

9/3/24, 2:08 PM

U.S. Seismic Design Maps

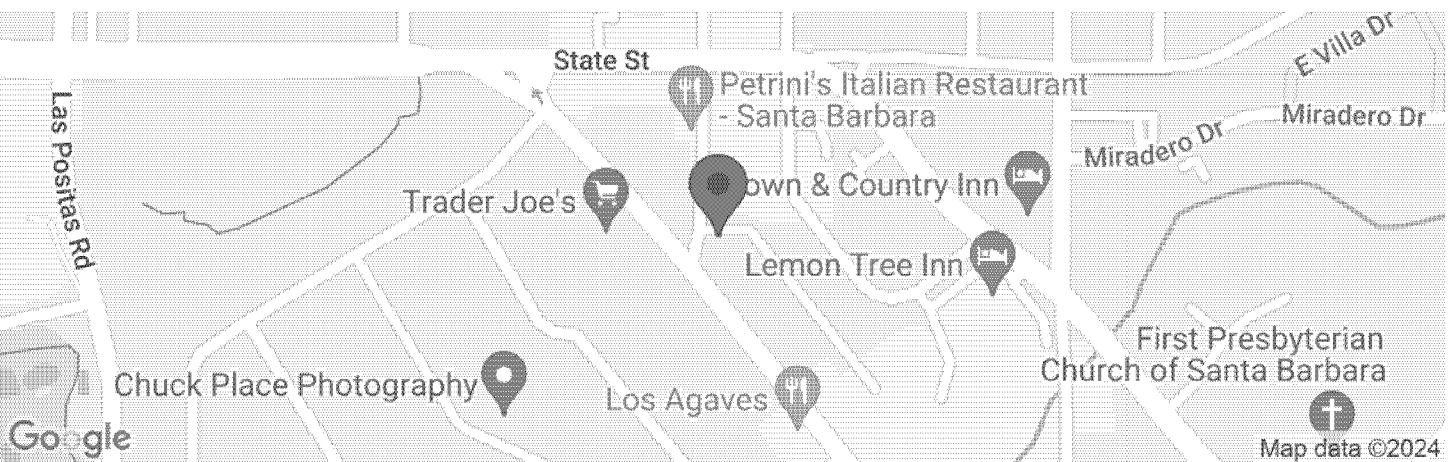
USGS web services were down for some period of time and as a result this tool wasn't operational, resulting in timeout error.
USGS web services are now operational so this tool should work as expected.



OSHPD

37 W Calle Laureles, Santa Barbara, CA 93105, USA

Latitude, Longitude: 34.4389902, -119.7280237



Date9/3/2024, 2:08:20 PM

Design Code Reference DocumentASCE7-16

Risk CategoryIV

Site ClassD - Default (See Section 11.4.3)

Type	Value	Description
S ₀	2.209	MCE _E ground motion, (for 0.2 second period)
S ₁	0.794	MCE _E ground motion, (for 1.0s period)
S _{MS}	2.651	Site-modified spectral acceleration value
S _{M1}	null-See Section 11.4.8	Site-modified spectral acceleration value
S ₀₈	1.767	Numeric seismic design value at 0.2 second SA
S _{M1}	null-See Section 11.4.8	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	null-See Section 11.4.8	Seismic design category
F _a	1.2	Site amplification factor at 0.2 second
F _v	null-See Section 11.4.8	Site amplification factor at 1.0 second
PGA	0.968	MCE _E peak ground acceleration
F _{PGA}	1.2	Site amplification factor at PGA
PGA _M	1.161	Site modified peak ground acceleration
T _L	8	Long-period transition period in seconds
SsRT	2.209	Probabilistic risk-targeted ground motion, (0.2 second)
SsUH	2.522	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
Ssd	2.925	Factored deterministic acceleration value, (0.2 second)
S1RT	0.794	Probabilistic risk-targeted ground motion, (1.0 second)
S1UH	0.906	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
S1D	0.932	Factored deterministic acceleration value, (1.0 second)
PGA _d	1.168	Factored deterministic acceleration value, (Peak Ground Acceleration)

<https://www.seismicmaps.org>

1/3

LAT - SEISMIC BRACE CALCULATIONS

Seismic Project
Standard
Brace Type

ZONE 1
NFPA 13-2022
Lateral

Brace Name
Drawing Reference
Approval Agency

LAT
SEE DRAWING
FM Approved

STRUCTURE INFORMATION

Structure
Substrate
Load Orientation

Lumber/Timbers (Thru Bolt)
Saw Lumber or Glue-Laminated Timbers - SG = 0.35
N/A

SEISMIC BRACE ATTACHMENTS

Swivel Att.
Pipe Att.

Model
Size
Adj. Load

AF700
1/2"
2,100 lbf.

AF001
4 NPS x 1 NPS
900 lbf.

BRACE INFORMATION

Brace Member
Brace Length Max
Brace Angle
Least Radius of Gyration
I/r Ratio Max
Max Horizontal Load

1 NPS Sch 40
7 ft 0 in
60° - 90°
0.421 in.
200
1,604 lbf.

FASTENER INFORMATION

Fastener Name
Fastener Orientation
Fastener Diameter
Nominal Embedment
Max Horizontal Load

Thru-Bolt per referenced edition of NFPA 13
F
1/2 in.
2 1/2 in.
480 lbf.

SPRINKLER SYSTEM LOAD CALCULATION (F_{PM} = C_pW_s)
C_p = 1.030

Qty	Line	Description	Pipe Size/Type	Length	Weight/ft	Weight/Line	Total Weight
1	Main	Braced Pipe	4 NPS Steel Sch 10	20.00 ft.	11.78 lbf/ft	235.60 lb.	235.60 lb.
1	Branch 1	Segment A	2 NPS Steel Sch 40	30.00 ft.	5.13 lbf/ft	153.90 lb.	153.90 lb.

Weakest Main Size	Spacing	Max Fpw	Total System Weight	System Design Weight (W _s)	Horizontal Seismic Load (Fpw)
4 NPS Steel Sch 10	20 ft.	1,634 lbf.	389.50 lb.	448.00 lb.	462 lbf.

2

LONG - SEISMIC BRACE CALCULATIONS

Seismic Project
Standard
Brace Type

ZONE 1
NFPA 13-2022
Longitudinal

Brace Name
Drawing Reference
Approval Agency

LONG
SEE DRAWING
FM Approved

STRUCTURE INFORMATION

Structure
Substrate
Load Orientation

Lumber/Timbers (Thru Bolt)
Saw Lumber or Glue-Laminated Timbers - SG = 0.35
N/A

SEISMIC BRACE ATTACHMENTS

Swivel Att.
Pipe Att.

Model
Size
Adj. Load

AF700
1/2"
2,100 lbf.

AF775
4 NPS x 1 NPS
811 lbf.

BRACE INFORMATION

Brace Member
Brace Length Max
Brace Angle
Least Radius of Gyration
I/r Ratio Max
Max Horizontal Load

1 NPS Sch 40
7 ft 0 in
60° - 90°
0.421 in.
200
1,604 lbf.

FASTENER INFORMATION

Fastener Name
Fastener Orientation
Fastener Diameter
Nominal Embedment
Max Horizontal Load

Thru-Bolt per referenced edition of NFPA 13
F
1/2 in.
2 1/2 in.
480 lbf.

SPRINKLER SYSTEM LOAD CALCULATION (F_{PM} = C_pW_s)
C_p = 1.030

Qty	Line	Description	Pipe Size/Type	Length	Weight/ft	Weight/Line	Total Weight
1	Main	Braced Pipe	4 NPS Steel Sch 10	30.00 ft.	11.78 lbf/ft	353.40 lb.	353.40 lb.

Total System Weight	System Design Weight (W _s)	Horizontal Seismic Load (Fpw)
353.40 lb.	407.00 lb.	420 lbf.

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SEISMIC COEFFICIENT TABLE			
Ss	Cp	Ss	Cp
0.33 or less	0.35	1.9	0.89
0.4	0.38	2	0.93
0.5	0.4	2.1	0.98
0.6	0.42	2.2	1.03
0.7	0.42	2.3	1.07
0.8	0.44	2.4	1.12
0.9	0.48	2.5	1.17
1.0	0.51	2.6	1.21
1.1	0.54	2.7	1.26
1.2	0.57	2.8	1.31
1.3	0.61	2.9	1.35
1.4	0.65	3.0	1.4
1.5	0.7	3.1	1.45
1.6	0.75	3.2	1.49
1.7	0.79	3.3	1.54
1.8	0.84	3.4	1.59

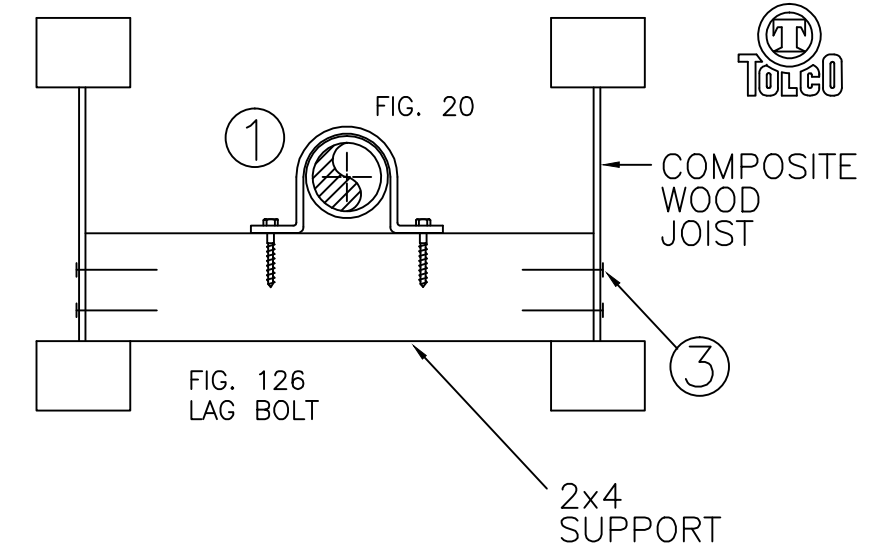


FIG. 20
FIG. 126 LAG BOLT
2x4 SUPPORT
COMPOSITE WOOD JOIST

1	STANDARD PIPE STRAP
2	RING HANGER
3	#10d NAIL (4 REQ'D)

MAX. HANGER SPACING

PIPE TYPE	NOMINAL STEEL PIPE SIZE (IN)								PIPE TYPE	NOMINAL CPVC PIPE SIZE (IN)						
	s	1	1½	1½	2	2½	4	6		s	1	1½	1½	2	2½	3
SCH 7,10,40	N/A	12-0	12-0	15-0	15-0	15-0	15-0	15-0	CPVC	5-6	6-0	6-6	7-0	8-0	9-0	10-0
SCH 30 LIGHT	N/A	12-0	12-0	12-0	12-0	12-0	N/A	N/A	N/A							

36" MAX. FOR 1" DIA.

48" MAX. FOR 1½" DIA.

60" MAX. FOR 2" DIA. OR LARGER

THEN EXTEND HERE

OMIT HGR ON STARTER PIPES 6" OR LESS, NO X-MAIN HGR OMISSIONS ALLOWED

IF GREATER THAN 36" MAX. FOR 1" DIA.

IF GREATER THAN 48" MAX. FOR 1½" DIA.

IF GREATER THAN 60" FOR 2" DIA. OR LARGER

9" MAX. FOR ¾" DIA.

12" MAX. FOR 1" DIA.

16" MAX. FOR 1½" DIA.

24" MAX. FOR 2" DIA. OR MORE

STATIC 100 PSI

OR MORE

STATIC 100 PSI

OR MORE

1 3/8" ALL THREAD ROD
RING HANGER
SEE TABLE 9.1.5.3.1
SIDE BEAM BRACKET

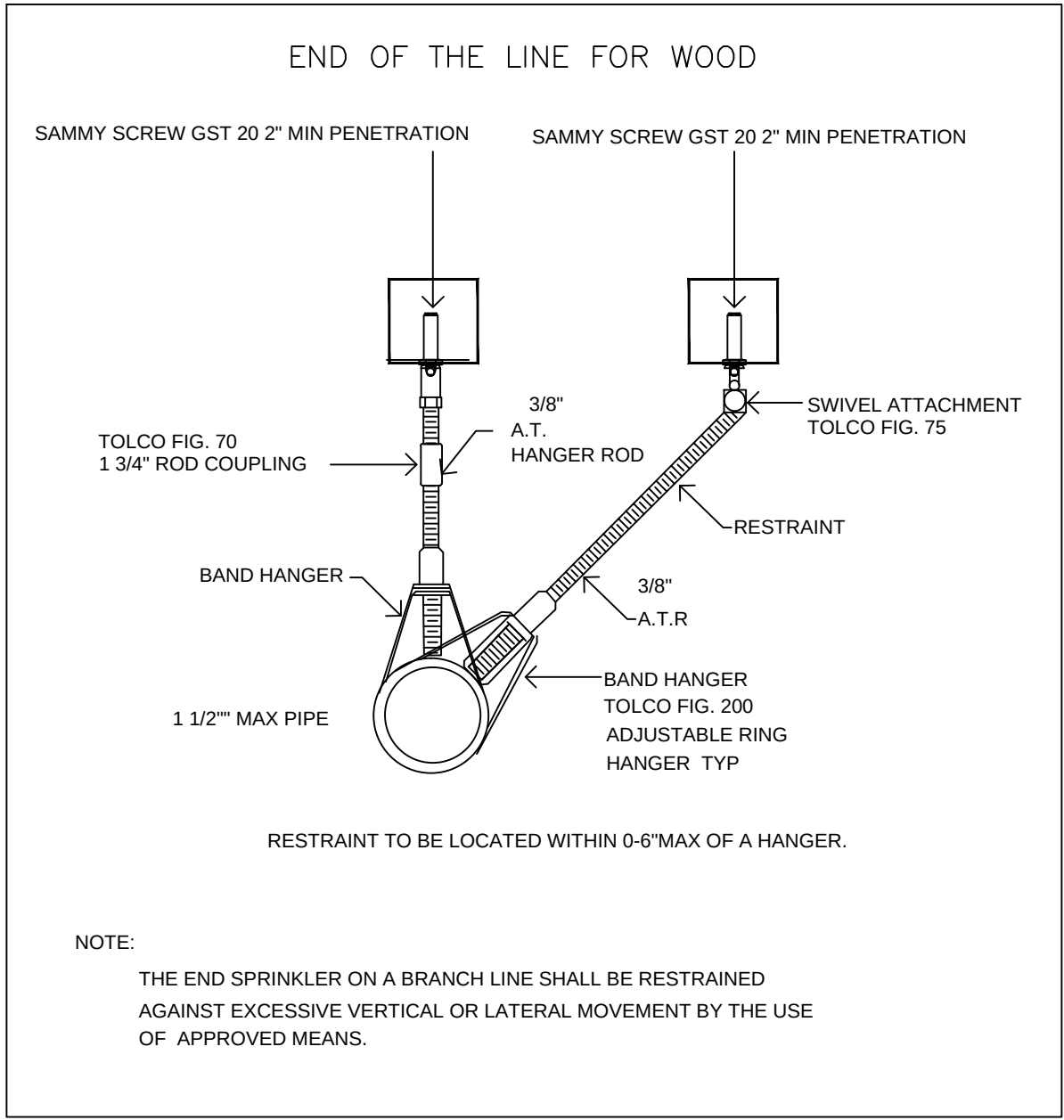


TABLE 9.1.5.3.1 Minimum Bolt or Lag Screw Sizes of Beam Installation (NFPA 13)		
Pipe Size	Size of Bolt or Lag Screw	Length of Lag Screw used with Wood Beams
Up to and including 2 in.	3/8"	2 1/2"
2 1/2" to 6"(inclusive)	1/2"	3"
6"	5/8"	3"

For S1 Units: 1 in. = 25.4 mm.

TABLE-9.1.2.1 Hanger Rod Sizes (NFPA 13)		
Pipe Size	Diam. of Rod in.	mm.
Up to and including 4 in.	3/8"	9.5
5,6 and 8 in.	1/2"	12.7
10 and 12 in.	5/8"	15.9

For S1 Units: 1 in. = 25.4 mm.

CPVC HANGER STRAPS

(BLAZEMASTER CPVC PIPING)

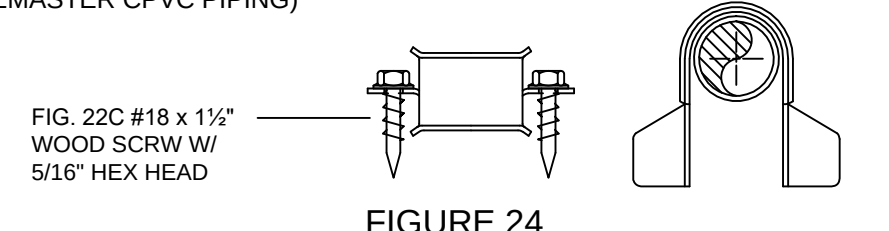


FIG. 22C #18 x 1 1/2" WOOD SCRW W/ 5/16" HEX HEAD

FIGURE 24

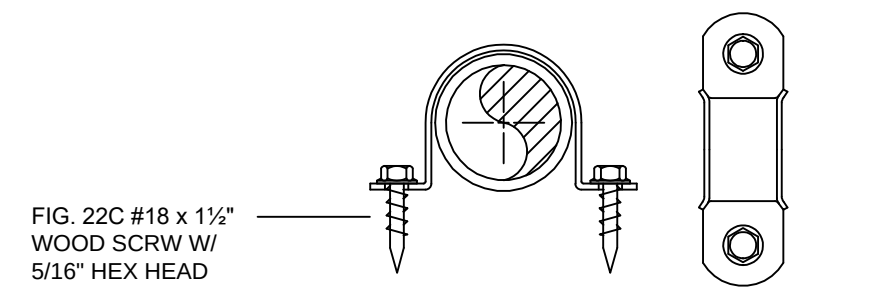


FIG. 22C #18 x 1 1/2" WOOD SCRW W/ 5/16" HEX HEAD

FIGURE 23

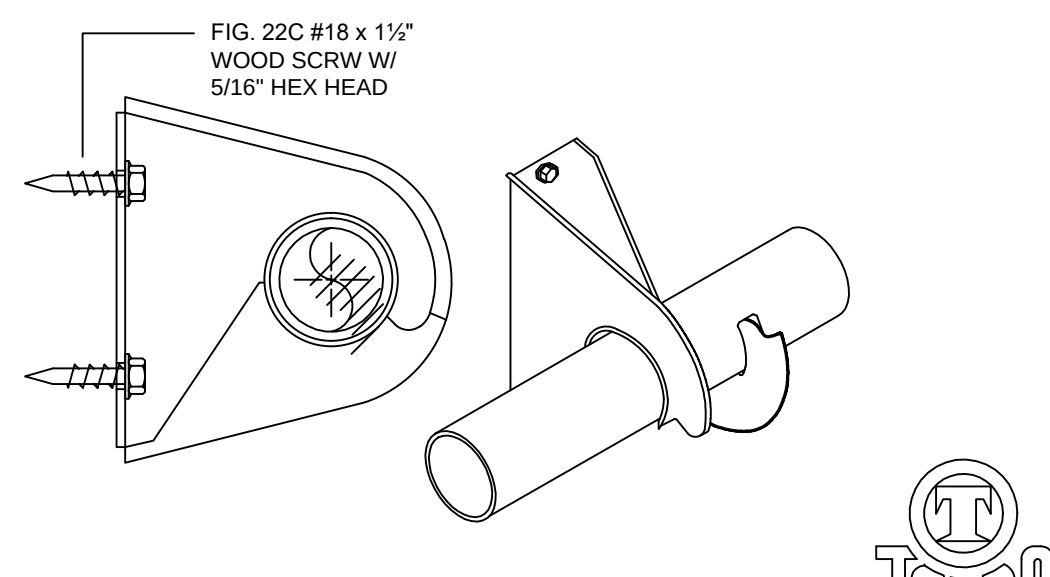


FIG. 22C #18 x 1 1/2" WOOD SCRW W/ 5/16" HEX HEAD

FIGURE 28

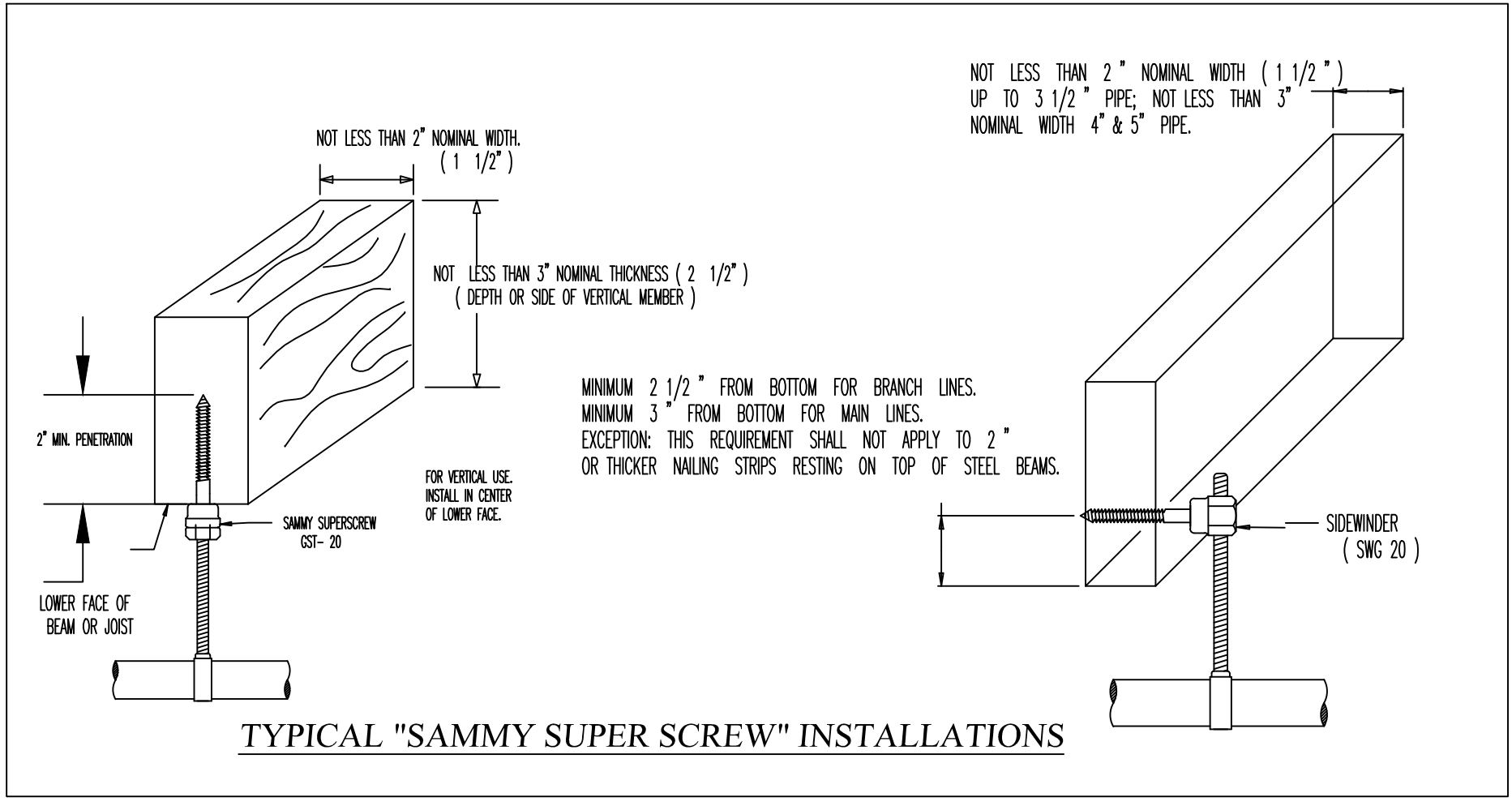


Diagram illustrating typical "Sammy Super Screw" installations for beam support. The diagram shows a cross-section of a beam with a screw installed through it. Key dimensions and requirements are noted: NOT LESS THAN 2" NOMINAL WIDTH (1 1/2" UP TO 3 1/2" PIPE, NOT LESS THAN 3" NOMINAL WIDTH 4" & 5" PIPE); NOT LESS THAN 2" NOMINAL THICKNESS (2 1/2" (DEPTH OR SIDE OF VERTICAL MEMBER)); MINIMUM 2 1/2" FROM BOTTOM FOR BRANCH LINES, MINIMUM 3" FROM BOTTOM FOR MAIN LINES, EXCEPTION: THIS REQUIREMENT SHALL NOT APPLY TO 2" OR THICKER HANGING STRIPS RESTING ON TOP OF STEEL BEAMS; 2" MIN PENETRATION; LOWER FACE OF BEAM OR JOIST; FOR VERTICAL USE, NAIL IN CENTER OF LOWER FACE; SAMMY SUPERSCREW GST-20.

TYPICAL "SAMMY SUPER SCREW" INSTALLATIONS

9.3.6.5 Where the branch lines are supported by rods less than 6 in. (150 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 branch lines.

9.3.6.6* Springs 4 ft (1.2 m) or longer shall be restrained against lateral movement.

9.3.6.7 Drops and armovers shall not require restraint.

9.1.3.5 Post-installed anchors shall be permitted to be installed in the vertical position under any of the following conditions:

(1) When used in concrete having gravel or crushed stone aggregate to support pipes 4 in. (100 mm) or less in diameter

(2) When post-installed anchors are alternated with hangers connected directly to the structural members, such as trusses and girders, or to the sides of concrete beams 1/4 to support pipe 5 in. (125 mm) or larger.

(3) When post-installed anchors are spaced not over 10 ft (3 m) apart to support pipe 4 in. (100 mm) or larger.

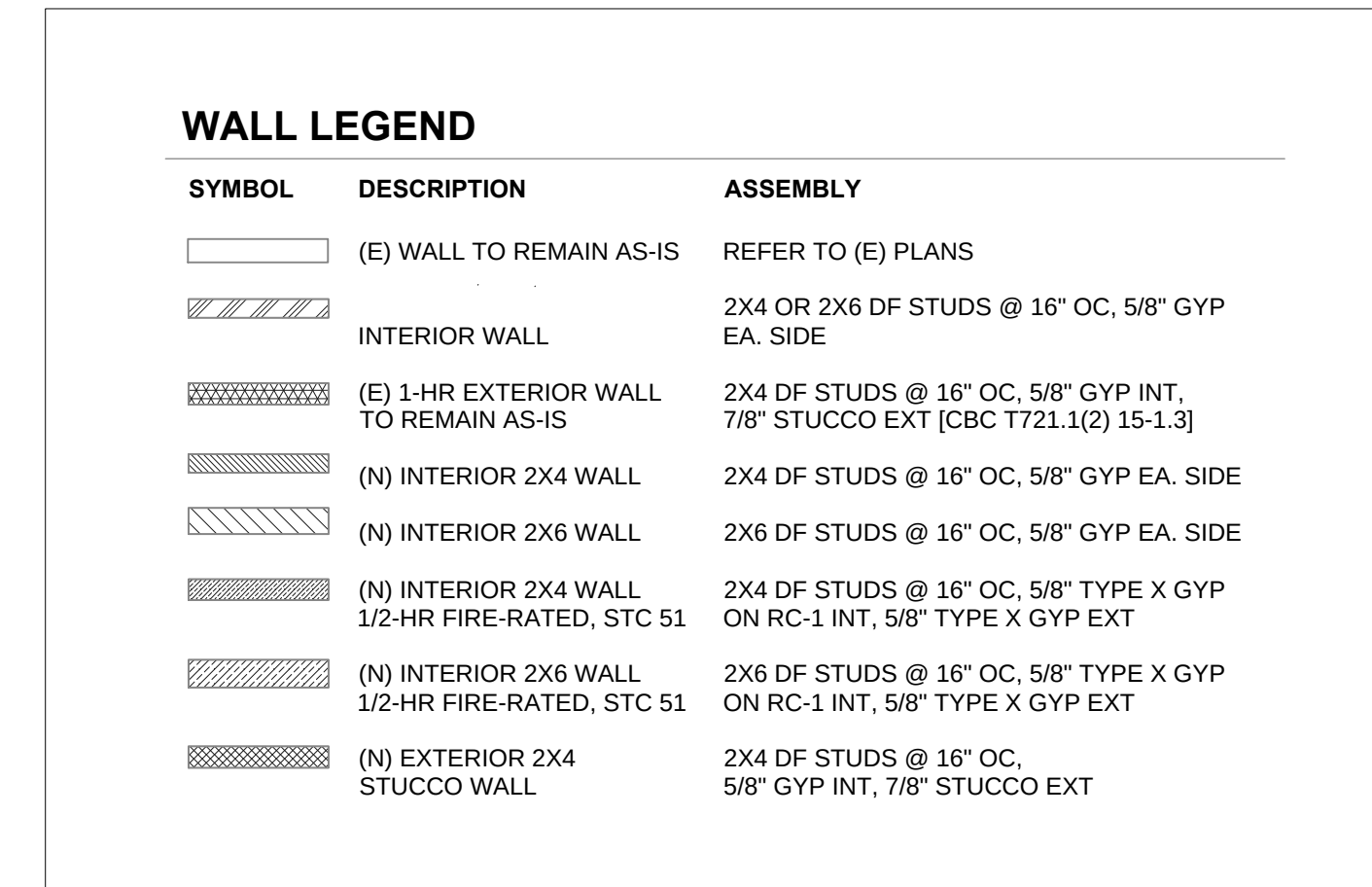
MAXIMUM HANGER SPACING FOR STEEL PIPE	
PIPE SIZE	HANGER SPACING
1 1/4" & SMALLER	12'-0"
1 1/2" & LARGER	15'-0"

THE HORIZONTAL LENGTH OF AN UNSUPPORTED ARM OVER SHALL NOT EXCEED 24" FOR STEEL PIPE WHEN THE MAXIMUM PRESSURE @ THE SYSTEM EXCEEDS 100 PSI. THE PIPE SUPPLYING AN END SPRINKLER IN A PENDENT POSITION AND ALL ARM-OVERS EXCEEDING 12" TO SPRINKLERS WILL BE PROVIDED WITH A TYPE OF HANGER THAT WILL PREVENT THE UPWARD MOVEMENT OF A PIPE.

REVISIONS		DATE
No.	DESCRIPTION	

PROJECT NAME
37 W CALLE LAURELES
SANTA BARBARA, CA 93105

Job No.	Sheet
Drawn by:	FS-2
Checked by:	Revision
Date	MM/DD/YYYY
Scale	AS NOTED



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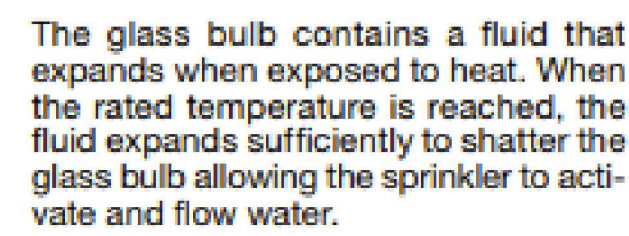
IMPORTANT
Refer to Technical Data Sheet TFP2300 for warnings pertaining to regulatory and health information.
Always refer to Technical Data Sheet TFP700 for the "INSTALLER WARNING" that provides cautions with respect to handling and installation of sprinkler systems and components. Improper handling and installation can permanently damage a sprinkler system or its components and cause the sprinkler to fail to operate in a fire situation or cause it to operate prematurely.

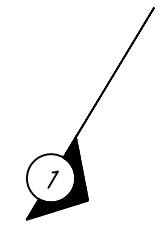


The Model CC2 Combustible Concealed Sprinklers are fast response, upright, specific application sprinklers designed to provide protection of specific light hazard combustible, as well as non-combustible, concealed spaces requiring sprinkler protection. The CC2 Sprinklers comply with the criterion for the protection of combustible concealed spaces as described in NFPA 13.

The Model CC2 Combustible Concealed Sprinklers described herein must be installed and maintained in compliance with this document, as well as with the applicable standards of the NATIONAL FIRE PROTECTION ASSOCIATION, in addition to the standards of any other authorities having jurisdiction. Failure to do so may impair the performance of these devices.

The owner is responsible for maintaining their fire protection system and devices in proper operating condition. Contact the installing contractor or product manufacturer with any questions.





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



WET PIPE SYSTEM Minimum Flow and Residual Pressure ^{1,2}							
Maximum Coverage Area ft ² (m ²)	Maximum Spacing (ft) (m)	Temperature Rating	GPM (LPM)	Pressure psi (bar)	Deflector to Ceiling	Installation Type	Minimum Spacing (ft) (m)
12 x 12 (3.7 x 3.7)	12 (3.7)		13 (49.2)	7.0 (0.48)		Smooth Ceiling 38 to 110 in.	
14 x 14 (4.1 x 4.3)	14 (4.3)		13 (49.2)	7.0 (0.48)			
16 x 16 (4.9 x 4.9)	16 (4.9)	165°F (68°C)	13 (49.2)	7.0 (0.48)		Beamed Ceilings per NFPA 13D or 13R or 13.6	8 (2.4)
18 x 18 (5.5 x 5.5)	18 (5.5)	200°F (93°C)	13 (49.2)	7.0 (0.48)		Installed in beam 38 to 110 in.	
20 x 20 (6.1 x 6.1)	20 (6.1)		20 (75.7)	16.7 (1.15)		below bottom of beam	

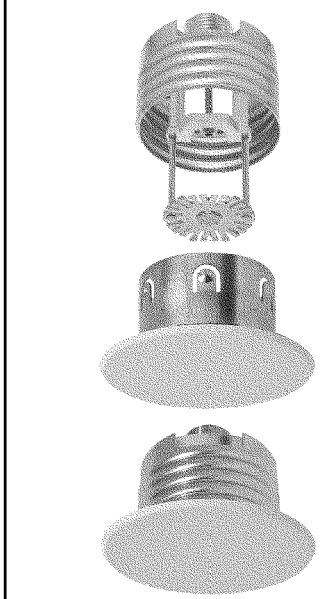
Notes:

- For coverage area and minimum beam height (or between beams indicated), use the minimum required flow for the next highest coverage area in which hydraulic design criteria are required.
- Requirements in table based on minimum flow (10 gpm) at each nozzle. The associated residual pressure are to be calculated using the normal design flow (15 gpm) discharge per the design orifice section.
- For NFPA 13R installation applications, the greater of 12" (305 mm) or the drop of the beam is to be used in accordance with the criteria in this table with the exception of the 12" (305 mm) spacing.

WET PIPE SYSTEM

SERIES F111 RESIDENTIAL 4-K FACTOR FLAT-PLATE CONCEALED PENDENT SPRINKLER (TY2354)

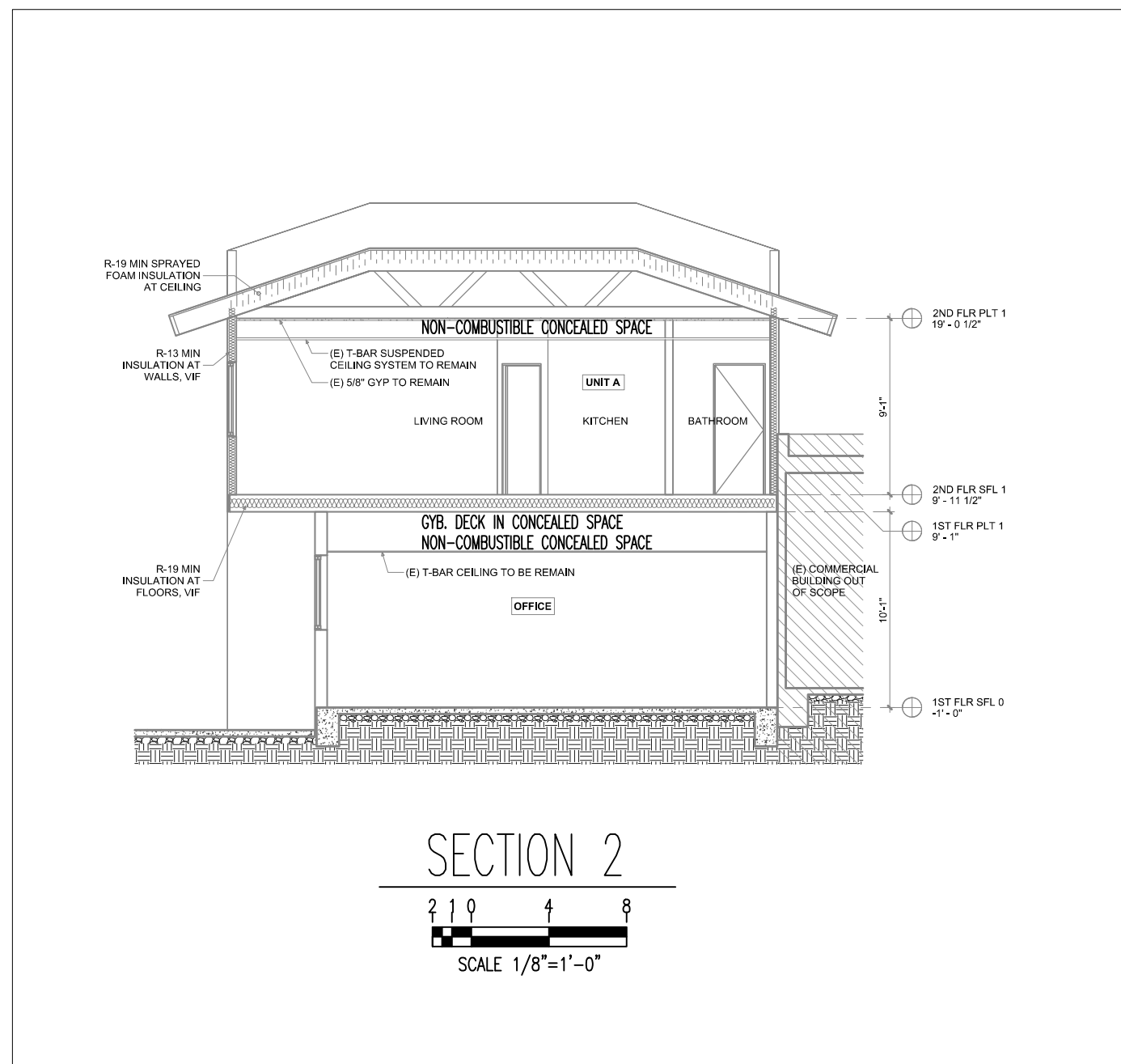
NFPA 13D, 13R, and 13 HYDRAULIC DESIGN CRITERIA



Unless the requirements of 19.3.1.4 are met, the minimum required discharge from each design area sprinkler shall be the greater of the following:

- ### WALL LEGEND

SYMBOL	DESCRIPTION	ASSEMBLY
	(E) WALL TO REMAIN AS-IS	REFER TO (E) PLANS
	INTERIOR WALL	2X4 OR 2X6 DF STUDS @ 16" OC, 5/8" GYP EA SIDE
	(E) 1-HR EXTERIOR WALL TO REMAIN AS-IS	2X4 OR STUDS @ 16" OC, 5/8" GYP INT, 7/8" STUCCO EXT [CBC 1721.1(2) 15-1.3]
	(N) INTERIOR 2X4 WALL	2X4 DF STUDS @ 16" OC, 5/8" GYP EA SIDE
	(N) INTERIOR 2X6 WALL	2X6 DF STUDS @ 16" OC, 5/8" GYP EA SIDE
	(N) INTERIOR 2X4 WALL 12-HR FIRE-RATED, STC 51	2X4 DF STUDS @ 16" OC, 5/8" TYPE X GYP ON RC-1 INT, 5/8" TYPE X GYP EXT
	(N) INTERIOR 2X6 WALL 12-HR FIRE-RATED, STC 51	2X6 DF STUDS @ 16" OC, 5/8" TYPE X GYP ON RC-1 INT, 5/8" TYPE X GYP EXT
	(N) EXTERIOR 2X4 STUCCO WALL	2X4 DF STUDS @ 16" OC, 5/8" GYP INT, 7/8" STUCCO EXT



Number of Sprinklers	
Total This Sheet	53
Symbol	Description
	24 (1/2",K=4.2) TYCO CC2 TY2189 175' SSU
	22 (1/2",K=4.9) TYCO LF1I RESIDENTIAL CONCEALED TY2534 155' 180 S.F. MAX., 9' MAX. FROM THE WALL
	7 (1/2",K=5.6) TYCO TY-FRB QR SSP 200' TY3231 OVER (1/2",K=4.2) TYCO CC2 TY2189 175' SSU
	A.S.RISER
	Denotes Hanger Location
	Denotes Seismic Brace Location

REVISIONS		
No.	DESCRIPTION	DATE

37 W CALLE LAURELES
SANTA BARBARA, CA 93105

Job No.	Sheet FS-4
Drawn by:	
Checked by:	Revision
Date	MM/DD/YYYY
Scale	AS NOTED