2.5" Main EQ TAG

Brace Type	Brace Pipe Size	Fastener Type	Fastener Orientation
Lateral	1"	Machine (Hex) Bolt	NFPA Type "A"
Brace Angle	**Attached To**	**Fastener Size**	**Maximum Fastener Load**
30	Steel	3/8 x 2	900lb 0oz

Code: NFPA #13 - 2007 | Table: 9.3.5.9.1 | Plan ID: SB-7 | Manufacturer: Tolco Inc

2.5" Main EQ LEGEND

1½	Pipe, Schedule 10	224-11	3lb 0½oz	0.5	341lb 14oz
2½	Pipe, Schedule 10	20-11½	5lb 14½oz	0.5	61lb 11½oz
3	Pipe, Schedule 10	9-8	7lb 15oz	0.5	38lb 6oz
1	Pipe, Schedule 40	7-8	2lb 0½oz	0.5	7lb 13½oz
				Total Weight (x Wp)	449lb 13½oz
				Total Load (Fp x 1.15)	517lb 6oz

(Fig. 1000) "Fast Clamp" Sway Brace Attachment

3/8 x 2 Machine (Hex) Bolt

(Fig. 980) Universal Swivel Sway Brace Attachment

1 Pipe, Schedule 40

2.5" LATERAL EQ TAG

Brace Type	Brace Pipe Size	Fastener Type	Fastener Orientation
Longitudinal	1"	Machine (Hex) Bolt	NFPA Type "A"
Brace Angle	**Attached To**	**Fastener Size**	**Maximum Fastener Load**
30	Steel	3/8 x 2	900lb 0oz

Code: NFPA #13 - 2007 | Table: 9.3.5.9.1 | Plan ID: SB-7 | Manufacturer: Tolco Inc

2.5" LATERAL EQ LEGEND

2½	Pipe, Schedule 10	42-0	5lb 14½oz	0.5	123lb 11oz
				Total Weight (x Wp)	123lb 11oz
				Total Load (Fp x 1.15)	142lb 4oz

(Fig. 48) Pipe Clamp for Sway Bracing

(Fig. 980) Universal Swivel Sway Brace Attachment

3/8 x 2 Machine (Hex) Bolt

(Fig. 980) Universal Swivel Sway Brace Attachment

1 Pipe, Schedule 40

2" EQ TAG

Brace Type	Brace Pipe Size	Fastener Type	Fastener Orientation
Lateral	1"	Machine (Hex) Bolt	NFPA Type "D"
Brace Angle	**Attached To**	**Fastener Size**	**Maximum Fastener Load**
30	Steel	3/8 x 1¼	800lb 0oz

Code: NFPA #13 - 2007 | Table: 9.3.5.9.1 | Plan ID: SB-7 | Manufacturer: Tolco Inc

2" EQ LEGEND

1¼	Pipe, Schedule 10	74-8	3lb 0½oz	0.5	113lb 8½oz
1	Pipe, Schedule 40	8-3½	2lb 0½oz	0.5	8lb 8½oz
2½	Pipe, Schedule 10	69-5	5lb 14½oz	0.5	143lb 9½oz
2	Pipe, Schedule 10	21-0	4lb 3½oz	0.5	44lb 5oz
				Total Weight (x Wp)	311lb 15oz
				Total Load (Fp x 1.15)	358lb 11½oz

3/8 x 2 Machine (Hex) Bolt

(Fig. 1000) "Fast Clamp" Sway Brace Attachment

(Fig. 980) Universal Swivel Sway Brace Attachment

1 Pipe, Schedule 40

3" Main EQ Tag

Brace Type	Brace Pipe Size	Fastener Type	Fastener Orientation
Lateral	1"	Machine (Hex) Bolt	NFPA Type "A"
Brace Angle	**Attached To**	**Fastener Size**	**Maximum Fastener Load**
30	Steel	3/8 x 2	900lb 0oz

Code: NFPA #13 - 2007 | Table: 9.3.5.9.1 | Plan ID: SB-7 | Manufacturer: Tolco Inc

3" Main EQ Legend

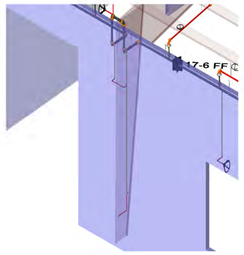
1½	Pipe, Schedule 10	72-6	3lb 0½oz	0.5	110lb 4½oz
3	Pipe, Schedule 10	18-9½	7lb 15oz	0.5	74lb 9½oz
				Total Weight (x Wp)	184lb 13½oz
				Total Load (Fp x 1.15)	212lb 9½oz

(Fig. 1000) "Fast Clamp" Sway Brace Attachment

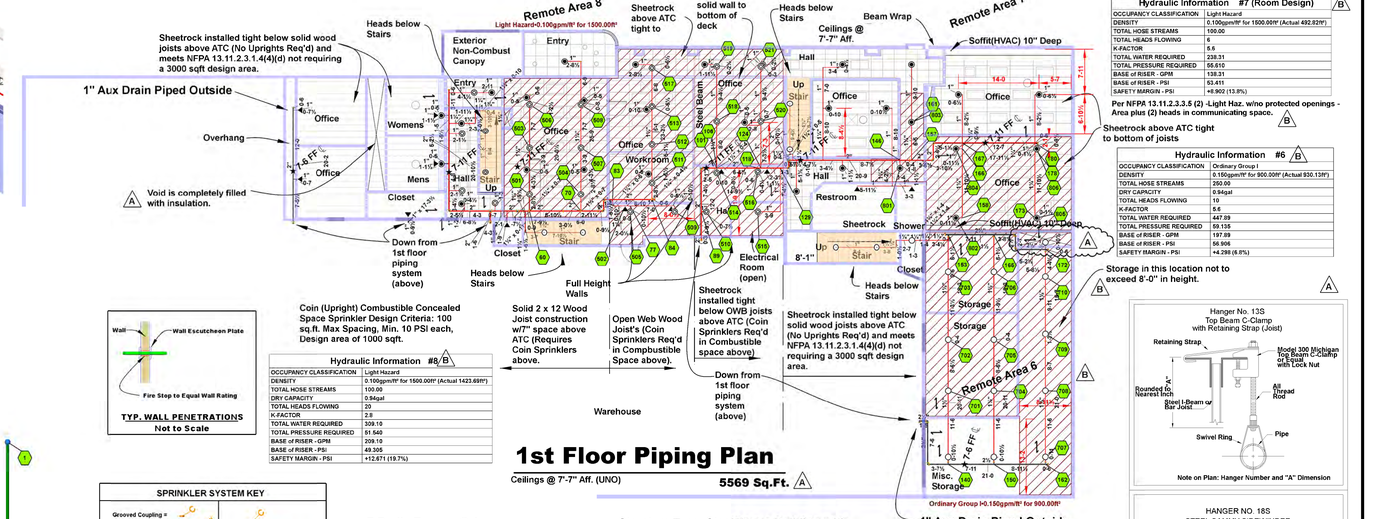
3/8 x 2 Machine (Hex) Bolt

(Fig. 980) Universal Swivel Sway Brace Attachment

1 Pipe, Schedule 40



1" Aux Drain Detail



Hydraulic Information #7 (Room Design)

OCCUPANCY CLASSIFICATION	Light Hazard
DENSITY	0.100gpm/ft² for 1500.00ft² (Actual 492.82ft²)
TOTAL HOSE STREAMS	100.00
TOTAL HEADS FLOWING	6
K-FACTOR	5.6
TOTAL WATER REQUIRED	238.31
TOTAL PRESSURE REQUIRED	56.610
BASE of RISER - GPM	138.31
BASE of RISER - PSI	53.451
SAFETY MARGIN - PSI	+8.902 (13.8%)

Per NFPA 13.11.2.3.3.5 (2) -Light Haz. w/no protected openings - Area plus (2) heads in communicating space.

Sheetrock above ATC tight to bottom of joists

Hydraulic Information #6

OCCUPANCY CLASSIFICATION	Ordinary Group I
DENSITY	0.150gpm/ft² for 900.00ft² (Actual 930.13ft²)
TOTAL HOSE STREAMS	250.00
DRY CAPACITY	0.94gal
TOTAL HEADS FLOWING	10
K-FACTOR	5.6
TOTAL WATER REQUIRED	447.89
TOTAL PRESSURE REQUIRED	59.135
BASE of RISER - GPM	197.89
BASE of RISER - PSI	56.906
SAFETY MARGIN - PSI	+4.286 (6.8%)

TYP. WALL PENETRATIONS
Not to Scale

Hydraulic Information #8

OCCUPANCY CLASSIFICATION	Light Hazard
DENSITY	0.100gpm/ft² for 1500.00ft² (Actual 1423.69ft²)
TOTAL HOSE STREAMS	100.00
DRY CAPACITY	0.94gal
TOTAL HEADS FLOWING	20
K-FACTOR	2.8
TOTAL WATER REQUIRED	309.10
TOTAL PRESSURE REQUIRED	51.540
BASE of RISER - GPM	209.10
BASE of RISER - PSI	49.305
SAFETY MARGIN - PSI	+12.671 (19.7%)

Hydraulic Information #1

OCCUPANCY CLASSIFICATION	High Piled Storage
DENSITY	0.155gpm/ft² for 2000.00ft² (Actual 2015.98ft²)
TOTAL HOSE STREAMS	500.00
TOTAL HEADS FLOWING	17
K-FACTOR	5.6
TOTAL WATER REQUIRED	629.94
TOTAL PRESSURE REQUIRED	66.187
BASE of RISER - GPM	329.94
BASE of RISER - PSI	53.832
SAFETY MARGIN - PSI	+3.938 (6.6%)

Hydraulic Design Criteria:

20' High Piled Class I Storage Per NFPA 13 Figure 14.2.4.2- Using High Temp Heads, the Area/Density requirement is: .155/2000

BACKFLOW FORWARD FLOW TEST

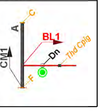
BACKFLOW SIZE:	6"
HIGHEST GPM DEMAND FOR SYSTEM(S) W/O HOSE:	330
TEST ORIFICE INTERNAL DIAMETER SIZE:	2"
NUMBER OF TEST ORIFICES:	2
GPM REQUIRED AT EACH TEST ORIFICE:	165
PITOT REQUIRED (AT EACH ORIFICE):	3

Water Flow

Test Conducted By	United Wated
Date of Test	7/23/2010
Location	5656 Morris Hill
Static Pressure	65.000
Residual Pressure:	20.000
Flow	2750.00
Outside Hose Flow	250.00

SPRINKLER SYSTEM KEY

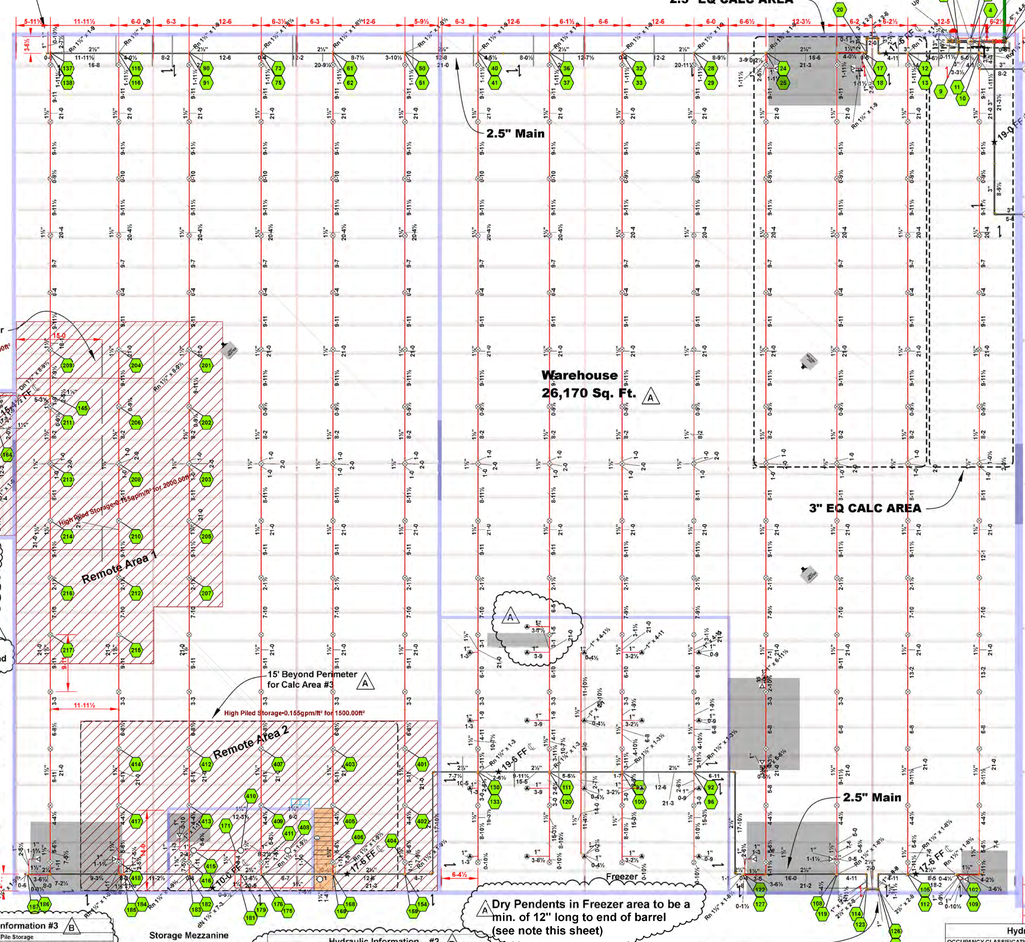
Grooved Coupling =
Flexible Coupling =
Threaded Coupling =
Drop or Riser =
Cross Main Fab Tag = CM1
Branchline Fab Tag = BL1



Z-Purlin Trapeze Calcs:

1. 5'-0" Span
2. Mains Sizes: 2", 2.5", & 3"
3. Modulus: .31, .34,, .37
4. Trapeze member size: 2" Sch #40

Structure Type: Steel Frame Building with Z-Purlins 5' o.c; 1st floor mezzanine is wood 2x members on one half and open web TJM's on the other with sheerock installed directly to bottom of joists.



When Dry Sprinklers are to be used in wet pipe sprinkler systems protecting areas subject to freezing temperatures (e.g., sprinkler drops into freezers), consideration must be given to the appropriate length of the sprinkler that will prevent freezing of the water in the connecting pipes due to conduction. When the temperature surrounding the wet pipe sprinkler system is maintained at a minimum temperature of 40°F/4°C, the following are the minimum recommended lengths between the face of the sprinkler fitting and the outside surface of the protected area (i.e., length exposed to minimum ambient of 40°F/4°C - Ref. Figure 14):

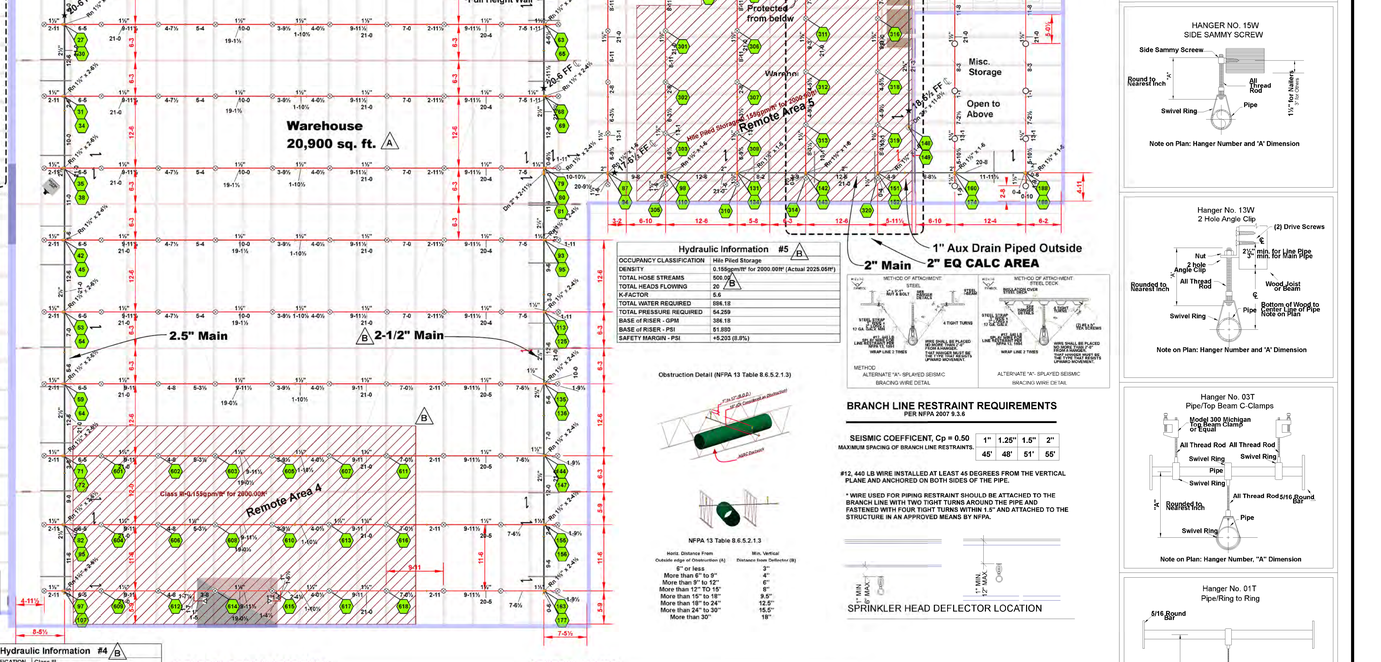
- 12 inches (300 mm) when the temperature within the protected area is -20°F/-29°C
- 18 inches (450 mm) when the temperature within the protected area is -40°F/-40°C
- 24 inches (600 mm) when the temperature within the protected area is -60°F/-51°C

Hydraulic Information #3

OCCUPANCY CLASSIFICATION	High Pile Storage
DENSITY	0.150gpm/ft² for 1500.00ft² (Actual 1085.55ft²)
TOTAL HOSE STREAMS	500.00
TOTAL HEADS FLOWING	10
K-FACTOR	5.6
TOTAL WATER REQUIRED	729.08
TOTAL PRESSURE REQUIRED	67.615
BASE of RISER - GPM	229.08
BASE of RISER - PSI	55.383
SAFETY MARGIN - PSI	+2.529 (5.0%)

Hydraulic Information #2

OCCUPANCY CLASSIFICATION	High Piled Storage
DENSITY	0.150gpm/ft² for 1500.00ft² (Actual 1829.26ft²)
TOTAL HOSE STREAMS	500.00
TOTAL HEADS FLOWING	10
K-FACTOR	5.6
TOTAL WATER REQUIRED	668.13
TOTAL PRESSURE REQUIRED	55.727
BASE of RISER - GPM	368.13
BASE of RISER - PSI	53.356
SAFETY MARGIN - PSI	+3.942 (6.6%)



Hydraulic Information #5

OCCUPANCY CLASSIFICATION	Hiis Piled Storage
DENSITY	0.155gpm/ft² for 2000.00ft² (Actual 2025.06ft²)
TOTAL HOSE STREAMS	500.00
TOTAL HEADS FLOWING	20
K-FACTOR	5.6
TOTAL WATER REQUIRED	896.18
TOTAL PRESSURE REQUIRED	54.259
BASE of RISER - GPM	396.18
BASE of RISER - PSI	51.880
SAFETY MARGIN - PSI	+9.203 (0.8%)

Hydraulic Information #4

OCCUPANCY CLASSIFICATION	Class III
DENSITY	0.150gpm/ft² for 2000.00ft² (Actual 2060.23ft²)
TOTAL HOSE STREAMS	500.00
TOTAL HEADS FLOWING	18
K-FACTOR	5.6
TOTAL WATER REQUIRED	859.07
TOTAL PRESSURE REQUIRED	54.576
BASE of RISER - GPM	359.07
BASE of RISER - PSI	52.224
SAFETY MARGIN - PSI	+8.198 (8.7%)

BRANCH LINE RESTRAINT REQUIREMENTS

PER NFPA 2007 8.3.6

SEISMIC COEFFICIENT, Cp = 0.50	1"	1.26"	1.5"	2"
MAXIMUM SPACING OF BRANCH LINE RESTRAINTS	45'	48'	51'	55'

#12, 440 LB WIRE INSTALLED AT LEAST 45 DEGREES FROM THE VERTICAL PLANE AND ANCHORED ON BOTH SIDES OF THE PIPE.

* WIRE USED FOR PIPING RESTRAINT SHOULD BE ATTACHED TO THE BRANCH LINE WITH TWO TIGHT TURNS AROUND THE PIPE AND FASTENED WITH FOUR TIGHT TURNS WITHIN 1.5" AND ATTACHED TO THE STRUCTURE IN AN APPROVED MEANS BY NFPA.

SPRINKLER HEAD DEFLECTOR LOCATION

GENERAL DESIGN APPROACH:

1) NFPA 13 2007 WAREHOUSE AREA: CLASS I HIGH PILED STORAGE UP TO 20' OFFICE AREA: LIGHT HAZARD IN ALL AREAS EXCEPT ISENERAL STORAGE ROOMS, MECHANICAL ROOMS, AND ELECTRICAL ROOMS.
2) OCCUPANCY CLASSIFICATION IS: B
3) BUILDING CONSTRUCTION TYPE: II B
4) THE BUILDING IS NOT SPRINKLERED IN A 12" UNDERGROUND CIRCULATING CITY SUPPLY
5) THIS BUILDING WILL BE PROTECTED BY A DUAL RISER WET SYSTEM PER NFPA 13 14.2.3.1 AND FIGURE 14.2.4.2 AND FIGURE 14.2.4.3
6) THE WAREHOUSE SYSTEM AREAS ARE HYDRAULICALLY CALCULATED TO PROVIDE .155 GPM OVER 2000 S.F. THE OFFICE SPACE HAS BEEN HYDRAULICALLY CALCULATED TO PROVIDE .10 GPM OVER 1500 S.F. THE QR AREA HEYDUCTOR WILL BE APPLIED WHERE ACTABLE.
7) SEE HYDRAULIC DATA INFORMATION BLOCKS ON SHEET FP1 FOR HAZARD AND SPRINKLER MAXIMUM AREAS OF COVERAGE IN EACH AREA TYPE AND SPECIFIC DESIGN APPROACH DETAILS.

GENERAL NOTES:

1) THE SPRINKLER SYSTEM DESIGN AS SHOWN ON THESE DRAWINGS SHALL CONFORM TO NFPA 13 2007 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 BRANCHLINE PIPING 1-1/4" TO 1-1/2" SHALL BE SCH. 10, MAINS 2" AND LARGER SHALL BE SCH. 10
ARMOUR PIPING FITTO 1-1/2" FITTINGS WILL BE THREADED UNO.
4) WATER FLOW INFORMATION OBTAINED FROM UNITED WATER ON JULY 23RD 2010. WATER FLOW WAS TAKEN AT THE PROJECT SITE. RESULT: STATIC 65 PSI / RESIDUAL 20 PSI @ 2750 GPM
5) ITEMS EXCLUDED FROM OUR SCOPE OF WORK INCLUDE BUT ARE NOT LIMITED TO:
ALL ELECTRICAL WIRING / ALARM DEVICES, AIR COMPRESSORS ECT.
FIRE EXTINGUISHERS , STRUCTURAL ANALYSIS, CR PAINTING.

GENERAL NOTES:

1. FIRE PROTECTION SYSTEM TO BE DESIGNED AND INSTALLED IN ACCORDANCE WITH THE APPLICABLE BUILDING CODES, STATE AND LOCAL FIRE MARSHALS REQUIREMENTS, NFPA 13, 2007 (EDITION.)
2. ALL ELECTRICAL WIRING OF FIRE PROTECTION SYSTEM AND COMPONENTS TO BE PERFORMED BY OTHER TRADE DIVISIONS.
3. ALL PAINTING OF FIRE PROTECTION PIPING AND RELATED COMPONENTS TO BE PERFORMED BY OTHER TRADE DIVISIONS.
4. ALL INSULATING OF FIRE PROTECTION PIPING AND RELATED COMPONENTS TO BE PERFORMED BY OTHER TRADE DIVISIONS.
5. SPRINKLER PIPING TO BE HUNG AS PER NFPA 13.
6. EARTHQUAKE AND SWAY BRACING TO BE AS PER NFPA 13. SWAY BRACE CALCULATIONS HAVE BEEN BASED ON THE ASSUMPTION THAT THE MAXIMUM BRACE LENGTH WILL BE 70'. AND THE VERTICAL WILL BE BETWEEN 30 & 44 DEGREES.
7. ALL WELDING TO BE DONE BY A CERTIFIED WELDER IN A FABRICATION SHOP PER NFPA STANDARDS.
8. LATERAL SWAY BRACES ARE REQUIRED ON ALL MAINS & BRANCHLINES 2 1/2" AND LARGER. LATERAL SWAY BRACES ARE NOT REQUIRED ON BRANCHLINES 2" AND SMALLER. LATERAL SWAY BRACES ARE NOT REQUIRED ON PIPES INDIVIDUALLY SUPPORTED BY RODS LESS THAN 3" PER NFPA 13 3.9.3.1 & 8
9. SYSTEM TO BE INSTALLED, TESTED, AND FLUSHED per NFPA 13 STANDARDS AND LOCAL REQUIREMENTS.
10. UNDERGROUND AND ABOVEGROUND PIPING TO BE HYDROSTATICALLY TESTED AT 200 PSI FOR 2 HOURS.
11. ALL SPRINKLER FITTINGS SHALL MEET OR EXCEED THE REQUIREMENTS OF NFPA 13 TABLE 6.4.1
12. ALL SPRINKLER PIPING SHALL CONFORM TO NFPA 13 TABLE 6.3.1.1 STANDARDS AND LOCAL REQUIREMENTS.
13. SPARE SPRINKLER CABINET AND WRENCH TO BE FURNISHED PER NFPA 13.
14. ROOM OCCUPANCY AND USE/HAZARD SHOWN AS ROOM NAME 10'-0
15. DOMESTIC MATERIAL NOT REQUIRED.
16. ELEVATION OF PIPE SHOWN AS (U) IS FROM ABOVE FINISHED FLOOR FLOOR AND ELEVATIONS SHOWN AS (D) ARE FROM BOTTOM OF TOP OF STRUCTURE DOWN.
17. PIPING: STEEL PIPING CONFORMING TO NFPA 13 AND ANSI/ASTME 403, ASTM A120 AND ASTM A795.
2" AND LARGER SCH PIPING: SCH 10 GROOVED ENDS WITH WELDED OUTLETS.
1-1/4" AND LARGER BRANCH LINE PIPING: GRID BRANCH LINES SCH 10 - GROOVED ENDS WITH WELDED OUTLETS.
BRANCH LINE PIPING, ARMOVENTS, DROPS AND SPRIGS: SCH 40 - THREADED ENDS WITH THREADED OUTLETS.
18. IN ROOMS NOT EXCEEDING 800 SQ FT AND OF UNOBSTRUCTED CONSTRUCTION, SPRINKLERS SHALL BE PERMITTED TO BE LOCATED NOT MORE THAN 6' FROM ANY SINGLE WALL. IN LIGHT HAZARD ONLY, AS PER NFPA 13 8.5.3.2.4.
19. SPRINKLERS ARE NOT REQUIRED UNDER INTERMEDIATE STAIR LANDINGS OF NONCOMBUSTIBLE CONSTRUCTION AND NOT USED FOR STORAGE. AS PER NFPA 13 8.15.3.2.3
20. SPRINKLER HEADS ARE NOT CENTER LINE OF CEILING TILE. ACTUAL LOCATIONS OF SPRINKLER HEADS WITHIN CEILING TILE MAY VARY DUE TO CONSTRUCTION CONDITIONS.
21. SPRINKLERS ARE NOT REQUIRED IN NON-COMBUSTIBLE SPACES. NFPA 13 8.15.1.2 ALL CONCEALED SPACES ENCLOSED WHOLLY OR PARTLY BY EXPOSED COMBUSTIBLE CONSTRUCTION SHALL BE PROTECTED BY SPRINKLERS.
22. NUTS, BOLTS, RODS, WASHERS, CLAMPS, AND OTHER RESTRAINING DEVICES ON ALL UNDERGROUND PIPING ARE TO BE COATED WITH BITUMINOUS OR OTHER APPROVED CORROSION RETARDING MATERIAL.
23. BEFORE BACKFILLING A COVER INSPECTION IS REQUIRED ON ALL UNDERGROUND PIPING AS PER LOCAL AHJ REQUIREMENTS.
24. ON SYSTEMS WHERE THE PRESSURE EXCEEDS 100 P.S.I., BRANCH LINES SUPPORTING SPRINKLERS IN A PENDENT POSITION BELOW A CEILING SHALL BE SUPPORTED BY A HANGER THAT PREVENTS UPWARD MOVEMENT OF THE PIPE, AND THE UNSUPPORTED LENGTH OF PIPE BETWEEN THE HANGER AND THE SPRINKLER IN A PENDENT POSITION SHALL NOT BE GREATER THAN 12" AND BRANCH LINES SUPPORTED PENDENT SPRINKLERS BELOW CEILING SHALL NOT HAVE UNSUPPORTED ARM OVERS THAT EXCEED 12". AS PER NFPA 13 9.2.3.4.4.1

Sprinkler Legend

Symbol	Manufacturer	S/IN/Model	Quantity	K-Factor	Type	Orifice	Finish	Temperature	Note
⊗	Globe Fire Sprinkler Corp	GL5615	345	5.6	Upright	½	Bronze	286°F	
○	Globe Fire Sprinkler Corp	GL5615	61	5.6	Upright	½	Bronze	200°F	
◁	Globe Fire Sprinkler Corp	GL5626	16	5.6	Sidewall	½	Bronze	200°F	
◀	Globe Fire Sprinkler Corp	GL5679	21	5.6	Pendent	½	Chrome	200°F	
◉	Globe Fire Sprinkler Corp	GL5601	65	5.6	Pendent	½	Chrome	155°F	
⊗	Central	TY1180	26	5.6	Upright	½	Brass	175°F	Coin Spr
◀	Globe Fire Sprinkler Corp	GL5626	12	5.6	Sidewall	½	Chrome	155°F	
			Total = 546						

HEAD CABINET WITH MIN. 12 SPARE HEADS & WRENCH(ES) PROVIDED

NOTICE

IT IS THE OWNER'S RESPONSIBILITY TO PROVIDE HEAT ADEQUATE TO PREVENT FREEZING THROUGHOUT WET PIPE SPRINKLER SYSTEMS. ALSO IN ENCLOSURES FOR DRY PIPE, DELUGE AND OTHER TYPES OF VALVES CONTROLLING WATER SUPPLIES TO SPRINKLER SYSTEMS.

UNDERGROUND AND OVERHEAD TESTS TO BE WITNESSED BY: PHONE #

1) Owner's Rep
2) Boise 334-4370
3)

CONTRACT WITH: Stein Distrubuting Co

ADDRESS: Boise, Idaho

PHONE NUMBER: FAX:

FIRE SPRINKLER PLAN

Job No. 1
Drawn By GE
Scale AS NOTED
Date 09/08/10
Checked By RB

Approval Stamp

Job: **Stein Warehouse**
5656 Morris Hill Rd.
Boise Idaho 83706

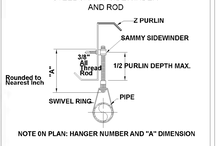
CONFIDENTIAL

Piping PLan FP2 2 OF 2

Hanger No. 13S
Top Beam C-Clamp with Retaining Strap (Joist)

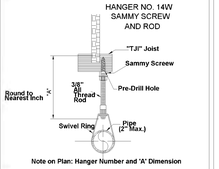
Note on Plan: Hanger Number and "A" Dimension

HANGER NO. 18S
STEEL SAMMY SIDEWINDER AND ROD



NOTE ON PLAN: HANGER NUMBER AND "A" DIMENSION

HANGER NO. 14W
SAMMY SCREW AND ROD



Note on Plan: Hanger Number and 'A' Dimension

HANGER NO. 15W
SIDE SAMMY SCREW

Note on Plan: Hanger Number and 'A' Dimension

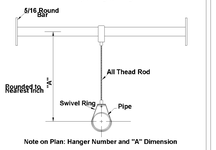
Hanger No. 13W
2 Hole Angle Clip

Note on Plan: Hanger Number and 'A' Dimension

Hanger No. 03T
Pipe/Top Beam C-Clamps

Note on Plan: Hanger Number, "A" Dimension

Hanger No. 01T
Pipe/Ring to Ring



Note on Plan: Hanger Number and "A" Dimension