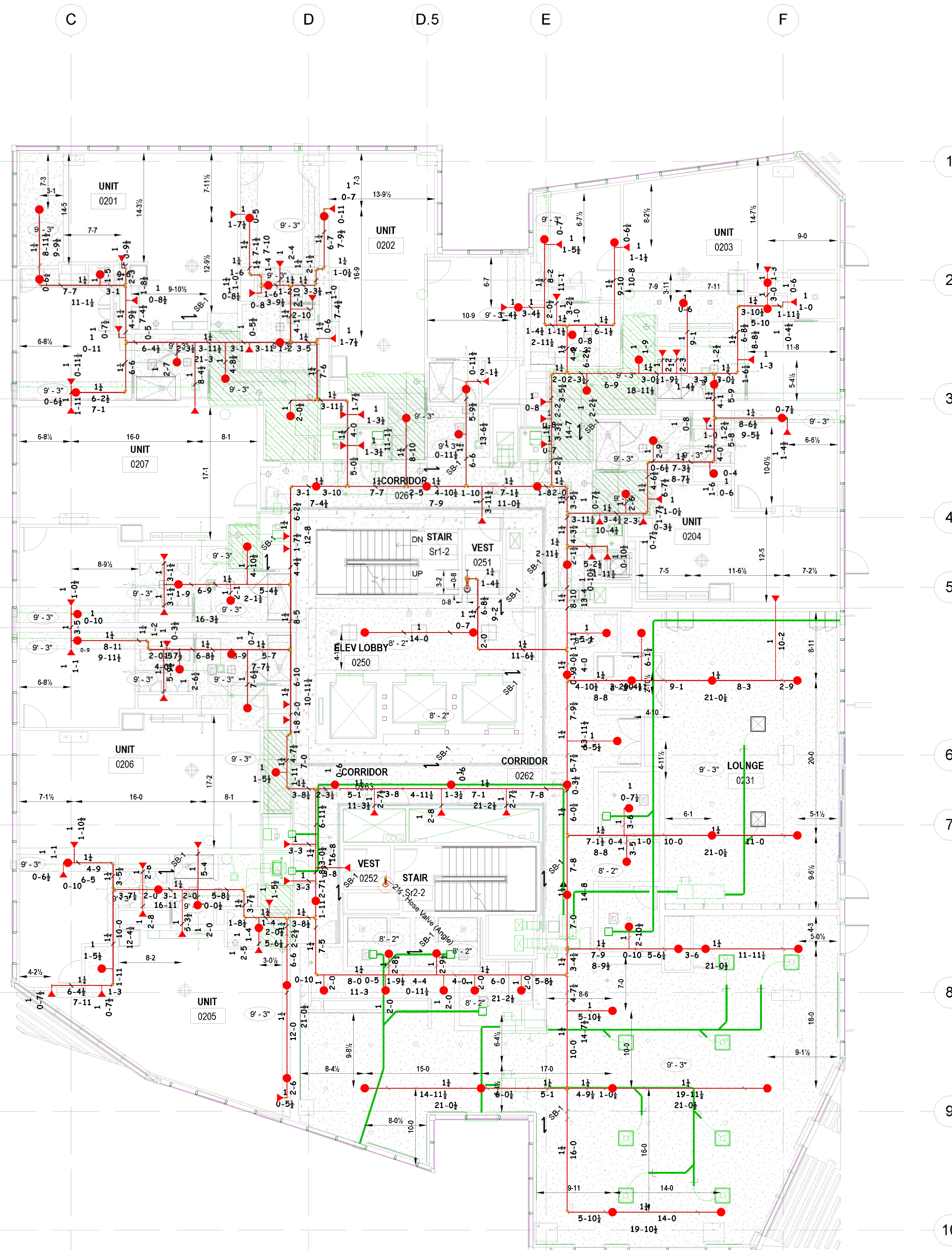
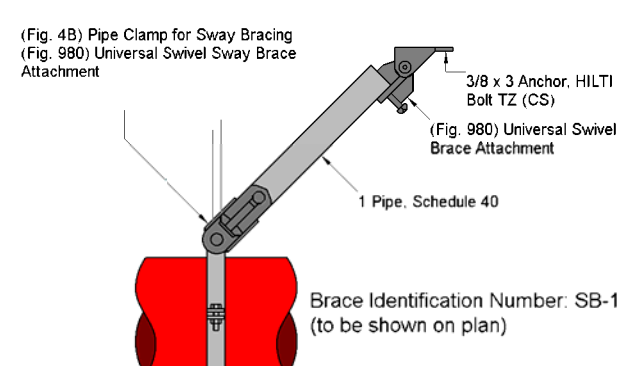
NFPA 13 2010 D.1.1.6 New Apartment Buildings.
 D.1.1.6.1 In buildings sprinklered in accordance with NFPA 13, closets less than 12 ft² (1.1 m²) in area in individual dwelling units shall not be required to be sprinklered. Closets that contain equipment such as washers, dryers, furnaces, or water heaters shall be sprinklered regardless of size. [101:30.5.5]

SEISMIC NOTES:

BRANCHLINES -
 NFPA 13 9.3.6.5 Where the branch lines are supported by rods less than 6 in. (152 mm) long measured between the top of the pipe and the point of attachment to the building structure, the requirements of 9.3.6.1 through 9.3.6.4 shall not apply and additional restraint shall not be required for the branchlines.

MAINS -
 NFPA 13 9.3.5.3.9 The requirements of 9.3.5.3 shall not apply to pipes individually supported by rods less than 6 in. (152 mm) long measured between the top of the pipe and the point of attachment to the building structure.

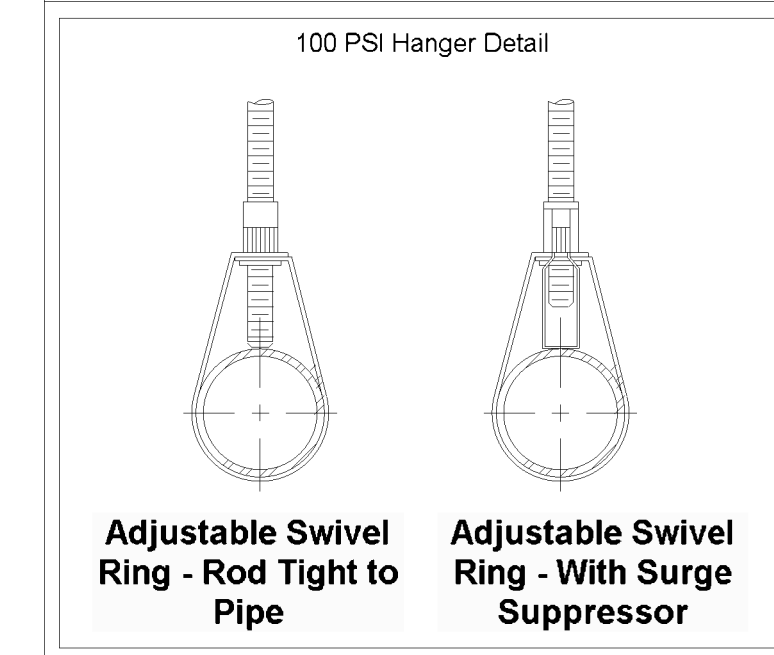
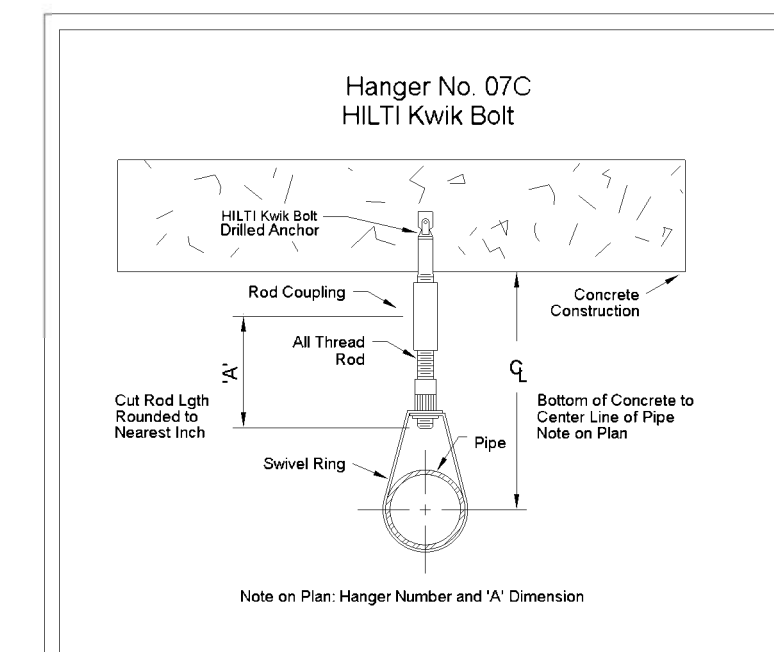
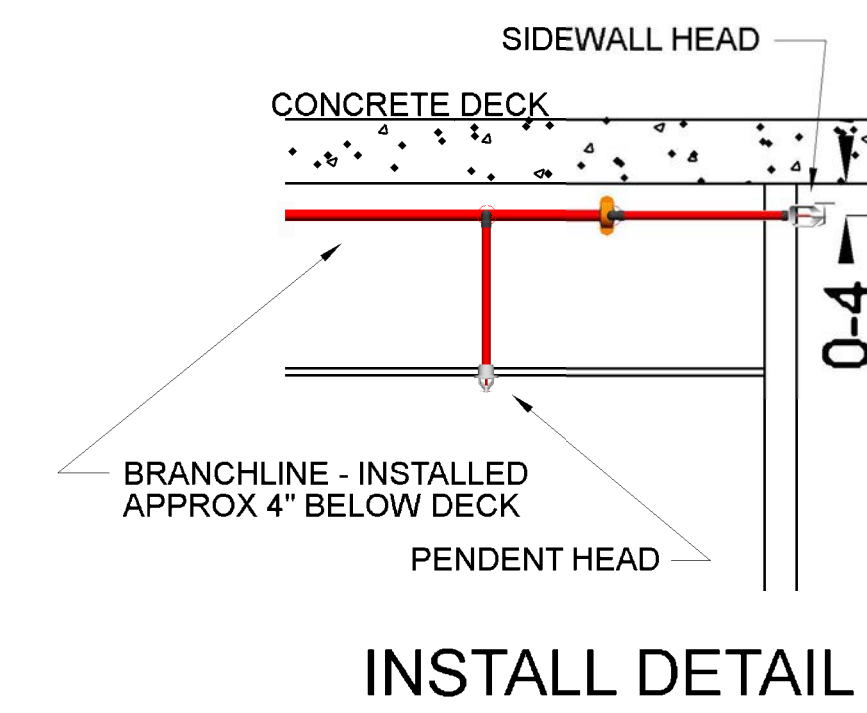
LONGITUDINAL BRACING IS STILL REQUIRED.
 REFER TO THE 19TH LEVEL FOR SEISMIC CALC INFO



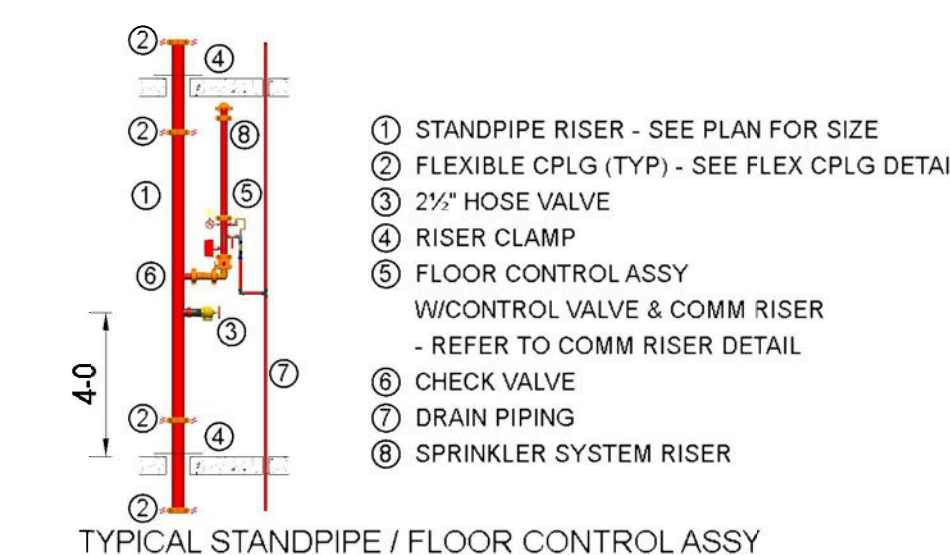
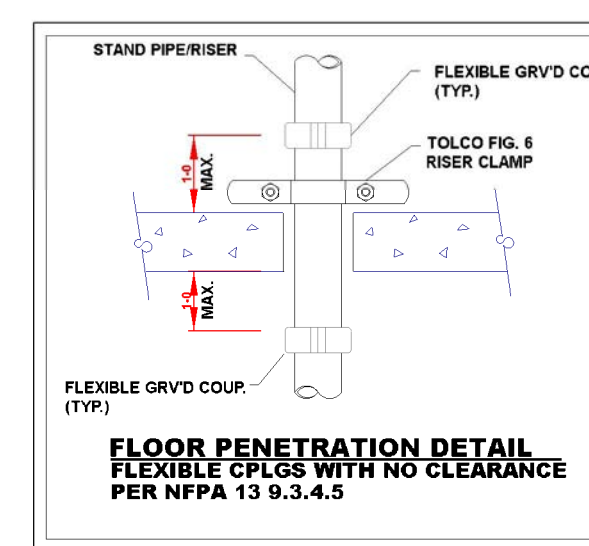
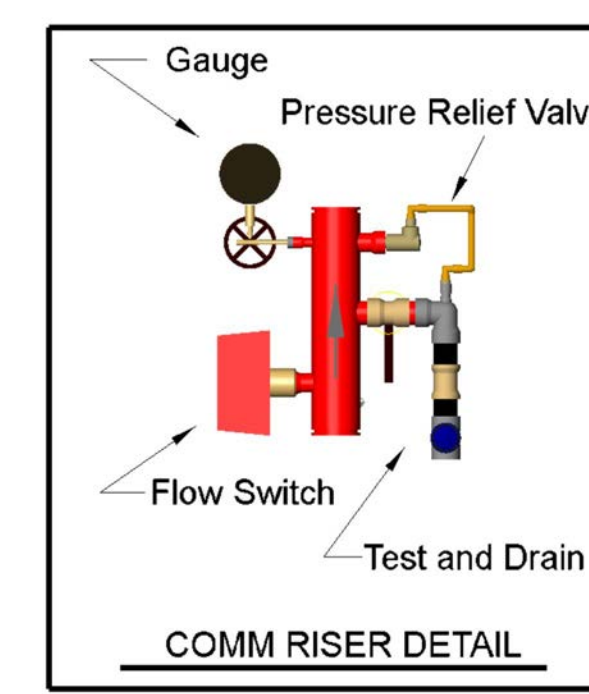
NOTE: PIPE SIZING BASED ON HYD CALCS ON 20TH FLOOR

LEVEL 02 FP PLAN

SCALE 1/8" = 1'-0"



100 PSI Hanger Note:
 * Unsupported Length with Maximum Pressure Exceeding 100 psi (6.9 bar) and a Branch Line Above a Ceiling
 Supplying Sprinklers in a Pendant Position Below the Ceiling
 9.2.3.4.4.1 Where the maximum static or flowing pressure, whichever is greater at the sprinkler, applied other than through the fire department connection, exceeds 100 psi (6.9 bar) and a branch line above a ceiling supplies sprinklers in a pendant position below the ceiling, the hanger assembly supporting the pipe supplying an end sprinkler in a pendant position shall be of a type that prevents upward movement of the pipe.



STREAMLINE FIRE PROTECTION INC.
 3700 INDUSTRY AVE. # 104
 LAKEWOOD CA. 90712
 (714)625-8203 FAX: (714)369-8235

COLUMBIA SQUARE RESIDENTIAL TOWER
 1550 N. EL CENTRO AVENUE
 LOS ANGELES, CA 90028

STATE LICENSE # 931633 C-16

REVISIONS:

REV	DATE	DESCRIPTION	BY

APPROVAL BY:

CONTRACT WITH:

OFFICE:

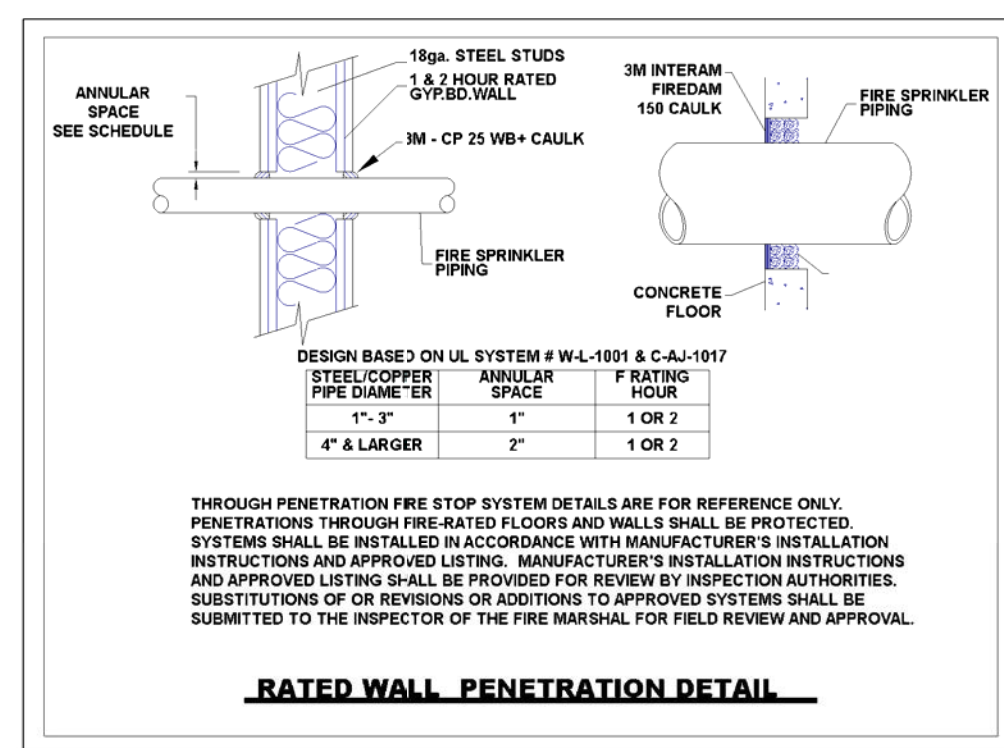
FAX:

SYMBOLS:

SYMBOL	MANUFACTURE	SIZE	QUANTITY	DATE	TEMPERATURE	MARK

DATE: 09/11/2011
 SCALE: AS NOTED
 DRAWN: Daniel W. Smith
 INCH: 1/8"
 SHEET: LEVEL 02 FP PLAN
 PROJECT: FP7

REGISTERED FIRE PROTECTION ENGINEER
 C-16
 931633
 CALIFORNIA



Technical Data: FIRES 49 Pendant and Recessed Pendant**
For Flat Ceilings & NFPA #13D Sloped Ceilings per TIA #1028R (see page 6)

Deflector - to ceiling			Deflector - to ceiling		
Maximum 4" (100mm) to 4" (100mm)			Maximum 4" (100mm) to 8" (203mm)		
Max. Sprinkler Spacing (ft)	Flow (gpm)	Pressure (psi)	Max. Sprinkler Spacing (ft)	Flow (gpm)	Pressure (psi)
12 x 14 (4.3 x 4.3)	13 (49)	7.0 (0.48)	15 (57.0)	9.4 (0.45)	10.6 (0.73)
14 x 14 (4.3 x 4.3)	13 (49)	7.0 (0.48)	16 (60.5)	17 (64.3)	12.0 (0.83)
16 x 16 (4.9 x 4.9)	13 (49)	7.0 (0.48)	17 (64.3)	19 (72.0)	13.0 (0.92)
18 x 18 (5.5 x 5.5)	17 (64.3)	12.0 (0.83)	20 (75.7)	22 (83.2)	15.0 (1.05)
20 x 20 (6.1 x 6.1)	20 (75.7)	16.7 (1.16)	22 (83.2)	25 (94.2)	17.0 (1.21)

Note: The F1, F2, F3 pendant and recessed pendant residential sprinklers can be installed per NFPA 13 on lacquered ceilings meeting the following criteria:
1. Maximum beam depth = 7/16" (11mm)
2. Beam spacing of or greater than 7" (178mm) on center
3. Refer to Bulletin 635 for additional details
**Note: The above pressures and flows utilize the Model F1 and F2 Recessed Escutcheos

Technical Data: FIRES 44 HSW and HSW/F2
For Flat Ceilings & NFPA #13D Sloped Ceilings per TIA #1028R (see page 6)

Deflector - to ceiling			Deflector - to ceiling		
Maximum 4" (100mm) to 4" (100mm)			Maximum 4" (100mm) to 12" (305mm)		
Max. Sprinkler Spacing (ft)	Flow (gpm)	Pressure (psi)	Max. Sprinkler Spacing (ft)	Flow (gpm)	Pressure (psi)
12 x 14 (4.3 x 4.3)	12 (45.4)	7.9 (0.52)	14 (53.0)	10.2 (0.71)	10.9 (0.77)
14 x 14 (4.3 x 4.3)	14 (53.0)	10.2 (0.71)	16 (60.6)	13.3 (0.92)	13.3 (0.92)
16 x 16 (4.9 x 4.9)	16 (60.6)	13.3 (0.92)	17 (64.4)	15.0 (1.04)	15.0 (1.04)
18 x 18 (5.5 x 5.5)	18 (68.1)	16.8 (1.18)	20 (75.7)	20.7 (1.43)	20.7 (1.43)
18 x 18 (5.5 x 5.5)	19 (72.0)	18.7 (1.29)	23 (87.1)	27.4 (1.89)	27.4 (1.89)
18 x 20 (4.9 x 6.1)	23 (87.1)	27.4 (1.89)	23 (87.1)	27.4 (1.89)	27.4 (1.89)

Note: The above pressures and flows utilize the Model F2 Recessed Escutcheos

NFPA 13 2010 8.15.8 Dwelling Units.
8.15.8.1 Bathrooms.
8.15.8.1.1 Unless sprinklers are required by 8.15.8.1.2 or 8.15.8.1.3, sprinklers shall not be required in bathrooms that are located within dwelling units, that do not exceed 55 ft² (5.1 m²) in area, and that have walls and ceilings of non-combustible or limited-combustible materials with a 15-minute thermal barrier rating, including the walls and ceilings behind any shower enclosure or tub.

NFPA 13 2010 8.15.8.1.3 Sprinklers shall be required in bathrooms opening directly onto public corridors or extrays.

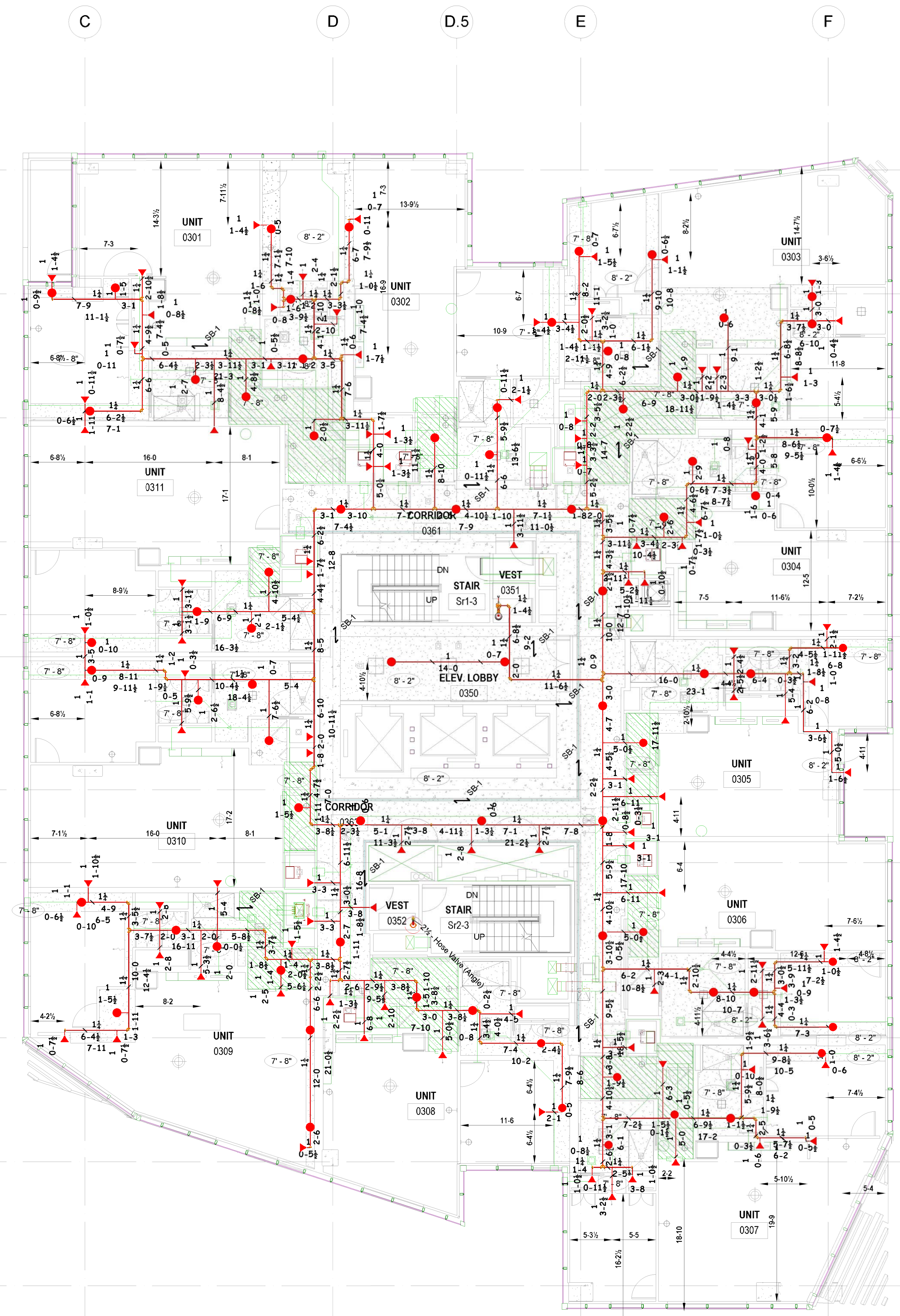
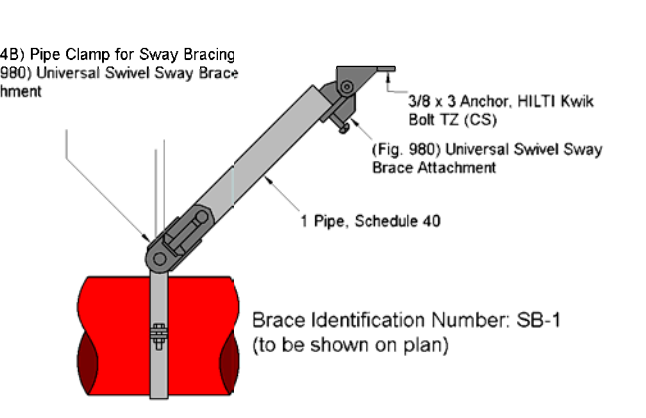
NFPA 13 2010 D.1.1.6 New Apartment Buildings.
D.1.1.6.1 In buildings sprinklered in accordance with NFPA 13, closets less than 12 ft² (1.1 m²) in area in individual dwelling units shall not be required to be sprinklered. Closets that contain equipment such as washers, dryers, furnaces, or water heaters shall be sprinklered regardless of size. [101-30.3.5.3]

SEISMIC NOTES:

BRANCHLINES
NFPA 13 9.3.5.5 Where the branch lines are supported by rods less than 6 in. (152 mm) long measured between the top of the pipe and the point of attachment to the building structure, the requirements of 9.3.6.1 through 9.3.6.4 shall not apply and additional restraint shall not be required for the branchlines.

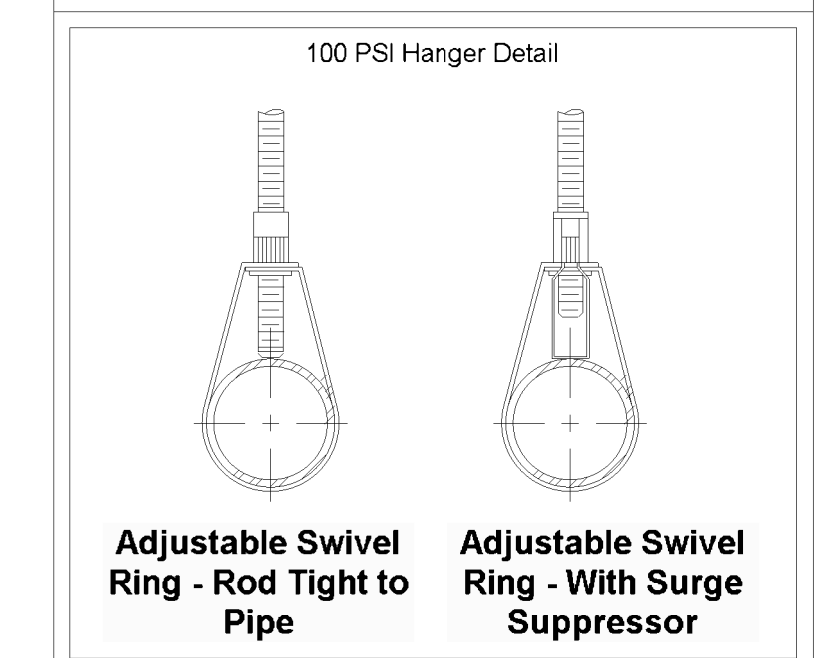
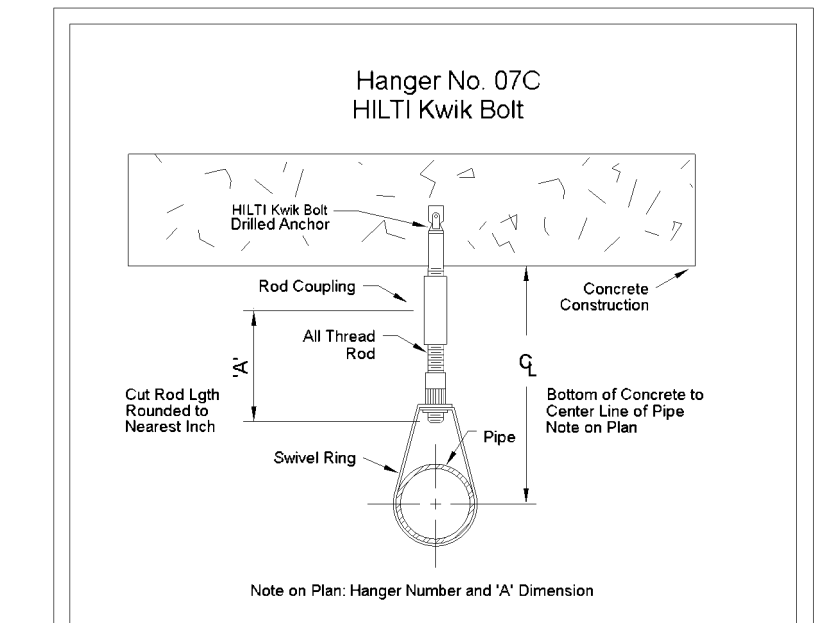
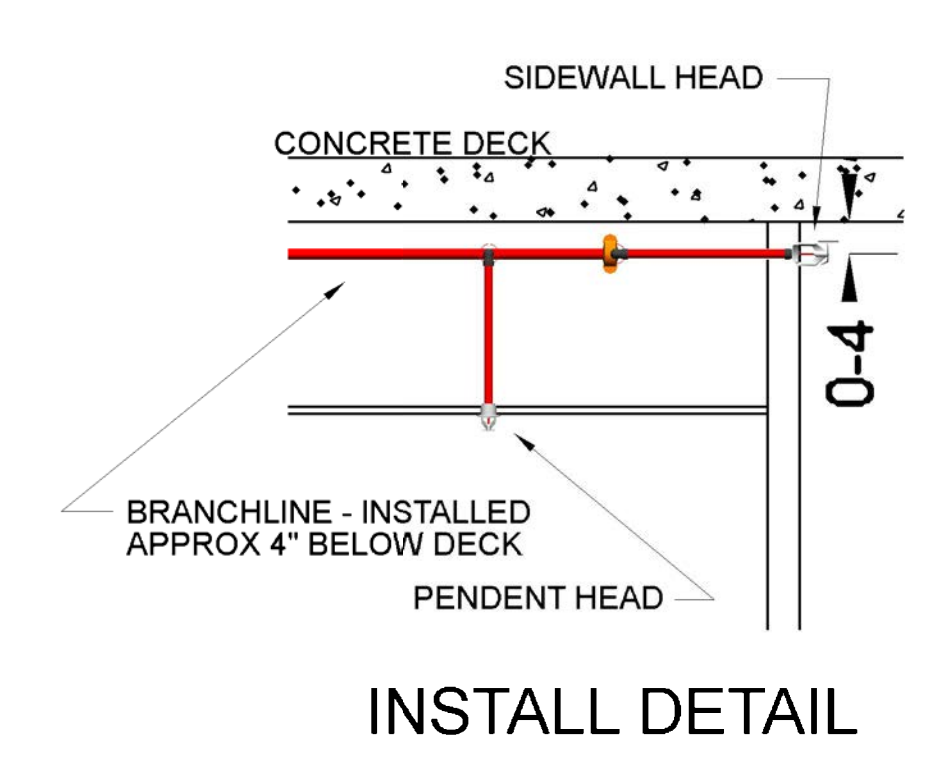
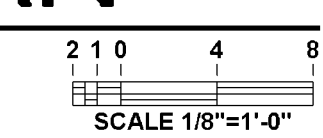
MAINS
NFPA 13 9.3.5.3.9 The requirements of 9.3.5.3 shall not apply to pipes individually supported by rods less than 6 in. (152 mm) long measured between the top of the pipe and the point of attachment to the building structure.

LONGITUDINAL BRACING IS STILL REQUIRED.
REFER TO THE 19TH LEVEL FOR SEISMIC CALC INFO

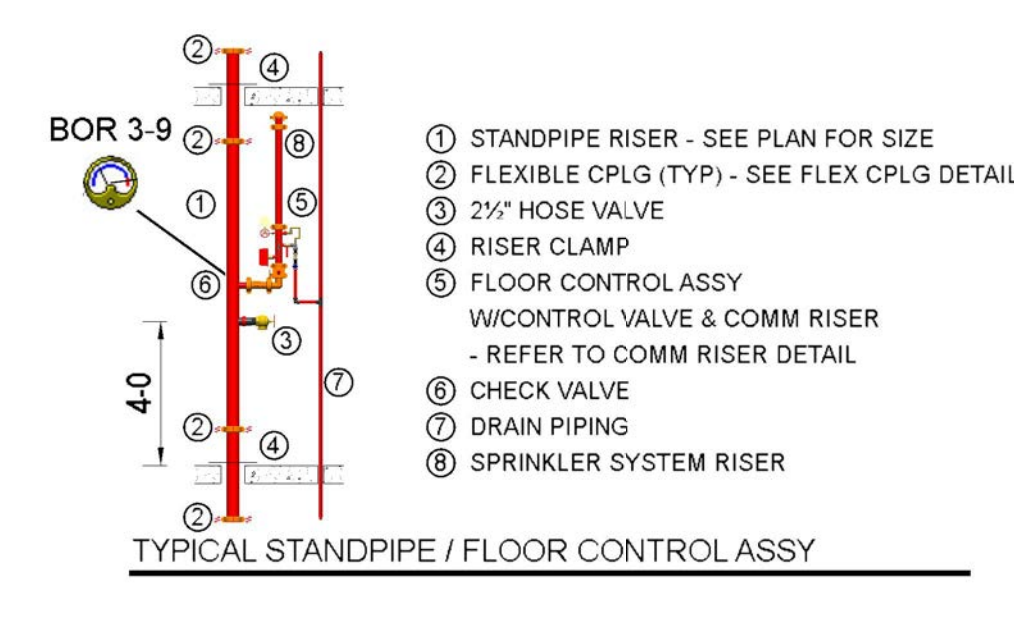
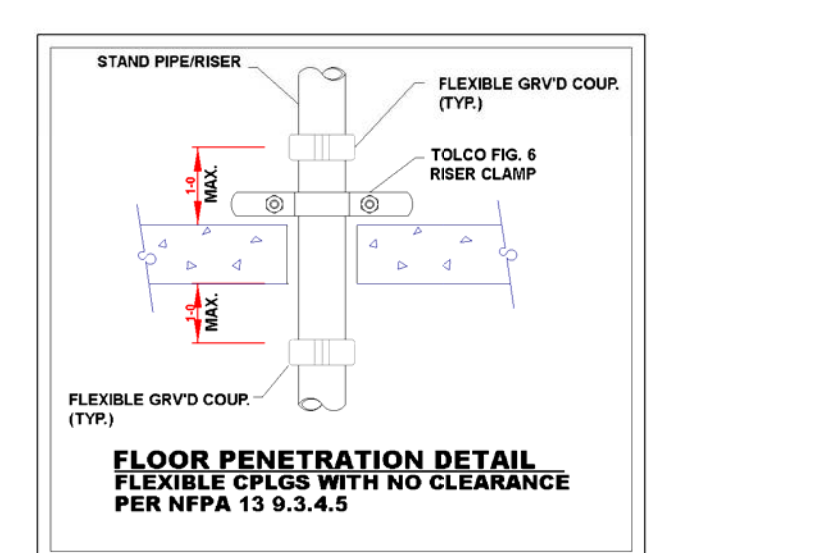
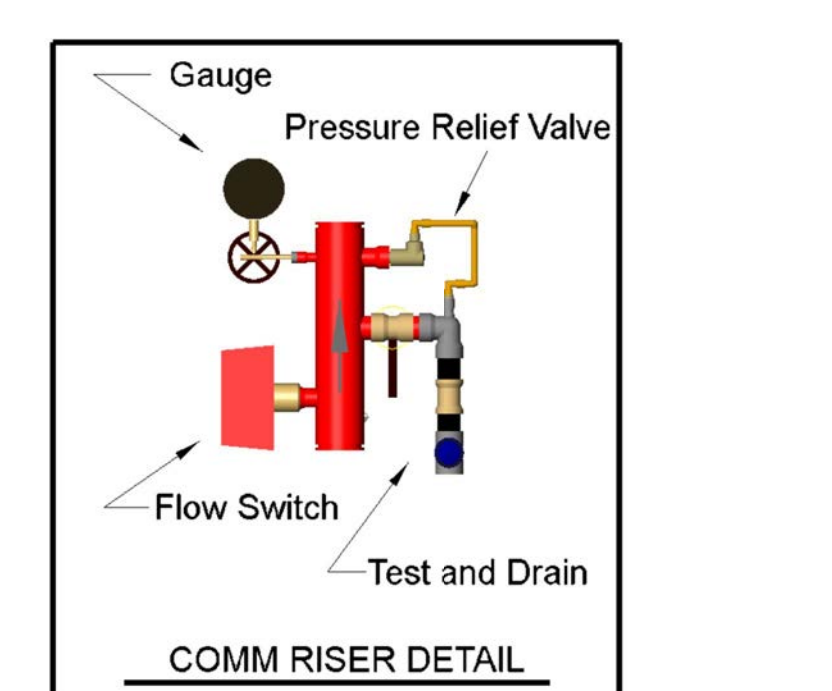
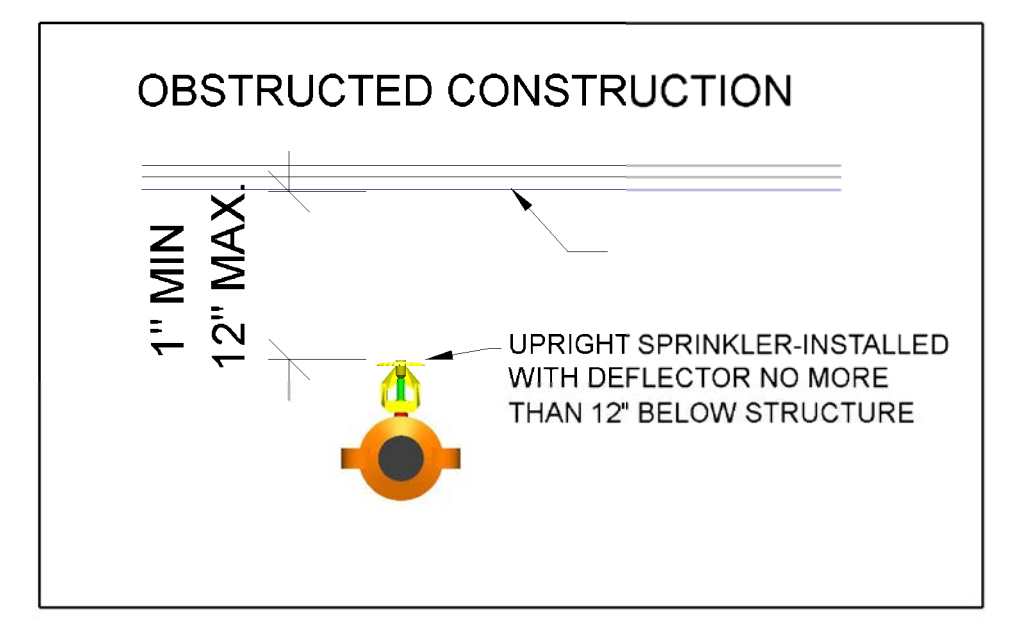


NOTE: PIPE SIZING BASED ON HYD CALCS ON 20TH FLOOR

LEVEL 03 FP PLAN
ALL CEILINGS @ 7'-8" U.N.O.



100 PSI Hanger Note:
* Unsupported Length with Maximum Pressure Exceeding 100 psi (6.9 bar) and a Branch Line Above a Ceiling.
Supporting Sprinklers in a Pendant Position Below the Ceiling.
9.2.3.4.1 Where the maximum static or flowing pressure, whichever is greater at the sprinkler, applied other than through the fire department connection, exceeds 100 psi (6.9 bar) and a branch line above a ceiling supplies sprinklers in a pendant position below the ceiling, the hanger assembly supporting the pipe supporting an end sprinkler in a pendant position shall be of a type that prevents upward movement of the pipe.

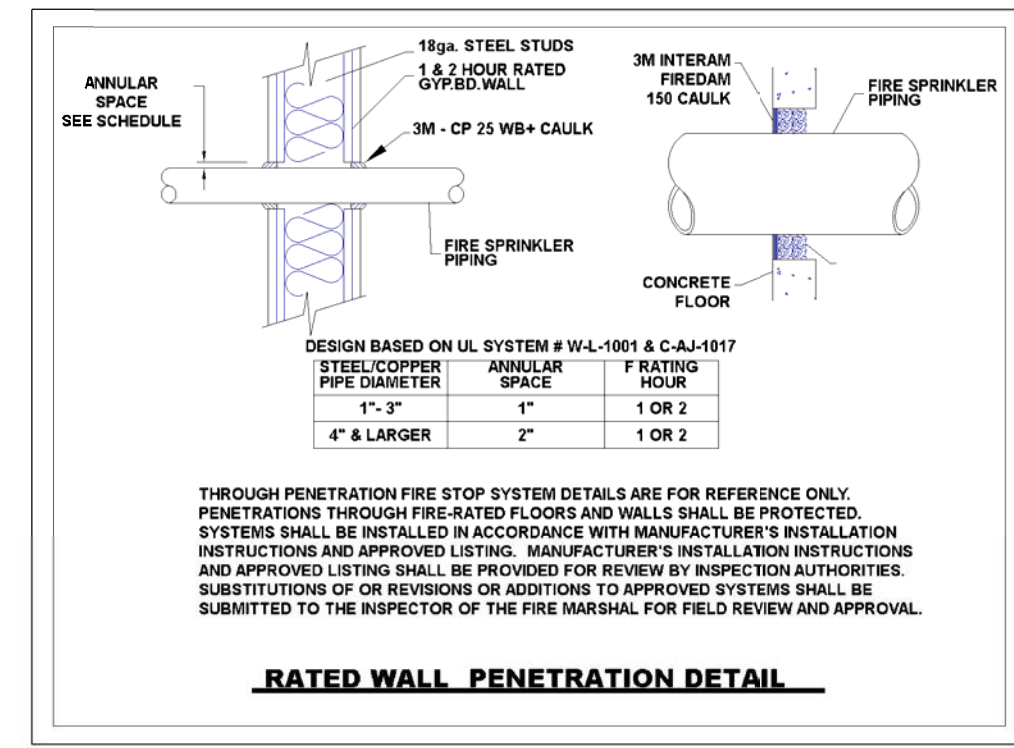


APPROVAL BY: _____ CONTRACT WITH: STREAMLINE FIRE PROTECTION INC. # 104 3700 INDUSTRY AVE. LAKEWOOD CA. 90712 (714) 625-8203 FAX: (714) 369-8235 STATE LICENSE # 93163 C-16

DATE: 06/07/14 SCALE: AS NOTED DRAWN: CHANG W. SHING INK: GDT PROJECT: LEVEL 03 FP PLAN SHEET: LEVEL 03 FP PLAN

COLUMBIA SQUARE RESIDENTIAL TOWER
1650 N. EL CENTRO AVENUE
LOS ANGELES, CA 90028

REV / DATE DESCRIPTION BY: _____



Technical Data: FIRES 49 Pendant and Recessed Pendant**
For Flat Ceilings & NFPA #13D Sloped Ceilings per TIA #1028R (see page 6)

Deflector - to ceiling Maximum 1" (25mm) to 4" (100mm)				Deflector - to ceiling Maximum 2" (50mm) to 8" (200mm)			
Max. Sprinkler Spacing ft (m)	Flow gpm (L/min)	Pressure psi (bar)	Flow gpm (L/min)	Pressure psi (bar)	Flow gpm (L/min)	Pressure psi (bar)	
12 x 12 (3.6 x 3.6)	13 (49)	7.0 (0.48)	15 (57.0)	9.4 (0.65)	16 (60.3)	10.6 (0.73)	
14 x 14 (4.3 x 4.3)	13 (49)	7.0 (0.48)	17 (64.3)	12.0 (0.83)	18 (68.3)	13.2 (0.92)	
16 x 16 (4.9 x 4.9)	13 (49)	7.0 (0.48)	19 (72.3)	15.0 (1.05)	20 (75.7)	16.7 (1.14)	
18 x 18 (5.5 x 5.5)	17 (64.3)	12.0 (0.83)	22 (83.2)	20.2 (1.40)			

*Note: The F1 Series 49 pendant and recessed pendant residential sprinklers can be installed on NFPA 13D sloped ceilings meeting the following criteria:
1. Maximum beam depth = 7" (178mm)
2. Beam spacing at or greater than 7' 0" (2.13m) on center
3. Refer to Bulletin Q35 for additional details.
**Note: The above pressures and flows utilize the Model F1 & F2 Recessed Escutcheon

Technical Data: FIRES 44 HSW and HSW/F2
For Flat Ceilings & NFPA #13D Sloped Ceilings per TIA #1028R (see page 6)

Deflector - to ceiling Maximum 4" (100mm) to 6" (150mm)				Deflector - to ceiling Maximum 6" (150mm) to 12" (300mm)			
Max. Sprinkler Spacing ft (m)	Flow gpm (L/min)	Pressure psi (bar)	Flow gpm (L/min)	Pressure psi (bar)	Flow gpm (L/min)	Pressure psi (bar)	
12 x 12 (3.6 x 3.6)	12 (45.4)	7.5 (0.52)	14 (53.0)	10.2 (0.71)	16 (60.3)	13.3 (0.92)	
14 x 14 (4.3 x 4.3)	14 (53.0)	10.2 (0.71)	17 (64.3)	15.0 (1.05)	18 (68.3)	17.0 (1.21)	
16 x 16 (4.9 x 4.9)	16 (60.3)	13.3 (0.92)	20 (75.7)	20.7 (1.43)	22 (83.2)	27.4 (1.89)	
18 x 18 (5.5 x 5.5)	19 (72.3)	18.7 (1.29)	23 (87.1)	27.4 (1.89)			

Note: The above pressures and flows utilize the Model F2 Recessed Escutcheon

NFPA 13 2010 8.15.8 Dwelling Units.
8.15.8.1 Bathrooms.
8.15.8.1.1 Unless sprinklers are required by 8.15.8.1.2 or 8.15.8.1.3, sprinklers shall not be required in bathrooms that are located within dwelling units, that do not exceed 55 ft² (5.1 m²) in area, and that have walls and ceilings of noncombustible or limited-combustible materials with a 15-minute thermal barrier rating, including the walls and ceilings behind any shower enclosure or tub.

NFPA 13 2010 8.15.8.1.3 Sprinklers shall be required in bathrooms opening directly onto public corridors or exitways.

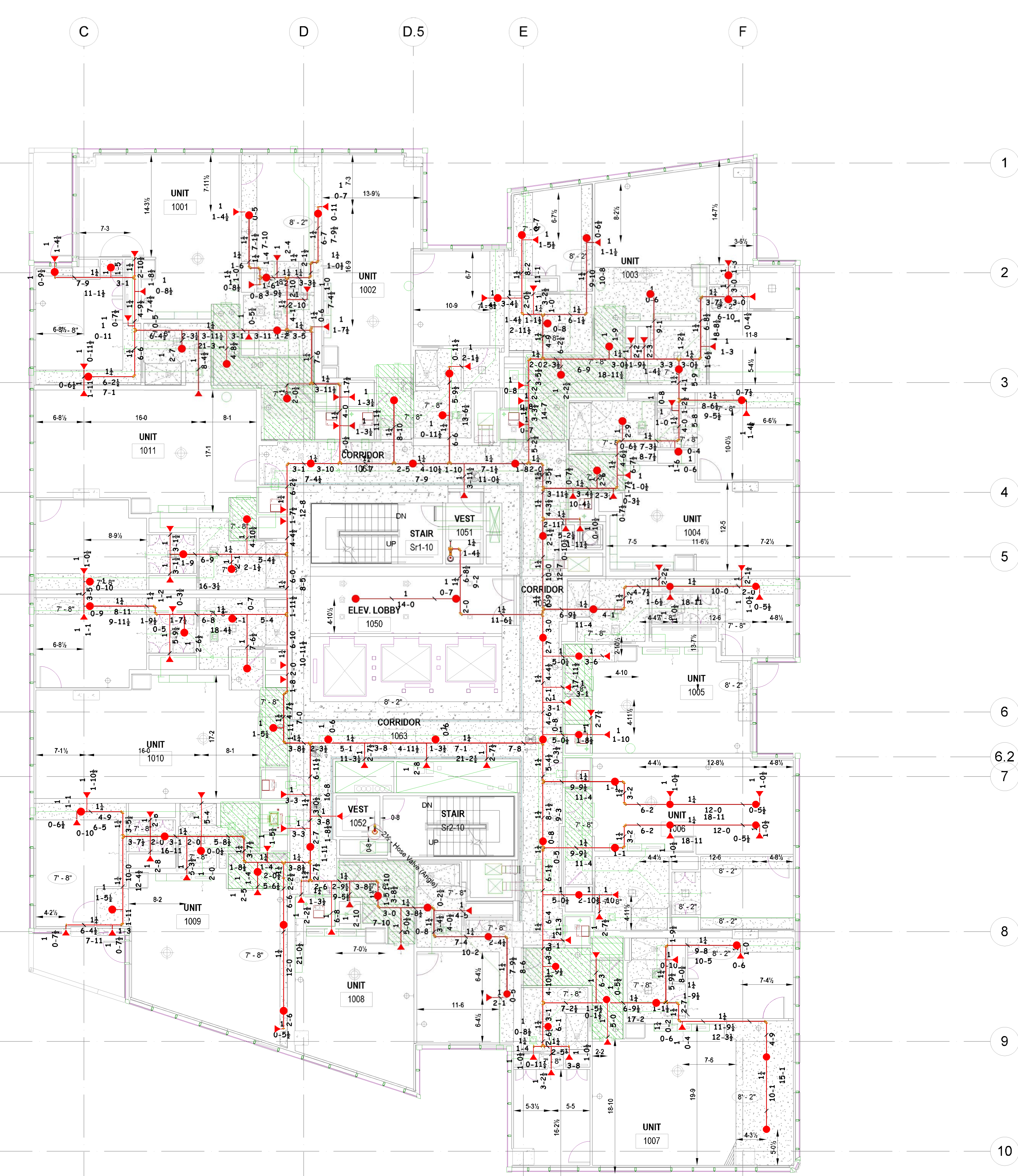
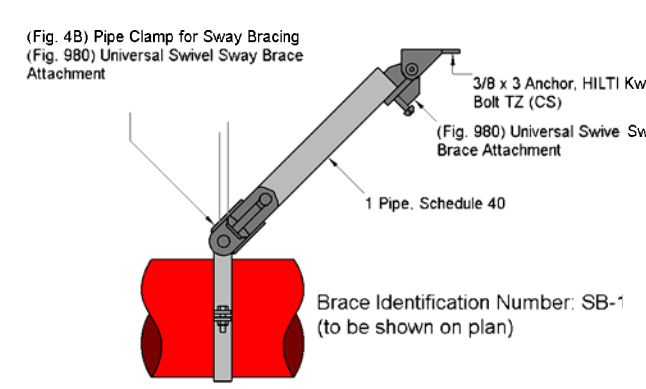
NFPA 13 2010 D.1.6 New Apartment Buildings.
D.1.6.1 In buildings sprinklered in accordance with NFPA 13, closets less than 12 ft² (1.1 m²) in area in individual dwelling units shall not be required to be sprinklered. Closets that contain equipment such as washers, dryers, furnaces, or water heaters shall be sprinklered regardless of size.
[101.30.3.5.3]

SEISMIC NOTES:

BRANCHLINES -
NFPA 13 9.3.6.5 Where the branch lines are supported by rods less than 6 in. (152 mm) long measured between the top of the pipe and the point of attachment to the building structure, the requirements of 9.3.6.1 through 9.3.6.4 shall not apply and additional restraint shall not be required for the branchlines.

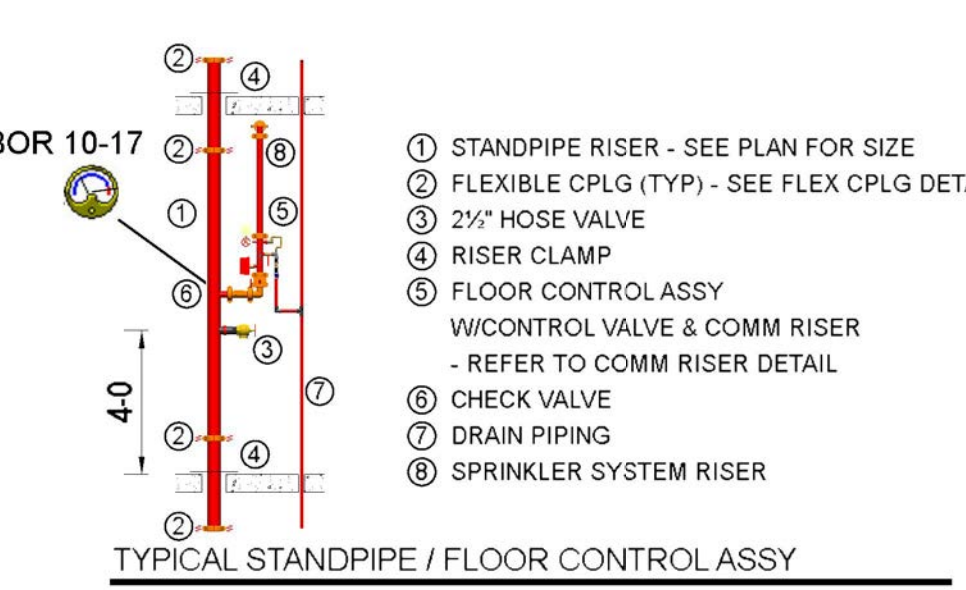
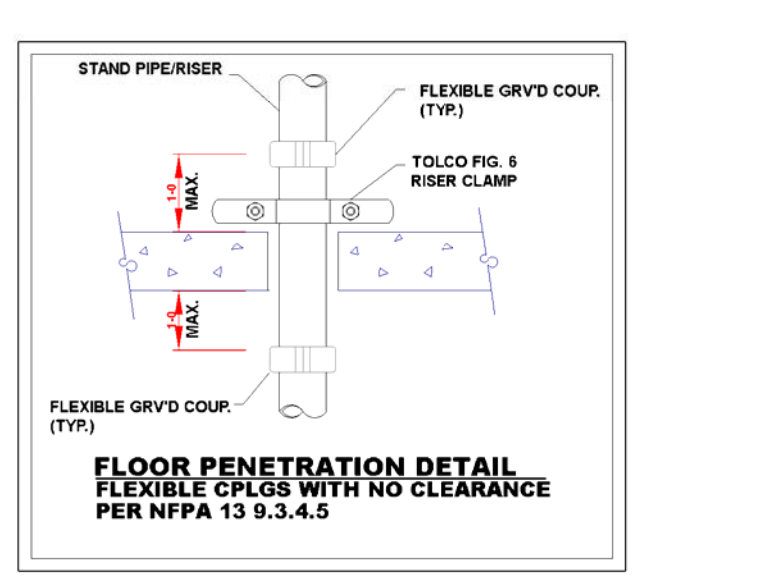
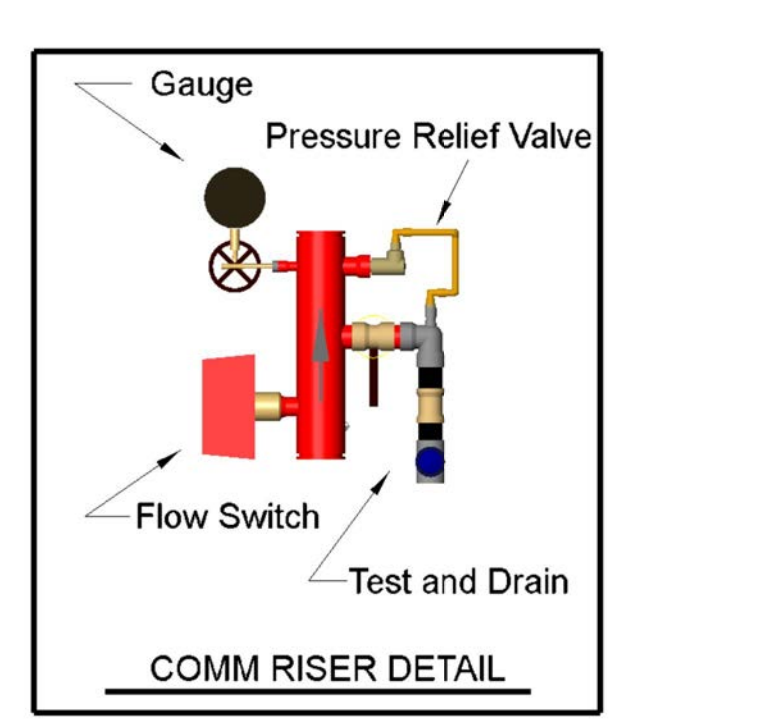
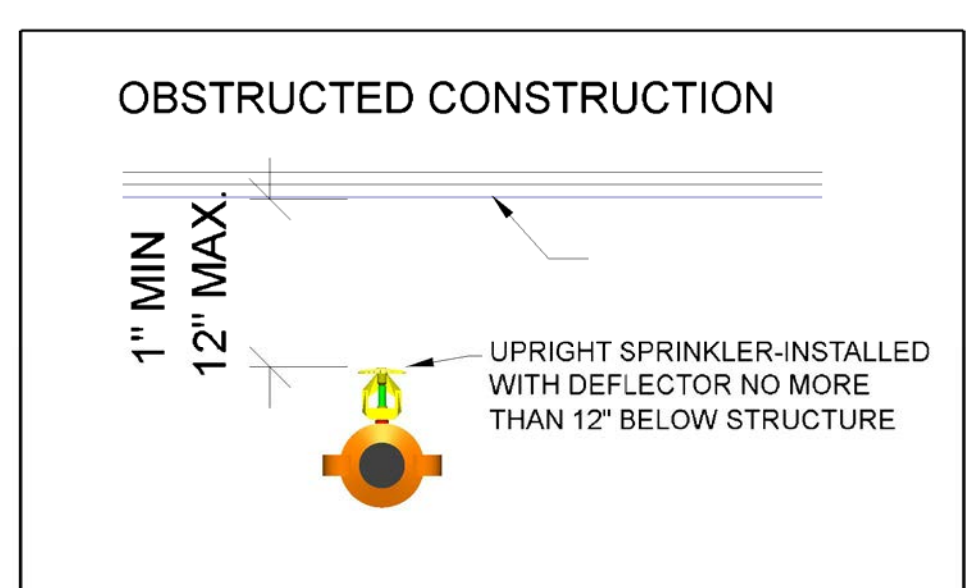
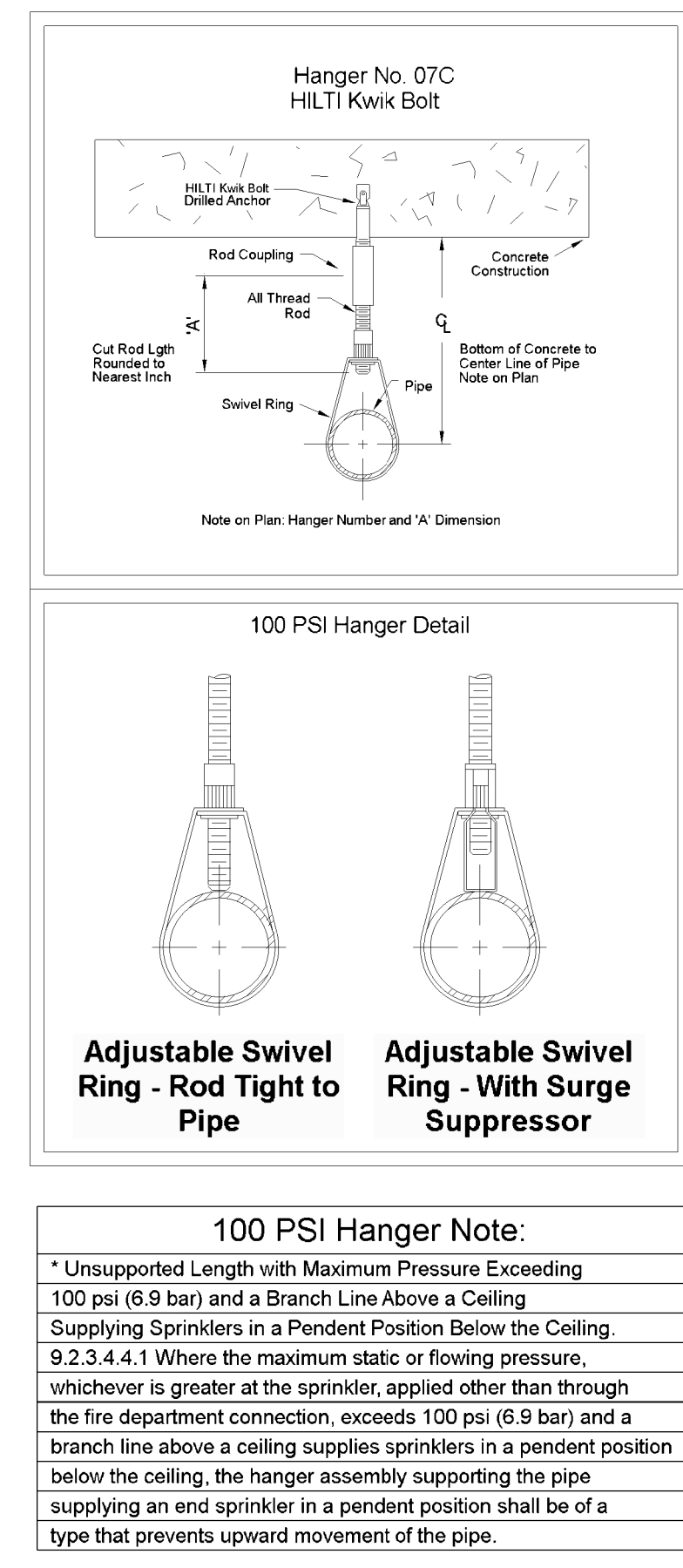
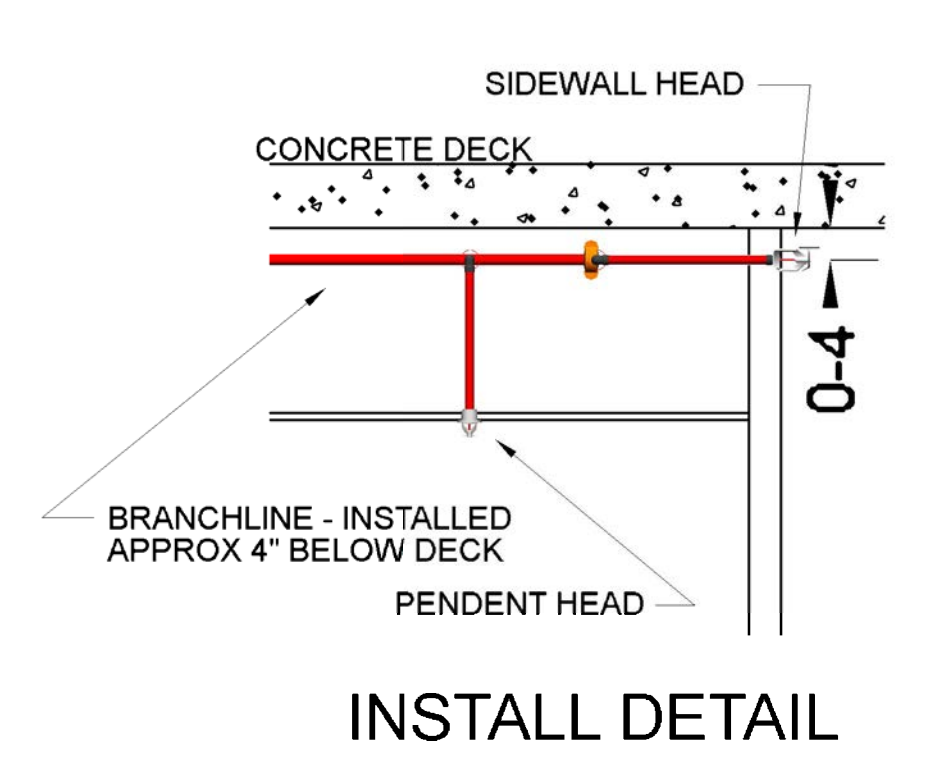
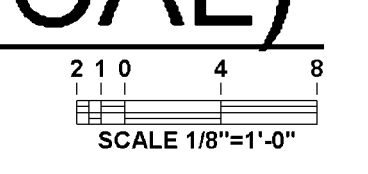
MAINS -
NFPA 13 9.3.5.3.9 The requirements of 9.3.5.3 shall not apply to pipes individually supported by rods less than 6 in. (152 mm) long measured between the top of the pipe and the point of attachment to the building structure.

LONGITUDINAL BRACING IS STILL REQUIRED.
REFER TO THE 19TH LEVEL FOR SEISMIC CALC INFO



NOTE: PIPE SIZING BASED ON HYD CALCS ON 20TH FLOOR

LEVEL 10 FP (11 thru 17 TYPICAL)
ALL CEILINGS @ 7'-8" U.N.O.



REVISIONS

NO.	DATE	DESCRIPTION	BY

SPRINKLER LEGEND

Symbol	Description	Quantity	Notes
○	Standpipe Riser	1	See Plan for Size
○	Flexible Coupling (Typ)	1	See Flex Coupling Detail
○	Riser Clamp	1	
○	Floor Control Assy	1	W/Control Valve & Comm Riser
○	W/Control Valve & Comm Riser	1	Refer to Comm Riser Detail
○	Check Valve	1	
○	Drain Piping	1	
○	Sprinkler System Riser	1	

APPROVAL BY:

CONTRACT WITH:

STREAMLINE FIRE PROTECTION INC. # 104
3700 INDUSTRY AVE.
LAKEWOOD CA. 90712
(714)625-8203 FAX: (714)369-8235

OFFICE: C-16
STATE LICENSE #931653

COLUMBIA SQUARE RESIDENTIAL TOWER
1650 N. EL CENTRO AVENUE
LOS ANGELES, CA 90028

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

DATE: 09/17/14
SCALE: AS NOTED
DRAWN: David W. Young
CHK: GDT
SHEET: LEVEL 10 FLOOR PLAN
FP9

Technical Data: F1RES 49 Pendant and Recessed Pendant**
For Flat Ceilings & NFPA #13D Sloped Ceilings per TIA #10288 (see page 6)

Deflector - to ceiling			Deflector - to ceiling		
Maximum 1" (25mm) to 4" (100mm)			Maximum 4" (100mm) to 8" (203mm)		
Max. Sprinkler Spacing (ft/m)	Flow (gpm/Lpm)	Pressure (psi/bar)	Flow (gpm/Lpm)	Pressure (psi/bar)	Flow (gpm/Lpm)
12 x 12 (3.6 x 3.6)	13 (49)	7.0 (0.48)	15 (57.0)	9.4 (0.65)	
14 x 14 (4.3 x 4.3)	13 (49)	7.0 (0.48)	16 (60.5)	10.6 (0.73)	
16 x 16 (4.9 x 4.9)	13 (49)	7.0 (0.48)	17 (64.3)	12.0 (0.83)	
18 x 18 (5.5 x 5.5)	17 (64.3)	12.0 (0.83)	19 (72.0)	15.0 (1.00)	
20 x 20 (6.1 x 6.1)	20 (75.7)	16.7 (1.14)	22 (83.2)	20.2 (1.40)	

**Note: The F1 Res 49 pendant and recessed pendant sprinklers can be installed per NFPA 13.5 detailed ratings meeting the following criteria:
1. Maximum beam depth = 7" (178mm)
2. Beam spacing or greater than 7' 0" (2.1m) on center
3. Refer to Bulletin 035 for additional details
**Note: The above pressures and flows utilize the Model F1 and F2 Recessed Enclosures

Technical Data: F1RES 44 HSW and HSW/F2
For Flat Ceilings & NFPA #13D Sloped Ceilings per TIA #10288 (see page 6)

Deflector - to ceiling			Deflector - to ceiling		
Maximum 4" (100mm) to 6" (150mm)			Maximum 6" (150mm) to 12" (305mm)		
Max. Sprinkler Spacing (ft/m)	Flow (gpm/Lpm)	Pressure (psi/bar)	Flow (gpm/Lpm)	Pressure (psi/bar)	Flow (gpm/Lpm)
12 x 12 (3.6 x 3.6)	12 (45.4)	7.5 (0.52)	14 (53.0)	10.2 (0.71)	
14 x 14 (4.3 x 4.3)	14 (53.0)	10.2 (0.71)	16 (60.6)	13.3 (0.92)	
16 x 16 (4.9 x 4.9)	16 (60.6)	13.3 (0.92)	17 (64.4)	15.0 (1.00)	
18 x 18 (5.5 x 5.5)	18 (68.1)	16.8 (1.14)	20 (75.7)	20.7 (1.43)	
20 x 20 (6.1 x 6.1)	21 (77.0)	18.7 (1.29)	23 (87.1)	27.4 (1.89)	

Note: The above pressures and flows utilize the Model F2 Recessed Enclosure.

NFPA 13 2010 8.15.8 Dwelling Units.
8.15.8.1 Bathrooms.
8.15.8.1.1* Unless sprinklers are required by 8.15.8.1.2 or 8.15.8.1.3, sprinklers shall not be required in bathrooms that are located within dwelling units, that do not exceed 55 sq ft (5.1 m²) in area, and that have walls and ceilings of noncombustible or limited-combustible materials with a 15 minute thermal barrier rating, including the walls and ceilings behind any shower enclosure or tub.

NFPA 13 2010 8.15.8.1.3 Sprinklers shall be required in bathrooms opening directly onto public corridors or exitways.

NFPA 13 2010 D.1.1.6 New Apartment Buildings.
D.1.1.6.1 In buildings sprinklered in accordance with NFPA 13, closets less than 12 sq ft (1.1 m²) in area in individual dwelling units shall not be required to be sprinklered. Closets that contain equipment such as washers, dryers, furnaces, or water heaters shall be sprinklered regardless of size.
[101-30.3.5]

Seismic Bracing Calculations			
Project: COLUMBIA SQUARE RESIDENTIAL TOWER		Contractor: Streamline Fire Protection Inc.	
Address: 1550 N. EL CENTRO AVENUE		Address: 2912 Silva St. Lakewood, Ca 90712	
LOS ANGELES, CA 90028		Phone: 562-618-1741	
FAX:		FAX:	
Brace Information		Seismic Brace Attachments	
Length of Brace:	3-0	Structure Attachment Fitting or Tension-only Bracing System	
Diameter of Brace:	1	Make: Takco Inc. Model: (g0) Universal Swivel Sway Brace Attach	
Type of Brace:	Pipe, Schedule 40	Listed Load Rating: 27650s Box	Adjusted Load Rating: 13820s Box
Angle of Brace:	30	Sway Brace (pipe attachment) Fitting	
Least Radius of Gyration:	0.42	Make: Takco Inc. Model: (Fig. 48) Pipe Clamp for Sway Bracing	
L/R Value:	88	Listed Load Rating: 3300s Box	Adjusted Load Rating: 1650s Box
Maximum Horizontal Load:	31500s Ooz		
Fastener Information		Seismic Brace Assembly Detail	
Orientation of Connecting Surface:	NFPA Type "A"	(Fig. 48) Pipe Clamp for Sway Bracing	
Fastener:		(Fig. 88) Universal Swivel Sway Brace Attachment	
Construction Type:	Normal Weight Concrete (4000psi)	(Fig. 89) Universal Swivel Sway Brace Attachment	
Type:	Anchor, HLT/Kwik Bolt	Brace Identification Number: SB-1 (to be shown on plan)	
Size:	3/8 x 3		
Min. Embedment:	0.2		
Maximum Load:	6300s Box		
Longitudinal Brace			
Diameter	Description	Unit Quantity	Quantity
1"	Pipe, Schedule 10	50-0	50-0
		2B 8/oz	1.12
			1410s Box
			Total Weight
			Pp x 1.155000
			1020s 4500s

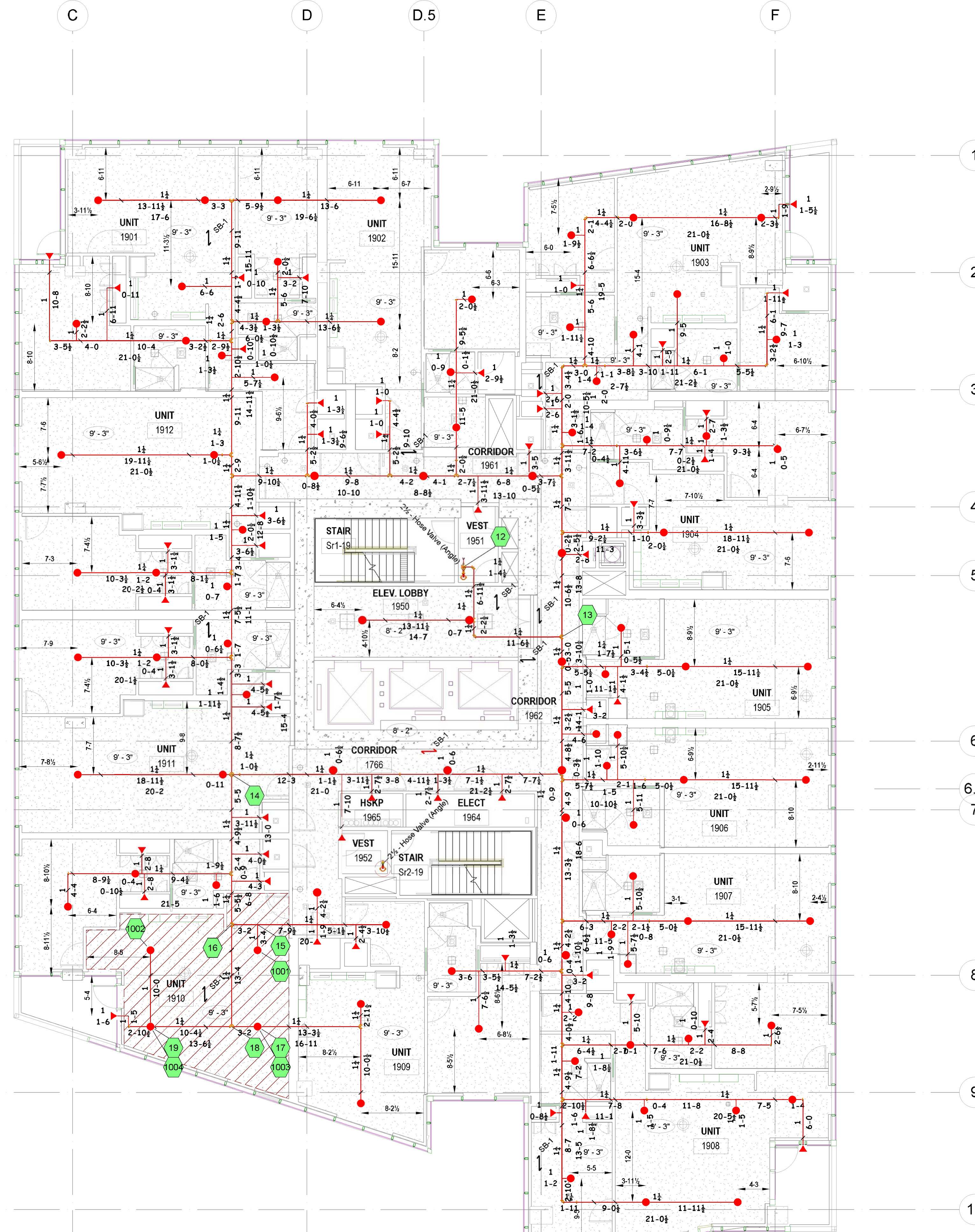
SEISMIC NOTES:

BRANCHLINES
NFPA 13 9.3.6.5 Where the branch lines are supported by rods less than 6 in. (152 mm) long measured between the top of the pipe and the point of attachment to the building structure, the requirements of 9.3.6.1 through 9.3.6.4 shall not apply and additional restraint shall not be required for the branchlines.

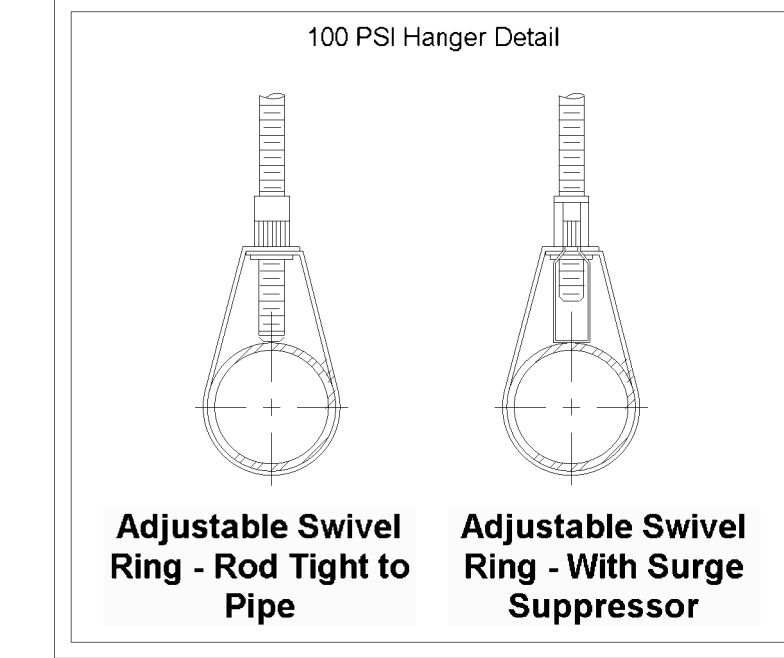
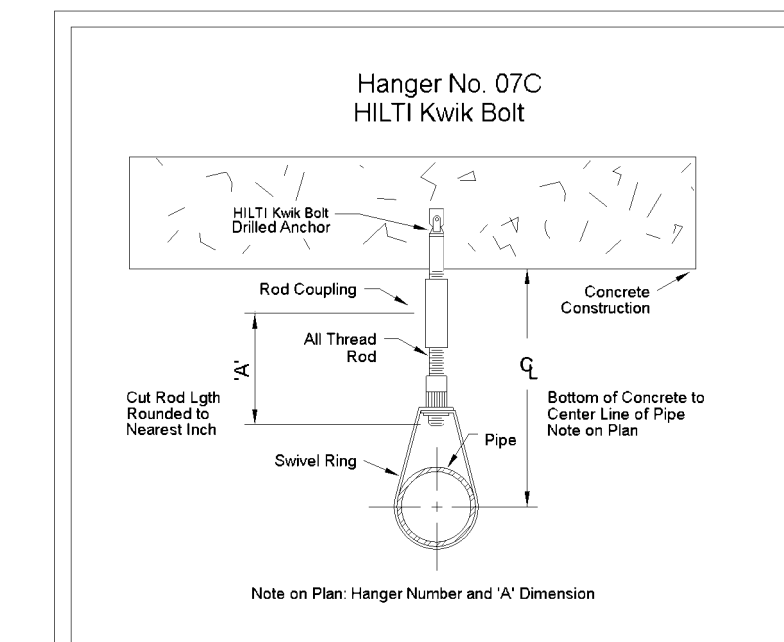
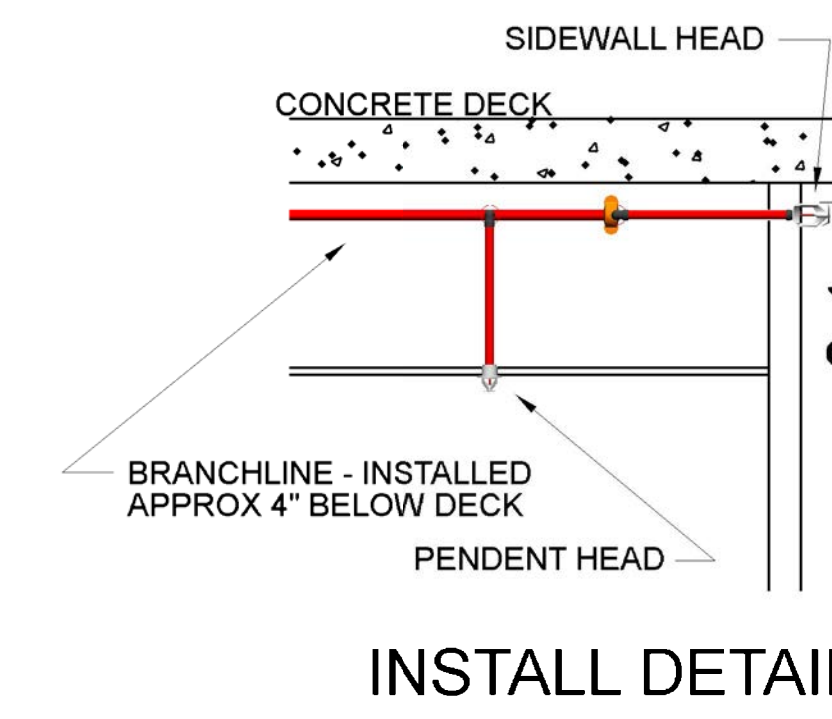
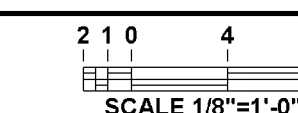
MAINS
NFPA 13 9.3.5.3.9 The requirements of 9.3.5.3 shall not apply to pipes individually supported by rods less than 6 in. (152 mm) long measured between the top of the pipe and the point of attachment to the building structure.

LONGITUDINAL BRACING IS STILL REQUIRED.

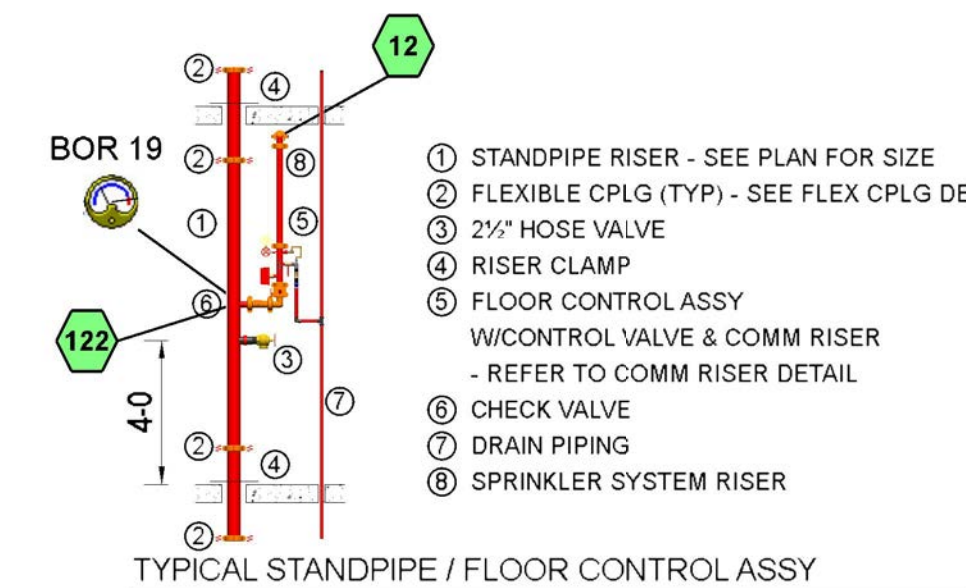
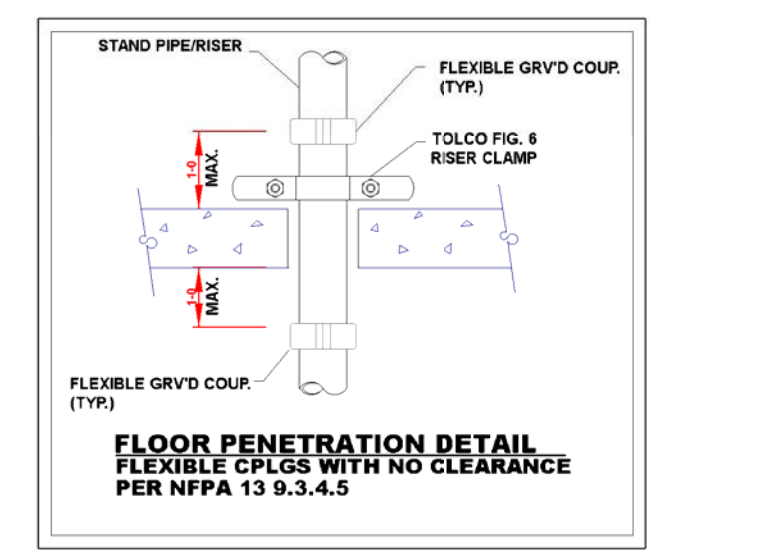
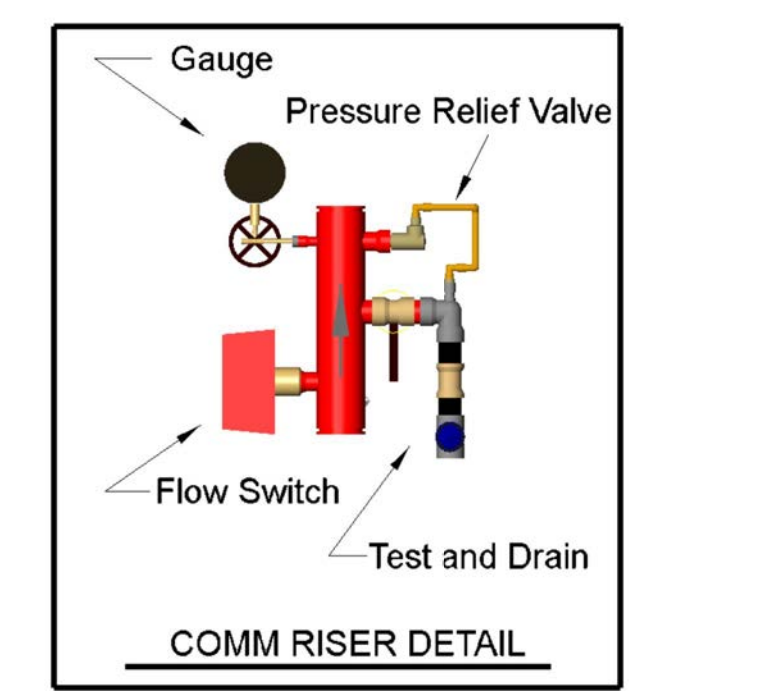
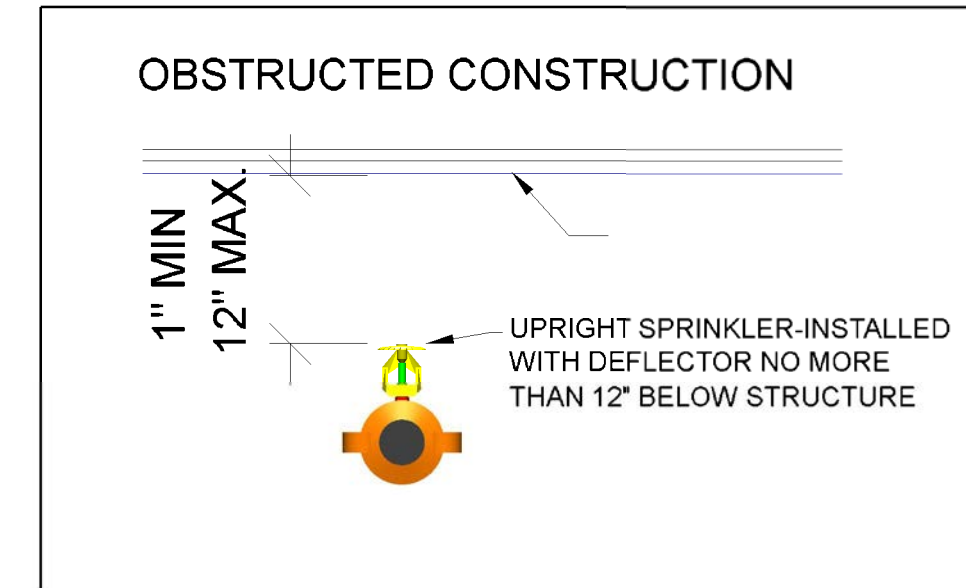
Hydraulic Information	
Remote Area 1	
OCCUPANCY CLASSIFICATION	Residential
DRY CAPACITY	0.00gal
TOTAL HEADS FLOWING	4
K-FACTOR	4.9
TOTAL WATER REQUIRED	85.37
TOTAL PRESSURE REQUIRED	155.430
BASE of RISER (gpm)	85.37
BASE of RISER (psi)	62.969
SAFETY MARGIN (psi)	+155.913 (50.1%)
BASED ON 20 x 20 SPACING	



LEVEL 19 FP
ALL CEILINGS @ 9'-3" U.N.O.
DECK @ 11'-3" AFF



100 PSI Hanger Note:
* Unsupported Length with Maximum Pressure Exceeding 100 psi (6.9 bar) and a Branch Line Above a Ceiling Supplying Sprinklers in a Pendant Position Below the Ceiling.
9.2.3.4.1 Where the maximum static or flowing pressure, whichever is greater at the sprinkler, applied other than through the fire department connection, exceeds 100 psi (6.9 bar) and a branch line above a ceiling supplies sprinklers in a pendant position below the ceiling, the hanger assembly supporting the pipe supplying an end sprinkler in a pendant position shall be of a type that prevents upward movement of the pipe.



REV / DATE DESCRIPTION

APPROVAL BY:

CONTRACT WITH:

OFFICE:

STATE LICENSE #931653 C-16

STREAMLINE FIRE PROTECTION INC. 3700 INDUSTRY AVE. # 104 LAKEWOOD CA. 90712 (714) 625-8203 FAX: (714) 369-8235

COLUMBIA SQUARE RESIDENTIAL TOWER 1550 N. EL CENTRO AVENUE LOS ANGELES, CA 90028

931653 C-16

DATE: 06/07/14
SCALE: AS NOTED
DRAWN: David W. Shroy
CHK: GDT
SHEET: LEVEL 19 FP PLAN
FP19

Hydraulic Information	
Remote Area 2-SIDEWALLS	
OCCUPANCY CLASSIFICATION	Residential
TOTAL HEADS FLOWING	4
K-FACTOR	4.4
TOTAL WATER REQUIRED	93.31
TOTAL PRESSURE REQUIRED	177.794
BASE OF RISER (gpm)	93.31
BASE OF RISER (psi)	79.922
SAFETY MARGIN (psi)	+133.452 (42.9%)
BASED ON 16 X 20 SPACING	

Technical Data: F185 49 Pendant and Recessed Pendant**
For Flat Ceilings & NFPA #13D Sloped Ceilings per IA #10288 (see page 6)

Deflector - to - ceiling Maximum 4" (100mm) to 8" (203mm)			Deflector - to - ceiling Maximum 4" (100mm) to 8" (203mm)		
Max. Sprinkler Spacing (ft. in.)	Flow (gpm) (Lpm)	Pressure (psi) (bar)	Max. Sprinkler Spacing (ft. in.)	Flow (gpm) (Lpm)	Pressure (psi) (bar)
12 x 12 (3.6 x 3.6)	13 (49)	7.0 (0.48)	12 x 12 (3.6 x 3.6)	15 (57.0)	9.4 (0.65)
14 x 14 (4.3 x 4.3)	13 (49)	7.0 (0.48)	14 x 14 (4.3 x 4.3)	16 (60.5)	10.6 (0.73)
16 x 16 (4.9 x 4.9)	13 (49)	7.0 (0.48)	16 x 16 (4.9 x 4.9)	17 (64.3)	12.0 (0.83)
18 x 18 (5.5 x 5.5)	17 (64.3)	12.0 (0.83)	18 x 18 (5.5 x 5.5)	19 (72.0)	15.0 (1.05)
20 x 20 (6.1 x 6.1)	20 (75.7)	16.7 (1.18)	20 x 20 (6.1 x 6.1)	22 (83.2)	20.2 (1.43)

Note: The F185 49 pendant and recessed pendant residential sprinklers can be installed per NFPA 13 in beamed ceilings meeting the following criteria:
1. Maximum beam depth = 7" (178mm)
2. Beam spacing of or greater than 7' 6" (2.3m) on center
3. Refer to Bulletin 035 for additional details
****Note:** The above pressures and flows utilize the Model F1 and F2 Recessed Escutcheons

Technical Data: F185 44 HSW and HSW/F2
For Flat Ceilings & NFPA #13D Sloped Ceilings per IA #10288 (see page 6)

Deflector - to - ceiling Maximum 4" (100mm) to 8" (203mm)			Deflector - to - ceiling Maximum 6" (150mm) to 12" (305mm)		
Max. Sprinkler Spacing (ft. in.)	Flow (gpm) (Lpm)	Pressure (psi) (bar)	Max. Sprinkler Spacing (ft. in.)	Flow (gpm) (Lpm)	Pressure (psi) (bar)
12 x 12 (3.6 x 3.6)	12 (45.5)	7.5 (0.52)	12 x 12 (3.6 x 3.6)	14 (53.0)	10.2 (0.71)
14 x 14 (4.3 x 4.3)	14 (53.0)	10.2 (0.71)	14 x 14 (4.3 x 4.3)	16 (60.5)	13.3 (0.92)
16 x 16 (4.9 x 4.9)	16 (60.5)	13.3 (0.92)	16 x 16 (4.9 x 4.9)	17 (64.3)	15.0 (1.04)
18 x 18 (5.5 x 5.5)	18 (66.7)	16.8 (1.19)	18 x 18 (5.5 x 5.5)	20 (75.7)	20.7 (1.48)
20 x 20 (6.1 x 6.1)	23 (87.1)	27.4 (1.89)	20 x 20 (6.1 x 6.1)	23 (87.1)	27.4 (1.89)

Note: The above pressures and flows utilize the Model F2 Recessed Escutcheons

NFPA 13 2010 8.15.8 Dwelling Units.
8.15.8.1 Bathrooms.
8.15.8.1.1 Unless sprinklers are required by 8.15.8.1.2 or 8.15.8.1.3, sprinklers shall not be required in bathrooms that are located within dwelling units, that do not exceed 55 ft² (5.1 m²) in area, and that have walls and ceilings of non-combustible or limited-combustible materials with a 15-minute thermal barrier rating, including the walls and ceilings behind any shower enclosure or tub.

NFPA 13 2010 8.15.8.1.3 Sprinklers shall be required in bathrooms opening directly onto public corridors or exitways.

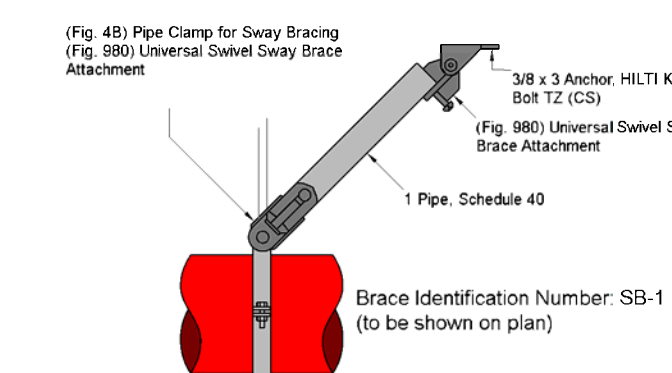
NFPA 13 2010 D.1.1.6 New Apartment Buildings.
D.1.1.6.1 In buildings sprinklered in accordance with NFPA 13, closets less than 12 ft² (1.1 m²) in area in individual dwelling units shall not be required to be sprinklered. Closets that contain equipment such as washers, dryers, furnaces, or water heaters shall be sprinklered regardless of size. [101:30.3.5.3]

SEISMIC NOTES:

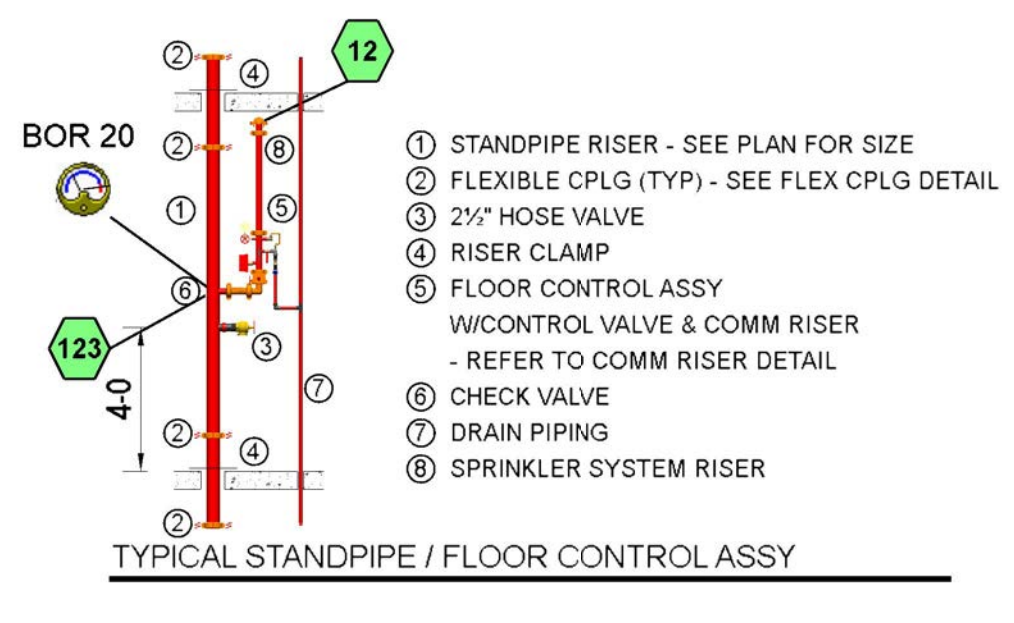
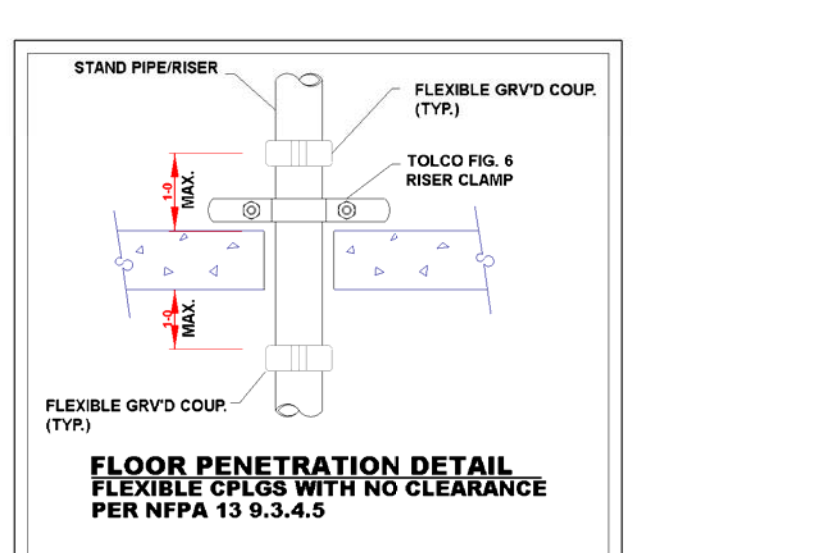
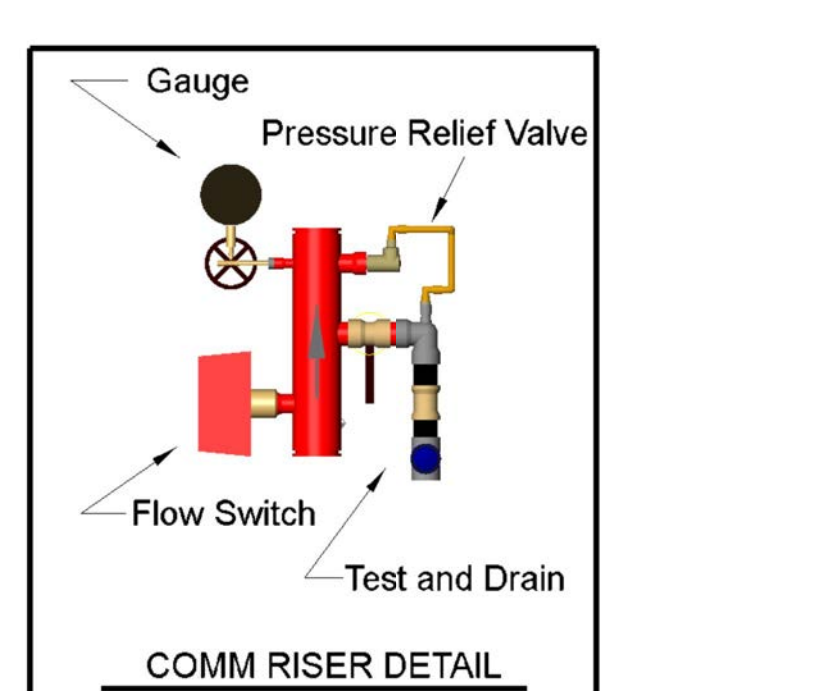
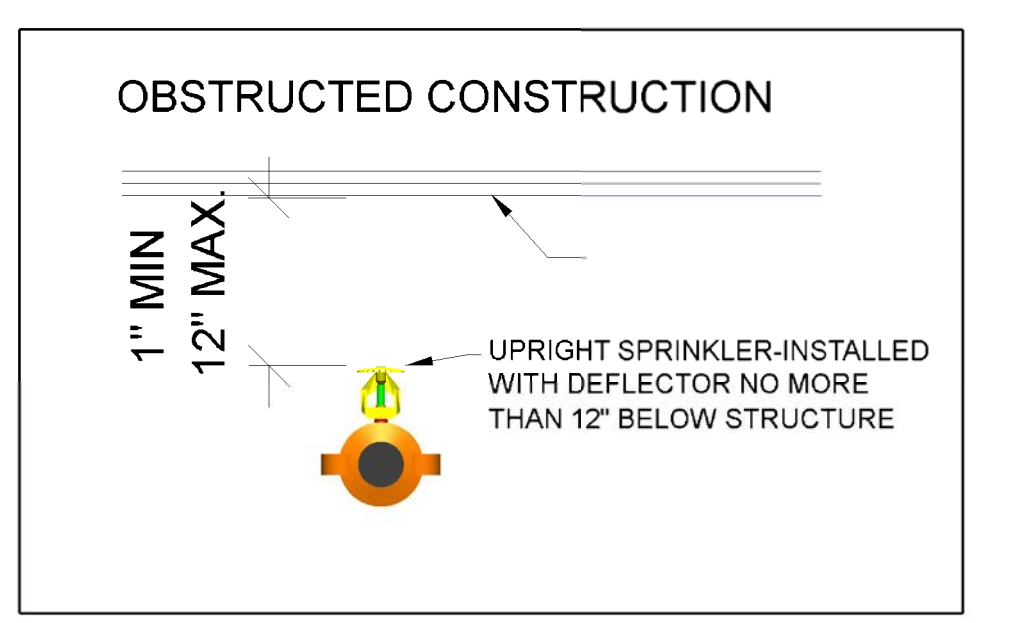
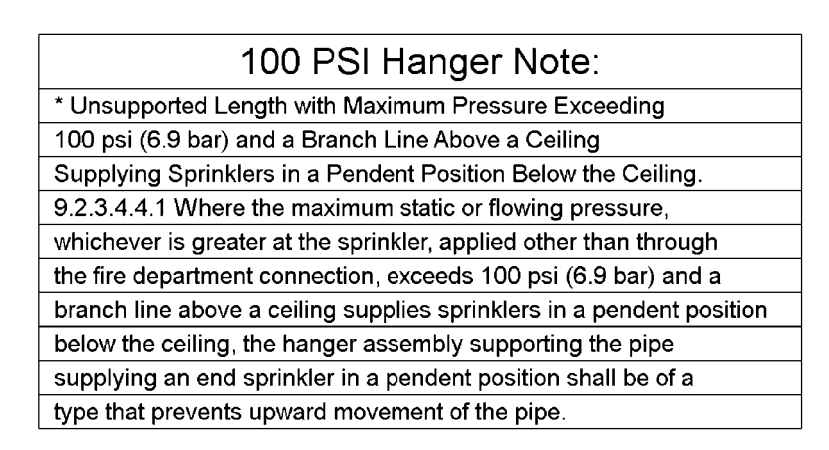
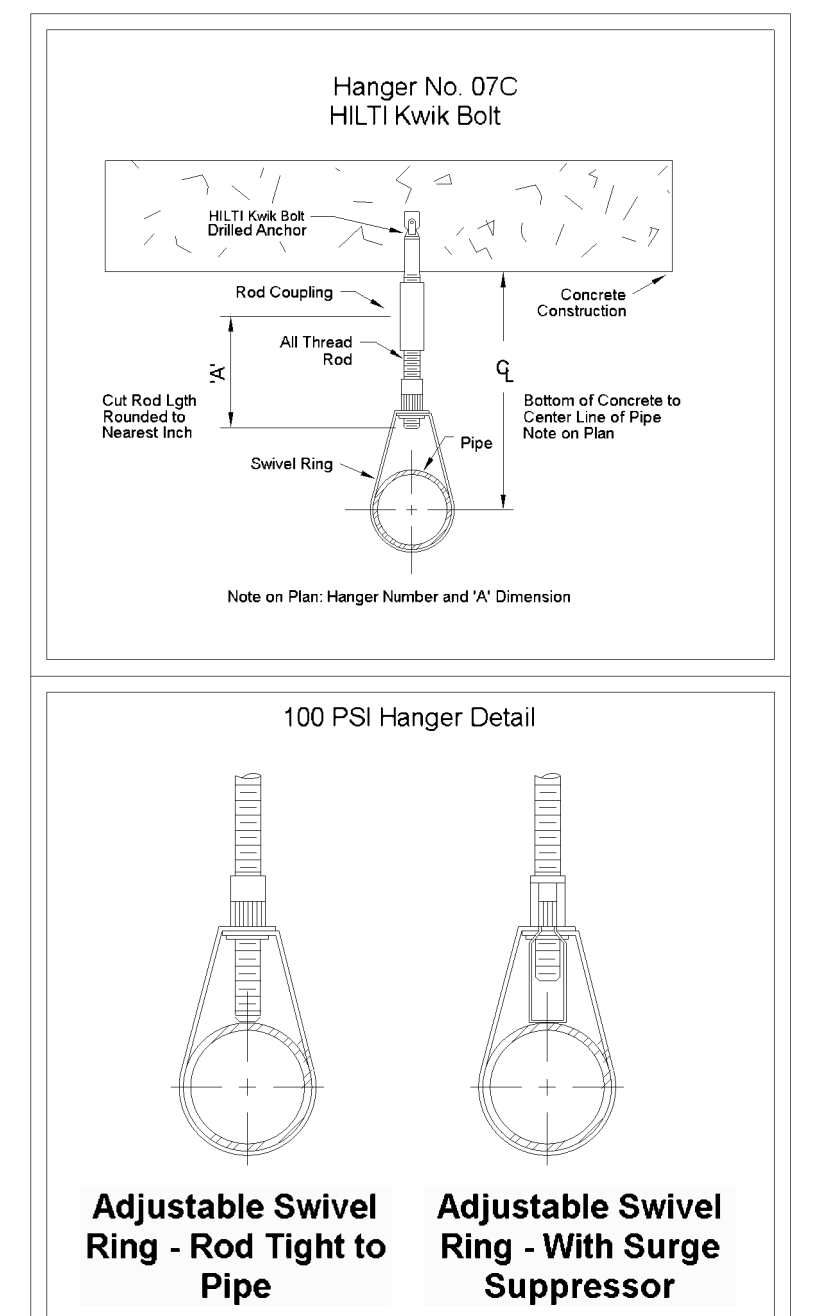
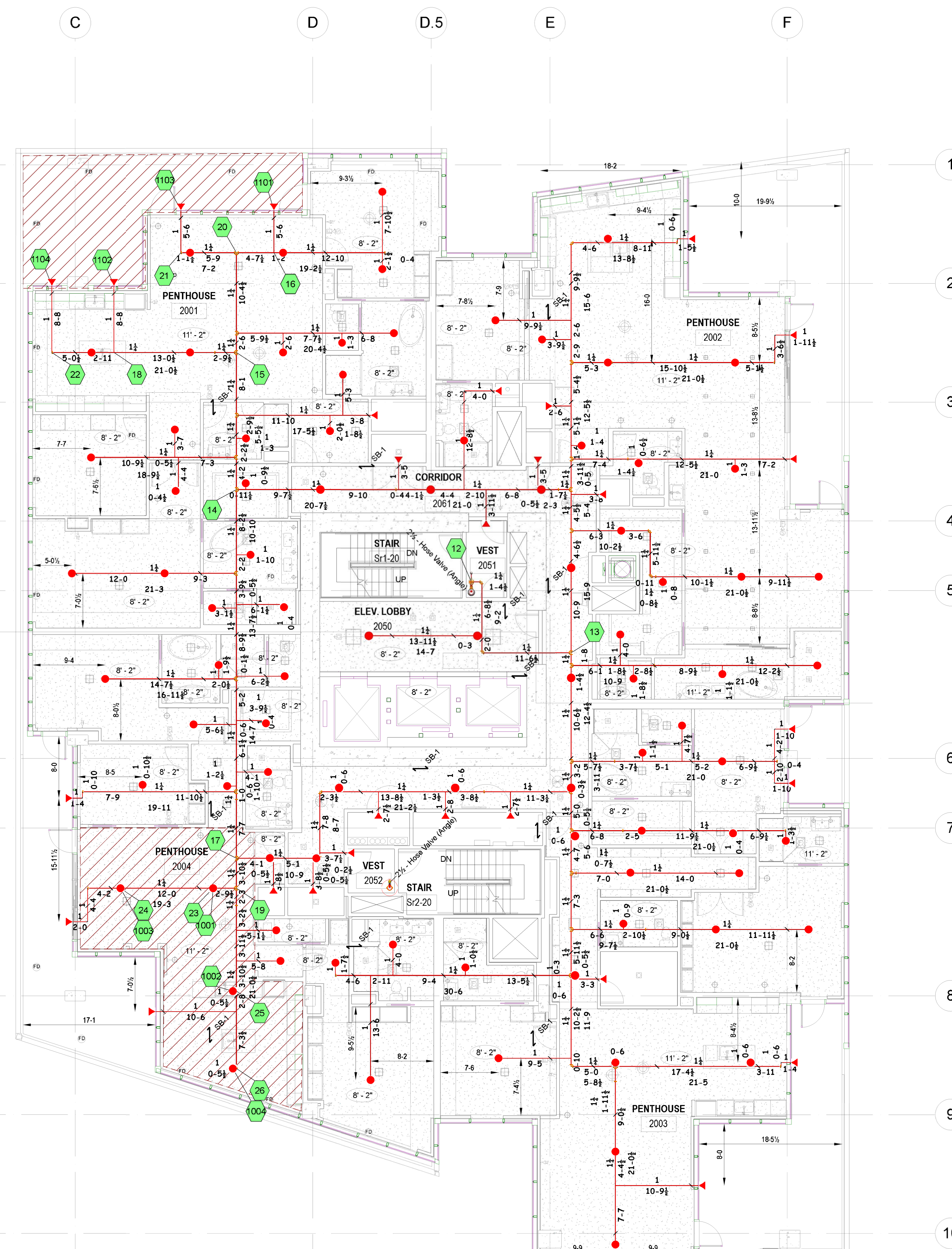
BRANCHLINES -
NFPA 13 9.3.6.5 Where the branch lines are supported by rods less than 6 in. (152 mm) long measured between the top of the pipe and the point of attachment to the building structure, the requirements of 9.3.6.1 through 9.3.6.4 shall not apply and additional restraint shall not be required for the branchlines.

MAINS -
NFPA 13 9.3.5.3.9 The requirements of 9.3.5.3 shall not apply to pipes individually supported by rods less than 6 in. (152 mm) long measured between the top of the pipe and the point of attachment to the building structure.

LONGITUDINAL BRACING IS STILL REQUIRED.
REFER TO THE 19TH LEVEL FOR SEISMIC CALC INFO



Hydraulic Information	
Remote Area 1-PENDENTS	
OCCUPANCY CLASSIFICATION	Residential
TOTAL HEADS FLOWING	4
K-FACTOR	4.9
TOTAL WATER REQUIRED	80.54
TOTAL PRESSURE REQUIRED	148.598
BASE OF RISER (gpm)	80.54
BASE OF RISER (psi)	50.764
SAFETY MARGIN (psi)	+162.801 (52.3%)
BASED ON 20 X 20 SPACING	



LEVEL 20 FP

ALL CEILINGS @ 8'-2" U.N.O.

2 1 0 4 8
SCALE 1/8"=1'-0"

Seismic Bracing Calculations	
Project: COLUMBIA SQUARE RESIDENTIAL TOWER 1550 N. EL CENTRO AVENUE LOS ANGELES, CA 90028	Client: Streamline Fire Protection, Inc. Address: 3700 Industry Ave., #104 Lakewood, CA 90712 Phone: (714) 625-8203 Fax: (714) 625-8203
Brace Information	Seismic Brace Attachments
Length of Brace: 2.0 Member: Steel Type of Brace: Steel Height of Brace: 30 Lateral Load: 1.0 Lateral Load Factor: 1.0 Lateral Load Factor: 1.0 Lateral Load Factor: 1.0	Brace Attachment: Steel Type of Attachment: Steel Height of Attachment: 30 Lateral Load: 1.0 Lateral Load Factor: 1.0 Lateral Load Factor: 1.0 Lateral Load Factor: 1.0
Fastener Information	Seismic Brace Assembly Detail
Fastener: NPS 1/2" Type: Nut Material: Steel Material Load: 5000 lbs	Fastener: NPS 1/2" Type: Nut Material: Steel Material Load: 5000 lbs
Member: Steel Quantity: 1 Length: 2.0 Weight: 1.0 Volume: 0.0	Member: Steel Quantity: 1 Length: 2.0 Weight: 1.0 Volume: 0.0

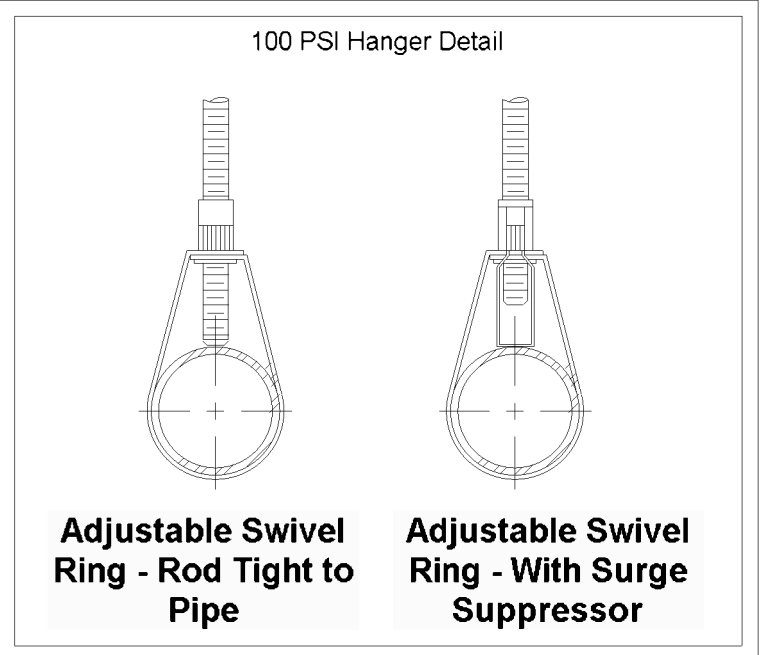
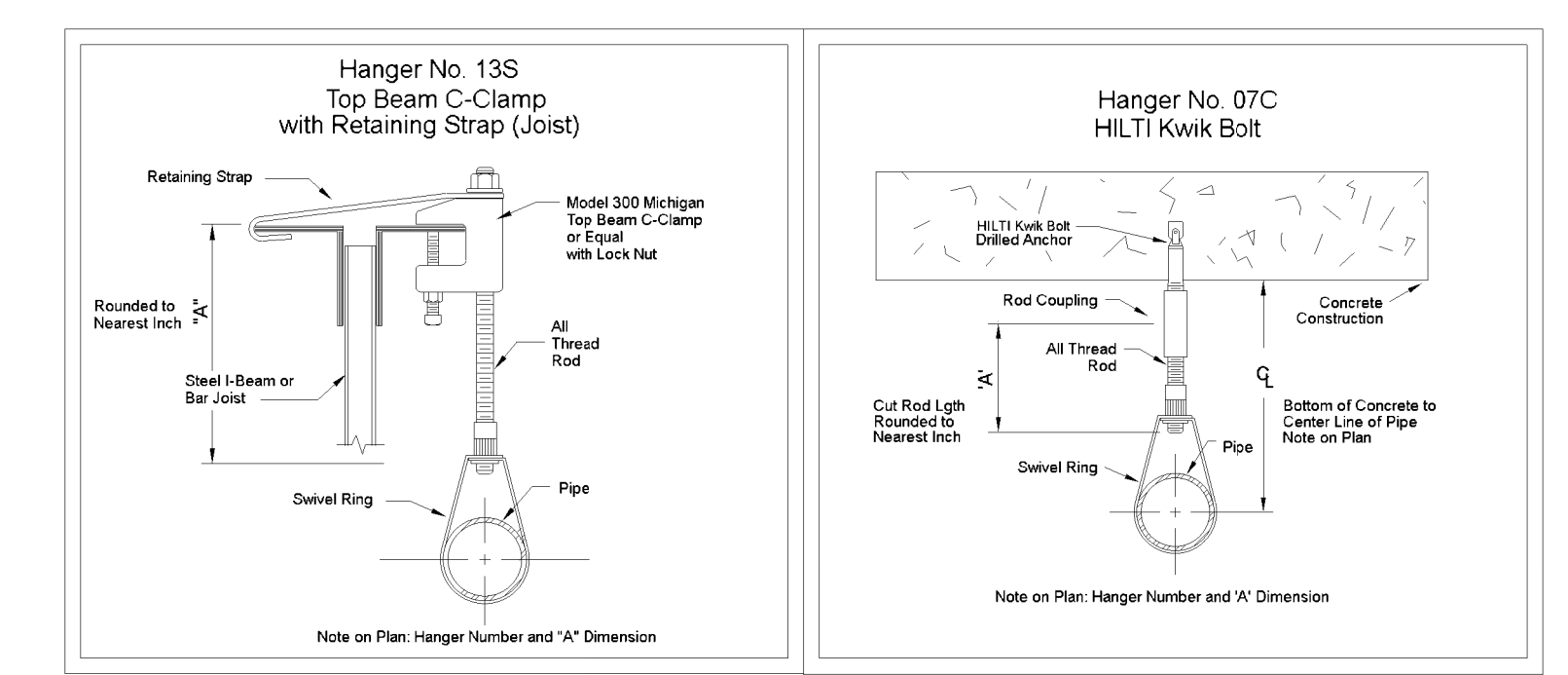
Seismic Bracing Calculations	
Project: COLUMBIA SQUARE RESIDENTIAL TOWER 1550 N. EL CENTRO AVENUE LOS ANGELES, CA 90028	Client: Streamline Fire Protection, Inc. Address: 3700 Industry Ave., #104 Lakewood, CA 90712 Phone: (714) 625-8203 Fax: (714) 625-8203
Brace Information	Seismic Brace Attachments
Length of Brace: 1.17 Member: Steel Type of Brace: Steel Height of Brace: 30 Lateral Load: 1.0 Lateral Load Factor: 1.0 Lateral Load Factor: 1.0 Lateral Load Factor: 1.0	Brace Attachment: Steel Type of Attachment: Steel Height of Attachment: 30 Lateral Load: 1.0 Lateral Load Factor: 1.0 Lateral Load Factor: 1.0 Lateral Load Factor: 1.0
Fastener Information	Seismic Brace Assembly Detail
Fastener: NPS 1/2" Type: Nut Material: Steel Material Load: 5000 lbs	Fastener: NPS 1/2" Type: Nut Material: Steel Material Load: 5000 lbs
Member: Steel Quantity: 1 Length: 1.17 Weight: 0.5 Volume: 0.0	Member: Steel Quantity: 1 Length: 1.17 Weight: 0.5 Volume: 0.0

Seismic Bracing Calculations	
Project: COLUMBIA SQUARE RESIDENTIAL TOWER 1550 N. EL CENTRO AVENUE LOS ANGELES, CA 90028	Client: Streamline Fire Protection, Inc. Address: 3700 Industry Ave., #104 Lakewood, CA 90712 Phone: (714) 625-8203 Fax: (714) 625-8203
Brace Information	Seismic Brace Attachments
Length of Brace: 1.17 Member: Steel Type of Brace: Steel Height of Brace: 30 Lateral Load: 1.0 Lateral Load Factor: 1.0 Lateral Load Factor: 1.0 Lateral Load Factor: 1.0	Brace Attachment: Steel Type of Attachment: Steel Height of Attachment: 30 Lateral Load: 1.0 Lateral Load Factor: 1.0 Lateral Load Factor: 1.0 Lateral Load Factor: 1.0
Fastener Information	Seismic Brace Assembly Detail
Fastener: NPS 1/2" Type: Nut Material: Steel Material Load: 5000 lbs	Fastener: NPS 1/2" Type: Nut Material: Steel Material Load: 5000 lbs
Member: Steel Quantity: 1 Length: 1.17 Weight: 0.5 Volume: 0.0	Member: Steel Quantity: 1 Length: 1.17 Weight: 0.5 Volume: 0.0

Seismic Bracing Calculations	
Project: COLUMBIA SQUARE RESIDENTIAL TOWER 1550 N. EL CENTRO AVENUE LOS ANGELES, CA 90028	Client: Streamline Fire Protection, Inc. Address: 3700 Industry Ave., #104 Lakewood, CA 90712 Phone: (714) 625-8203 Fax: (714) 625-8203
Brace Information	Seismic Brace Attachments
Length of Brace: 1.17 Member: Steel Type of Brace: Steel Height of Brace: 30 Lateral Load: 1.0 Lateral Load Factor: 1.0 Lateral Load Factor: 1.0 Lateral Load Factor: 1.0	Brace Attachment: Steel Type of Attachment: Steel Height of Attachment: 30 Lateral Load: 1.0 Lateral Load Factor: 1.0 Lateral Load Factor: 1.0 Lateral Load Factor: 1.0
Fastener Information	Seismic Brace Assembly Detail
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Member: Steel Quantity: 1 Length: 1.17 Weight: 0.5 Volume: 0.0	Member: Steel Quantity: 1 Length: 1.17 Weight: 0.5 Volume: 0.0

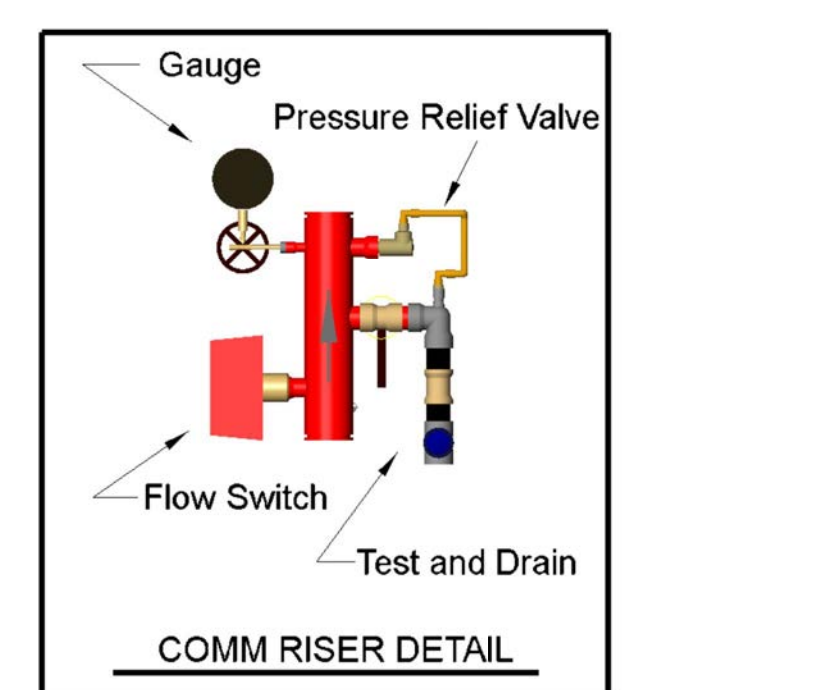
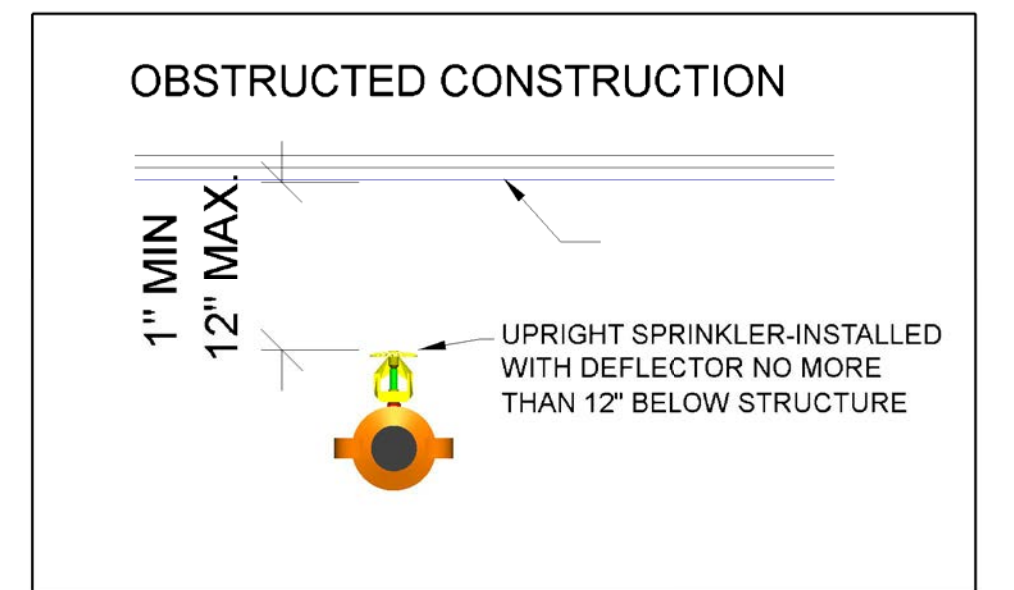
Seismic Bracing Calculations	
Project: COLUMBIA SQUARE RESIDENTIAL TOWER 1550 N. EL CENTRO AVENUE LOS ANGELES, CA 90028	Client: Streamline Fire Protection, Inc. Address: 3700 Industry Ave., #104 Lakewood, CA 90712 Phone: (714) 625-8203 Fax: (714) 625-8203
Brace Information	Seismic Brace Attachments
Length of Brace: 1.17 Member: Steel Type of Brace: Steel Height of Brace: 30 Lateral Load: 1.0 Lateral Load Factor: 1.0 Lateral Load Factor: 1.0 Lateral Load Factor: 1.0	Brace Attachment: Steel Type of Attachment: Steel Height of Attachment: 30 Lateral Load: 1.0 Lateral Load Factor: 1.0 Lateral Load Factor: 1.0 Lateral Load Factor: 1.0
Fastener Information	Seismic Brace Assembly Detail
Fastener: NPS 1/2" Type: Nut Material: Steel Material Load: 5000 lbs	Fastener: NPS 1/2" Type: Nut Material: Steel Material Load: 5000 lbs
Member: Steel Quantity: 1 Length: 1.17 Weight: 0.5 Volume: 0.0	Member: Steel Quantity: 1 Length: 1.17 Weight: 0.5 Volume: 0.0

Seismic Bracing Calculations	
Project: COLUMBIA SQUARE RESIDENTIAL TOWER 1550 N. EL CENTRO AVENUE LOS ANGELES, CA 90028	Client: Streamline Fire Protection, Inc. Address: 3700 Industry Ave., #104 Lakewood, CA 90712 Phone: (714) 625-8203 Fax: (714) 625-8203
Brace Information	Seismic Brace Attachments
Length of Brace: 1.17 Member: Steel Type of Brace: Steel Height of Brace: 30 Lateral Load: 1.0 Lateral Load Factor: 1.0 Lateral Load Factor: 1.0 Lateral Load Factor: 1.0	Brace Attachment: Steel Type of Attachment: Steel Height of Attachment: 30 Lateral Load: 1.0 Lateral Load Factor: 1.0 Lateral Load Factor: 1.0 Lateral Load Factor: 1.0
Fastener Information	Seismic Brace Assembly Detail
Fastener: NPS 1/2" Type: Nut Material: Steel Material Load: 5000 lbs	Fastener: NPS 1/2" Type: Nut Material: Steel Material Load: 5000 lbs
Member: Steel Quantity: 1 Length: 1.17 Weight: 0.5 Volume: 0.0	Member: Steel Quantity: 1 Length: 1.17 Weight: 0.5 Volume: 0.0

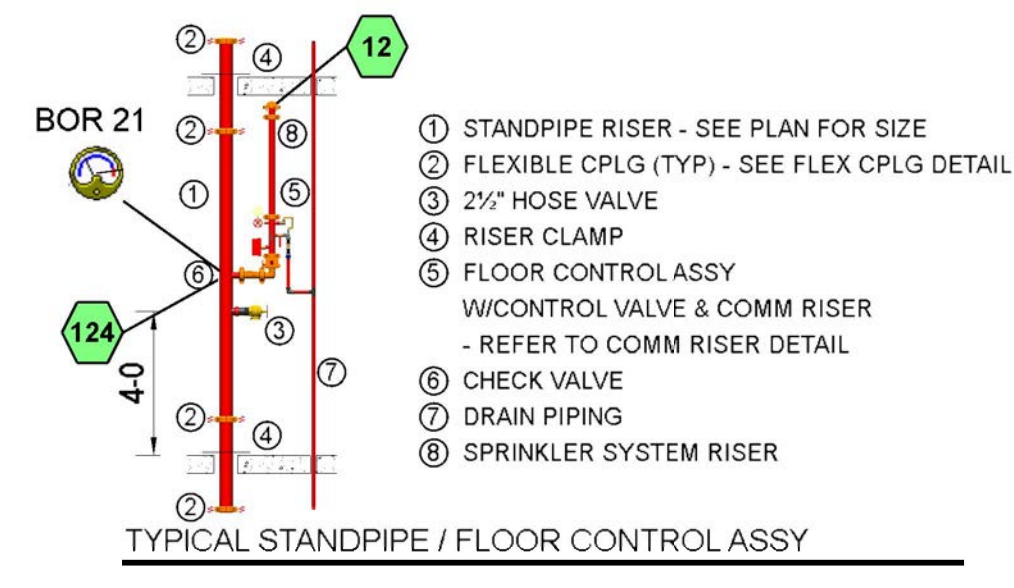
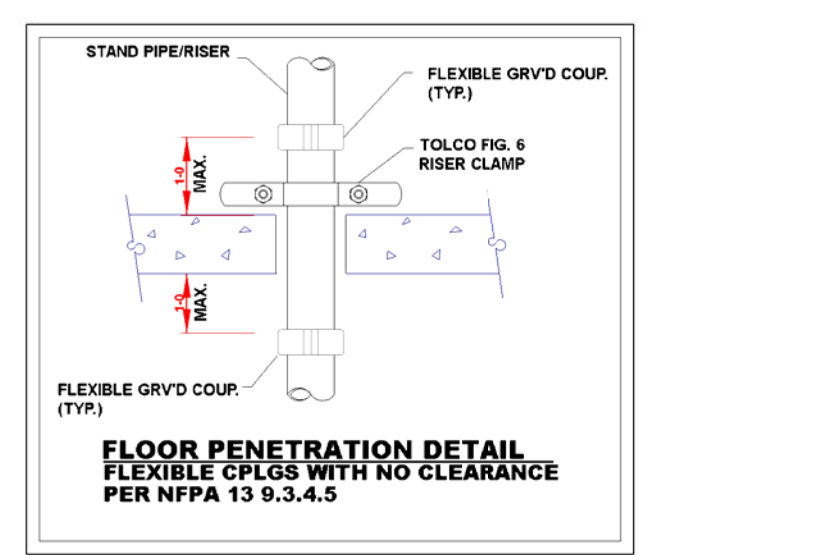


Hydraulic Information	
OCCUPANCY CLASSIFICATION	Remote Area 2
DENSITY	0.150gpm/ft² for 1500.00ft² (Actual 1180.13ft²)
TOTAL HEADS FLOWING	17
K-FACTOR	5.6
TOTAL WATER REQUIRED	391.55
TOTAL PRESSURE REQUIRED	195.045
BASE OF RISER (gpm)	391.55
BASE OF RISER (psi)	86.756
SAFETY MARGIN (psi)	+107.671 (35.6%)

100 PSI Hanger Note:
 * Unsupported length with maximum pressure exceeding 100 psi (6.9 bar) and a Branch Line Above a Ceiling.
 Supplying Sprinklers in a Pendent Position Below the Ceiling.
 9.2.3.4.1 Where the maximum static or flowing pressure, whichever is greater at the sprinkler, applied other than through the fire department connection, exceeds 100 psi (6.9 bar) and a branch line above a ceiling supplies sprinklers in a pendent position below the ceiling, the hanger assembly supporting the pipe supporting an end sprinkler in a pendent position shall be of a type that prevents upward movement of the pipe.



Hydraulic Information	
OCCUPANCY CLASSIFICATION	Remote Area 1
DENSITY	Light Hazard
TOTAL HEADS FLOWING	19
K-FACTOR	5.6
TOTAL WATER REQUIRED	518.37
TOTAL PRESSURE REQUIRED	245.508
BASE OF RISER (gpm)	518.37
BASE OF RISER (psi)	135.627
SAFETY MARGIN (psi)	+50.964 (17.2%)



Technical Data: F1RES 49 Pendent and Recessed Pendent**
 For Flat Ceilings & NFPA #130 Sloped Ceilings per TIA #10288 (see page 6)
 Deflector - to ceiling
 Maximum 12" (25mm) to 4" (100mm)

Max. Sprinkler Spacing ft (m)	Flow (gpm) (Lpm)	Pressure (psi) (bar)
12 x 12 (3.6 x 3.6)	13 (49)	7.0 (0.48)
14 x 14 (4.3 x 4.3)	12 (49)	7.0 (0.48)
16 x 16 (4.9 x 4.9)	12 (49)	7.0 (0.48)
18 x 18 (5.5 x 5.5)	17 (64.3)	12.0 (0.83)
20 x 20 (6.1 x 6.1)	20 (75.7)	16.7 (1.14)

Note: The F1 Res 49 pendent and recessed pendent residential sprinklers can be installed per NFPA 13 in concealed ceilings meeting the following criteria:
 1. Maximum beam depth = 7" (178mm)
 2. Beams spacing at or greater than 7'-0" (2.1m) on center
 3. Refer to Bulletin 035 for additional details.
 **Note: The above pressures and flows utilize the Model F1 and F2 Recessed Escutcheons.

Technical Data: F1RES 44 HSW and HSW/F2
 For Flat Ceilings & NFPA #130 Sloped Ceilings per TIA #10288 (see page 6)
 Deflector - to ceiling
 Maximum 4" (100mm) to 6" (150mm)

Max. Sprinkler Spacing ft (m)	Flow (gpm) (Lpm)	Pressure (psi) (bar)
12 x 12 (3.6 x 3.6)	12 (45.4)	7.5 (0.52)
14 x 14 (4.3 x 4.3)	14 (53.0)	10.2 (0.71)
16 x 16 (4.9 x 4.9)	16 (60.6)	13.3 (0.92)
18 x 18 (5.5 x 5.5)	18 (68.1)	16.8 (1.14)
20 x 20 (6.1 x 6.1)	23 (87.1)	27.4 (1.89)

Note: The above pressures and flows utilize the Model F2 Recessed Escutcheon.

NFPA 13 2010 8.15.8 Dwelling Units.
 8.15.8.1 Bathrooms.
 8.15.8.1.1 Unless sprinklers are required by 8.15.8.1.2 or 8.15.8.1.3, sprinklers shall not be required in bathrooms that are located within dwelling units, that do not exceed 55 ft² (5.1 m²) in area, and that have walls and ceilings of noncombustible or limited-combustible materials with a 15-minute thermal barrier rating, including the walls and ceilings behind any shower enclosure or tub.

NFPA 13 2010 8.15.8.1.3 Sprinklers shall be required in bathrooms opening directly onto public corridors or exits.

NFPA 13 2010 D.1.1.6 New Apartment Buildings.
 D.1.1.6.1 In buildings sprinklered in accordance with NFPA 13, closets less than 12 ft² (1.1 m²) in area in individual dwelling units shall not be required to be sprinklered. Closets that contain equipment such as washers, dryers, furnaces, or water heaters shall be sprinklered regardless of size.
 [D1-30.3.5.3]

LEVEL 21 POOL FP
 ALL CEILINGS @ 8'-2" U.N.O.



REV / DATE DESCRIPTION

APPROVAL BY:

CONTRACT WITH:

STREAMLINE FIRE PROTECTION INC. # 104
 3700 INDUSTRY AVE.
 LAKEWOOD CA, 90712
 (714) 625-8203 FAX: (714) 369-8235
 STATE LICENSE # 931653 C-16

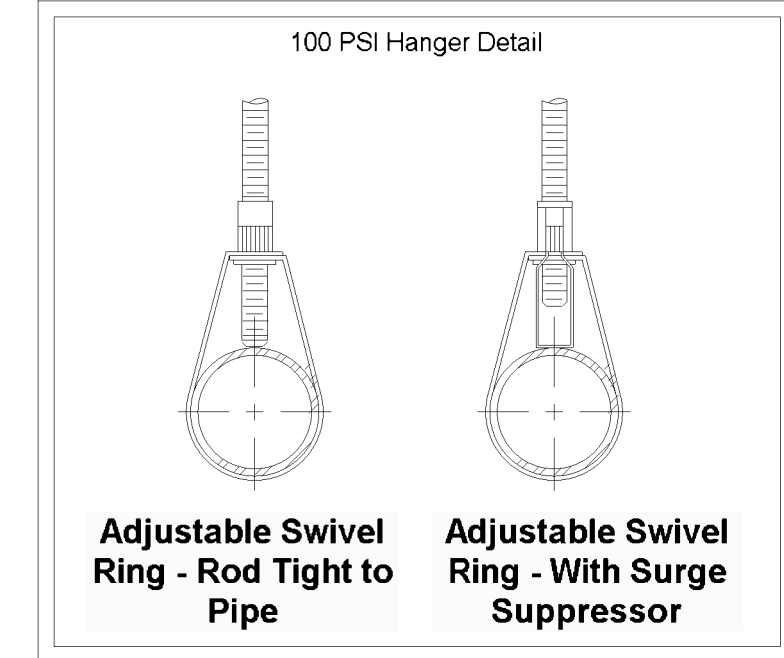
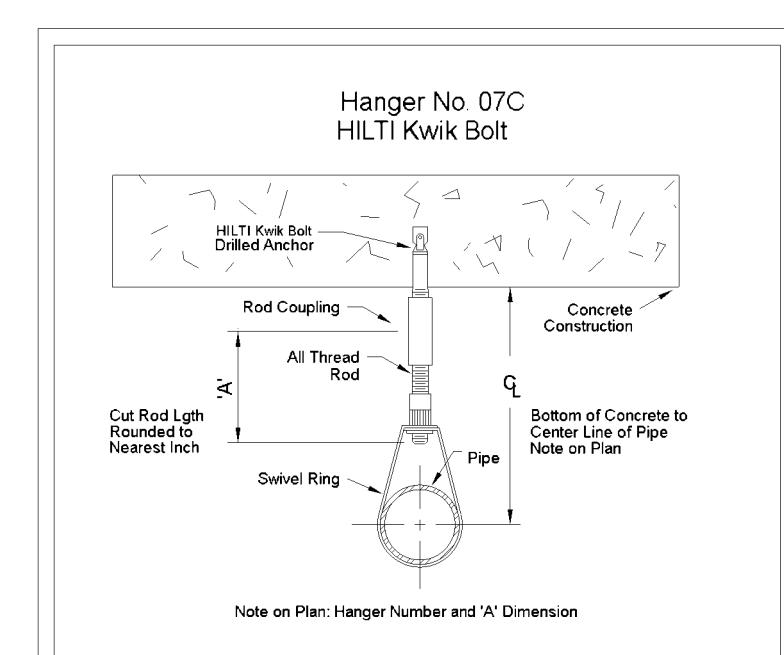
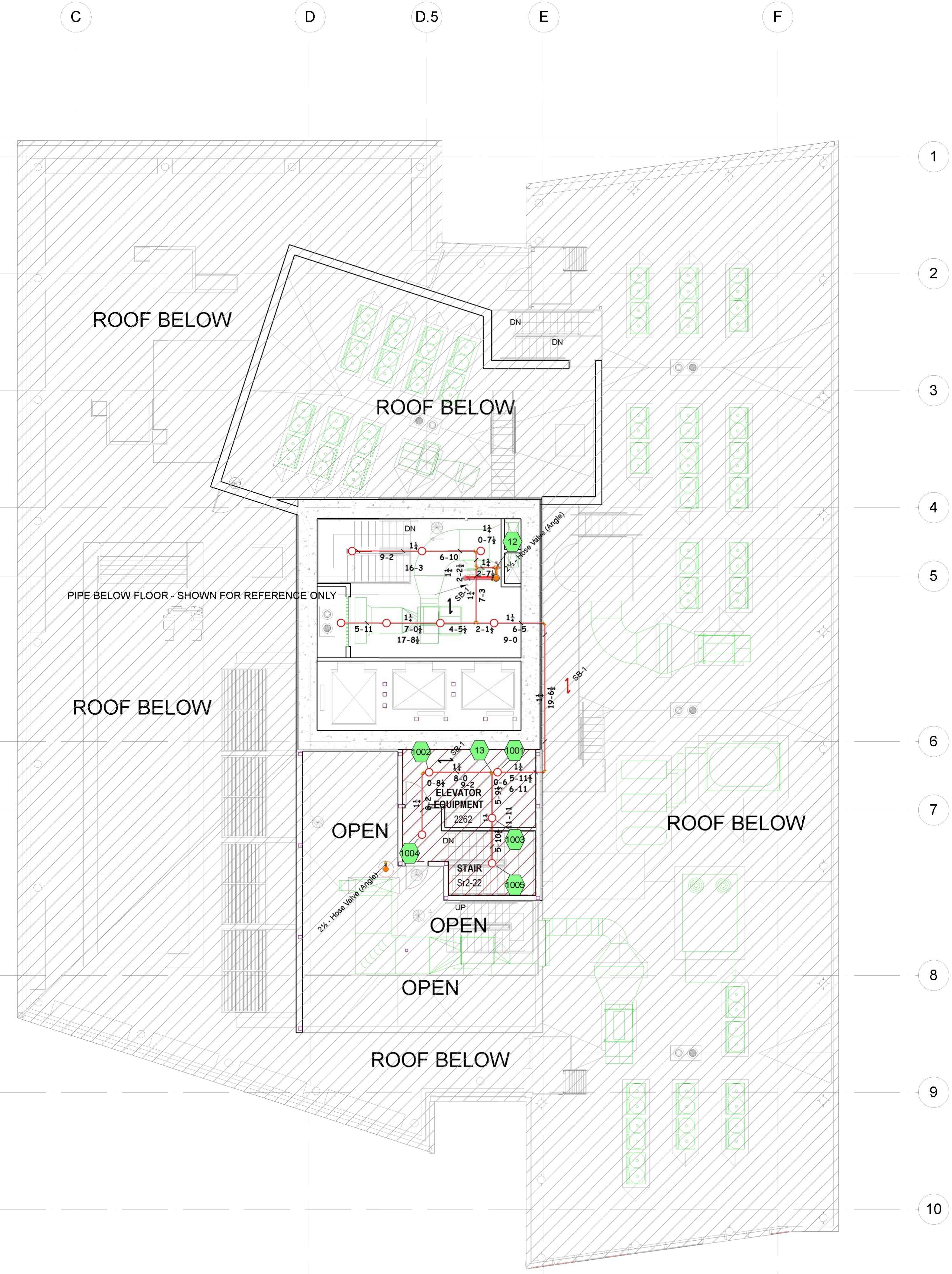
COLUMBIA SQUARE RESIDENTIAL TOWER
 1550 N. EL CENTRO AVENUE
 LOS ANGELES, CA 90028

DATE: 06/07/14
 SCALE: AS NOTED
 DRAWN: Daniel W. Shing
 INK: GDT
 SHEET: LEVEL 21 POOL FP
 OF: 13

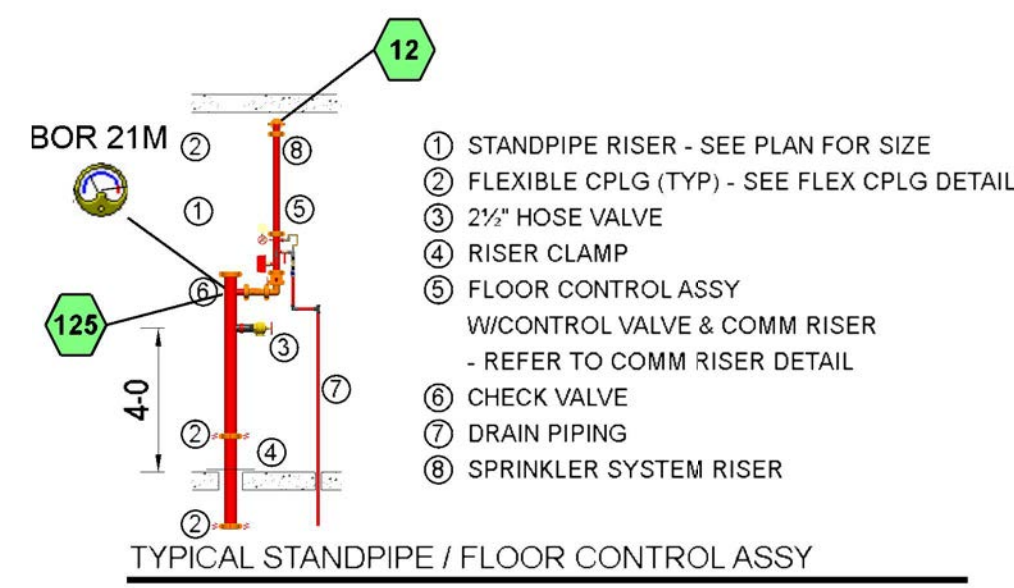
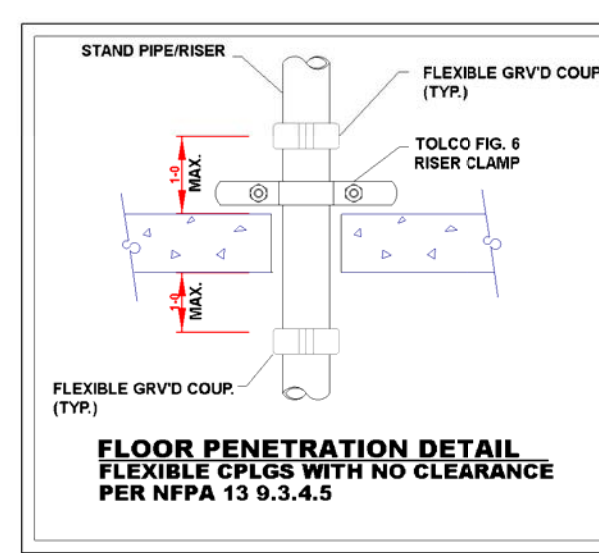
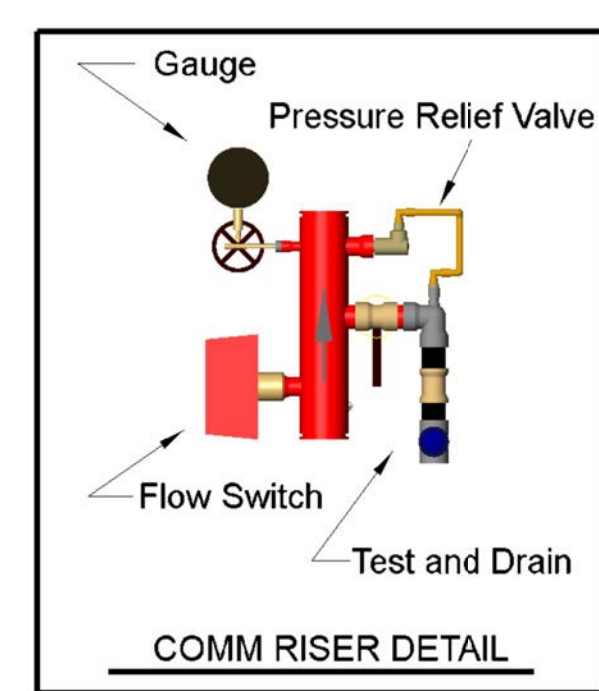
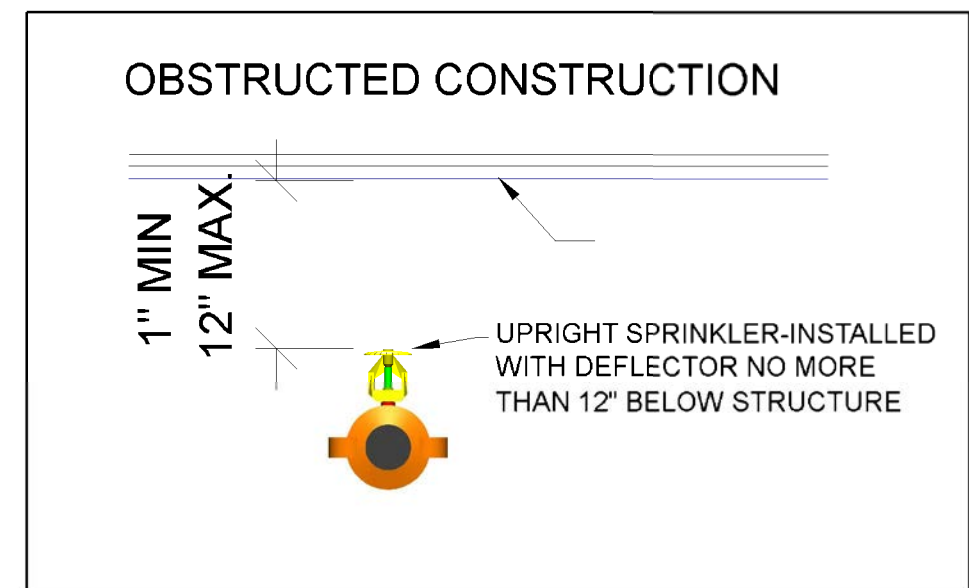
LEGEND FIRE PROTECTION SYMBOLS
 C-16
 931653
 DETROIT

Seismic Bracing Calculations			
Project: COLUMBIA SQUARE RESIDENTIAL TOWER		Contractor: Streamline Fire Protection Inc.	
Address: 1550 N. EL CENTRO AVENUE LOS ANGELES, CA 90028		Address: 2912 SHAW ST. LAKEWOOD, CA 90712	
Phone: 862-618-1741		Fax:	
Brace Information		Seismic Brace Attachments	
Length of Brace:	3-0	Structure Attachment Filing or Tension-only Bracing System	
Diameter of Brace:	1	Make: Talo Inc. Model: 880 Universal Swivel Sway Brace Attach	
Type of Brace:	Pipe, Schedule 40	Listed Load Rating: 2705b Doz. Adjusted Load Rating: 1382b Doz.	
Angle of Brace:	30	Sway Brace (pipe attachment) Filing	
Least Radius of Gyration:	0.42"	Make: Talo Inc. Model: (Fig. 48) Pipe Clamp for Sway Bracing	
L/R Value:	88	Listed Load Rating: 3305b Doz. Adjusted Load Rating: 1655b Doz.	
Maximum Horizontal Load:	3150b Doz.		
Fastener Information		Seismic Assembly Detail	
Orientation of Connecting Surface:	NFPA Type "A"	(Provide Detail On Plans)	
Fastener:	Anchor, HLT11 Kwik Bolt	(Fig. 48) Pipe Clamp for Sway Bracing	(Fig. 880 Universal Swivel Sway Brace Attachment)
Construction Type:	Normal Weight Concrete (4000psi)	(Fig. 880 Universal Swivel Sway Brace Attachment)	(Fig. 880 Universal Swivel Sway Brace Attachment)
Type:	Anchor, HLT11 Kwik Bolt	(Fig. 880 Universal Swivel Sway Brace Attachment)	(Fig. 880 Universal Swivel Sway Brace Attachment)
Size:	3/8 x 3	(Fig. 880 Universal Swivel Sway Brace Attachment)	(Fig. 880 Universal Swivel Sway Brace Attachment)
Min. Embedment:	0-2	(Fig. 880 Universal Swivel Sway Brace Attachment)	(Fig. 880 Universal Swivel Sway Brace Attachment)
Maximum Load:	638b Doz.	(Fig. 880 Universal Swivel Sway Brace Attachment)	(Fig. 880 Universal Swivel Sway Brace Attachment)
Longitudinal Bracing			
Diameter	Description	Unit Quantity	Quantity Unit Weight (lb) Total Weight (lb)
1 1/2"	Pipe, Schedule 10	40-0	40-0 29.81 Doz 1192b 1410z
			Net Weight: 1125b 1410z
			Fig. 1.1.6.3.3.3

Hydraulic Information	
Remote Area 1	
OCCUPANCY CLASSIFICATION	Ordinary Group 1
DENSITY	0.15 gpm/ft ² for 1500.00ft ² (Actual 306.86ft ²)
TOTAL HEADS FLOWING	5
K-FACTOR	5.6
TOTAL WATER REQUIRED	99.70
TOTAL PRESSURE REQUIRED	165.603
BASE OF RISER (gpm)	99.70
BASE OF RISER (psi)	55.020
SAFETY MARGIN (psi)	+145.558 (46.8%)



100 PSI Hanger Note:	
*Unsupported Length with Maximum Pressure Exceeding 100 psi (8.9 bar) and a Branch Line Above a Ceiling	
Supplying Sprinklers in a Pendant Position Below the Ceiling	
9.2.3.4.4.1 Where the maximum static or flowing pressure, whichever is greater at the sprinkler, applied other than through the fire department connection, exceeds 100 psi (8.9 bar) and a branch line above a ceiling supplies sprinklers in a pendant position below the ceiling, the hanger assembly supporting the pipe supplying an end sprinkler in a pendant position shall be of a type that prevents upward movement of the pipe.	



Technical Data: FIRES 49 Pendant and Recessed Pendant**			
For Flat Ceilings & NFPA #13D Sloped Ceilings per TIA #1028R (see page 6)			
Deflector - to - ceiling		Deflector - to - ceiling	
Max. Sprinkler Spacing (ft)	Flow (gpm) (L/min)	Flow (gpm) (L/min)	Pressure (psi) (bar)
12 x 12 (3.6 x 3.6)	13 (49)	7.0 (2.48)	15 (57.0)
14 x 14 (4.3 x 4.3)	13 (49)	7.0 (2.48)	16 (60.5)
16 x 16 (4.9 x 4.9)	13 (49)	7.0 (2.48)	17 (64.2)
18 x 18 (5.5 x 5.5)	17 (64.3)	10.0 (3.83)	19 (72.0)
20 x 20 (6.1 x 6.1)	20 (75.7)	16.7 (7.14)	22 (83.2)

Technical Data: FIRES 44 HSW and HSW/F2			
For Flat Ceilings & NFPA #13D Sloped Ceilings per TIA #1028R (see page 6)			
Deflector - to - ceiling		Deflector - to - ceiling	
Max. Sprinkler Spacing (ft)	Flow (gpm) (L/min)	Flow (gpm) (L/min)	Pressure (psi) (bar)
12 x 12 (3.6 x 3.6)	12 (45.4)	7.5 (2.82)	14 (53.0)
14 x 14 (4.3 x 4.3)	14 (53.0)	10.2 (3.77)	16 (60.6)
16 x 16 (4.9 x 4.9)	16 (60.6)	13.3 (4.92)	17 (64.2)
18 x 18 (5.5 x 5.5)	18 (68.1)	16.8 (7.16)	20 (75.7)
20 x 20 (6.1 x 6.1)	22 (83.1)	21.4 (8.09)	23 (87.1)

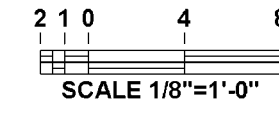
NFPA 13 2010 8.15.8 Dwelling Units.
8.15.8.1 Bathrooms.
8.15.8.1.1 Unless sprinklers are required by 8.15.8.1.2 or 8.15.8.1.3, sprinklers shall not be required in bathrooms that are located within dwelling units, that do not exceed 55 ft² (5.1 m²) in area, and that have walls and ceilings of noncombustible or limited-combustible materials with a 15-minute thermal barrier rating, including the walls and ceilings behind any shower enclosure or tub.

NFPA 13 2010 8.15.8.1.3 Sprinklers shall be required in bathrooms opening directly onto public corridors or exitways.

NFPA 13 2010 D.1.1.6 New Apartment Buildings.
D.1.1.6.1 In buildings sprinklered in accordance with NFPA 13, closets less than 12 ft² (1.1 m²) in area in individual dwelling units shall not be required to be sprinklered. Closets that contain equipment such as washers, dryers, furnaces, or water heaters shall be sprinklered regardless of size. [101.30.3.5.3]

SEISMIC NOTES:
BRANCHLINES - NFPA 13 9.3.6.5 Where the branch lines are supported by rods less than 6 in. (152 mm) long measured between the top of the pipe and the point of attachment to the building structure, the requirements of 9.3.6.1 through 9.3.6.4 shall not apply and additional restraint shall not be required for the branchlines.
MAINS - NFPA 13 9.3.5.3.9 The requirements of 9.3.5.3 shall not apply to pipes individually supported by rods less than 6 in. (152 mm) long measured between the top of the pipe and the point of attachment to the building structure.
LONGITUDINAL BRACING IS STILL REQUIRED.

LEVEL 21M MECH FP
ALL CEILINGS @ 8'-2" U.N.O.



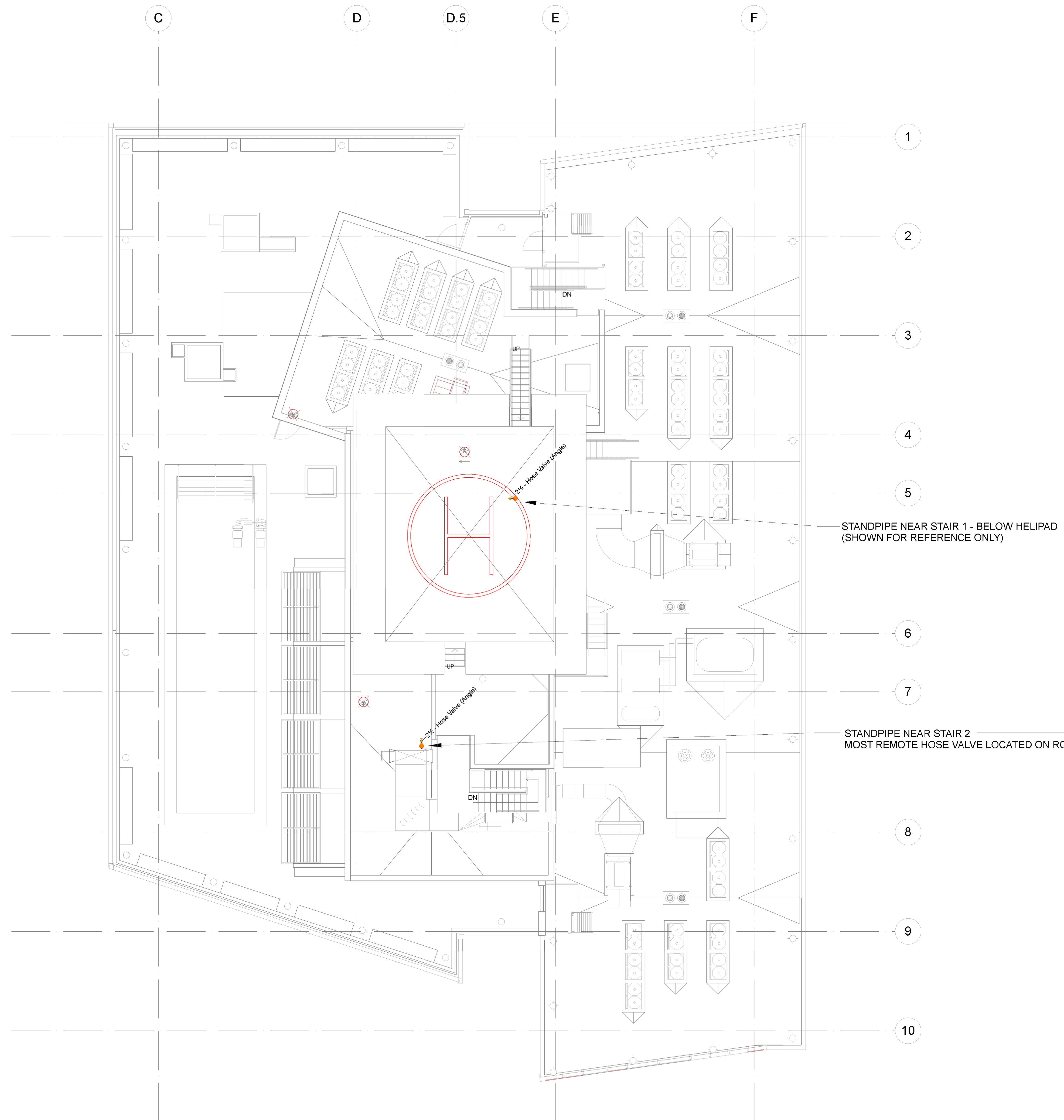
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APPROVAL BY: _____

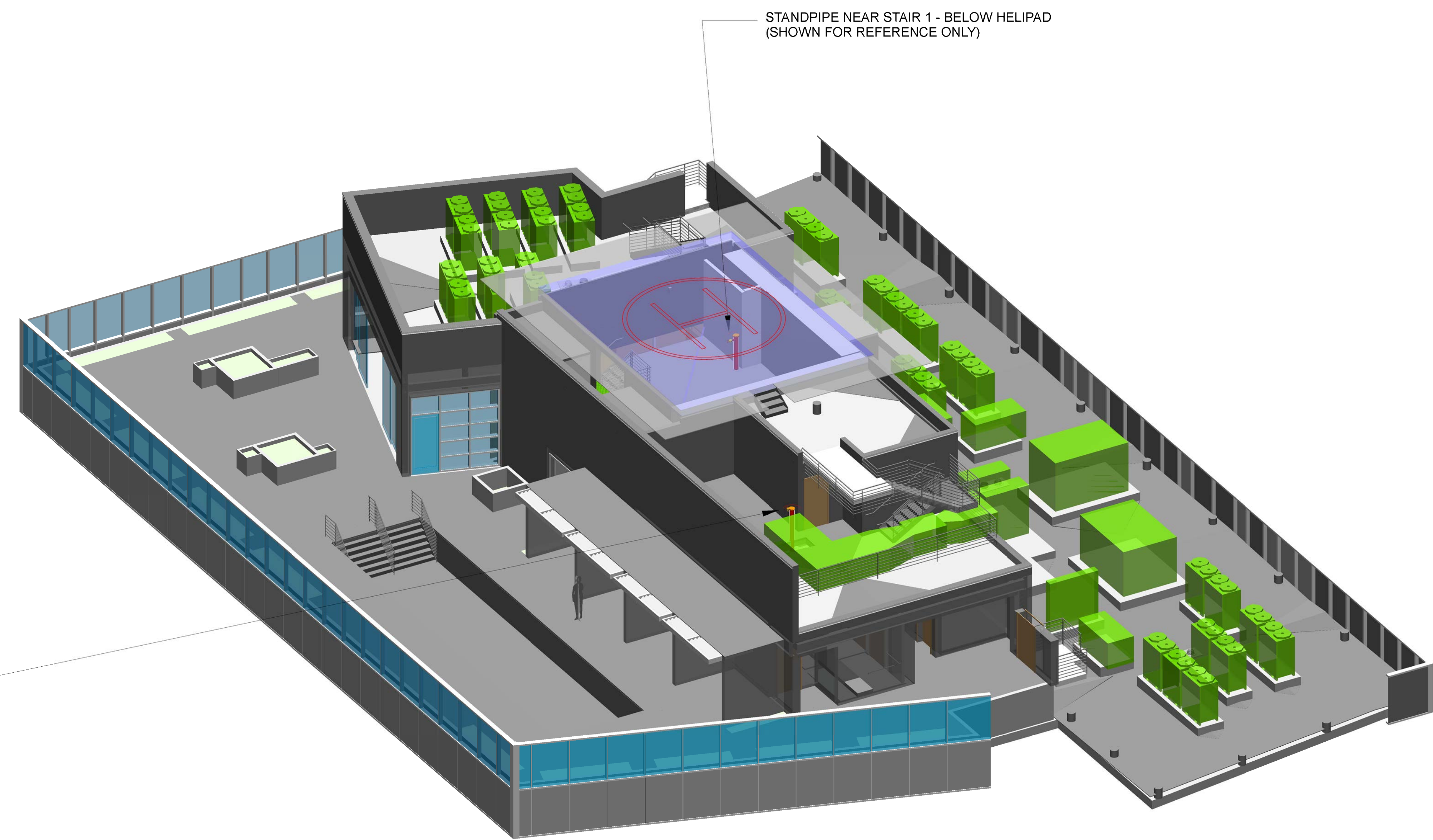
CONTRACT WITH: STREAMLINE FIRE PROTECTION INC. 3700 INDUSTRY AVE. # 104 LAKEWOOD CA. 90712 (714)625-8203 FAX: (714)369-8235 OFFICE: STATE LICENSE # 931653 C-16

PROJECT: COLUMBIA SQUARE RESIDENTIAL TOWER 1550 N. EL CENTRO AVENUE LOS ANGELES, CA 90028

DATE: 06/07/14
SCALE: AS NOTED
DRAWN: CHANG W. SHING
CHK: GGT
SHEET: LEVEL 21M FP PLAN
FP14



ROOF PLAN
 2 1 0 4 8
 SCALE 1/8"=1'-0"



ROOF ISO PLAN PLAN (FOR REFERENCE ONLY)
 2 1 0 4 8
 SCALE 1/8"=1'-0"

REV / DATE	DESCRIPTION	BY

APPROVAL BY:	SYMBOL	MANUFACTURER	SIZE	MODEL	QUANTITY	CRITERIA	FINISH	TEMPERATURE	NOTE

CONTRACT WITH:

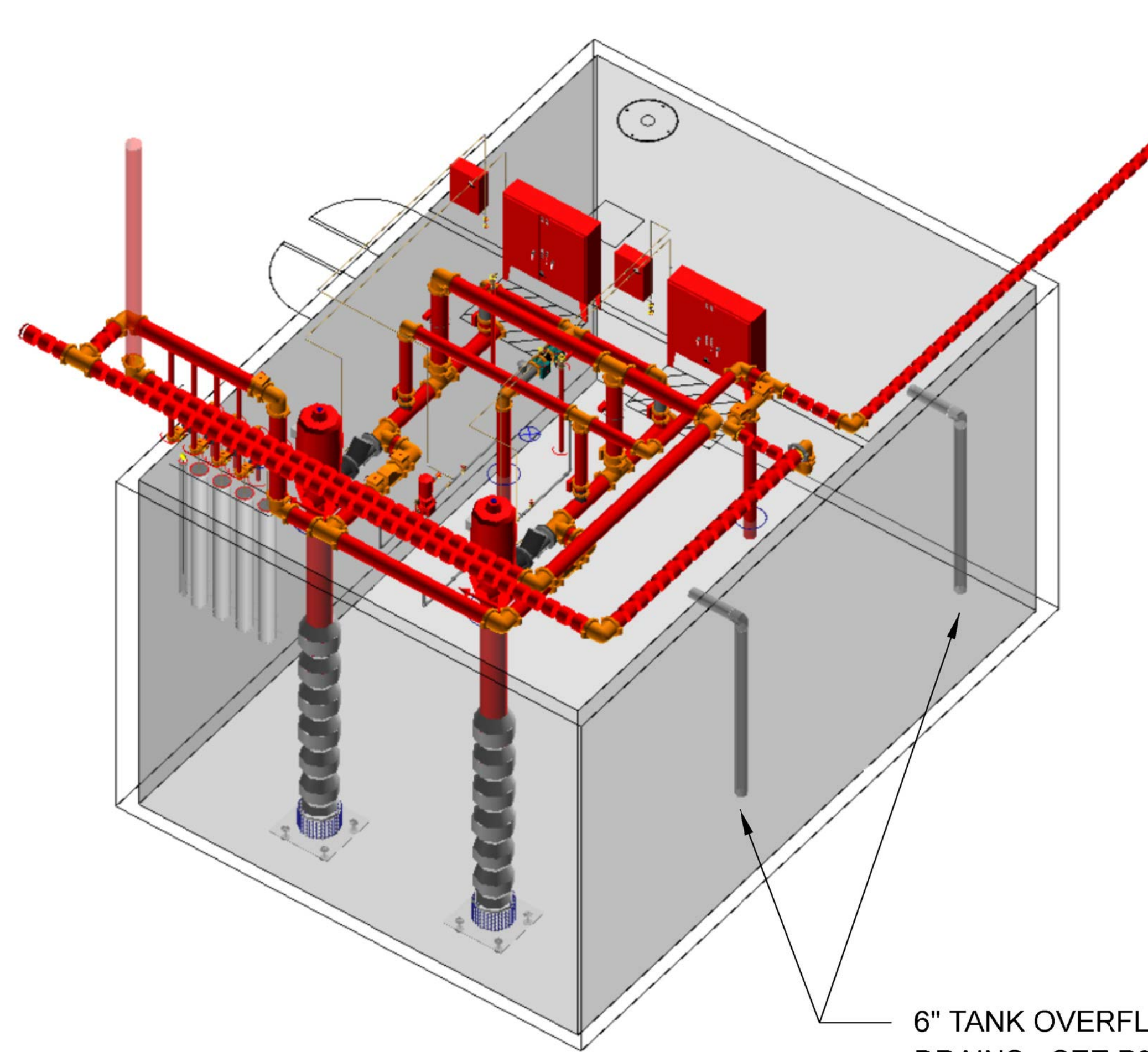
OFFICE:

STREAMLINE FIRE PROTECTION INC.
 3700 INDUSTRY AVE. # 104
 LAKEWOOD CA. 90712
 (714) 625-8203 FAX: (714) 369-8235
 STATE LICENSE # 931653 C-16

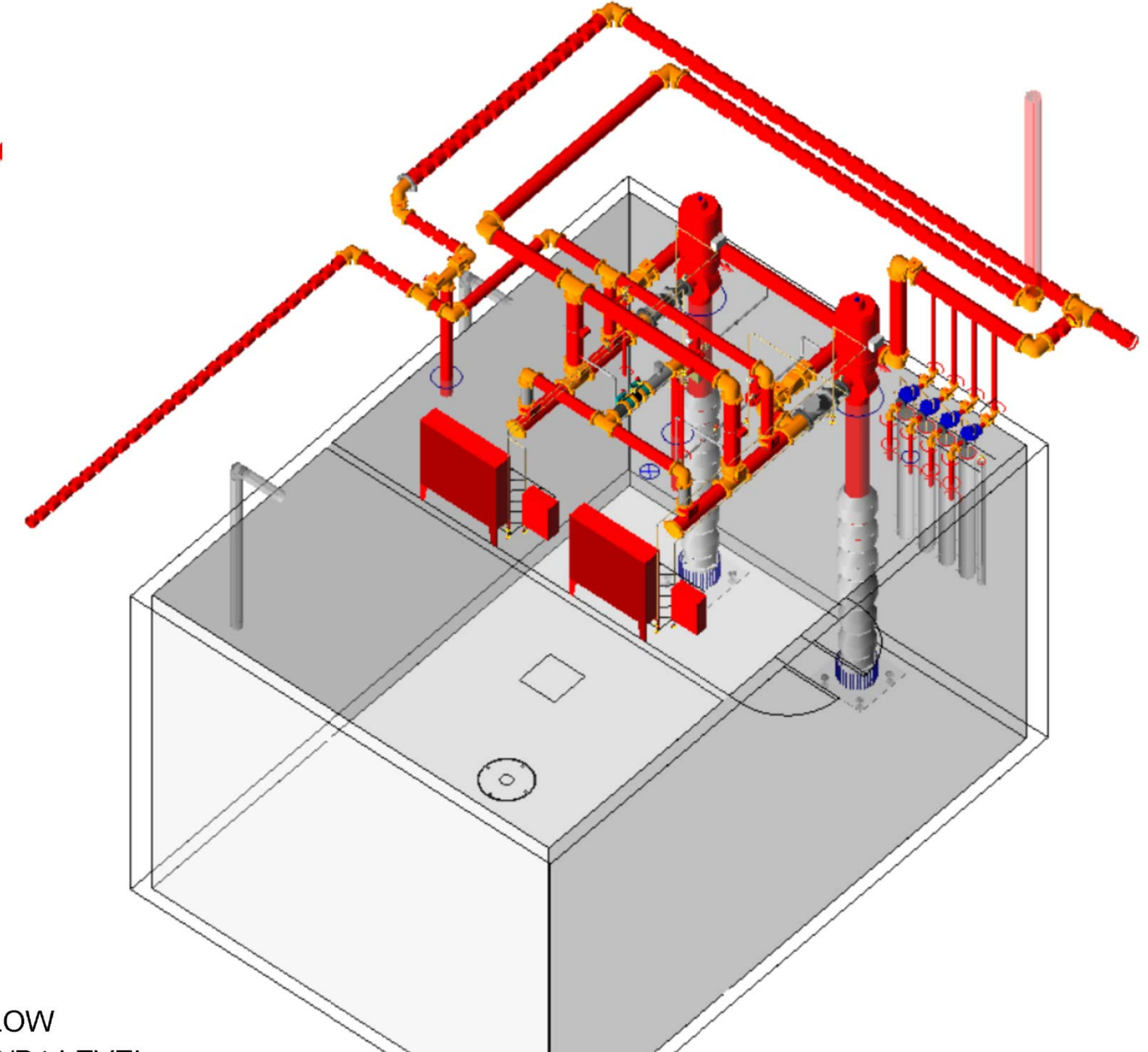
COLUMBIA SQUARE RESIDENTIAL TOWER
 1650 N. EL CENTRO AVENUE
 LOS ANGELES, CA 90028

DATE: 08/07/14
 SCALE: AS NOTED
 DRAWN: Daniel W. Steing
 INK: GGT
 SHEET: ROOF PLAN
 FP15

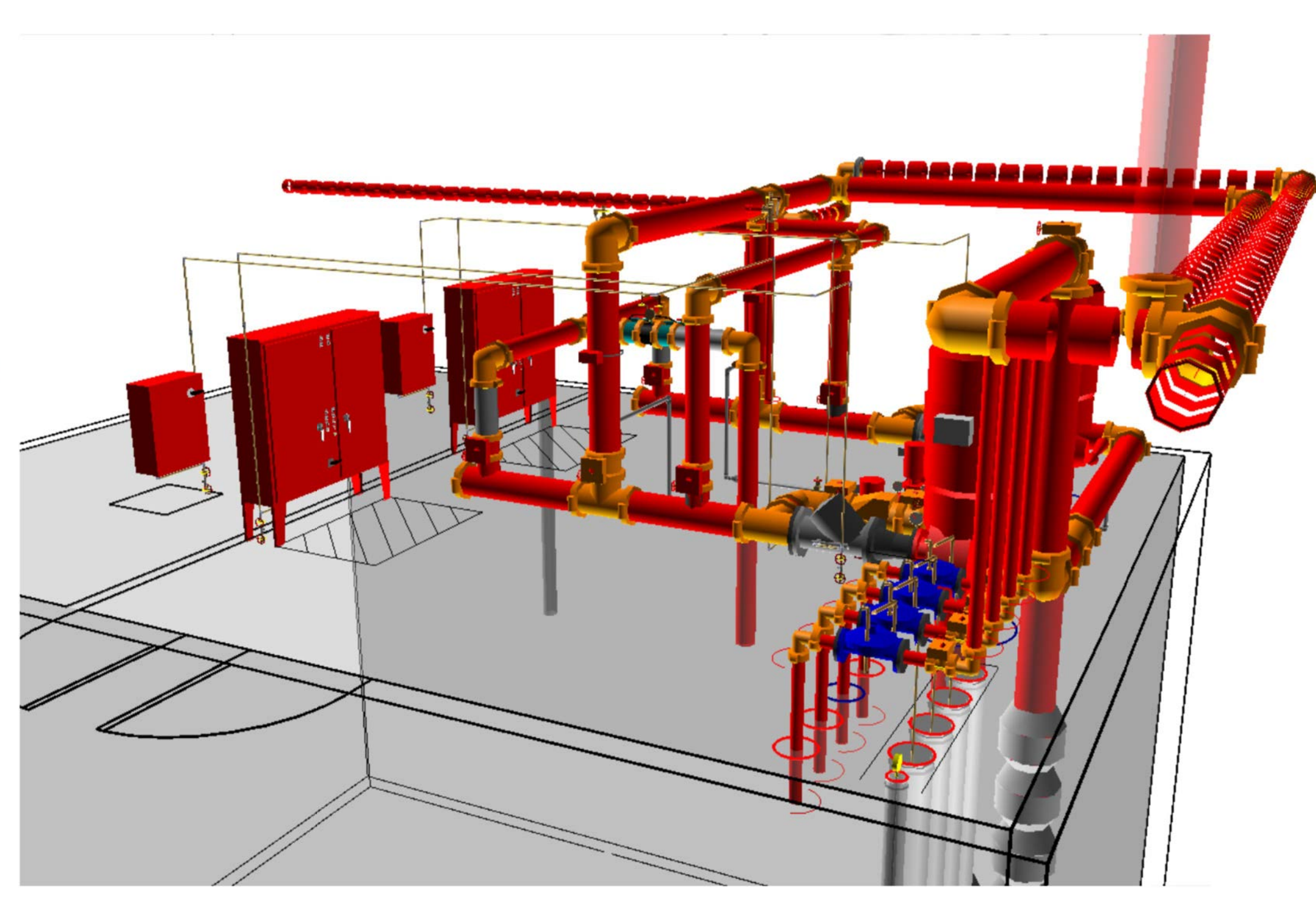
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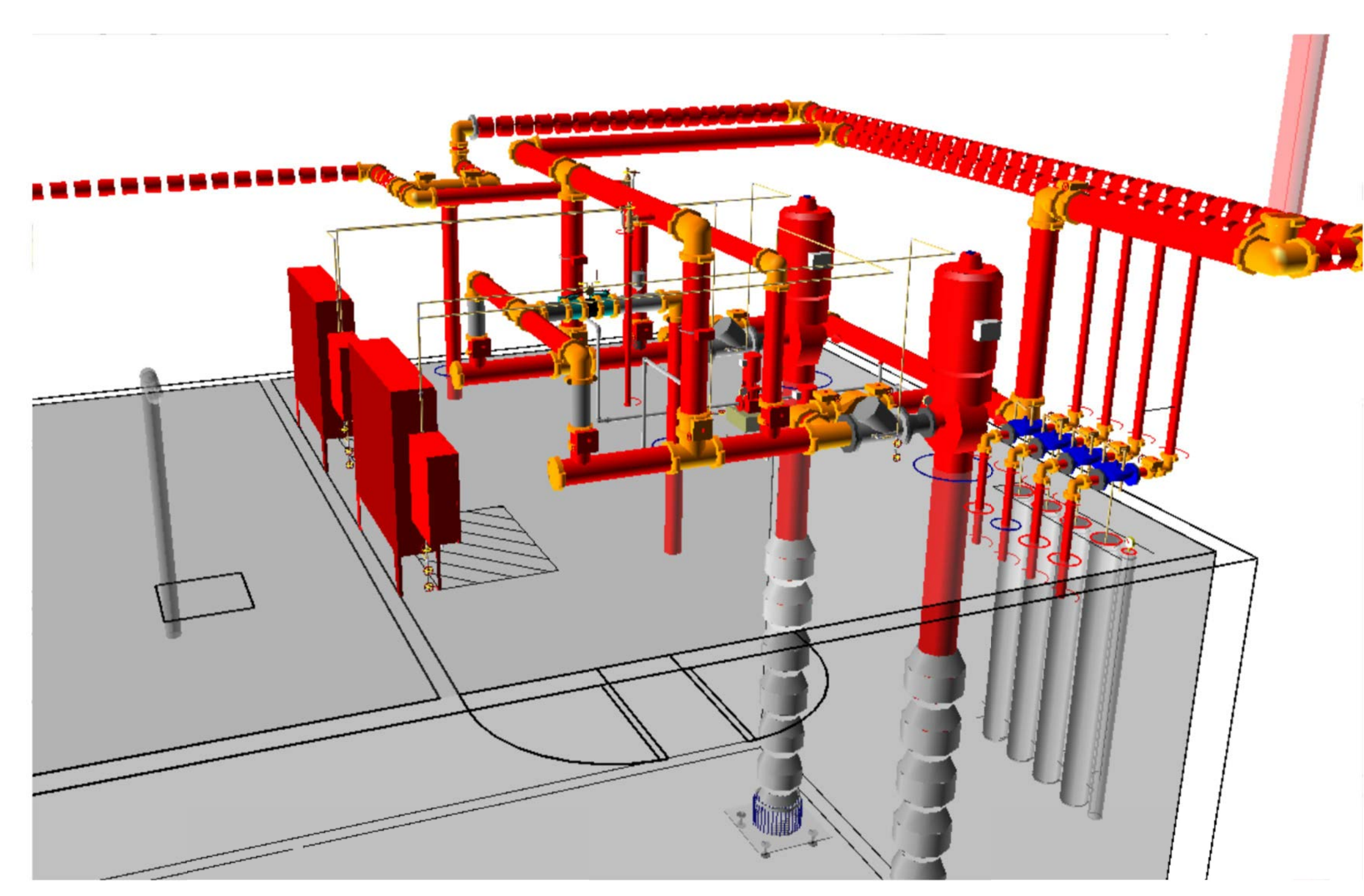
SE ISO VIEW FOR REFERENCE ONLY



NW ISO VIEW FOR REFERENCE ONLY



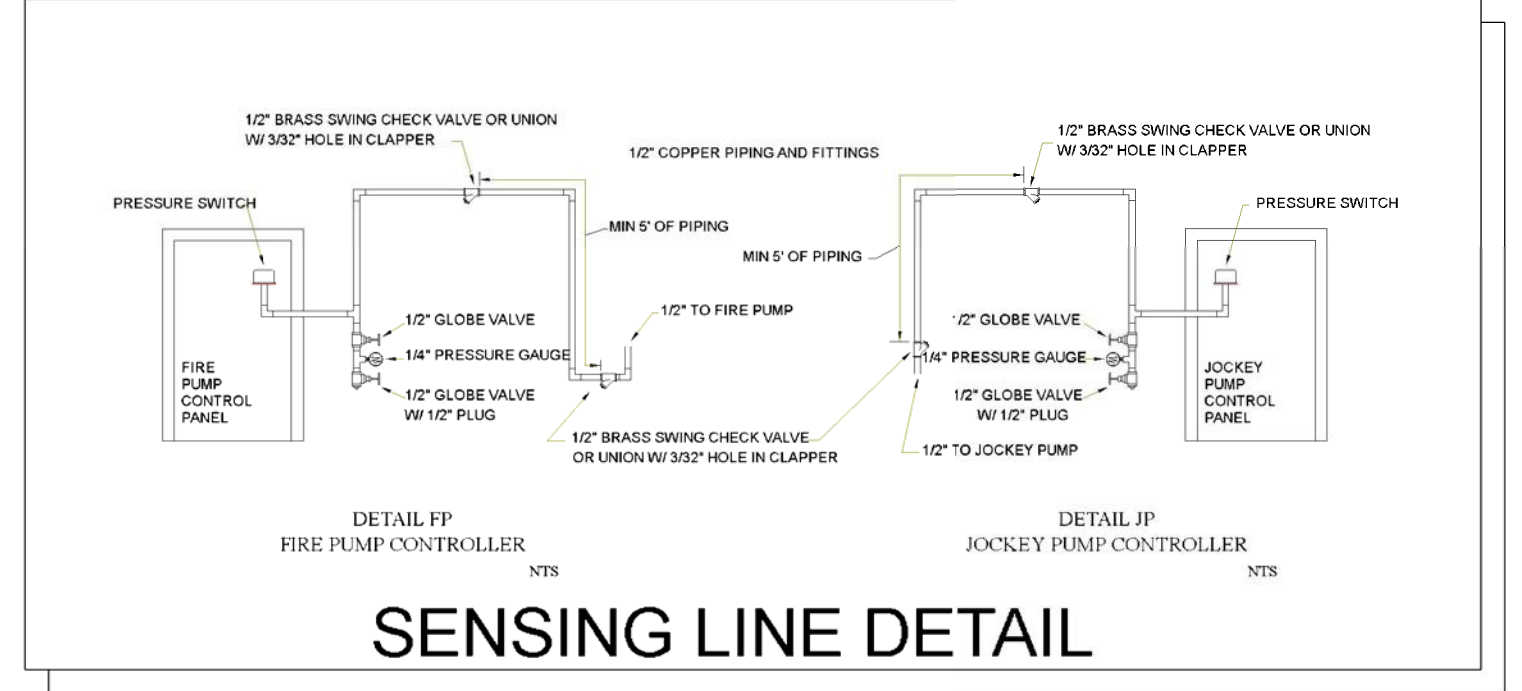
PERSPECTIVE DETAIL FOR REFERENCE ONLY



PERSPECTIVE DETAIL FOR REFERENCE ONLY

6" TANK OVERFLOW DRAINS - SEE P3/P4 LEVEL PIPED TO BELOW GRADE DRAIN SYSTEM REFER TO CAMPUS PLAN (NIC)

NOTE: HIGH AND LOW LEVEL ALARMS WILL BE INSTALLED AND WILL SOUND AND TURN ON AN INDICATION LIGHT IN A STAFFED LOCATION WHEN THE WATER LEVEL IS NOT WITHIN 10 % OF THE DESIGN VOLUME. (LAPC 20.50.0)



SENSING LINE DETAIL



Schematic Diagram

Item	Description
1	Hytrol (Main Valve)
2	CF1-C1 Float Control

CLA-VAL FLOAT VALVE DETAIL

124-01 Valve Selection	100-01 Pattern: Globe (G), Angle (A), End Connections: Threaded (T), Grooved (GR), Flanged (F) Indicate Available Size																													
	Inches	X	1	1 1/2	2	2 1/2	3	4	6	8	10	12	14	16	18	20	24	Basic Valve 100-01						See the 124-02/24-02 Technical Data Sheet for larger sizes.						
Pattern	G	C	A	G	A	G	A	G	A	G	A	G	A	G	A	G	A	G	A	G	A	G	A	G	A					
Suggested Flow (gpm)	15	20	25	32	40	50	65	80	100	150	200	250	300	350	400	450	500	600												
Suggested Flow (L/min)	42	68	120	160	260	370	580	990	2250																					
End Detail	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T					
Maximum Intermittent	1.2	2.1	3.5	6	8	13	19	29	50	113																				
Maximum Continuous	1.5	2.6	4.3	7.6	10	16	23	37	62	142																				

NOTE: (4) 2 1/2" FLOAT VALVES RATED AT 300 GPM EACH WILL MEET THE 1000 GPM PUMP RATING TO FILL THE TANK APPROPRIATELY.

TANK VOLUME CALCULATION

Volume of a Square or Rectangular Tank or Clarifier

Please enter the data for length, width & side water depth.

Tank Length (ft) 22.867 **enter length**

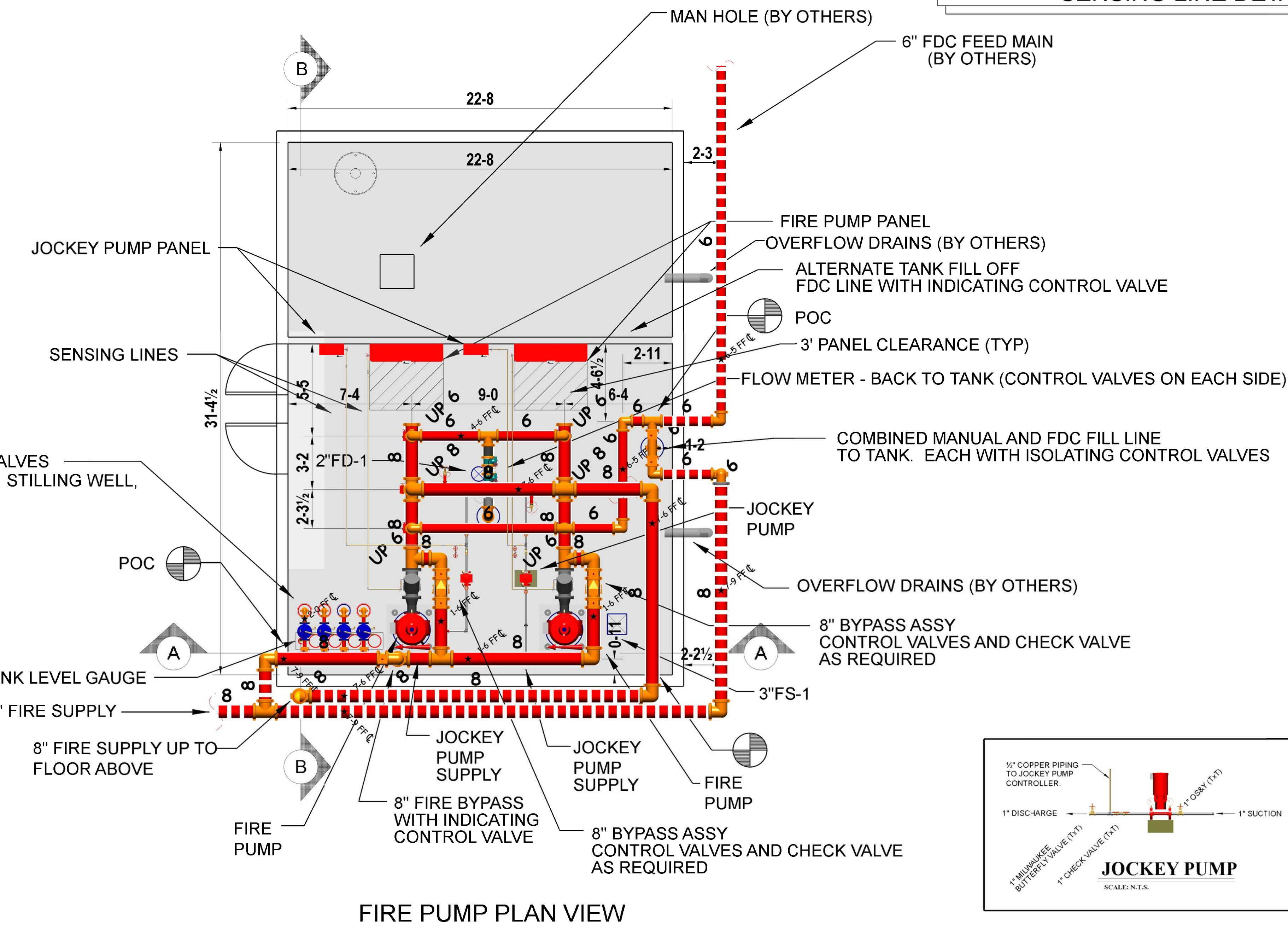
Tank Width (ft) 31.375 **enter width**

Side Water Depth (ft) 8.833 **enter depth**

Calculate Tank Cubic Feet **Click on button to calculate cubic feet** 6281.8275451

Calculate Volume of Water (gallons) **Click on button to calculate gallons** 48925.251762

TANK CAPACITY BASED ON STANDPIPE OR SPRINKLER DEMAND REQUIREMENTS (WORST CASE):
 1. (2) STANDPIPES FLOWING A TOTAL OF 750 GPM OR
 2. SPRINKLER DEMAND OF 519 GPM X 90 MINUTES ON LEVEL 21 FOR A TOTAL OF 46,710 GPM



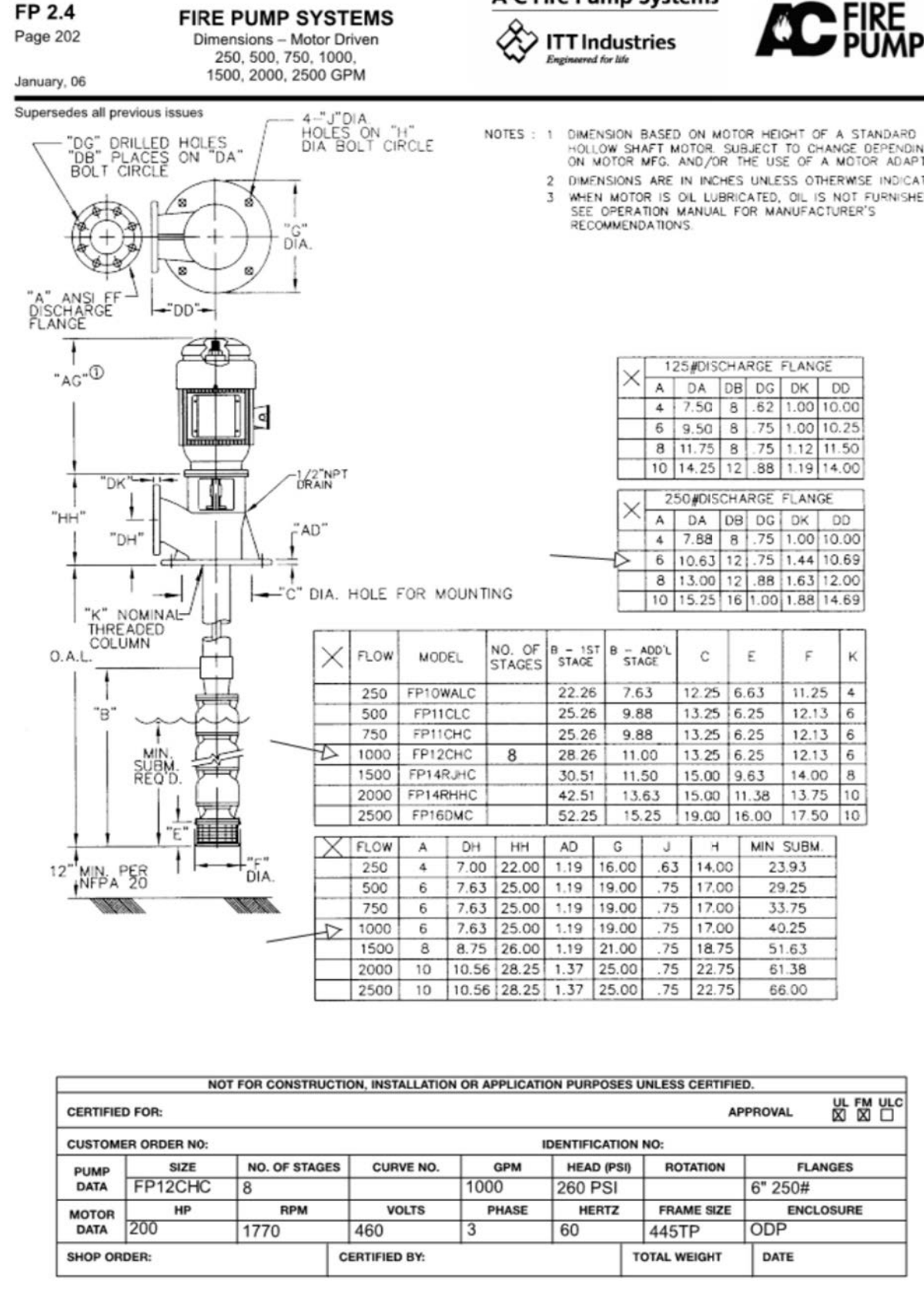
FIRE PUMP PLAN VIEW

NOTE: DASHED LINES INDICATE WORK BY CAMPUS CONTRACTOR

NOTE: ALL PUMP PIPING TO BE SCHEDULE 10 OR EQUAL.
 NOTE: ALL CONTROL VALVES TO BE TAMPERED

SYMBOL	LOCATION	SERVICE	MANUF. & MODEL NO.	PUMP CAPACITY		MOTOR CAPACITY				REMARKS		
				TYPE	GPM	HEAD	HP	RPM	VOLTS		PH	HZ
	LEVEL P2	FIRE	A-C FIRE PUMPS FP12CHC	VERTICAL	1000	260	200	1770	460	3	60	DUAL FIRE PUMP SYSTEM - PRIMARY AND REDUNDANT
	LEVEL P2	FIRE	A-C FIRE PUMPS FP12CHC	JOCKEY	-	-	-	-	-	-	-	DUAL JOCKEY PUMP SYSTEM - PRIMARY AND REDUNDANT

FIRE PUMP DETAIL PLAN

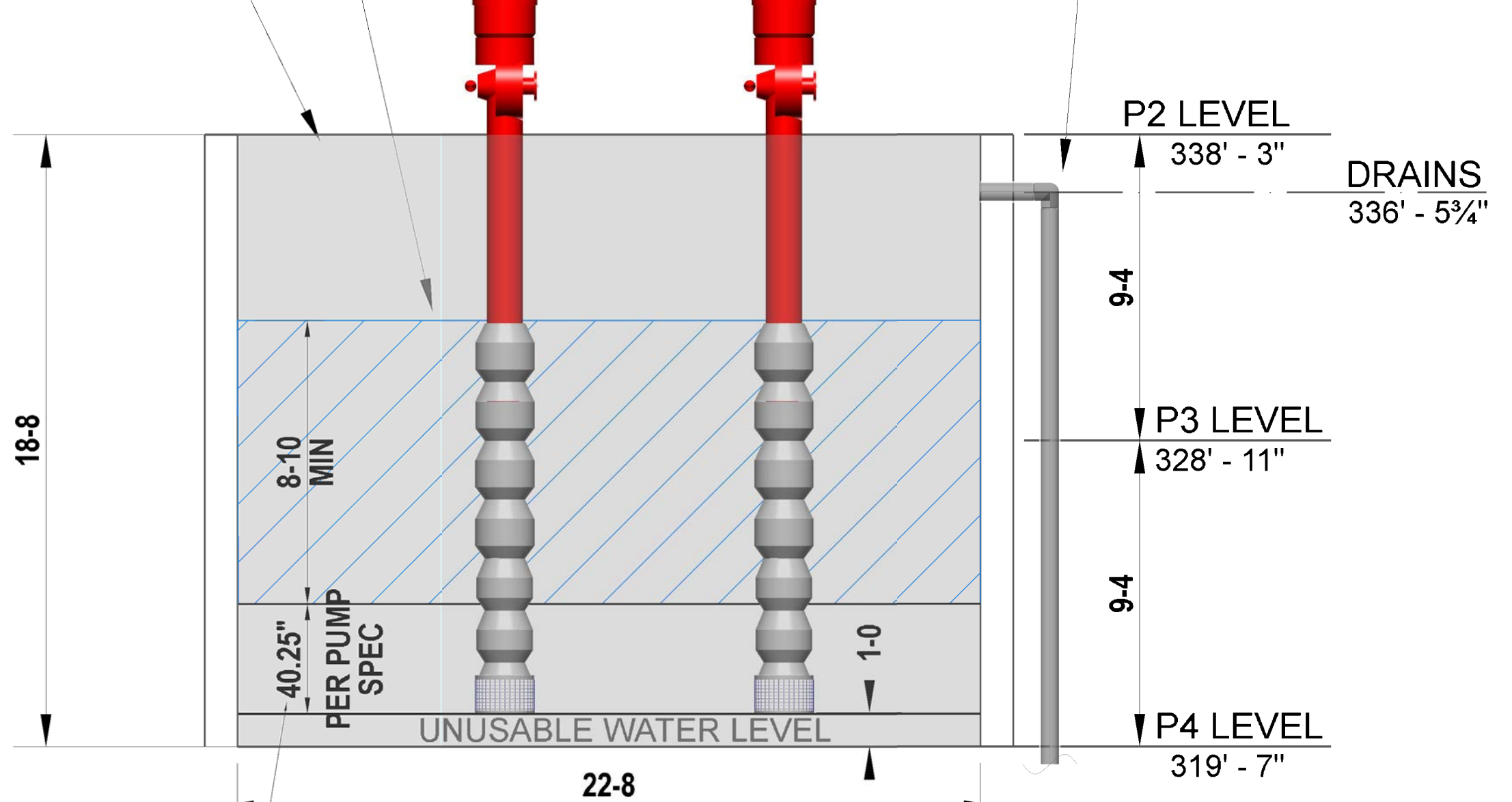


6" TANK OVERFLOW DRAINS - SEE P3/P4 LEVEL PIPED TO BELOW GRADE DRAIN SYSTEM REFER TO CAMPUS PLAN (NIC)

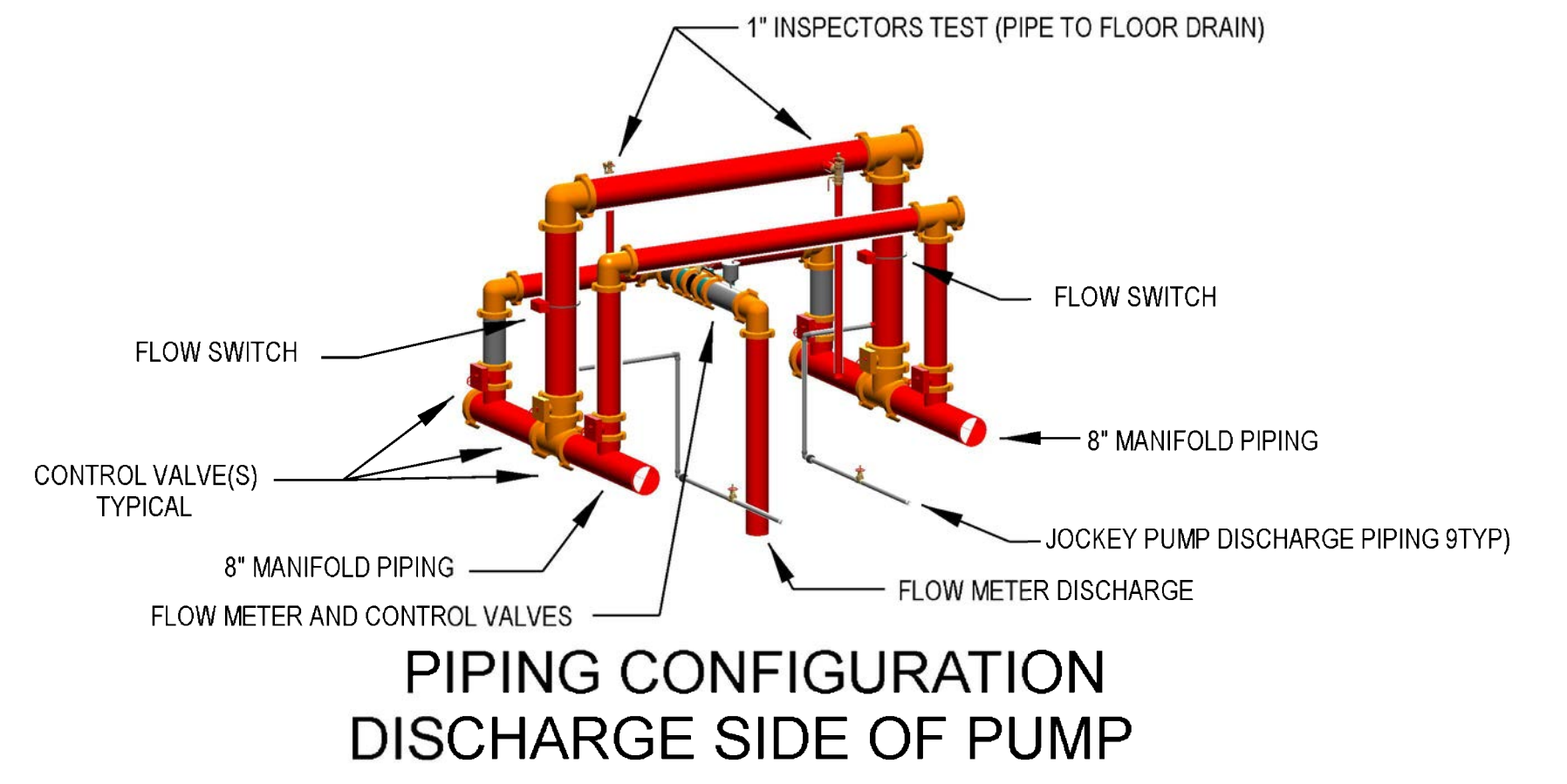
VERTICAL TURBINE FIRE PUMP

WATER LEVEL 63,750 GALLONS SEE DETAIL THIS SHEET

P3/P4 CONCRETE WATER TANK



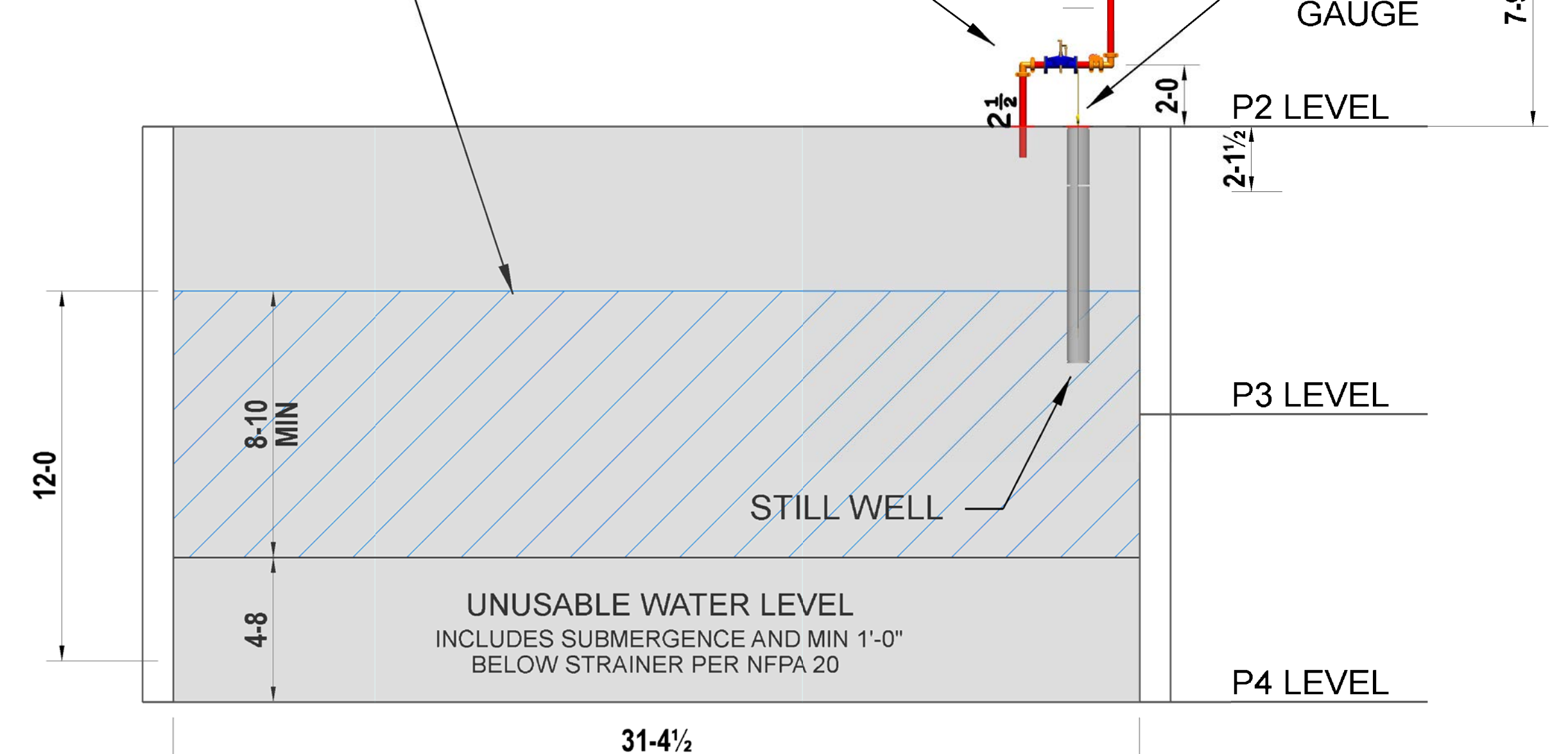
TANK / PUMP SECTION DETAIL "A-A"



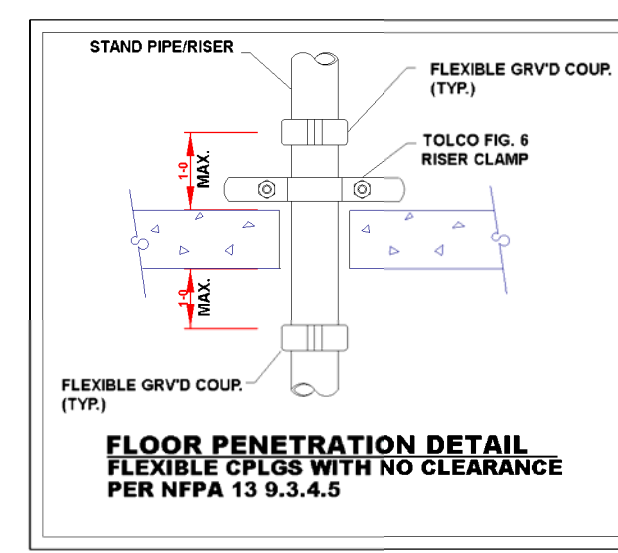
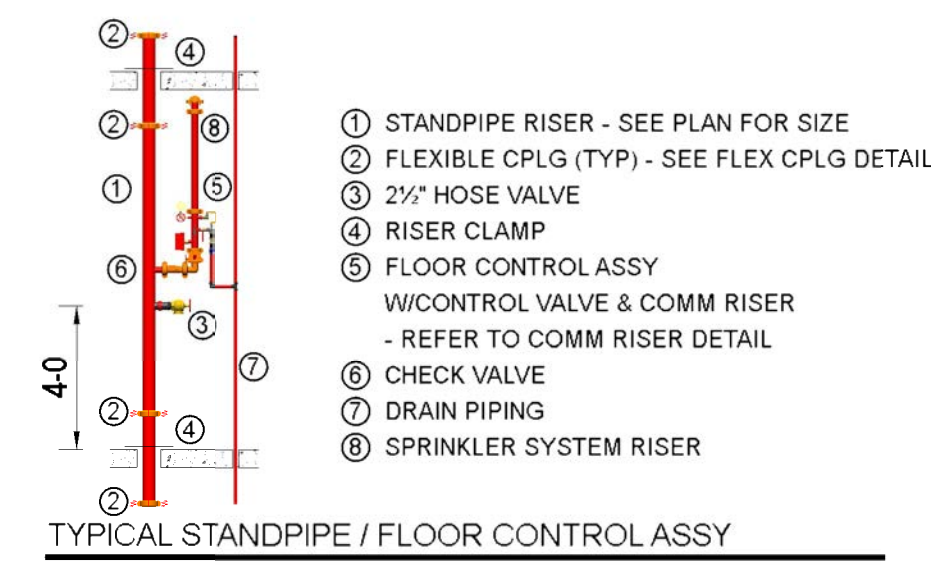
PIPING CONFIGURATION DISCHARGE SIDE OF PUMP

(4) 2 1/2" CLA-VAL 124-01 FLOAT VALVES WITH CF1-C1 FLOAT ASSEMBLY, STILLING WELL, AND ISOLATION VALVE

WATER LEVEL 63,749 GALLONS SEE DETAIL THIS SHEET



TANK / FILL LINE SECTION DETAIL "B-B"



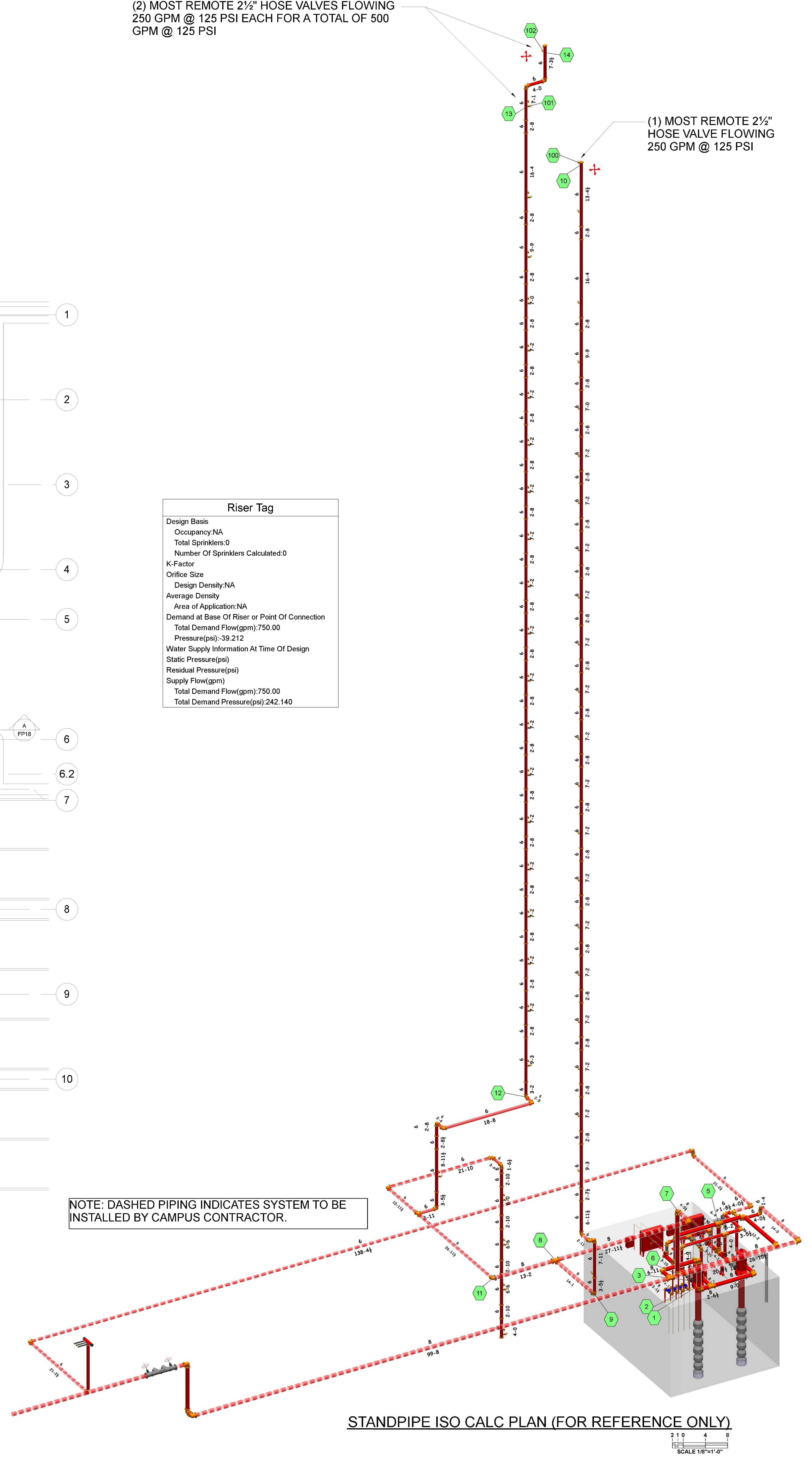
NOTE: DASHED PIPING INDICATES SYSTEM TO BE INSTALLED BY CAMPUS CONTRACTOR.

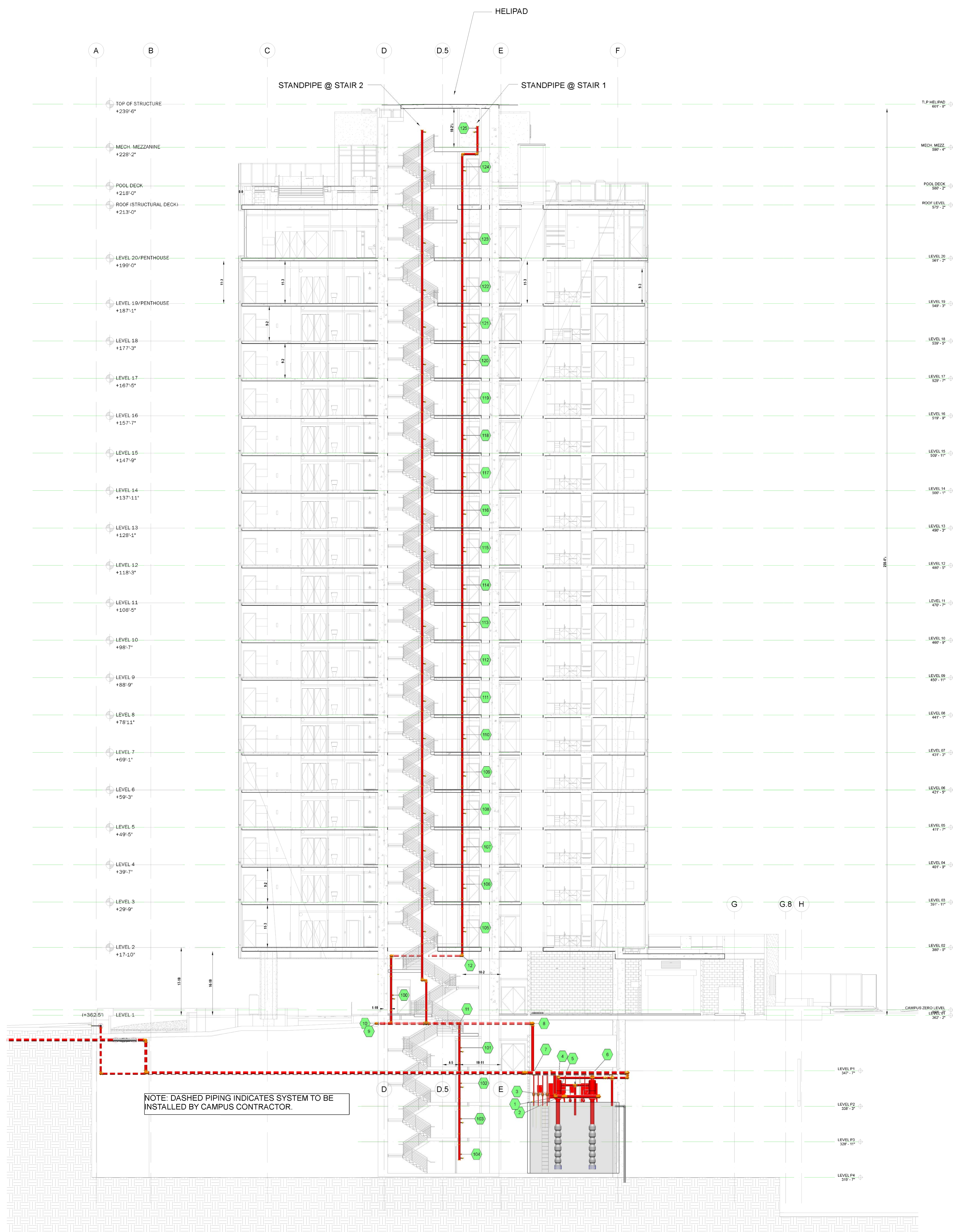
NOTE: DASHED PIPING INDICATES SYSTEM TO BE INSTALLED BY CAMPUS CONTRACTOR.

(2) MOST REMOTE 2 1/2" HOSE VALVES FLOWING 250 GPM @ 125 PSI EACH FOR A TOTAL OF 500 GPM @ 125 PSI

(1) MOST REMOTE 2 1/2" HOSE VALVE FLOWING 250 GPM @ 125 PSI

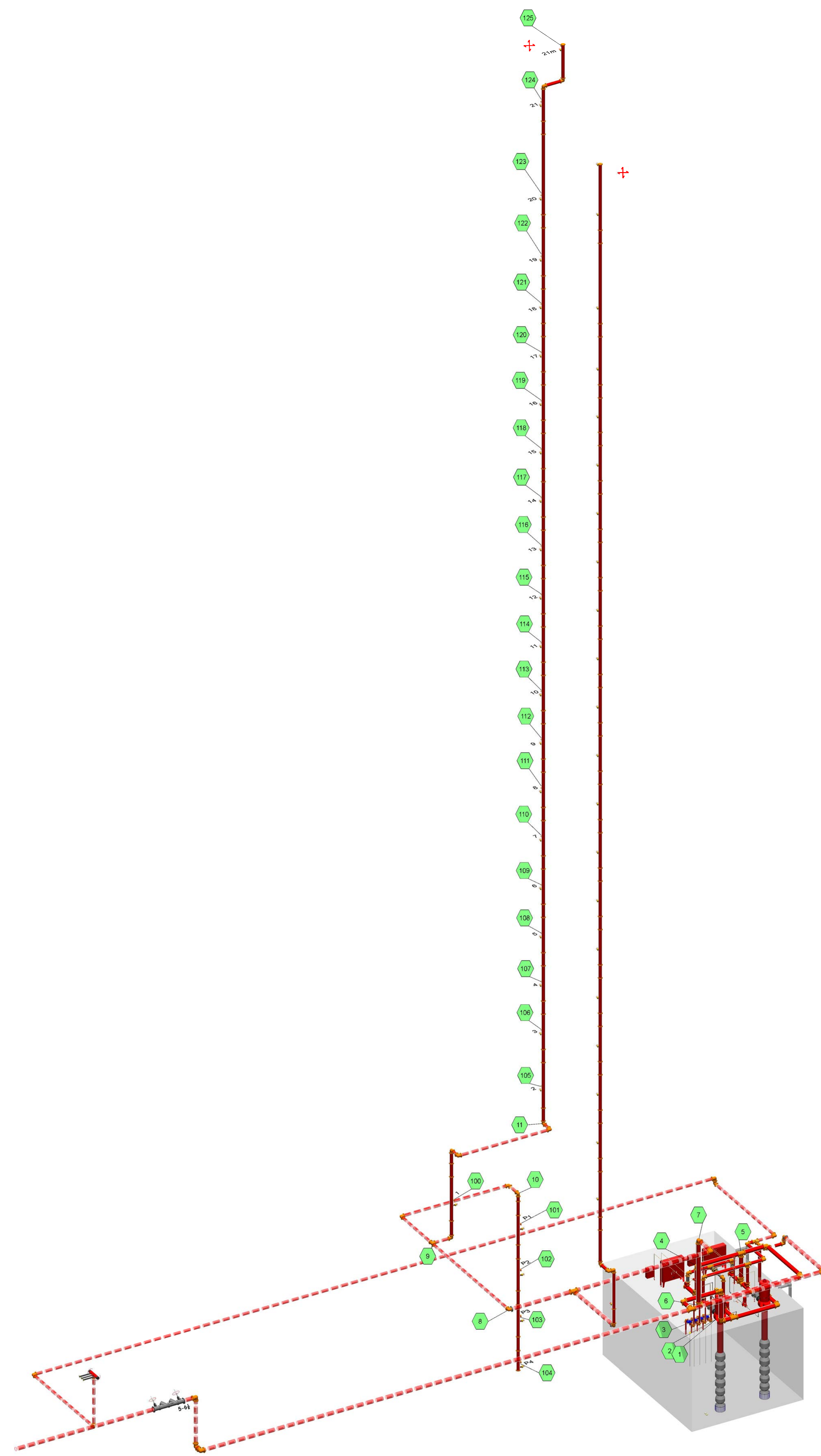
Riser Tag	
Design Basis	Occupancy: NA
Total Sprinklers	0
Number Of Sprinklers Calculated	0
K-Factor	
Orifice Size	
Design Density	NA
Average Density	
Area of Application	NA
Demand at Base Of Riser or Point Of Connection	
Total Demand Flow(gpm)	750.00
Pressure(psi)	39.212
Water Supply Information At Time Of Design	
Static Pressure(psi)	
Residual Pressure(psi)	
Supply Flow(gpm)	
Total Demand Flow(gpm)	750.00
Total Demand Pressure(psi)	242.140





SECTION PLAN "A-A"

3 11.0 6 12
SCALE 3/32"=1'-0"



ISO PLAN FOR HYDRAULIC NODE REFERENCE

3 11.0 6 12
SCALE 3/32"=1'-0"

REV / DATE	DESCRIPTION	BY

<p>APPROVAL BY:</p> <p>Symbol/Manufacturer/Size/Model/Quantity/Color/Finish/Temp/Response</p> <p>Sprinkler Legend</p>	<p>CONTRACT WITH:</p> <p>STREAMLINE FIRE PROTECTION INC. # 104 3700 INDUSTRY AVE. LAKEWOOD CA. 90712 (714)625-8203 FAX: (714)369-8235</p> <p>OFFICE: STATE LICENSE #931653 C-16</p>
<p>COLUMBIA SQUARE RESIDENTIAL TOWER</p> <p>1650 N. EL CENTRO AVENUE LOS ANGELES, CA 90028</p>	<p>DATE: 09/17/14</p> <p>SCALE: AS NOTED</p> <p>DRAWN: Daniel W. Shing</p> <p>CHK: DWT</p> <p>PROJECT: SECTION & SCHEMATIC PLAN</p> <p>FP18</p>