Sway Bracing Calculations per 2016 NFPA 13

Project/Contractor information

Project:
Project Address:
Project City/St:
Contractor:
Contractor Address:
Contractor City/St:

Brace Pipe Information

Length of Brace:	4 ft 0 in
Diameter of Brace:	1 inch
Type of Brace:	Schedule 40
Angle of Brace:	45° to 59°
Least Radius of Gyration:	0.421
L/R Value:	200
Maximum Horizontal Load:	1,310

Fastener Information

☒ NFPA 13 Fastener ☐ Listed Adapter

Structural Supporting Member:	Open Web Bar Joist
Orientation of connecting surface:	B
Fastener Type:	A.T.R. / Nut / Washer
Fastener Diameter:	½"
Fastener Length (under head):	1'-0" - Field Order
Maximum Load:	1,350 lb

Seismic Brace Attachments

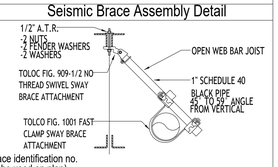
Structure Attachment Adapter:
TOLCO Figure 909 - No Thread Swivel Sway Brace Attachment
Listed load rating: 1,370 lb Listed load rating: 968 lb

Structure Attachment Fitting:
TOLCO N/A
Listed load rating: N/A Adj.load rating per 9.3.5.2.3: N/A

Brace Pipe Adapter:
TOLCO Figure 1001Fast Clamp - Sway Brace Attachment
Listed load rating: 1,130 lb Adj.load rating per 9.3.5.2.3: 799.15 lb

Sway Brace Fitting:
TOLCO N/A
Listed load rating: N/A Adj.load rating per 9.3.5.2.3: N/A

Seismic Brace Assembly Detail



Brace identification no. (to be used on plan)

☒ Lateral Brace ☐ Longitudinal Brace ☐ 4-Way Brace

Sprinkler System Load Calculation [Fpw CpWp(default is 0.61 Cp)] Ss 1.31 Cp0.61

	Diameter	Type	Length (ft)	Total (ft)	Weight per ft	Cp	Total Weight
▨	2½ in	Schedule 10	40 FT	40 FT	5.89 lb/ft	0.61	235.6
☐							
☐							
☐							
☐							
☐					Total Weight		235.6
☐					Total Weight x 0.61	1,202.4 x 0.61	143.71
Brace Connection					Fpw x 1.15		165.26

2½" Lateral Brace - 40'-0" MAX SPACING

Sway Bracing Calculations per 2016 NFPA 13

Project/Contractor information

Project:
Project Address:
Project City/St:
Contractor:
Contractor Address:
Contractor City/St:

Brace Pipe Information

Length of Brace:	4 ft 0 in
Diameter of Brace:	1 inch
Type of Brace:	Schedule 40
Angle of Brace:	45° to 59°
Least Radius of Gyration:	0.421
L/R Value:	200
Maximum Horizontal Load:	1,310

Fastener Information

☒ NFPA 13 Fastener ☐ Listed Adapter

Structural Supporting Member:	Open Web Bar Joist
Orientation of connecting surface:	B
Fastener Type:	A.T.R. / Nut / Washer
Fastener Diameter:	½"
Fastener Length (under head):	1'-0" - Field Order
Maximum Load:	1,350 lb

Seismic Brace Attachments

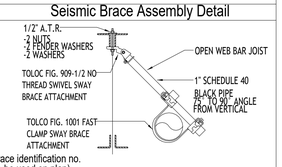
Structure Attachment Adapter:
TOLCO Figure 909 - No Thread Swivel Sway Brace Attachment
Listed load rating: 1,370 lb Listed load rating: 968 lb

Structure Attachment Fitting:
TOLCO N/A
Listed load rating: N/A Adj.load rating per 9.3.5.2.3: N/A

Brace Pipe Adapter:
TOLCO Figure 1001Fast Clamp - Sway Brace Attachment
Listed load rating: 990 lb Adj.load rating per 9.3.5.2.3: 857.14 lb

Sway Brace Fitting:
TOLCO N/A
Listed load rating: N/A Adj.load rating per 9.3.5.2.3: N/A

Seismic Brace Assembly Detail



Brace identification no. (to be used on plan)

☒ Lateral Brace ☐ Longitudinal Brace ☐ 4-Way Brace

Sprinkler System Load Calculation [Fpw CpWp(default is 0.61 Cp)] Ss 1.31 Cp0.61

	Diameter	Type	Length (ft)	Total (ft)	Weight per ft	Cp	Total Weight
▨	8 in	Schedule 10	30 FT	30 FT	40.08 lb/ft	0.61	1,1202.4
☐							
☐							
☐							
☐							
☐					Total Weight		1,1202.4
☐					Total Weight x 0.61	1,202.4 x 0.61	733.46
Brace Connection					Fpw x 1.15		843.47

8" Lateral Brace - 30'-0" MAX SPACING

Sway Bracing Calculations per 2016 NFPA 13

Project/Contractor information

Project:
Project Address:
Project City/St:
Contractor:
Contractor Address:
Contractor City/St:

Brace Pipe Information

Length of Brace:	4 ft 0 in
Diameter of Brace:	1 inch
Type of Brace:	Schedule 40
Angle of Brace:	45° to 59°
Least Radius of Gyration:	0.421
L/R Value:	200
Maximum Horizontal Load:	1,310

Fastener Information

☒ NFPA 13 Fastener ☐ Listed Adapter

Structural Supporting Member:	Open Web Bar Joist
Orientation of connecting surface:	B
Fastener Type:	A.T.R. / Nut / Washer
Fastener Diameter:	½"
Fastener Length (under head):	1'-0" - Field Order
Maximum Load:	1,350 lb

Seismic Brace Attachments

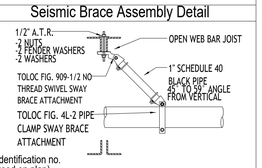
Structure Attachment Adapter:
TOLCO Figure 909 - No Thread Swivel Sway Brace Attachment
Listed load rating: 1,370 lb Listed load rating: 968 lb

Structure Attachment Fitting:
TOLCO N/A
Listed load rating: N/A Adj.load rating per 9.3.5.2.3: N/A

Brace Pipe Adapter:
TOLCO Figure 4L-2 - Pipe Clamp - Sway Brace Attachment
Listed load rating: 1,600 lb Adj.load rating per 9.3.5.2.3: 1,131.54 lb

Sway Brace Fitting:
TOLCO N/A
Listed load rating: N/A Adj.load rating per 9.3.5.2.3: N/A

Seismic Brace Assembly Detail



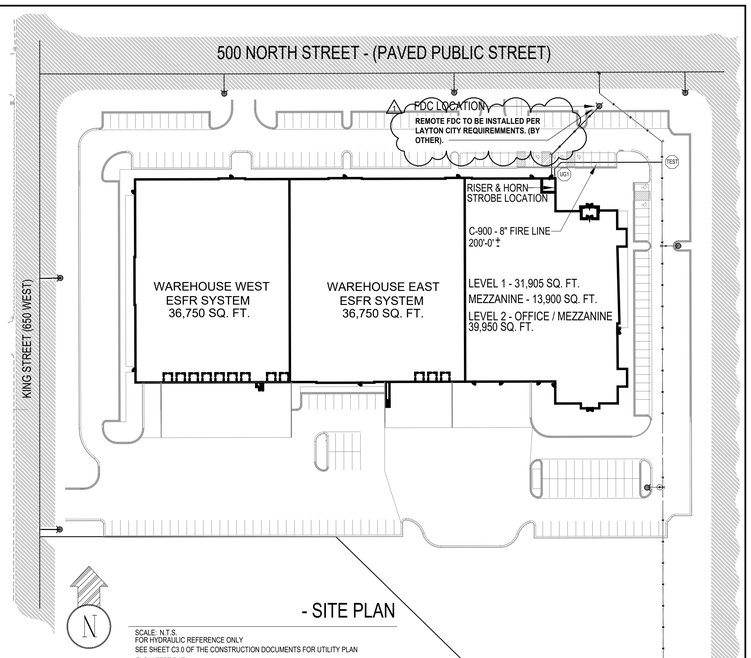
Brace identification no. (to be used on plan)

☐ Lateral Brace ☒ Longitudinal Brace ☐ 4-Way Brace

Sprinkler System Load Calculation [Fpw CpWp(default is 0.61 Cp)] Ss 1.31 Cp0.61

	Diameter	Type	Length (ft)	Total (ft)	Weight per ft	Cp	Total Weight
▨	8 in	Schedule 10	30 FT	30 FT	40.08 lb/ft	0.61	1,202.4
☐							
☐							
☐							
☐							
☐					Total Weight		1,202.4
☐					Total Weight x 0.61	1,202.4 x 0.61	733.46
Brace Connection					Fpw x 1.15		843.47

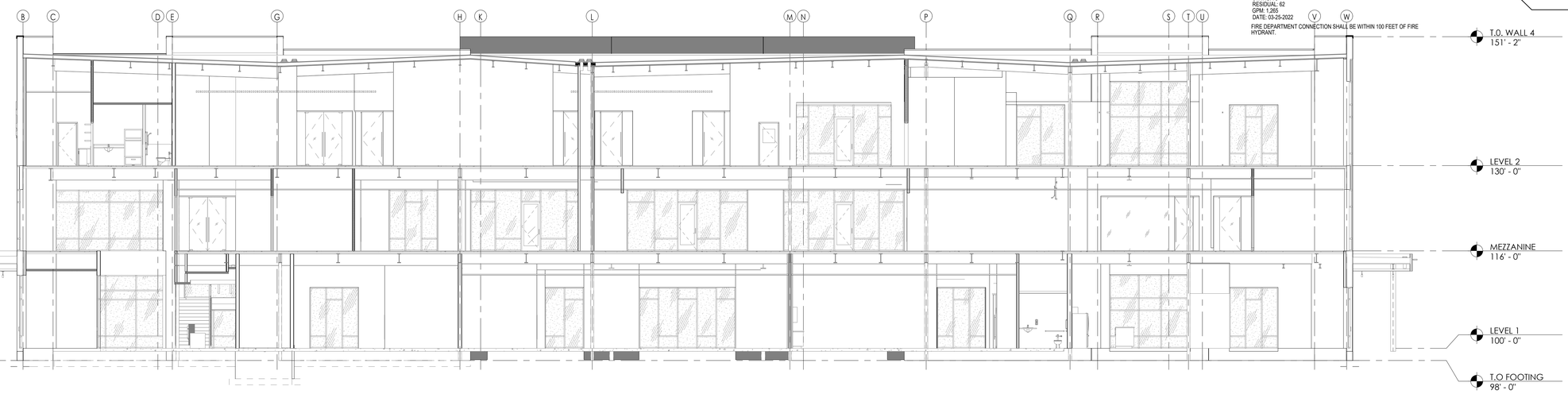
8" Longitudinal Brace 30'-0" MAX SPACING



- SITE PLAN

SCALE: N.T.S.
FOR HYDRAULIC REFERENCE ONLY
SEE SHEET C3.0 OF THE CONSTRUCTION DOCUMENTS FOR UTILITY PLAN
FLOW TEST DATA
STATIC: 78
RESIDUAL: 62
GPM: 1,265
DATE: 03-25-2022

FIRE DEPARTMENT CONNECTION SHALL BE WITHIN 100 FEET OF FIRE HYDRANT.



FIRE PROTECTION SECTION 1

1/8" 1'-0"

ESFR SPRINKLER INSTALLATION NOTES:

STORAGE LIMITATIONS
FIRE PROTECTION IS PROVIDED WITH 200°F ESFR CEILING SPRINKLERS. MAXIMUM TOP OF STORAGE 35'-0" HIGH. MAXIMUM BUILDING HEIGHT 40'-0". AT LEAST 36 INCHES SHALL BE MAINTAINED BETWEEN THE TOP OF STORAGE AND THE SPRINKLER DEFLECTOR.

TYPES OF STORAGE ALLOWED
PALLETIZED AND SOLID PILE STORAGE. SINGLE, DOUBLE, OR MULTIPLE ROW RACK STORAGE.

TYPES OF COMMODITIES ALLOWED
CLASS I, II, III, OR IV COMMODITIES, ENCAPSULATED OR UNENCAPSULATED.

SPECIFIC TYPES OF STORAGE NOT ALLOWED
RACK STORAGE INVOLVING SOLID SHELVES. RACK STORAGE INVOLVING COMBUSTIBLE, OPEN-TOP CARTONS OR CONTAINERS.

E.S.F.R. SPRINKLER INSTALLATION GUIDELINES
THE FOLLOWING ESFR GUIDELINES ARE FROM NFPA 13 - 8.12. THESE GUIDELINES MUST BE FOLLOWED IN ALL INSTALLATIONS OF ESFR SPRINKLERS.

"K-16.8" ESFR SPRINKLER DEFLECTOR MUST BE BETWEEN 6" AND 14" BELOW ROOF DECK.

ISOLATED (NON-CONTINUOUS) OBSTRUCTIONS UP TO 2 FEET WIDE (ROUND LIGHTS, ETC.): THE SPRINKLER MUST BE AT LEAST 12" HORIZONTALLY FROM THE EDGE OF THE OBSTRUCTION.

ISOLATED (NON-CONTINUOUS) OBSTRUCTIONS GREATER THAN 2 FEET WIDE (ROUND LIGHTS, ETC.): SPRINKLERS SHALL BE INSTALLED UNDER OBSTRUCTIONS THAT RESTRICT ONE SPRINKLER AND ARE LOCATED BELOW THE ELEVATION OF SPRINKLERS (LIGHT FIXTURES AND UNIT HEATERS).

CONTINUOUS OBSTRUCTIONS UP TO 2 INCHES IN WIDTH (CONDUIT, PIPE, JOIST BRIDGING, ETC.): IF THE OBSTRUCTION IS AT LEAST 2 FEET BELOW THE DEFLECTOR, DISREGARD IT. IF THE OBSTRUCTION IS CLOSER THAN 2 FEET TO THE DEFLECTOR, THE SPRINKLER MUST BE AT LEAST 12" HORIZONTALLY FROM THE EDGE OF THE OBSTRUCTION.

CONTINUOUS OBSTRUCTIONS GREATER THAN 2 INCHES, UP TO 12 INCHES IN WIDTH (SMALL DUCTS, LARGER PIPES, BOTTOM CHORD OF JOISTS, ETC.): THE SPRINKLER MUST BE AT LEAST 12" HORIZONTALLY FROM THE EDGE OF THE OBSTRUCTION.

CONTINUOUS OBSTRUCTIONS GREATER THAN 12 INCHES, UP TO 2 FEET IN WIDTH (DUCTS, FLUORESCENT LIGHTS IN ROWS, RACKS OF PIPES, ETC.): THE SPRINKLER MUST BE AT LEAST 24" HORIZONTALLY FROM THE EDGE OF THE OBSTRUCTION.

CONTINUOUS OBSTRUCTIONS GREATER THAN 2 FEET IN WIDTH (LARGE DUCTS, ETC.): INSTALL ADDITIONAL SPRINKLERS BELOW OBSTRUCTIONS (DUCTS, LIGHTS, PIPES, CONVEYORS, ETC.).

ESFR SPRINKLER COVERAGE AREA MUST BE BETWEEN 80 AND 100 SQUARE FEET. MINIMUM DISTANCE BETWEEN HEADS IS 8 FEET. MAXIMUM DISTANCE BETWEEN HEADS IS 12 FEET FOR BUILDINGS UP TO 30 FEET HIGH, AND 10 FEET FOR BUILDINGS OVER 30 FEET HIGH.

SPRINKLERS SHALL BE POSITIONED A MINIMUM OF 1'-0" HORIZONTALLY FROM THE NEAREST EDGE TO ANY BOTTOM CHORD OF A BAR JOIST OR OPEN TRUSS.

BASIS OF DESIGN

SCOPE OF WORK
PROVIDE NEW AUTOMATIC SPRINKLER SYSTEM TO NEW BUILDING

ALL DESIGN, MATERIAL, TESTING, AND INSTALLATION SHALL MEET NFPA 13, 2016 ed.

BUILDING TYPE
BUILDING TYPE IS B, S-1, S2, F-1, F-2, M A-1, A-2 ACCESSORY WITH OFFICE, WAREHOUSE INDUSTRIAL, SALES, AUDITORIUM, BREAK ROOMS.

CONSTRUCTION TYPE
BUILDING CONSISTS OF STEEL STRUCTURE, WITH STEEL ROOF DECKING, STEEL STUD FRAMING FOR WALLS. GYP BD WALL COVERING. GYP BD SOLID CEILINGS & ACUSTICAL TILE CEILING.

HAZARD CLASSIFICATION
LIGHT HAZARD
OFFICES
BATHROOMS

ORDINARY HAZARD GROUP I
KITCHEN
MECHANICAL ROOM
ELECTRICAL ROOM
CUSTODIAL ROOM

ORDINARY HAZARD, GROUP II
MANUFACTURING
RETAIL/MERCHANTILE
SHOWROOM LOUNGE

DESIGN AREA / DENSITY
AREA 3 - TRAINING THEATER
LIGHT HAZARD
NFPA MINIMUM - 1500 FT2/ @ 0.10 GPM/FT/

AREA 4 - LEVEL 2 - SOUTH - SHELL - ROOM
ORDINARY GRP II HAZARD
NFPA MINIMUM - 1500 FT2/ @ 0.15 GPM/FT2/

AREA 1 & 2 - WAREHOUSE / STORAGE
ESFR SPRINKLER SYSTEM
STORAGE - CLASS I - IV COMMODITY
ENCAPSULATED OR UNENCAPSULATED
35 FT MAX STORAGE HEIGHT
40 FT MAX CEILING HEIGHT
PER NFPA 13 - TABLE 14.4.1
(PALATIZED OR SOLID PILED) OR TABLE 16.2.3.1 (RACK STORAGE) WITH K-16.8 SPRINKLER.
MIN PRESSURE 52 PSI
PER 14.4.3 OR - 16.2.3.5.
DESIGN AREA MINIMUM 12 SPRINKER .4 SPRINKLERS IN EACH A 3 BRANCHLINE

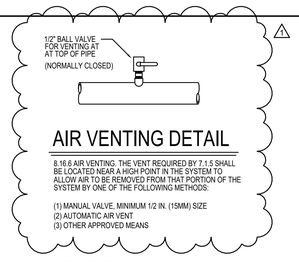
GENERAL NOTES

1. CONTRACT IS TO START INSIDE THE BUILDING. ALL UNDERGROUND PIPING INCLDING REMOTE FDC IS TO BE COMPLETED BY OTHERS.
2. ALL PIPING 2" AND SMALLER SHALL BE EDDY THREAD BLACK STEEL PIPE AND WILL USE CAST IRON THREADED FITTINGS. 2-1/2" AND LARGER PIPING SHALL BE EDDY FLOW BLACK STEEL PIPE USING CAST IRON GROOVED FITTINGS.
3. SPRINKLER HEADS SHALL BE TO BE LOCATED IN THE CENTER OF CEILING TILES AND / OR QUARTER POINT OF CEILING TILE.
4. ALL CLEANING AND PAINTING OF PIPE IS BY OTHERS.
5. ALL ELECTRICAL WORK IS BY OTHERS.

SHEET INDEX

SYMBOL LEGEND

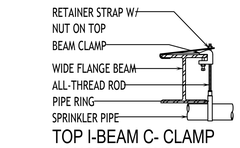
SYMBOL	DESCRIPTION
	NEW PIPING
	NEW FLEX CONNECTION
	ELBOW DOWN
	ELBOW UP
	TEE DOWN
	TEE UP
	PLUG IN UP, DOWN, OR SIDE OUTLET
	PIPE CAP
	GROOVED COUPLING(RIGID UNLESS OTHERWISE NOTED)
	PIPE HANGER
99	HYDRAULIC CALCULATION NODE
10'-10"	CEILING ELEVATION
1-4 / 10-6	PIPE BELOW BOTTOM OF DECK / ELEV. ABOVE FINISHED FLOOR
	LONGITUDINAL SEISMIC SWAY BRACE
	LATERAL SEISMIC SWAY BRACE
1-1/4" / 10'-2"	PIPE NOMINAL SIZE(IN.) / LENGTH (FT-IN)



AIR VENTING DETAIL

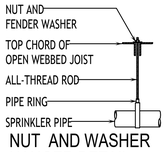
8.16.6 AIR VENTING. THE VENT REQUIRED BY 7.1.5 SHALL BE LOCATED NEAR A HIGH POINT IN THE SYSTEM TO ALLOW AIR TO BE REMOVED FROM THAT PORTION OF THE SYSTEM BY ONE OF THE FOLLOWING METHODS:

(1) MANUAL VALVE, MINIMUM 1/2 IN. (15MM) SIZE
(2) AUTOMATIC AIR VENT
(3) OTHER APPROVED MEANS



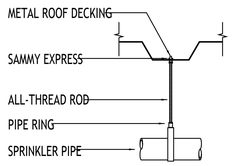
TOP I-BEAM C- CLAMP HANGER DETAIL

N.T.S.



NUT AND WASHER HANGER DETAIL

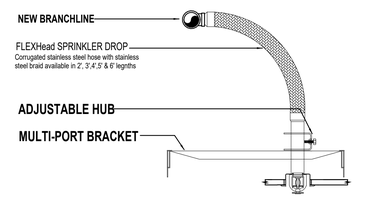
N.T.S.



METAL DECK SAMMY HANGER

SCALE: N.T.S. FOR 1" ARM OVERS ONLY

PIPE SIZE	AT-ROD
4 INCHES OR LESS	⅜
6 AND 8 INCHES	N/A
10 AND 12 INCHES	N/A



FLEXHEAD DROP DETAIL

SCALE: N.T.S.

Sway Bracing Calculations per 2016 NFPA 13

Project/Contractor information

Project:
Project Address:
Project City/St:
Contractor:
Contractor Address:
Contractor City/St:

Brace Pipe Information

Length of Brace:	4 ft 0 in
Diameter of Brace:	1 inch
Type of Brace:	Schedule 40
Angle of Brace:	45° to 59°
Least Radius of Gyration:	0.421
L/R Value:	200
Maximum Horizontal Load:	1,310

Fastener Information

☒ NFPA 13 Fastener ☐ Listed Adapter

Structural Supporting Member:	Open Web Bar Joist
Orientation of connecting surface:	B
Fastener Type:	A.T.R. / Nut / Washer
Fastener Diameter:	½"
Fastener Length (under head):	1'-0" - Field Order
Maximum Load:	1,350 lb

Seismic Brace Attachments

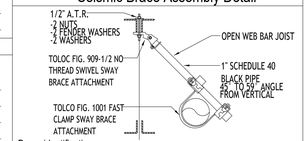
Structure Attachment Adapter:
TOLCO Figure 909 - No Thread Swivel Sway Brace Attachment
Listed load rating: 1,370 lb Listed load rating: 968 lb

Structure Attachment Fitting:
TOLCO N/A
Listed load rating: N/A Adj.load rating per 9.3.5.2.3: N/A

Brace Pipe Adapter:
TOLCO Figure 1001Fast Clamp - Sway Brace Attachment
Listed load rating: 1,200 lb Adj.load rating per 9.3.5.2.3: 848.65 lb

Sway Brace Fitting:
TOLCO N/A
Listed load rating: N/A Adj.load rating per 9.3.5.2.3: N/A

Seismic Brace Assembly Detail



Brace identification no.
(to be used on plan)

☒ Lateral Brace ☐ Longitudinal Brace ☐ 4-Way Brace

Sprinkler System Load Calculation [Fpw CpWp(default is 0.61 Cp)] Ss 1.31 Cp0.61

	Diameter	Type	Length (ft)	Total (ft)	Weight per ft	Cp	Total Weight
☒	3 in	Schedule 10	40 FT	40 FT	7.94 lb/ft	0.61	317.6
☒	1¼ in	Schedule 10	62 FT	186 FT	2.93 lb/ft	0.61	489.18
☐							
☐							
☐							
☐					Total Weight		806.78
☐					Total Weight x 0.61	806.78 x 0.61	492.13
Brace Connection					Fpw x 1.15		565.94

3" Lateral Brace - 40'-0" MAX SPACING

Sway Bracing Calculations per 2016 NFPA 13

Project/Contractor information

Project:
Project Address:
Project City/St:
Contractor:
Contractor Address:
Contractor City/St:

Brace Pipe Information

Length of Brace:	4 ft 0 in
Diameter of Brace:	1 inch
Type of Brace:	Schedule 40
Angle of Brace:	45° to 59°
Least Radius of Gyration:	0.421
L/R Value:	200
Maximum Horizontal Load:	1,310

Fastener Information

☒ NFPA 13 Fastener ☐ Listed Adapter

Structural Supporting Member:	Open Web Bar Joist
Orientation of connecting surface:	B
Fastener Type:	A.T.R. / Nut / Washer
Fastener Diameter:	½"
Fastener Length (under head):	1'-0" - Field Order
Maximum Load:	1,350 lb

Seismic Brace Attachments

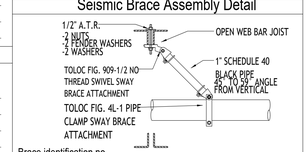
Structure Attachment Adapter:
TOLCO Figure 909 - No Thread Swivel Sway Brace Attachment
Listed load rating: 1,370 lb Listed load rating: 968 lb

Structure Attachment Fitting:
TOLCO N/A
Listed load rating: N/A Adj.load rating per 9.3.5.2.3: N/A

Brace Pipe Adapter:
TOLCO Figure 4L-1 - Pipe Clamp - Sway Brace Attachment
Listed load rating: 1,000 lb Adj.load rating per 9.3.5.2.3: 707 lb

Sway Brace Fitting:
TOLCO N/A
Listed load rating: N/A Adj.load rating per 9.3.5.2.3: N/A

Seismic Brace Assembly Detail



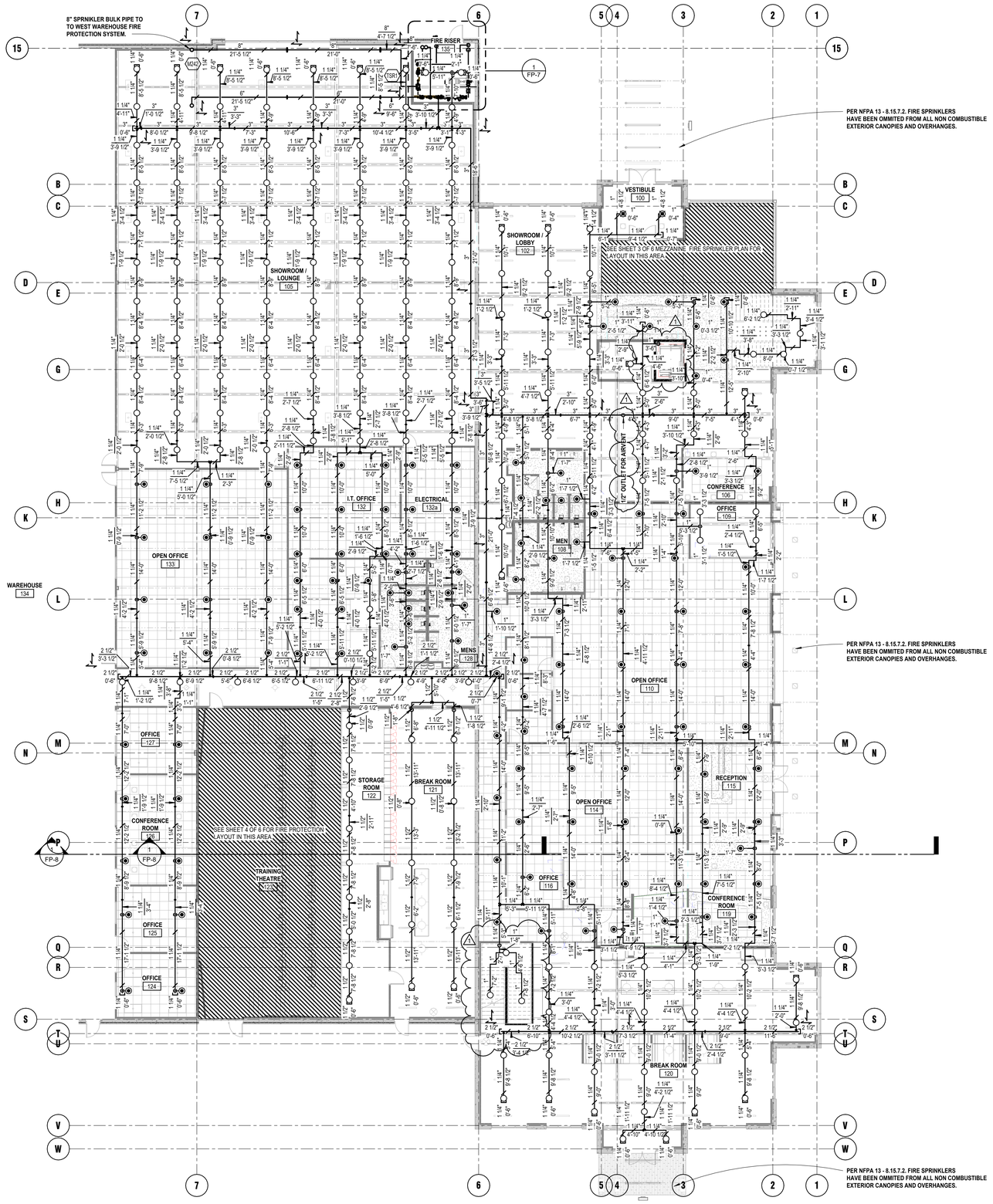
Brace identification no.
(to be used on plan)

☐ Lateral Brace ☒ Longitudinal Brace ☐ 4-Way Brace

Sprinkler System Load Calculation [Fpw CpWp(default is 0.61 Cp)] Ss 1.31 Cp0.61

	Diameter	Type	Length (ft)	Total (ft)	Weight per ft	Cp	Total Weight
☒	3 in	Schedule 10	80 FT	80 FT	7.94 lb/ft	0.61	635.2
☐							
☐							
☐							
☐							
☐					Total Weight		635.2
☐					Total Weight x 0.61	635.2 x 0.61	387.472
Brace Connection					Fpw x 1.15		445.59

3" Longitudinal Brace 80'-0" MAX SPACING



1 FP-2 FIRE PROTECTION PLAN - LEVEL 1
3/32" 1'-0"

GENERAL NOTES

1. CONTRACT IS TO START INSIDE THE BUILDING. ALL UNDERGROUND PIPING INCLDING REMOTE FDC IS TO BE COMPLETED BY OTHERS.
2. ALL PIPING 2" AND SMALLER SHALL BE EDDY THREAD BLACK STEEL PIPE AND WILL USE CAST IRON THREADED FITTINGS. 2-1/2" AND LARGER PIPING SHALL BE EDDY FLOW BLACK STEEL PIPE USING CAST IRON GROOVED FITTINGS.
3. SPRINKLER HEADS SHALL BE TO BE LOCATED IN THE CENTER OF CEILING TILES AND / OR QUARTER POINT OF CEILING TILE.
4. ALL CLEANING AND PAINTING OF PIPE IS BY OTHERS.
5. ALL ELECTRICAL WORK IS BY OTHERS.

SYMBOL LEGEND

SYMBOL	DESCRIPTION
	NEW PIPING
	NEW FLEX CONNECTION
	ELBOW DOWN
	ELBOW UP
	TEE DOWN
	TEE UP
	PLUG IN UP, DOWN, OR SIDE OUTLET
	PIPE CAP
	GROOVED COUPLING(RIGID UNLESS OTHERWISE NOTED)
	PIPE HANGER
99	HYDRAULIC CALCULATION NODE
10'-10"	CEILING ELEVATION
1-4 / 10-6	PIPE ELEV. BELOW BOTTOM OF DECK / ABOVE FINISHED FLOOR
	LONGITUDINAL SEISMIC SWAY BRACE
	LATERAL SEISMIC SWAY BRACE
1-1/4" / 10'-2"	PIPE NOMINAL SIZE(IN.) / LENGTH (FT-IN)

BASIS OF DESIGN

SCOPE OF WORK
PROVIDE NEW AUTOMATIC SPRINKLER SYSTEM TO NEW BUILDING

ALL DESIGN, MATERIAL, TESTING, AND INSTALLATION SHALL MEET NFPA 13, 2016 ed.

BUILDING TYPE
BUILDING TYPE IS B, S-1, S2, F-1, F-2, M A-1, A-2
ACCESSORY WITH OFFICE, WAREHOUSE
INDUSTRIAL, SALES, AUDITORIUM, BREAK ROOMS.

CONSTRUCTION TYPE
BUILDING CONSISTS OF STEEL STRUCTURE, WITH STEEL ROOF DECKING, STEEL STUD FRAMING FOR WALLS. GYP BD WALL COVERING. GYP BD SOLID CEILINGS & ACUSTICAL TILE CEILING.

HAZARD CLASSIFICATION
LIGHT HAZARD
OFFICES
BATHROOMS

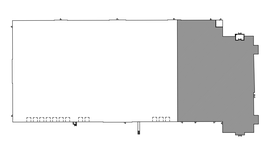
ORDINARY HAZARD GROUP I
KITCHEN
MECHANICAL ROOM
ELECTRICAL ROOM
CUSTODIAL ROOM

ORDINARY HAZARD, GROUP II
MANUFACTURING
RETAIL/MERCHANTILE
SHOWROOM LOUNGE

DESIGN AREA / DENSITY
AREA 3 - TRAINING THEATER
LIGHT HAZARD
NFPA MINIMUM - 1500 FT2/ @ 0.10 GPM/FT/

AREA 4 - LEVEL 2 - SOUTH - SHELL - ROOM
ORDINARY GRP II HAZARD
NFPA MINIMUM - 1500 FT2/ @ 0.15 GPM/FT2/

AREA 1 & 2 - WAREHOUSE / STORAGE
ESFR SPRINKLER SYSTEM
STORAGE - CLASS I - IV COMMODITY
ENCAPSULATED OR UNENCAPSULATED
35 FT MAX STORAGE HEIGHT
40 FT MAX CEILING HEIGHT
PER NFPA 13 - TABLE 14.4.1 (PALATIZED OR SOLID PILED) OR TABLE 16.2.3.1 (RACK STORAGE) WITH K-16.8 SPRINKLER.
MIN PRESSURE 52 PSI
PER 14.4.3 OR - 16.2.3.5.
DESIGN AREA MINIMUM 12 SPRINKER, 4 SPRINKLERS IN EACH OF 3 BRANCH-LINE



LEVEL 1 - KEY PLAN
SCALE N.T.S.

Sway Bracing Calculations per 2016 NFPA 13

Project/Contractor information

Project:
Project Address:
Project City/St:
Contractor:
Contractor Address:
Contractor City/St:

Brace Pipe Information

Length of Brace:	4 ft 0 in
Diameter of Brace:	1 inch
Type of Brace:	Schedule 40
Angle of Brace:	45° to 59°
Least Radius of Gyration:	0.421
L/R Value:	200
Maximum Horizontal Load:	1,310

Fastener Information

▨ NFPA 13 Fastener ☐ Listed Adapter

Structural Supporting Member:	Open Web Bar Joist
Orientation of connecting surface:	B
Fastener Type:	A.T.R. / Nut / Washer
Fastener Diameter:	½"
Fastener Length (under head):	1'-0" - Field Order
Maximum Load:	1,350 lb

Seismic Brace Attachments

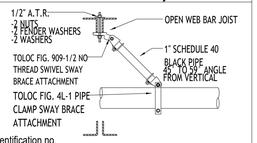
Structure Attachment Adapter:
TOLCO Figure 909 - No Thread Swivel Sway Brace Attachment
Listed load rating: 1,370 lb Listed load rating: 968 lb

Structure Attachment Fitting:
TOLCO N/A
Listed load rating: N/A Adj.load rating per 9.3.5.2.3: N/A

Brace Pipe Adapter:
TOLCO Figure 4L-1 - Pipe Clamp - Sway Brace Attachment
Listed load rating: 1,000 lb Adj.load rating per 9.3.5.2.3: 707.21 lb

Sway Brace Fitting:
TOLCO N/A
Listed load rating: N/A Adj.load rating per 9.3.5.2.3: N/A

Seismic Brace Assembly Detail



Brace identification no. (to be used on plan)

☐ Lateral Brace ▨ Longitudinal Brace ☐ 4-Way Brace

Sprinkler System Load Calculation [Fpw CpWp(default is 0.61 Cp)] Ss 1.31 Cp0.61

	Diameter	Type	Length (ft)	Total (ft)	Weight per ft	Cp	Total Weight
▨	4 in	Schedule 10	80 FT	80 FT	11.78 lb/ft	0.61	942.4
☐							
☐							
☐							
☐							
☐					Total Weight		942.4
☐					Total Weight x 0.61	942.4 x 0.61	574.86
Brace Connection					Fpw x 1.15		661.09

4" Longitudinal Brace 80'-0" MAX SPACING

Sway Bracing Calculations per 2016 NFPA 13

Project/Contractor information

Project:
Project Address:
Project City/St:
Contractor:
Contractor Address:
Contractor City/St:

Brace Pipe Information

Length of Brace:	4 ft 0 in
Diameter of Brace:	1 inch
Type of Brace:	Schedule 40
Angle of Brace:	45° to 59°
Least Radius of Gyration:	0.421
L/R Value:	200
Maximum Horizontal Load:	1,310

Fastener Information

▨ NFPA 13 Fastener ☐ Listed Adapter

Structural Supporting Member:	Open Web Bar Joist
Orientation of connecting surface:	B
Fastener Type:	A.T.R. / Nut / Washer
Fastener Diameter:	½"
Fastener Length (under head):	1'-0" - Field Order
Maximum Load:	1,350 lb

Seismic Brace Attachments

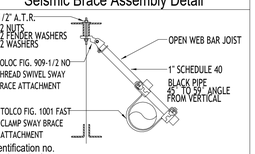
Structure Attachment Adapter:
TOLCO Figure 909 - No Thread Swivel Sway Brace Attachment
Listed load rating: 1,370 lb Listed load rating: 968 lb

Structure Attachment Fitting:
TOLCO N/A
Listed load rating: N/A Adj.load rating per 9.3.5.2.3: N/A

Brace Pipe Adapter:
TOLCO Figure 1001Fast Clamp - Sway Brace Attachment
Listed load rating: 1,200 lb Adj.load rating per 9.3.5.2.3: 548.65 lb

Sway Brace Fitting:
TOLCO N/A
Listed load rating: N/A Adj.load rating per 9.3.5.2.3: N/A

Seismic Brace Assembly Detail



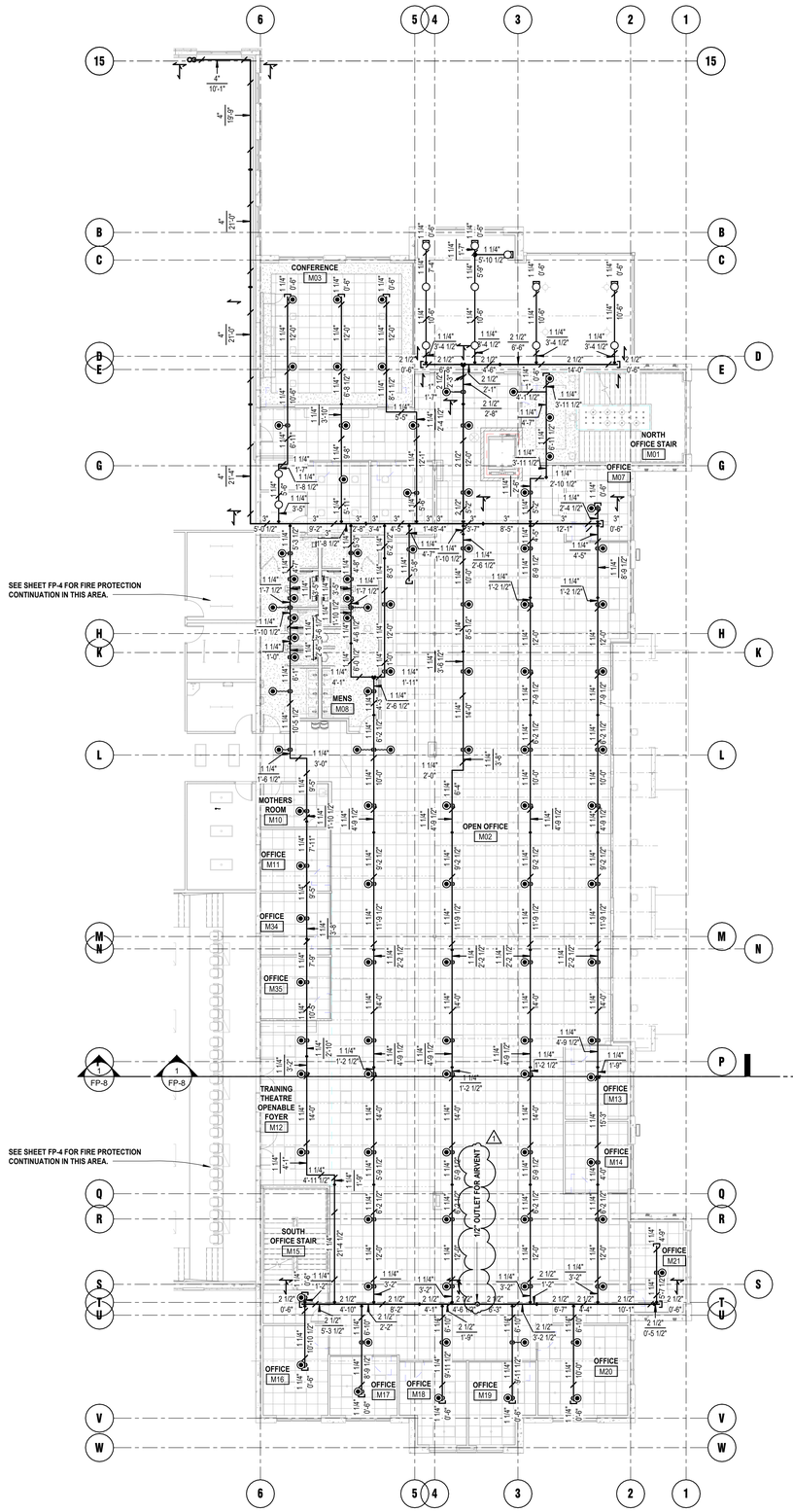
Brace identification no. (to be used on plan)

▨ Lateral Brace ☐ Longitudinal Brace ☐ 4-Way Brace

Sprinkler System Load Calculation [Fpw CpWp(default is 0.61 Cp)] Ss 1.31 Cp0.61

	Diameter	Type	Length (ft)	Total (ft)	Weight per ft	Cp	Total Weight
▨	4 in	Schedule 10	40 FT	40 FT	11.78 lb/ft	0.61	471.2
☐							
☐							
☐							
☐							
☐					Total Weight		471.2
☐					Total Weight x 0.61	471.2 x 0.61	287.43
Brace Connection					Fpw x 1.15		330.54

4" Lateral Brace - 40'-0" MAX SPACING



1 FP-3 FIRE PROTECTION PLAN - MEZZANINE
3/32" 1'-0"

SYMBOL LEGEND

SYMBOL	DESCRIPTION
	NEW PIPING
	NEW FLEX CONNECTION
	ELBOW DOWN
	ELBOW UP
	TEE DOWN
	TEE UP
	PLUG IN UP, DOWN, OR SIDE OUTLET
	PIPE CAP
	GROOVED COUPLING(RIGID UNLESS OTHERWISE NOTED)
	PIPE HANGER
99	HYDRAULIC CALCULATION NODE
10'-10"	CEILING ELEVATION
1-4 / 10-6	PIPE ELEV. BELOW BOTTOM OF DECK / ABOVE FINISHED FLOOR
	LONGITUDINAL SEISMIC SWAY BRACE
	LATERAL SEISMIC SWAY BRACE
1-1/4" / 10'-2"	PIPE NOMINAL SIZE(IN.) / LENGTH (FT-IN)

BASIS OF DESIGN

SCOPE OF WORK
PROVIDE NEW AUTOMATIC SPRINKLER SYSTEM TO NEW BUILDING

ALL DESIGN, MATERIAL, TESTING, AND INSTALLATION SHALL MEET NFPA 13, 2016 ed.

BUILDING TYPE
BUILDING TYPE IS B, S-1, S2, F-1, F-2, M A-1, A-2 ACCESSORY WITH OFFICE, WAREHOUSE INDUSTRIAL, SALES, AUDITORIUM, BREAK ROOMS.

CONSTRUCTION TYPE
BUILDING CONSISTS OF STEEL STRUCTURE, WITH STEEL ROOF DECKING, STEEL STUD FRAMING FOR WALLS. GYP BD WALL COVERING. GYP BD SOLID CEILINGS & ACUSTICAL TILE CEILING.

HAZARD CLASSIFICATION
LIGHT HAZARD
OFFICES
BATHROOMS

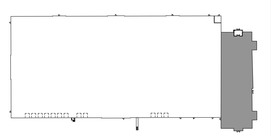
ORDINARY HAZARD GROUP I
KITCHEN
MECHANICAL ROOM
ELECTRICAL ROOM
CUSTODIAL ROOM

ORDINARY HAZARD, GROUP II
MANUFACTURING
RETAIL/MERCHANTILE
SHOWROOM LOUNGE

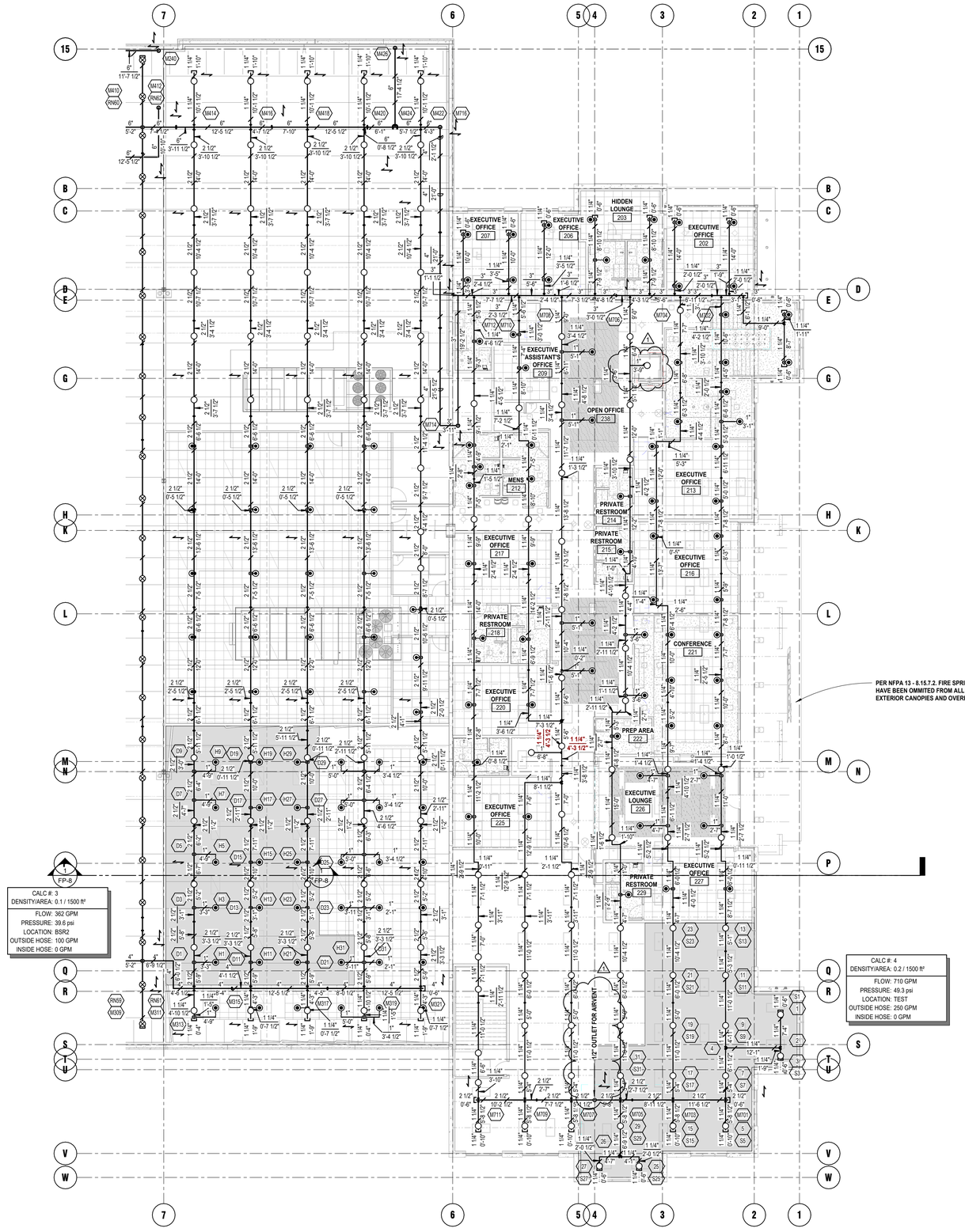
DESIGN AREA / DENSITY
AREA 3 - TRAINING THEATER
LIGHT HAZARD
NFPA MINIMUM - 1500 FT2/ @ 0.10 GPM/FT/

AREA 4 - LEVEL 2 - SOUTH - SHELL - ROOM
ORDINARY GRP II HAZARD
NFPA MINIMUM - 1500 FT2/ @ 0.15 GPM/FT2/

AREA 1 & 2 - WAREHOUSE / STORAGE
ESFR SPRINKLER SYSTEM
STORAGE - CLASS I - IV COMMODITY
ENCAPSULATED OR UNENCAPSULATED
35 FT MAX STORAGE HEIGHT
40 FT MAX CEILING HEIGHT
PER NFPA 13 - TABLE 14.4.1
(PALATIZED OR SOLID PILED) OR TABLE 16.2.3.1 (RACK STORAGE) WITH K-16.8 SPRINKLER
MIN PRESSURE 52 PSI
PER 14.4.3 OR - 16.2.3.5.
DESIGN AREA MINIMUM 12 SPRINKER, 4 SPRINKLERS IN EACH OF 3 BRANCH-LINE



MEZZANINE - KEY PLAN
SCALE: N.T.S.



1 FP-4 FIRE PROTECTION PLAN - LEVEL 2 OFFICE / MEZZANINE

3/32" 1'-0"

SYMBOL LEGEND

SYMBOL	DESCRIPTION
	NEW PIPING
	NEW FLEX CONNECTION
	ELBOW DOWN
	ELBOW UP
	TEE DOWN
	TEE UP
	PLUG IN UP, DOWN, OR SIDE OUTLET
	PIPE CAP
	GROOVED COUPLING(RIGID UNLESS OTHERWISE NOTED)
	PIPE HANGER
99	HYDRAULIC CALCULATION NODE
10'-10"	CEILING ELEVATION
1-4 / 10-6	PIPE ELEV. BELOW BOTTOM OF DECK / ABOVE FINISHED FLOOR
	LONGITUDINAL SEISMIC SWAY BRACE
	LATERAL SEISMIC SWAY BRACE
1-1/4" / 10'-2"	PIPE NOMINAL SIZE(IN.) / LENGTH (FT-IN)

BASIS OF DESIGN

SCOPE OF WORK
PROVIDE NEW AUTOMATIC SPRINKLER SYSTEM TO NEW BUILDING

ALL DESIGN, MATERIAL, TESTING, AND INSTALLATION SHALL MEET NFPA 13, 2016 ed.

BUILDING TYPE
BUILDING TYPE IS B, S-1, S2, F-1, F-2, M A-1, A-2 ACCESSORY WITH OFFICE, WAREHOUSE INDUSTRIAL, SALES, AUDITORIUM, BREAK ROOMS.

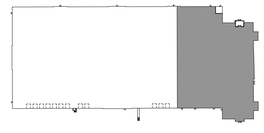
CONSTRUCTION TYPE
BUILDING CONSISTS OF STEEL STRUCTURE, WITH STEEL ROOF DECKING. STEEL STUD FRAMING FOR WALLS. GYP BD WALL COVERING. GYP BD SOLID CEILINGS & ACUSTICAL TILE CEILING.

HAZARD CLASSIFICATION
LIGHT HAZARD
- OFFICES
- BATHROOMS

ORDINARY HAZARD GROUP I
- KITCHEN
- MECHANICAL ROOM
- ELECTRICAL ROOM
- CUSTODIAL ROOM

ORDINARY HAZARD, GROUP II
- MANUFACTURING
- RETAIL/MERCHANTILE
- SHOWROOM LOUNGE

DESIGN AREA / DENSITY
- AREA 3 - TRAINING THEATER
  - LIGHT HAZARD
  - NFPA MINIMUM - 1500 FT2/ @ 0.10 GPM/FT/
- AREA 4 - LEVEL 2 - SOUTH - SHELL - ROOM
  - ORDINARY GRP II HAZARD
  - NFPA MINIMUM - 1500 FT2/ @ 0.15 GPM/FT2/
- AREA 1 & 2 - WAREHOUSE / STORAGE
  - ESFR SPRINKLER SYSTEM
  - STORAGE - CLASS I - IV COMMODITY
  - ENCAPSULATED OR UNENCAPSULATED
  - 35 FT MAX STORAGE HEIGHT
  - 40 FT MAX CEILING HEIGHT
  - PER NFPA 13 - TABLE 14.4.1 (PALATIZED OR SOLID PILED) OR TABLE 16.2.3.1 (RACK STORAGE) WITH K-16.8 SPRINKLER.
  - MIN PRESSURE 52 PSI
  - PER 14.4.3 OR - 16.2.3.5.
  - DESIGN AREA MINIMUM 12 SPRINKER, 4 SPRINKLERS IN EACH OF 3 BRANCH-LINE



LEVEL 2 - OFFICE & MEZZANINE - KEY PLAN

SCALE N.T.S.

Sway Bracing Calculations per 2016 NFPA 13

Project/Contractor information

Project:
Project Address:
Project City/St:
Contractor:
Contractor Address:
Contractor City/St:

Brace Pipe Information

Length of Brace:	4 ft 0 in
Diameter of Brace:	1 Inch
Type of Brace:	Schedule 40
Angle of Brace:	45° to 59°
Least Radius of Gyration:	0.421
L/R Value:	200
Maximum Horizontal Load:	1,310

Fastener Information

▨ NFPA 13 Fastener ☐ Listed Adapter

Structural Supporting Member:	Open Web Bar Joist
Orientation of connecting surface:	B
Fastener Type:	A.T.R. / Nut / Washer
Fastener Diameter:	½"
Fastener Length (under head):	1'-0" - Field Order
Maximum Load:	1,350 lb

Seismic Brace Attachments

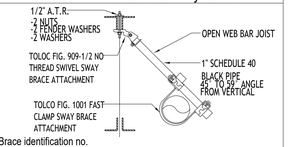
Structure Attachment Adapter:
TOLCO Figure 909 - No Thread Swivel Sway Brace Attachment
Listed load rating: 1,370 lb Listed load rating: 968 lb

Structure Attachment Fitting:
TOLCO N/A
Listed load rating: N/A Adj.load rating per 9.3.5.2.3: N/A

Brace Pipe Adapter:
TOLCO Figure 1001Fast Clamp - Sway Brace Attachment
Listed load rating: 2,000 lb Adj.load rating per 9.3.5.2.3: 1,414 lb

Sway Brace Fitting:
TOLCO N/A
Listed load rating: N/A Adj.load rating per 9.3.5.2.3: N/A

Seismic Brace Assembly Detail



Brace identification no. (to be used on plan)

▨ Lateral Brace ☐ Longitudinal Brace ☐ 4-Way Brace

Sprinkler System Load Calculation [Fpw CpWp(default is 0.61 Cp)] Ss 1.31 Cp0.61

	Diameter	Type	Length (ft)	Total (ft)	Weight per ft	Cp	Total Weight
▨	6 in	Schedule 10	30 FT	30 FT	23.03 lb/ft	0.61	690.9
▨	2½ in	Schedule 10	107 FT	107 FT	5.89 lb/ft	0.61	630.23
☐							
☐							
☐							
☐					Total Weight		1,321.13
☐					Total Weight x .61	1,321.13 x 0.61	805.88
Brace Connection					Fpw x 1.15		926.76

6" Lateral Brace - 30'-0" MAX SPACING

Sway Bracing Calculations per 2016 NFPA 13

Project/Contractor information

Project:
Project Address:
Project City/St:
Contractor:
Contractor Address:
Contractor City/St:

Brace Pipe Information

Length of Brace:	4 ft 0 in
Diameter of Brace:	1 inch
Type of Brace:	Schedule 40
Angle of Brace:	45° to 59°
Least Radius of Gyration:	0.421
L/R Value:	200
Maximum Horizontal Load:	1,310

Fastener Information

▨ NFPA 13 Fastener ☐ Listed Adapter

Structural Supporting Member:	Open Web Bar Joist
Orientation of connecting surface:	B
Fastener Type:	A.T.R. / Nut / Washer
Fastener Diameter:	½"
Fastener Length (under head):	1'-0" - Field Order
Maximum Load:	1,350 lb

Seismic Brace Attachments

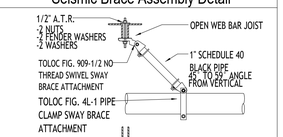
Structure Attachment Adapter:
TOLCO Figure 909 - No Thread Swivel Sway Brace Attachment
Listed load rating: 1,370 lb Listed load rating: 968 lb

Structure Attachment Fitting:
TOLCO N/A
Listed load rating: N/A Adj.load rating per 9.3.5.2.3: N/A

Brace Pipe Adapter:
TOLCO Figure 4L-1 - Pipe Clamp - Sway Brace Attachment
Listed load rating: 1,000 lb Adj.load rating per 9.3.5.2.3: 707 lb

Sway Brace Fitting:
TOLCO N/A
Listed load rating: N/A Adj.load rating per 9.3.5.2.3: N/A

Seismic Brace Assembly Detail



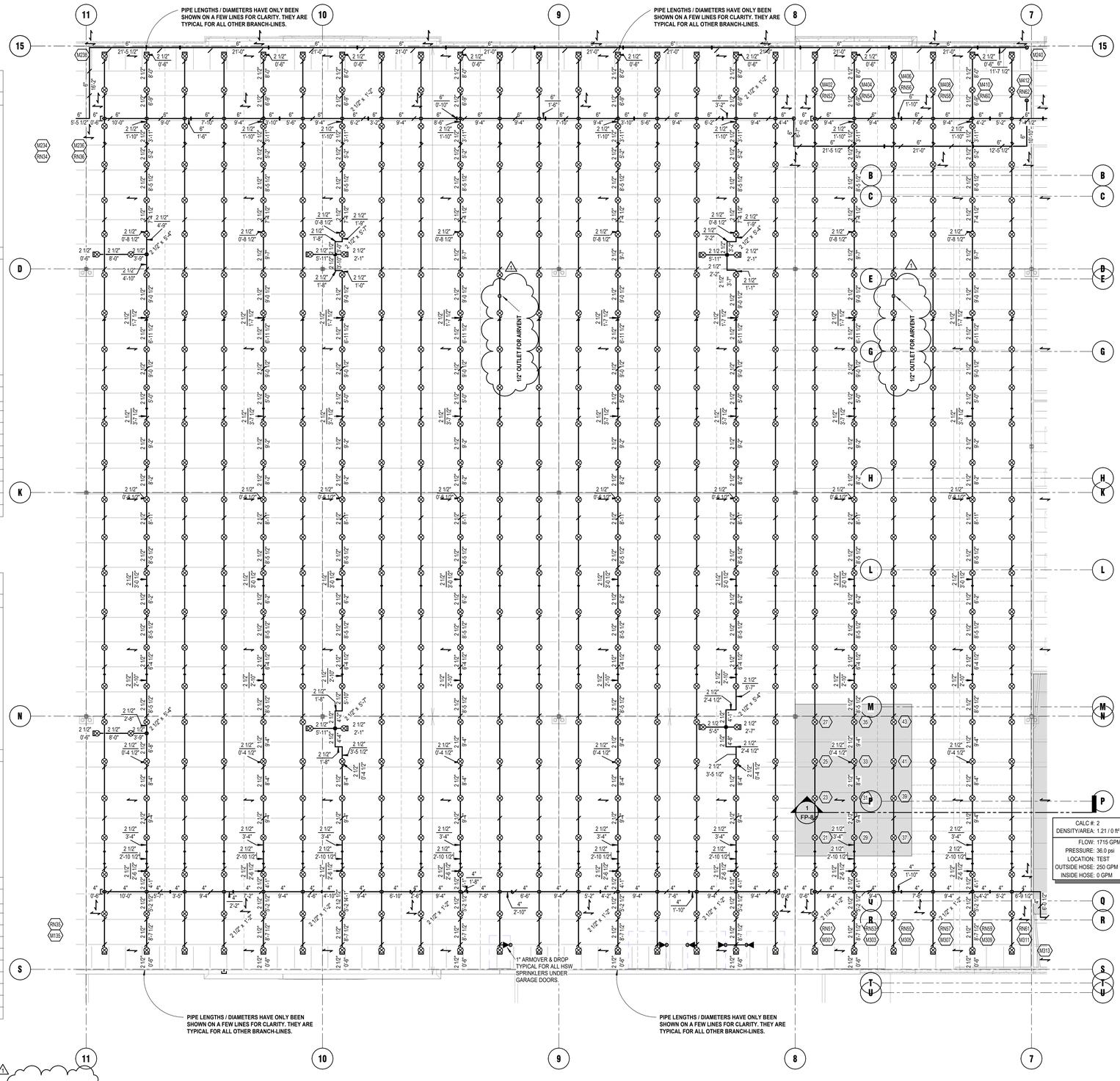
Brace identification no. (to be used on plan)

☐ Lateral Brace ▨ Longitudinal Brace ☐ 4-Way Brace

Sprinkler System Load Calculation [Fpw CpWp(default is 0.61 Cp)] Ss 1.31 Cp0.61

	Diameter	Type	Length (ft)	Total (ft)	Weight per ft	Cp	Total Weight
▨	6 in	Schedule 10	55 FT	55 FT	23.03 lb/ft	0.61	1,266.65
☐							
☐							
☐							
☐							
☐					Total Weight		1,266.65
☐					Total Weight x 0.61	1,266.65 x 0.61	772.65
Brace Connection					Fpw x 1.15		888.54

6" Longitudinal Brace 55'-0" MAX SPACING



ESFR SPRINKLER INSTALLATION NOTES:

STORAGE LIMITATIONS
FIRE PROTECTION IS PROVIDED WITH 200°F ESFR CEILING SPRINKLERS. MAXIMUM TOP OF STORAGE 35'-0" HIGH. MAXIMUM BUILDING HEIGHT 40'-0". AT LEAST 36 INCHES SHALL BE MAINTAINED BETWEEN THE TOP OF STORAGE AND THE SPRINKLER DEFLECTOR.

TYPES OF STORAGE ALLOWED
PALLETIZED AND SOLID PILE STORAGE. SINGLE, DOUBLE, OR MULTIPLE ROW RACK STORAGE.

TYPES OF COMMODITIES ALLOWED
CLASS I, II, III, OR IV COMMODITIES, ENCAPSULATED OR UNENCAPSULATED.

SPECIFIC TYPES OF STORAGE NOT ALLOWED
RACK STORAGE INVOLVING SOLID SHELVES. RACK STORAGE INVOLVING COMBUSTIBLE, OPEN-TOP CARTONS OR CONTAINERS.

E.S.F.R. SPRINKLER INSTALLATION GUIDELINES
THE FOLLOWING ESFR GUIDELINES ARE FROM NFPA 13 - 8.12. THESE GUIDELINES MUST BE FOLLOWED IN ALL INSTALLATIONS OF ESFR SPRINKLERS.

"K-16.8" ESFR SPRINKLER DEFLECTOR MUST BE BETWEEN 6" AND 14" BELOW ROOF DECK.

ISOLATED (NON-CONTINUOUS) OBSTRUCTIONS UP TO 2 FEET WIDE (ROUND LIGHTS, ETC.): THE SPRINKLER MUST BE AT LEAST 12" HORIZONTALLY FROM THE EDGE OF THE OBSTRUCTION.

ISOLATED (NON-CONTINUOUS) OBSTRUCTIONS GREATER THAN 2 FEET WIDE (ROUND LIGHTS, ETC.): SPRINKLERS SHALL BE INSTALLED UNDER OBSTRUCTIONS THAT RESTRICT ONE SPRINKLER AND ARE LOCATED BELOW THE ELEVATION OF SPRINKLERS (LIGHT FIXTURES AND UNIT HEATERS).

CONTINUOUS OBSTRUCTIONS UP TO 2 INCHES IN WIDTH (CONDUIT, PIPE, JOIST BRIDGING, ETC.): IF THE OBSTRUCTION IS AT LEAST 2 FEET BELOW THE DEFLECTOR, DISREGARD IT. IF THE OBSTRUCTION IS CLOSER THAN 2 FEET TO THE DEFLECTOR, THE SPRINKLER MUST BE AT LEAST 12" HORIZONTALLY FROM THE EDGE OF THE OBSTRUCTION.

CONTINUOUS OBSTRUCTIONS GREATER THAN 2 INCHES, UP TO 12 INCHES IN WIDTH (SMALL DUCTS, LARGER PIPES, BOTTOM CHORD OF JOISTS, ETC.): THE SPRINKLER MUST BE AT LEAST 12" HORIZONTALLY FROM THE EDGE OF THE OBSTRUCTION.

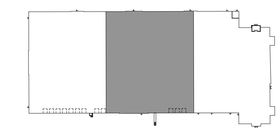
CONTINUOUS OBSTRUCTIONS GREATER THAN 12 INCHES, UP TO 2 FEET IN WIDTH (DUCTS, FLUORESCENT LIGHTS IN ROWS, RACKS OF PIPES, ETC.): THE SPRINKLER MUST BE AT LEAST 24" HORIZONTALLY FROM THE EDGE OF THE OBSTRUCTION.

CONTINUOUS OBSTRUCTIONS GREATER THAN 2 FEET IN WIDTH (LARGE DUCTS, ETC.): INSTALL ADDITIONAL SPRINKLERS BELOW OBSTRUCTIONS (DUCTS, LIGHTS, PIPES, CONVEYORS, ETC.).

ESFR SPRINKLER COVERAGE AREA MUST BE BETWEEN 80 AND 100 SQUARE FEET. MINIMUM DISTANCE BETWEEN HEADS IS 8 FEET. MAXIMUM DISTANCE BETWEEN HEADS IS 12 FEET FOR BUILDINGS UP TO 30 FEET HIGH, AND 10 FEET FOR BUILDINGS OVER 30 FEET HIGH.

SPRINKLERS SHALL BE POSITIONED A MINIMUM OF 1'-0" HORIZONTALLY FROM THE NEAREST EDGE TO ANY BOTTOM CHORD OF A BAR JOIST OR OPEN TRUSS.

FIRE PROTECTION PLAN - LEVEL 2 - WAREHOUSE - EAST



WAREHOUSE EAST - KEY PLAN

Sway Bracing Calculations per 2016 NFPA 13

Project/Contractor information

Project:
Project Address:
Project City/St:
Contractor:
Contractor Address:
Contractor City/St:

Brace Pipe Information

Length of Brace:	4 ft 0 in
Diameter of Brace:	1 inch
Type of Brace:	Schedule 40
Angle of Brace:	45° to 59°
Least Radius of Gyration:	0.421
L/R Value:	200
Maximum Horizontal Load:	1,310

Fastener Information

☒ NFPA 13 Fastener ☐ Listed Adapter

Structural Supporting Member:	Open Web Bar Joist
Orientation of connecting surface:	B
Fastener Type:	A.T.R. / Nut / Washer
Fastener Diameter:	½"
Fastener Length (under head):	1'-0" - Field Order
Maximum Load:	1,350 lb

Seismic Brace Attachments

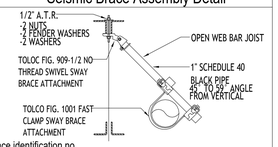
Structure Attachment Adapter:
TOLCO Figure 909 - No Thread Swivel Sway Brace Attachment
Listed load rating: 1,370 lb Listed load rating: 968 lb

Structure Attachment Fitting:
TOLCO N/A
Listed load rating: N/A Adj.load rating per 9.3.5.2.3: N/A

Brace Pipe Adapter:
TOLCO Figure 1001Fast Clamp - Sway Brace Attachment
Listed load rating: 2,000 lb Adj.load rating per 9.3.5.2.3: 1,414 lb

Sway Brace Fitting:
TOLCO N/A
Listed load rating: N/A Adj.load rating per 9.3.5.2.3: N/A

Seismic Brace Assembly Detail



Brace identification no. (to be used on plan)

☐ Lateral Brace ☐ Longitudinal Brace ☐ 4-Way Brace

Sprinkler System Load Calculation [Fpw CpWp(default is 0.61 Cp)] Ss 1.31 Cp0.61

	Diameter	Type	Length (ft)	Total (ft)	Weight per ft	Cp	Total Weight
☒	6 in	Schedule 10	30 FT	30 FT	23.03 lb/ft	0.61	690.9
☒	2½ in	Schedule 10	107 FT	107 FT	5.89 lb/ft	0.61	630.23
☐							
☐							
☐							
☐					Total Weight		1,321.13
☐					Total Weight x .61	1,321.13 x 0.61	805.88
Brace Connection					Fpw x 1.15		926.76

6" Lateral Brace - 30'-0" MAX SPACING

Sway Bracing Calculations per 2016 NFPA 13

Project/Contractor information

Project:
Project Address:
Project City/St:
Contractor:
Contractor Address:
Contractor City/St:

Brace Pipe Information

Length of Brace:	4 ft 0 in
Diameter of Brace:	1 inch
Type of Brace:	Schedule 40
Angle of Brace:	45° to 59°
Least Radius of Gyration:	0.421
L/R Value:	200
Maximum Horizontal Load:	1,310

Fastener Information

☒ NFPA 13 Fastener ☐ Listed Adapter

Structural Supporting Member:	Open Web Bar Joist
Orientation of connecting surface:	B
Fastener Type:	A.T.R. / Nut / Washer
Fastener Diameter:	½"
Fastener Length (under head):	1'-0" - Field Order
Maximum Load:	1,350 lb

Seismic Brace Attachments

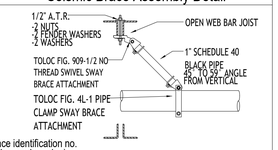
Structure Attachment Adapter:
TOLCO Figure 909 - No Thread Swivel Sway Brace Attachment
Listed load rating: 1,370 lb Listed load rating: 968 lb

Structure Attachment Fitting:
TOLCO N/A
Listed load rating: N/A Adj.load rating per 9.3.5.2.3: N/A

Brace Pipe Adapter:
TOLCO Figure 4L-1 - Pipe Clamp - Sway Brace Attachment
Listed load rating: 1,000 lb Adj.load rating per 9.3.5.2.3: 707 lb

Sway Brace Fitting:
TOLCO N/A
Listed load rating: N/A Adj.load rating per 9.3.5.2.3: N/A

Seismic Brace Assembly Detail



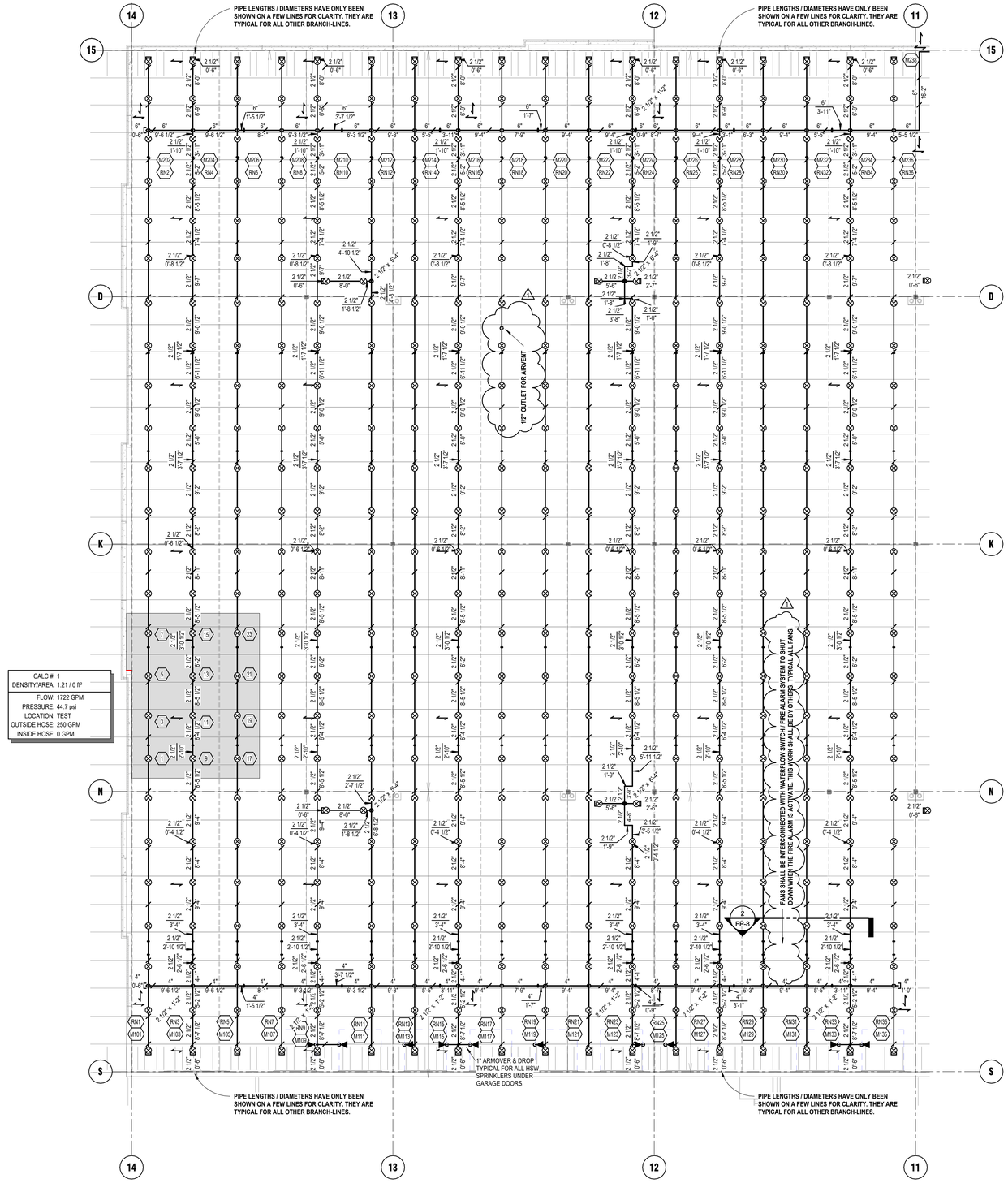
Brace identification no. (to be used on plan)

☐ Lateral Brace ☒ Longitudinal Brace ☐ 4-Way Brace

Sprinkler System Load Calculation [Fpw CpWp(default is 0.61 Cp)] Ss 1.31 Cp0.61

	Diameter	Type	Length (ft)	Total (ft)	Weight per ft	Cp	Total Weight
☒	6 in	Schedule 10	55 FT	55 FT	23.03 lb/ft	0.61	1,266.65
☐							
☐							
☐							
☐							
☐					Total Weight		1,266.65
☐					Total Weight x 0.61	1,266.65 x 0.61	772.65
Brace Connection					Fpw x 1.15		888.54

6" Longitudinal Brace 55'-0" MAX SPACING



1 FP-6 FIRE PROTECTION PLAN - LEVEL 2 - WAREHOUSE - WEST
3/32" 1'-0"

ESFR SPRINKLER INSTALLATION NOTES:

STORAGE LIMITATIONS
FIRE PROTECTION IS PROVIDED WITH 200°F ESFR CEILING SPRINKLERS. MAXIMUM TOP OF STORAGE 35'-0" HIGH. MAXIMUM BUILDING HEIGHT 40'-0". AT LEAST 36 INCHES SHALL BE MAINTAINED BETWEEN THE TOP OF STORAGE AND THE SPRINKLER DEFLECTOR.

TYPES OF STORAGE ALLOWED
PALLETIZED AND SOLID PILE STORAGE. SINGLE, DOUBLE, OR MULTIPLE ROW RACK STORAGE.

TYPES OF COMMODITIES ALLOWED
CLASS I, II, III, OR IV COMMODITIES, ENCAPSULATED OR UNENCAPSULATED.

SPECIFIC TYPES OF STORAGE NOT ALLOWED
RACK STORAGE INVOLVING SOLID SHELVES. RACK STORAGE INVOLVING COMBUSTIBLE, OPEN-TOP CARTONS OR CONTAINERS.

E.S.F.R. SPRINKLER INSTALLATION GUIDELINES
THE FOLLOWING ESFR GUIDELINES ARE FROM NFPA 13 - 8.12. THESE GUIDELINES MUST BE FOLLOWED IN ALL INSTALLATIONS OF ESFR SPRINKLERS.

"K-16.8" ESFR SPRINKLER DEFLECTOR MUST BE BETWEEN 6" AND 14" BELOW ROOF DECK.

ISOLATED (NON-CONTINUOUS) OBSTRUCTIONS UP TO 2 FEET WIDE (ROUND LIGHTS, ETC.): THE SPRINKLER MUST BE AT LEAST 12" HORIZONTALLY FROM THE EDGE OF THE OBSTRUCTION.

ISOLATED (NON-CONTINUOUS) OBSTRUCTIONS GREATER THAN 2 FEET WIDE (ROUND LIGHTS, ETC.): SPRINKLERS SHALL BE INSTALLED UNDER OBSTRUCTIONS THAT RESTRICT ONE SPRINKLER AND ARE LOCATED BELOW THE ELEVATION OF SPRINKLERS (LIGHT FIXTURES AND UNIT HEATERS).

CONTINUOUS OBSTRUCTIONS UP TO 2 INCHES IN WIDTH (CONDUIT, PIPE, JOIST BRIDGING, ETC.): IF THE OBSTRUCTION IS AT LEAST 2 FEET BELOW THE DEFLECTOR, DISREGARD IT. IF THE OBSTRUCTION IS CLOSER THAN 2 FEET TO THE DEFLECTOR, THE SPRINKLER MUST BE AT LEAST 12" HORIZONTALLY FROM THE EDGE OF THE OBSTRUCTION.

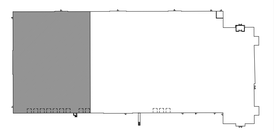
CONTINUOUS OBSTRUCTIONS GREATER THAN 2 INCHES, UP TO 12 INCHES IN WIDTH (SMALL DUCTS, LARGER PIPES, BOTTOM CHORD OF JOISTS, ETC.): THE SPRINKLER MUST BE AT LEAST 12" HORIZONTALLY FROM THE EDGE OF THE OBSTRUCTION.

CONTINUOUS OBSTRUCTIONS GREATER THAN 12 INCHES, UP TO 2 FEET IN WIDTH (DUCTS, FLUORESCENT LIGHTS IN ROWS, RACKS OF PIPES, ETC.): THE SPRINKLER MUST BE AT LEAST 24" HORIZONTALLY FROM THE EDGE OF THE OBSTRUCTION.

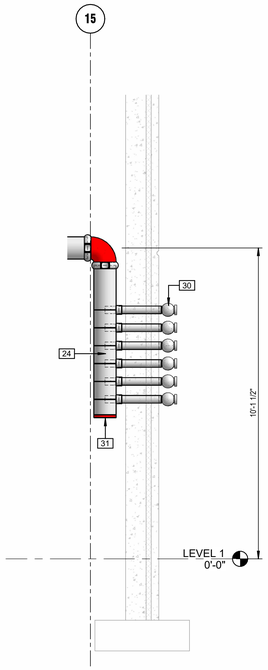
CONTINUOUS OBSTRUCTIONS GREATER THAN 2 FEET IN WIDTH (LARGE DUCTS, ETC.): INSTALL ADDITIONAL SPRINKLERS BELOW OBSTRUCTIONS (DUCTS, LIGHTS, PIPES, CONVEYORS, ETC.).

ESFR SPRINKLER COVERAGE AREA MUST BE BETWEEN 80 AND 100 SQUARE FEET. MINIMUM DISTANCE BETWEEN HEADS IS 8 FEET. MAXIMUM DISTANCE BETWEEN HEADS IS 12 FEET FOR BUILDINGS UP TO 30 FEET HIGH, AND 10 FEET FOR BUILDINGS OVER 30 FEET HIGH.

SPRINKLERS SHALL BE POSITIONED A MINIMUM OF 1'-0" HORIZONTALLY FROM THE NEAREST EDGE TO ANY BOTTOM CHORD OF A BAR JOIST OR OPEN TRUSS.

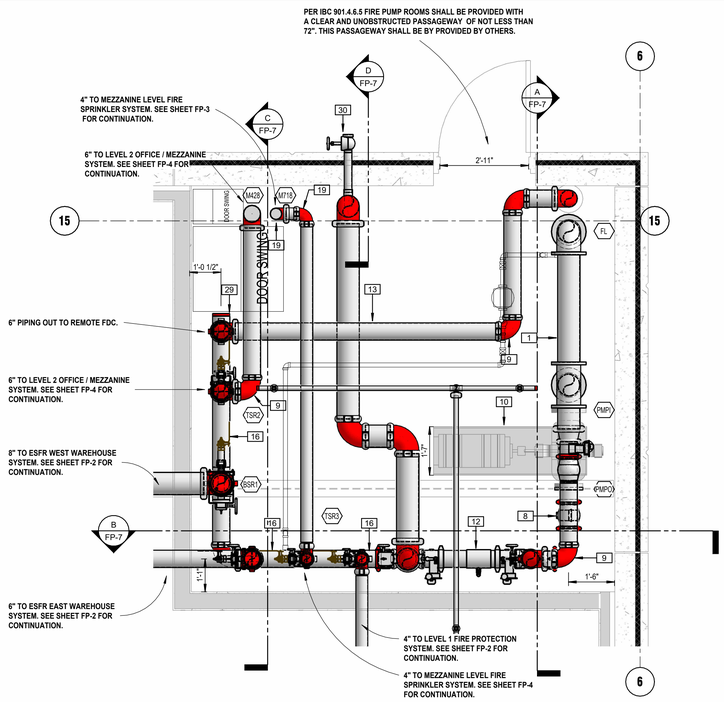


WAREHOUSE EAST - KEY PLAN



D FP-7 1/2" 1'-0"

FIRE PROTECTION - PUMP SECTION D

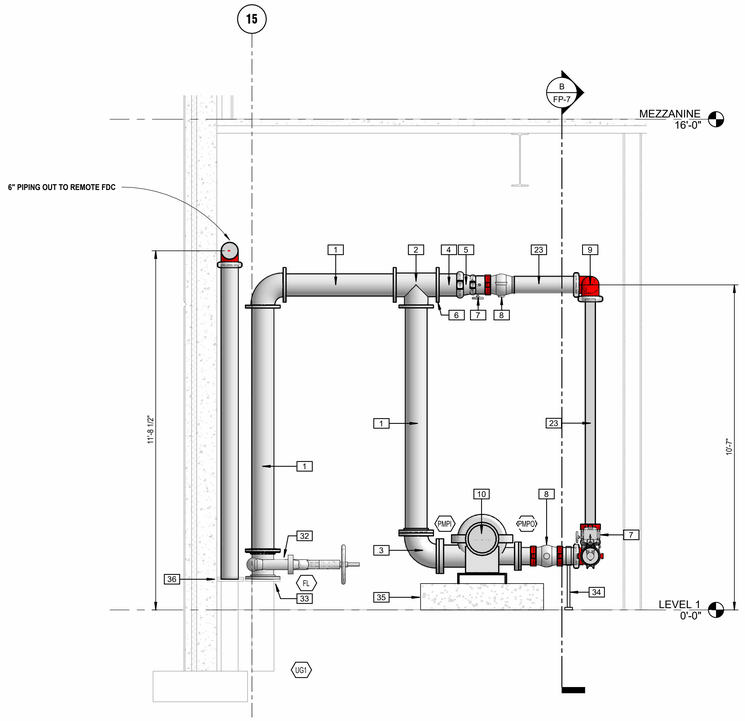


1 FP-7 1/2" 1'-0"

FIRE PROTECTION PLAN - RISER ROOM

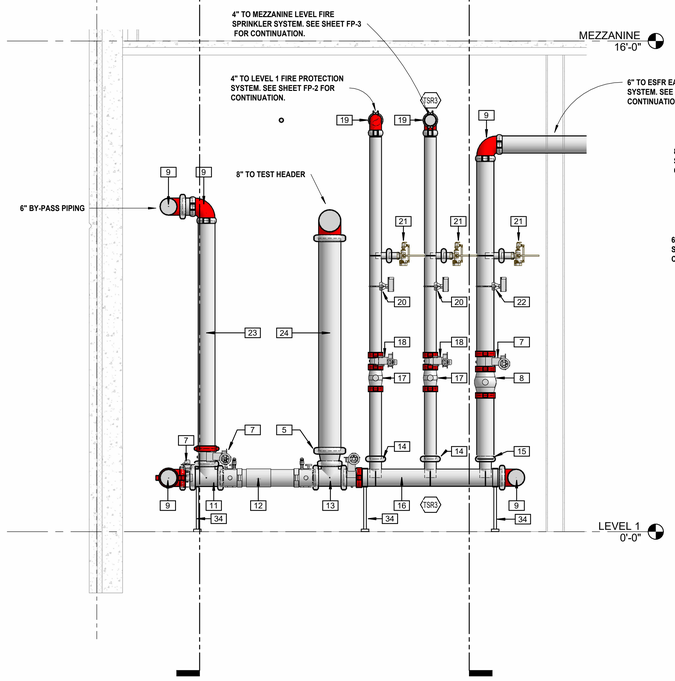
RISER KEYNOTES

#	NOTE
1	8" FIRE PUMP SUCTION PIPE
2	8" FLANGED TEE
3	8" FLANGED ELL
4	6" GROOVED SPOOL PIECE
5	8" X 6" GROOVED CONCENTRIC REDUCER
6	8" SPLIT FLANGE WITH NUT, BOLT & GASKET KIT
7	6" GROOVED BUTTERFLY VALVE WITH TAMPER SWITCH, SUPERVISED OPEN
8	6" GROOVED CHECK VALVE
9	6" GROOVED ELL
10	HORIZONTAL SPLIT CASE FIRE PUMP (1,500 GPM @ 85 PSI BOOST)- 8" SUCTION / 6" DISCHARGE
11	6" GROOVED TEE
12	6" AMES COLT 200 DOUBLE CHECK BACKFLOW ASSEMBLY WITH TAMPLER SWITCHES, SUPERVISED OPEN
13	6" PIPE OUT TO REMOTE FDC FLANGE LOCTED IN FIRE PUMP ROOM (FLANGE IS BY OTHERS) FDC PIPING (GALVANIZED BETWEEN FDC AND CHECK VALVE)
14	6" x 4" GROOVE-O-LET
15	6" x 6" GROOVE-O-LET
16	6" MANIFOLD PIPE
17	4" GROOVED CHECK VALVE
18	4" GROOVED BUTTERFLY VALVE WITH TAMPER SWITCH, SUPERVISED OPEN
19	4" GROOVED ELL
20	4" FLOW SWITCH
21	2" AGF 2511A INSPECTOR TEST AND DRAIN W/ PRESSURE RELIEF BYPASS
22	6" FLOW SWITCH
23	6" FIRE PUMP BY-PASS PIPING
24	6" PIPING OUT TO FIRE PUMP TEST HEADER
25	8" GROOVED CHECK VALVE
26	8" FLOW SWITCH
27	8" GROOVED ELL
28	8" GROOVED BUTTERFLY VALVE WITH TAMPER SWITCH, SUPERVISED OPEN
29	6" GROOVED CAP
30	2-1/2" TEST HEADER HOSE VALVE
31	8" GROOVED CAP
32	8" FLANGED GATE VALVE WITH TAMPER SWITCH, SUPERVISED OPEN
33	8" SPIGOT (BY OTHERS)
34	6" PIPE STAND - PIPE STANDS SHALL BE BOLTED / ANCHORED TO THE FLOOR
35	FIRE PUMP - PUMP PAD (BY OTHERS)
36	6" SPIGOT (BY OTHERS) OUT TO FDC



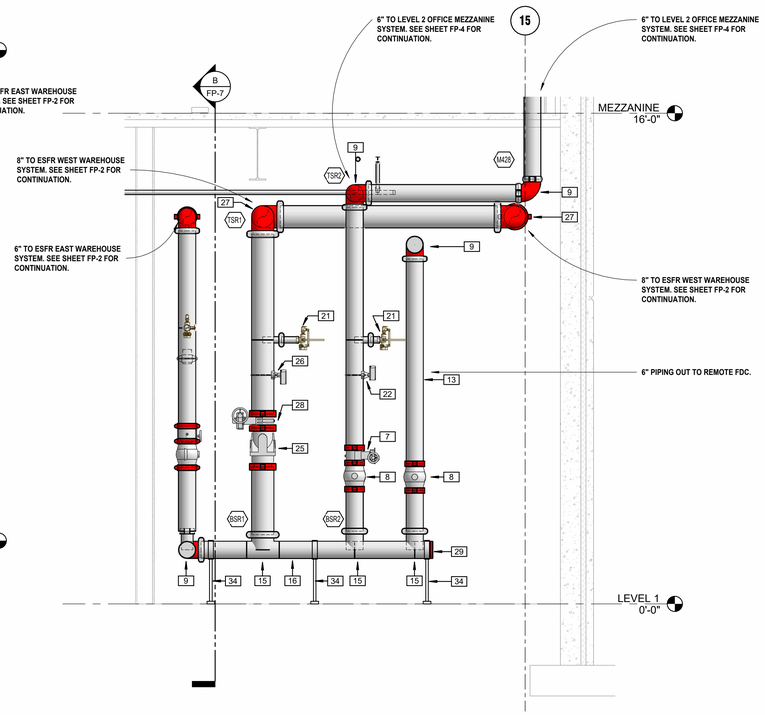
A FP-7 1/2" 1'-0"

FIRE PROTECTION - PUMP SECTION A



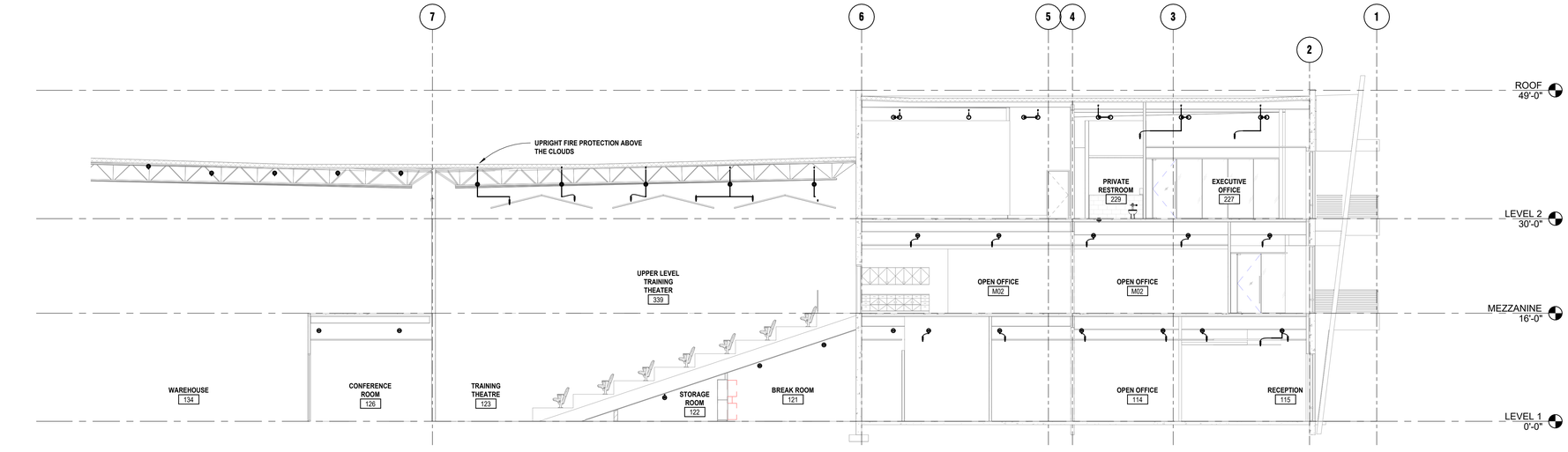
B FP-7 1/2" 1'-0"

FIRE PROTECTION - PUMP SECTION B

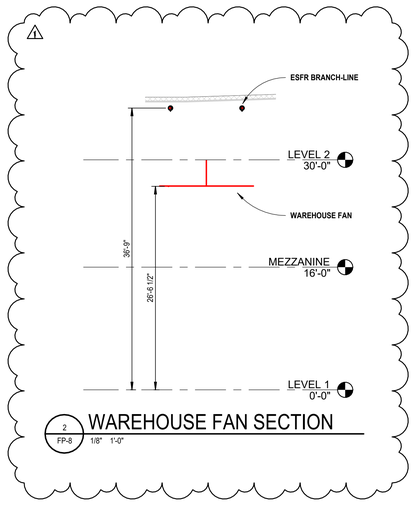


C FP-7 1/2" 1'-0"

FIRE PROTECTION - PUMP SECTION C



1 FP-8 FIRE PROTECTION SECTION A
1/8" 1'-0"



2 FP-8 WAREHOUSE FAN SECTION
1/8" 1'-0"