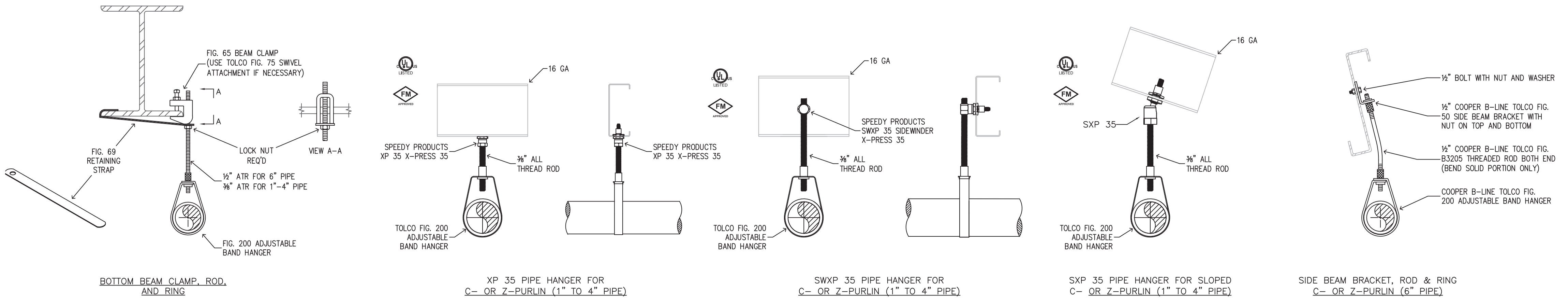
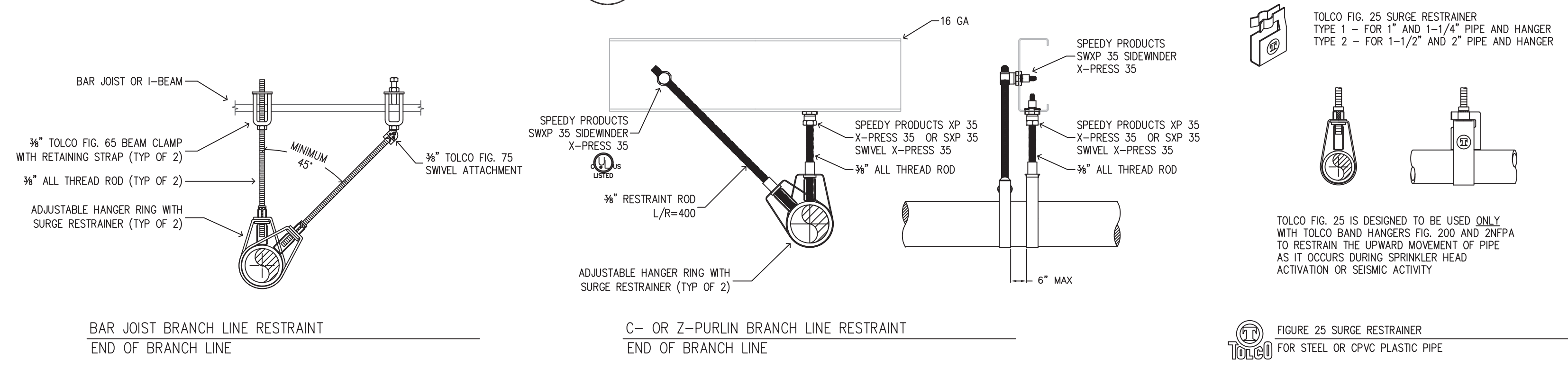


1 FIRE SPRINKLER SITE PLAN
 SCALE: 1" = 40'-0"

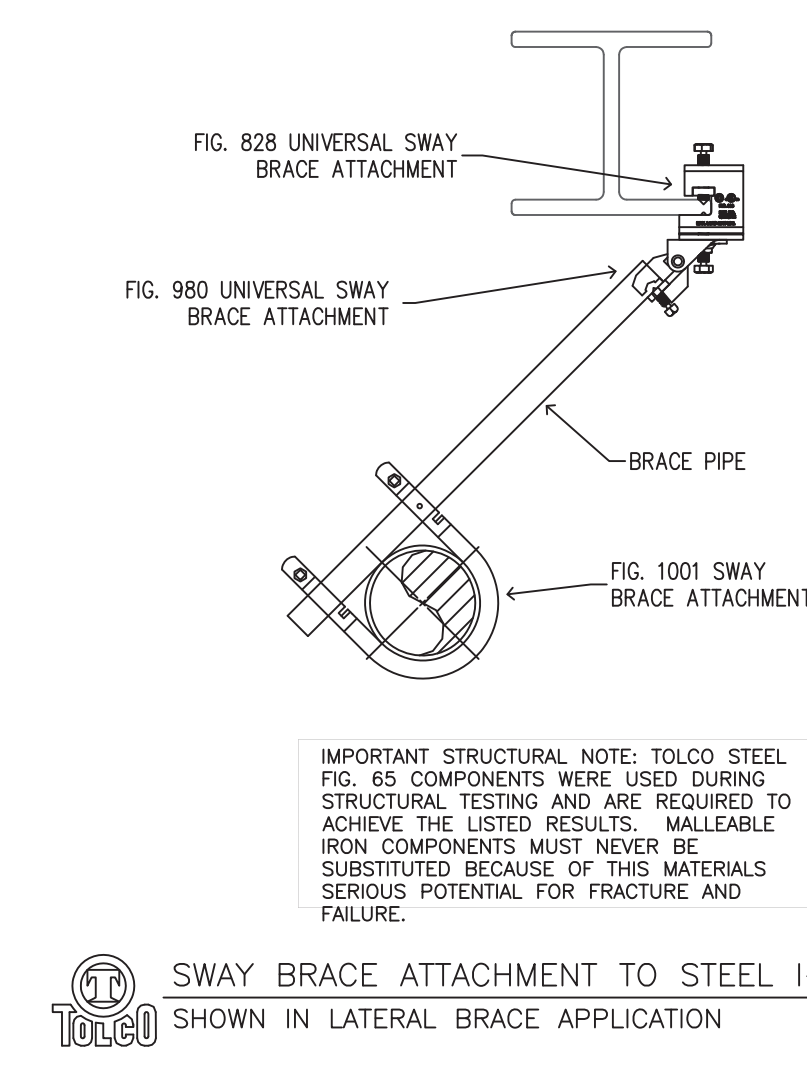


2 HANGER DETAILS
 SCALE: NOT TO SCALE

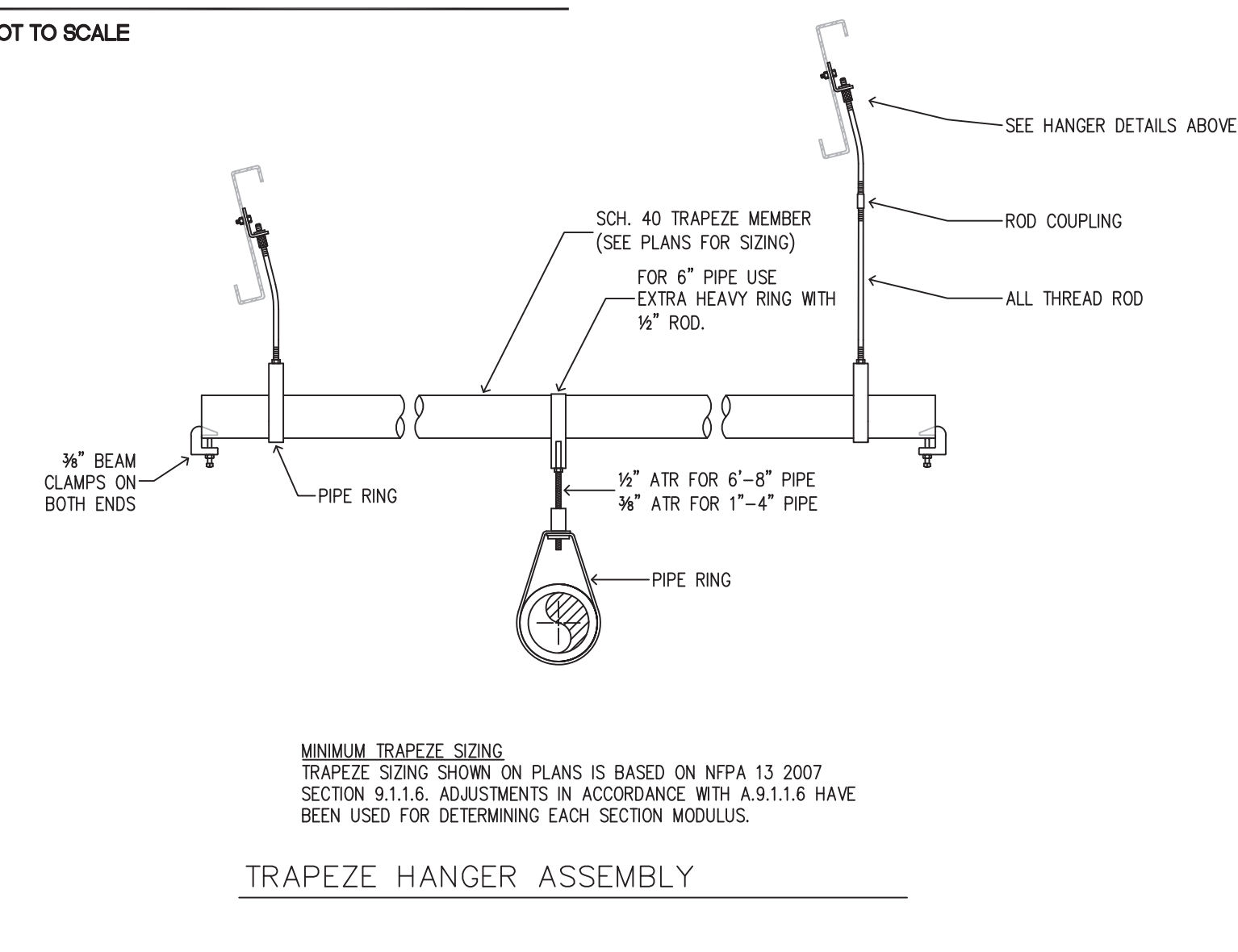
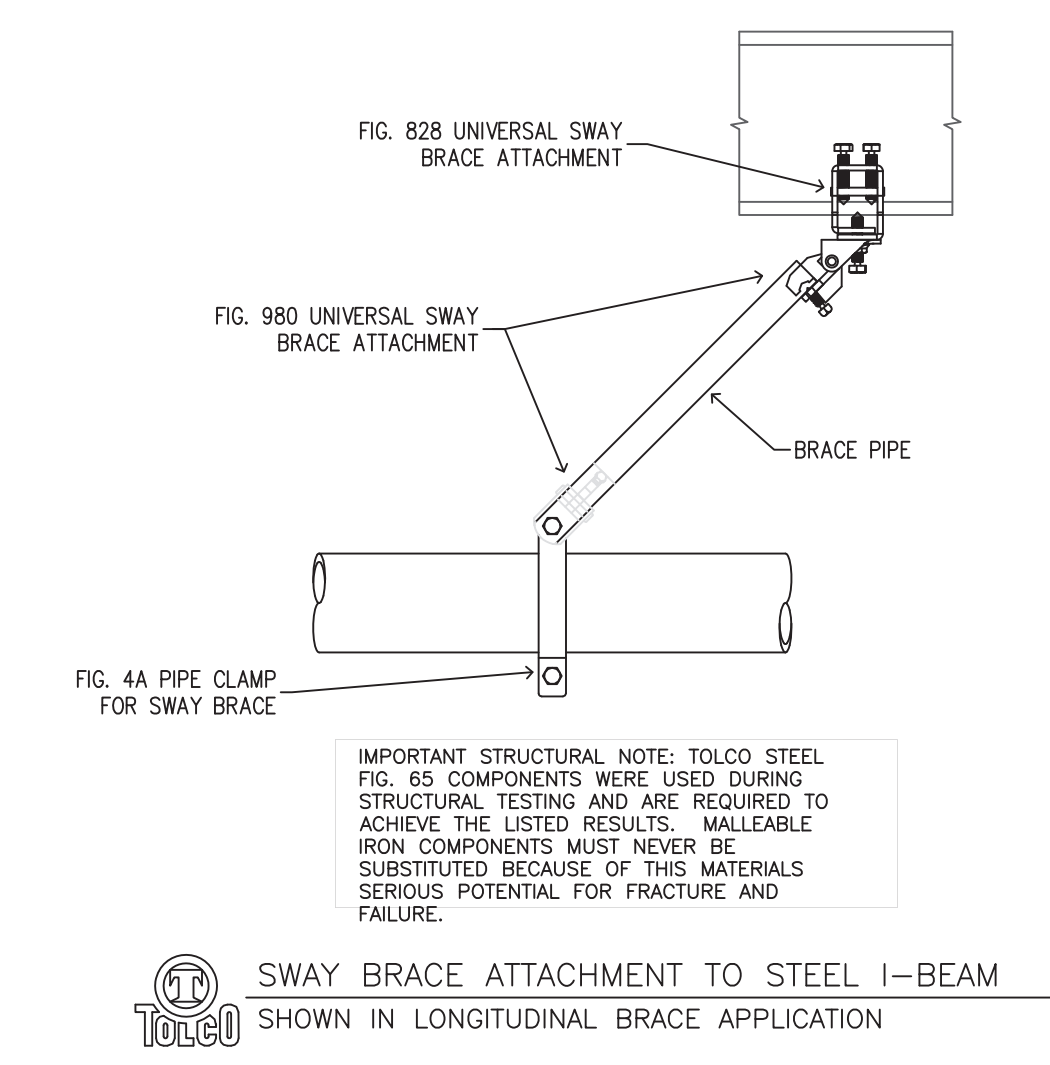
NOTE: ALL THREAD ROD USED FOR BRANCHLINE RESTRAINTS SHALL NOT EXCEED 1'-10". USE RESTRAINTS IN BOTH DIRECTIONS WHEN ROD LENGTH EXCEEDS 1'-10".



3 BRANCHLINE RESTRAINT DETAILS
 SCALE: NOT TO SCALE



4 EQ BRACING DETAILS
 SCALE: NOT TO SCALE



5 TRAPEZE ASSEMBLY DETAIL
 SCALE: NOT TO SCALE

FIRE SPRINKLER NOTES	
SCOPE OF WORK:	PROVIDE NEW WET FIRE SPRINKLER SYSTEM THROUGHOUT. PROVIDE HEF SYSTEM TO PROTECT ALL OF THE TRAINING BAY ROOM 101. ALL WORK SHALL BE IN ACCORDANCE WITH NFPA 13 2010 AND CONTRACT DOCUMENTS.
START POINT:	6" ABOVE FINISHED FLOOR. ALL UNDERGROUND PIPING, CATHODIC PROTECTION, AND PROTECTIVE ENCASEMENT OF UNDERGROUND PIPING IS BY OTHERS.
TYPE OF CONSTRUCTION:	STEEL (NONCOMBUSTIBLE)
OCCUPANCY HAZARD:	CLASSROOM (110), TOILET (104), OFFICE (102), AND COMMUNICATIONS ROOM (108) - LIGHT HAZARD (.10 GPM/SF OVER 3,000 SF W/NO HOSE ALLOWANCE) TRAINING AREA (111), ELEC ROOM (109), CLOSET (103), MECH ROOM (106), AND FIRE ROOM (107) - ORDINARY GROUP 1 (.15 GPM/SF OVER 3,000 SF W/NO HOSE ALLOWANCE) TRAINING BAY (101) - ORDINARY GROUP 2 (.20 GPM/SF OVER 5,000 SF W/NO HOSE ALLOWANCE)
WATER SUPPLY DATA:	STATIC = 143 PSI (CHURN PRESSURE) (FROM 12/14/11 PUMP TEST) RESIDUAL = 126 PSI (100% RATED FLOW) GPM FLOWING = 3,004 (BOTH PUMPS FLOWING SIMULTANEOUSLY)
LOCATION OF RISER:	AS SHOWN ON PLANS
LOCATION OF FIRE DEPT CONNECTION:	AS SHOWN ON PLANS
MATERIALS:	UL LISTED OR FM APPROVED
PIPE:	1" TO 8" SCH. 40 CONFORMING WITH ASTM A135 AND NFPA 13 STANDARDS
FITTINGS:	1" TO 2" THREADED CAST IRON CONFORMING WITH ASME B16.4 OR MALLEABLE IRON CONFORMING WITH ASME B16.3 (BLACK) 2 1/2" TO 6" (DOWNSTREAM OF RISER CHECK VALVES) GROOVED DUCTILE IRON (PAINTED) CONFORMING WITH ASTM A-536 2 1/2" TO 3" (UPSTREAM OF RISER CHECK VALVES, PROPORTIONER, AND SURGE ARRESTERS) GROOVED DUCTILE IRON (PAINTED) CONFORMING WITH ASTM A-536 4" TO 8" (UPSTREAM OF RISER CHECK VALVES, PROPORTIONER, AND SURGE ARRESTERS) FLANGED, WELD FLANGED-END, OR THREAD FLANGE-ED CONFORMING WITH ASTM A-536
SPRINKLER HEADS:	SEE SPRINKLER HEAD LEGEND
NOTES:	GENERAL CONTRACTOR SHALL COORDINATE ATTACHMENT OF EQUIPMENT WITH THE PRE-ENGINEERED METAL BUILDING SUPPLIER. ALL EXPOSED AND CONCEALED SPRINKLER PIPING SHALL BE PAINTED RED. ALL PAINTING TO BE PROVIDED BY OTHERS. PROVIDE CAST IN PLACE SPLASH BLOCKS FOR DRAINS TO PREVENT EROSION IN ACCORDANCE WITH SPECIFICATIONS. CONTRACTOR TO PROVIDE PROPER AMOUNT OF SPARE SPRINKLERS AND SPRINKLER WRENCHES IN A CABINET. CONTRACTOR TO PROVIDE EARTHQUAKE BRACING AND BRANCH LINE RESTRAINTS IN ACCORDANCE WITH NFPA 13 2010. MARK ALL EXPOSED INTERIOR PIPING AT 26 FT. INTERVALS WITH PLASTIC WRAP AROUND TYPE PIPE LABELS CONFORMING WITH ASME/ANSI A13.1 "SCHEME FOR THE IDENTIFICATION OF PIPING SYSTEMS". INDICATE THE TYPE OF FLUID CARRIED AND THE DIRECTION OF FLOW. LABELS ARE NOT REQUIRED ON SPRINKLER SYSTEM BRANCH LINES LESS THAN 2" IN SIZE. LABEL PIPING "FIRE WATER", "FOAM/WATER", OR "FOAM CONCENTRATE" ACCORDINGLY. CLEARANCE SHALL BE PROVIDED AROUND ALL PIPING EXTENDING THROUGH WALLS AND FLOORS. HOLES SHALL BE SIZED SUCH THAT THE DIAMETER OF THE HOLES ARE 2" LARGER THAN THE PIPE FOR 1" THROUGH 3" PIPE SIZES, AND 4" LARGER THAN THE PIPE FOR 4" PIPE SIZE AND LARGER. NO CLEARANCE IS NECESSARY FOR PIPING PASSING THROUGH GYPSUM BOARD OR EQUALLY FRANGIBLE CONSTRUCTION THAT IS NOT REQUIRED TO HAVE A FIRE RESISTANCE RATING. NO CLEARANCE IS NECESSARY FOR PIPING PASSING THROUGH WALLS WHEN FLEXIBLE COUPLINGS ARE PROVIDED WITHIN 12" OF BOTH SIDES. IF FLEXIBLE COUPLINGS ARE USED ON BOTH SIDES, PROVIDE LATERAL EARTHQUAKE BRACES WITHIN 24" OF EITHER COUPLING. PROVIDE LISTED FIRE STOP ASSEMBLY WHEN PASSING THROUGH ALL RATED WALLS AND FLOORS.

ICON FIRE SYSTEMS DESIGN

92-324 PUEONANI PLACE
 KAPOLEI, HI 96707
 PHONE/FAX: (808) 672-7124
 WWW.ICONFIRE.COM

HAKO PLUMBING INC.
 958 AKEPO LANE
 HONOLULU, HI 96817
 PHONE: (808) 852-4600
 FAX: (808) 832-4599

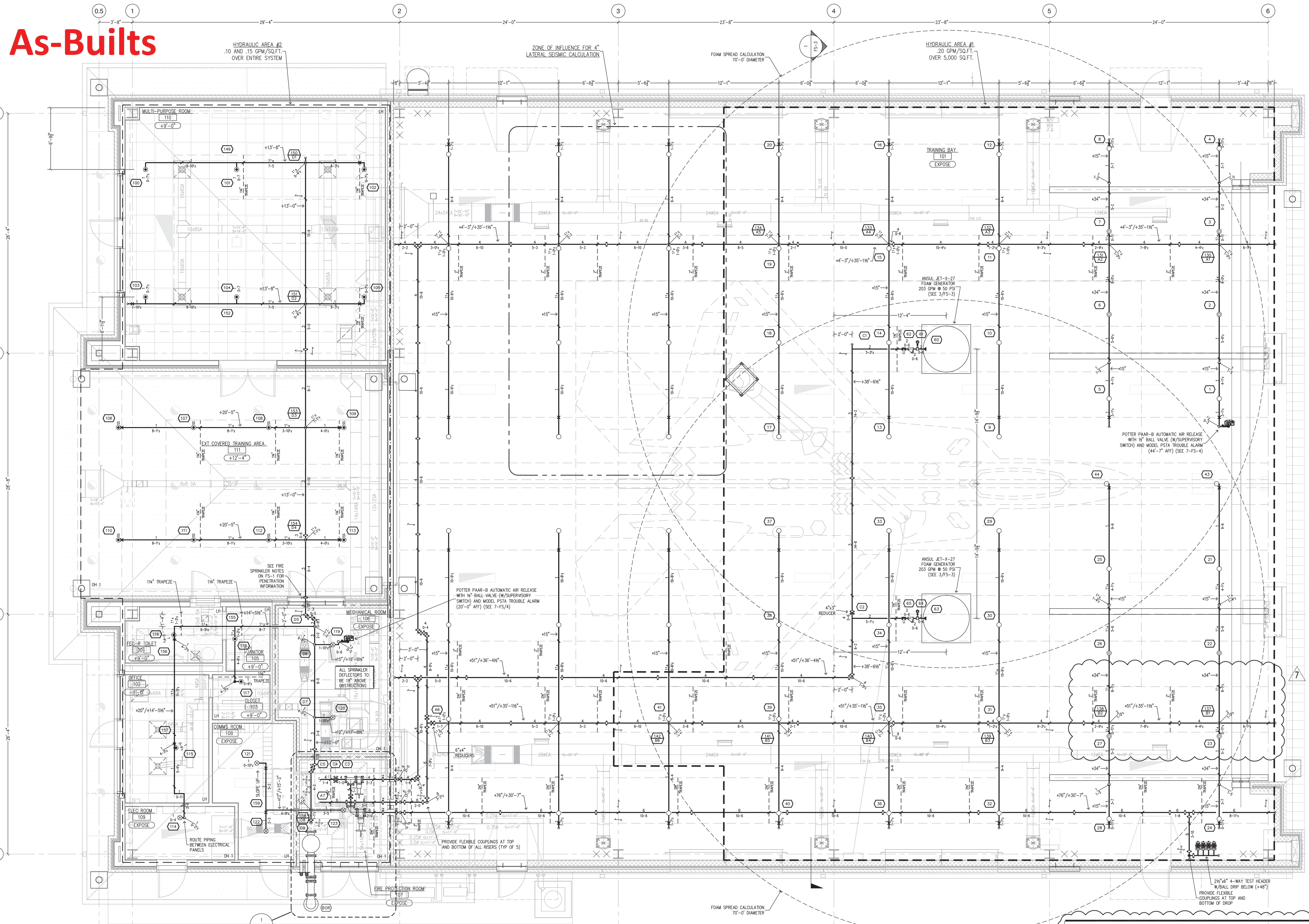
SYMBOL	DESCRIPTION
+10'-0"	ELEVATION ABOVE FLOOR
-1'-0"	ELEVATION BELOW DECK
—	RIGID COUPLING
—	FLEXIBLE COUPLING
—	CAP
—	PLUG
—	RISE
—	DROP
—	HANGER ASSEMBLY
—	BRANCH LINE RESTRAINT
—	2-WAY EARTHQUAKE BRACE
—	4-WAY EARTHQUAKE BRACE
—	HYDRAULIC NODE POINT
—	MAIN FABRICATION SYMBOL
—	BRANCH FABRICATION SYMBOL

NO.	REVISION/ISSUE	DATE
1	S.S. DANNAWAY COMMENTS	6/26/14
2	S.S. DANNAWAY COMMENTS	6/23/14
3	RELOCATED RELIEF VALVES	2/24/14
4	RELOCATED VALVES	2/12/14
5	BURNS & MCDONNELL COMMENTS	1/28/14
6	REVISED UNDERGROUND SUPPLY	11/25/13

FIRE SPRINKLER SHOP DRAWINGS
 TFI - F-22 SQUADRON WEAPONS LOAD CREW TRAINING FACILITY
 JOINT BASE PEARL HARBOR - HICKAM HAWAII AIR NATIONAL GUARD
 CONTRACT NO. W90FY09-D-0002

DESIGNED BY: THOMAS BURTNES, NICET 094915, LEVEL IV
 DATE: MAY 23, 2013
 SCALE: AS SHOWN

SHEET: **FS-1**
 SHEET 1 OF 4



SPRINKLER HEAD LEGEND

SYM	CHY	POSITION	FINISH	TEMP	K	INPT	SIN	INPS	MODEL #	ESD/NOTION
10	PEND		CHROME	155	5.60	1/2"	TY3231	TYco	TY-FRB	CHROME RECESSED
150	UPR		BRASS	175	5.60	1/2"	TY3131	TYco	TY-FRB	NONE
2	SIDE			0	28.85	2 1/2"	ANSUL	JETX27	NONE	
18	PEND		BRASS	200	5.60	1/2"	TY3201	TYco	TY-B	S.S. RECESSED
6	UPR		BRASS	155	5.60	1/2"	TY3131	TYco	TY-FRB	NONE
8	UPR		BRASS	175	5.60	1/2"	TY3131	TYco	TY-FRB	NONE

90 TOTAL SPRINKLERS / 2 TOTAL HEF FOAM GENERATORS
 -STAINLESS STEEL SPRINKLER

1 FIRE SPRINKLER FLOOR PLAN
 SCALE: 1/4" = 1'-0"

HEF CALCULATIONS
 HEF DISCHARGE RATE = ((VOLUME/TIME)+R3)XCDCL
 WHERE:
 SHRINKAGE COEFFICIENT C_{sh} = 1.15
 LEAKAGE COEFFICIENT Q_l = 2.0
 VOLUME = 7,991 SQUARE FEET X 3.28' = 26,211 CUBIC FEET
 TIME = 4 MINUTES
 SPRINKLER BREAKDOWN RATE = 12,506 (10x1,250.6)
 HEF DISCHARGE RATE = ((26,211/4)+(12,506x1.15x2.0) = 44,065 CUBIC FEET PER MINUTE
 DESIGNED DISCHARGE FOR (2) JET-X-27 GENERATORS (203 GPM @ 50 PSI) = 23,965 + 2 = 47,930 CUBIC FEET PER MINUTE

FOAM CONCENTRATE CALCULATIONS
 ACTUAL FLOW AT PROPORTIONER = 494.3 GPM + 2% = 9.89 GPM
 MINIMUM TIME = 15 MINUTES
 TOTAL CONCENTRATE REQUIRED = 148.4 GALLONS
 NOMINAL CAPACITY OF TANK = 150 GALLONS

ICON FIRE SYSTEMS DESIGN

92-324 PUEONANI PLACE
 KAPOLEI, HI 96707
 PHONE/FAX: (808) 672-7214
 WWW.ICONFIRE.COM

CONTRACTOR: _____

PROJECT NAME AND ADDRESS: _____

FIRE SPRINKLER SHOP DRAWINGS
 TFI - F-22 SQUADRON
 WEAPONS LOAD CREW TRAINING FACILITY
 JOINT BASE PEARL HARBOR - HICKAM
 HAWAII AIR NATIONAL GUARD
 CONTRACT NO. W90FY09-D-0002

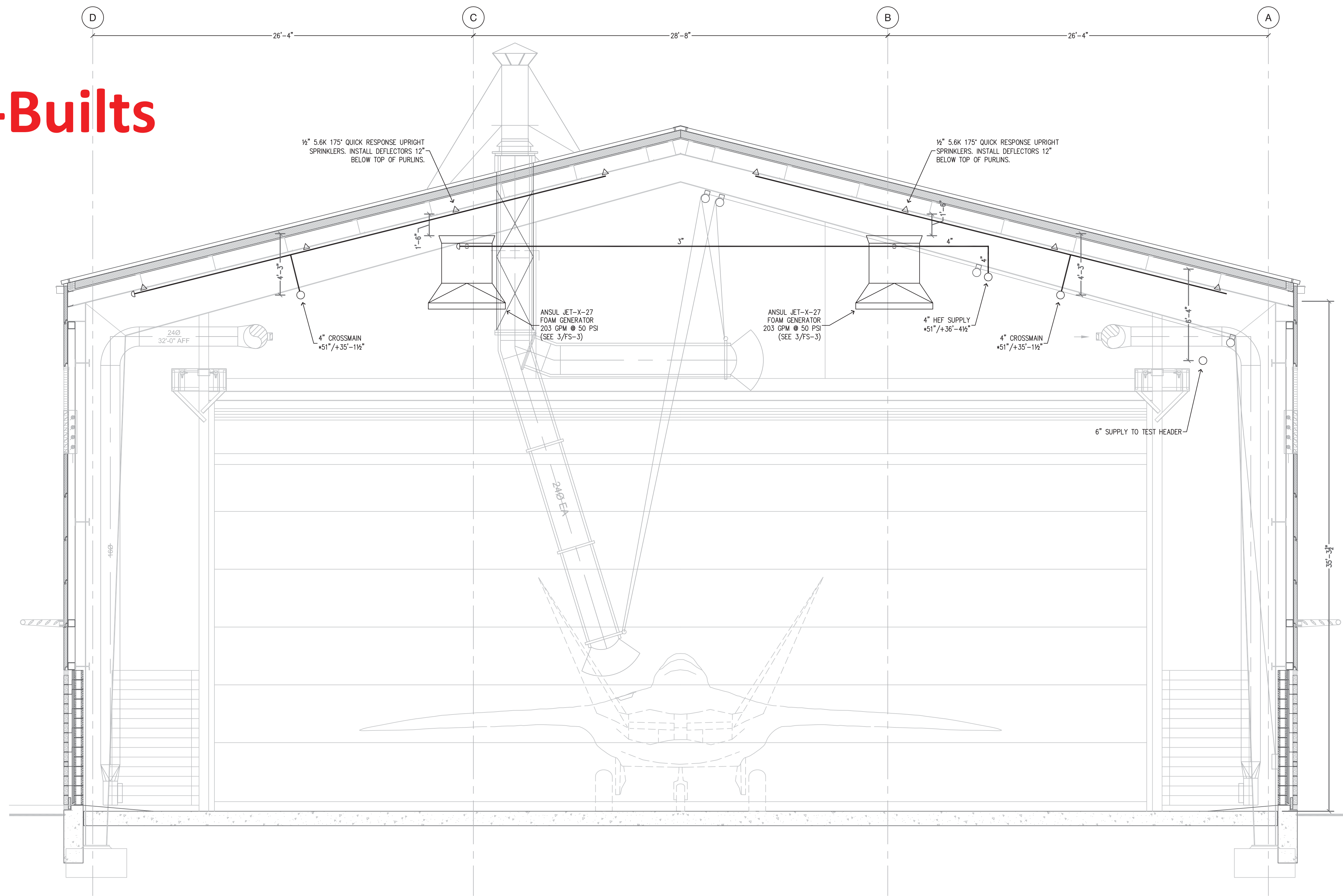
NO.	REVISION/ISSUE	DATE
1	S.S. DANNAWAY COMMENTS	6/26/14
2	S.S. DANNAWAY COMMENTS	6/29/14
3	RELOCATED RELIEF VALVES	2/24/14
4	RELOCATED VALVES	2/12/14
5	BURNS & MCDONNELL COMMENTS	1/28/14
6	REVISED UNDERGROUND SUPPLY	11/25/13

DESIGNED BY: THOMAS BURTNESS
 CHECKED BY: NICET 094915, LEVEL IV
 DATE: MAY 23, 2013

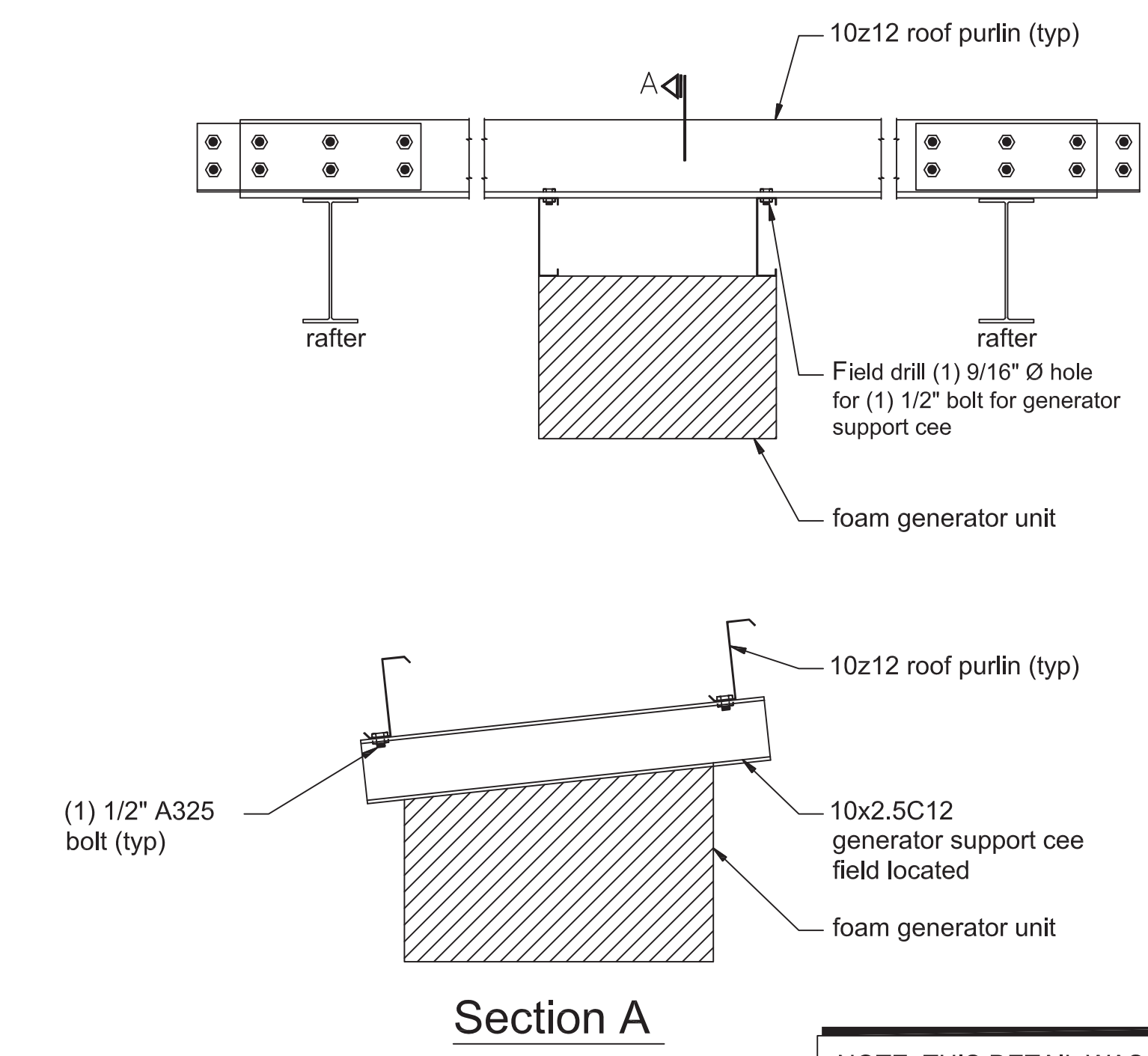
SCALE: AS SHOWN

FS-2
 SHEET 2 OF 4

As-Builts



1 FIRE SPRINKLER SECTION
SCALE: 1/4" = 1'-0"

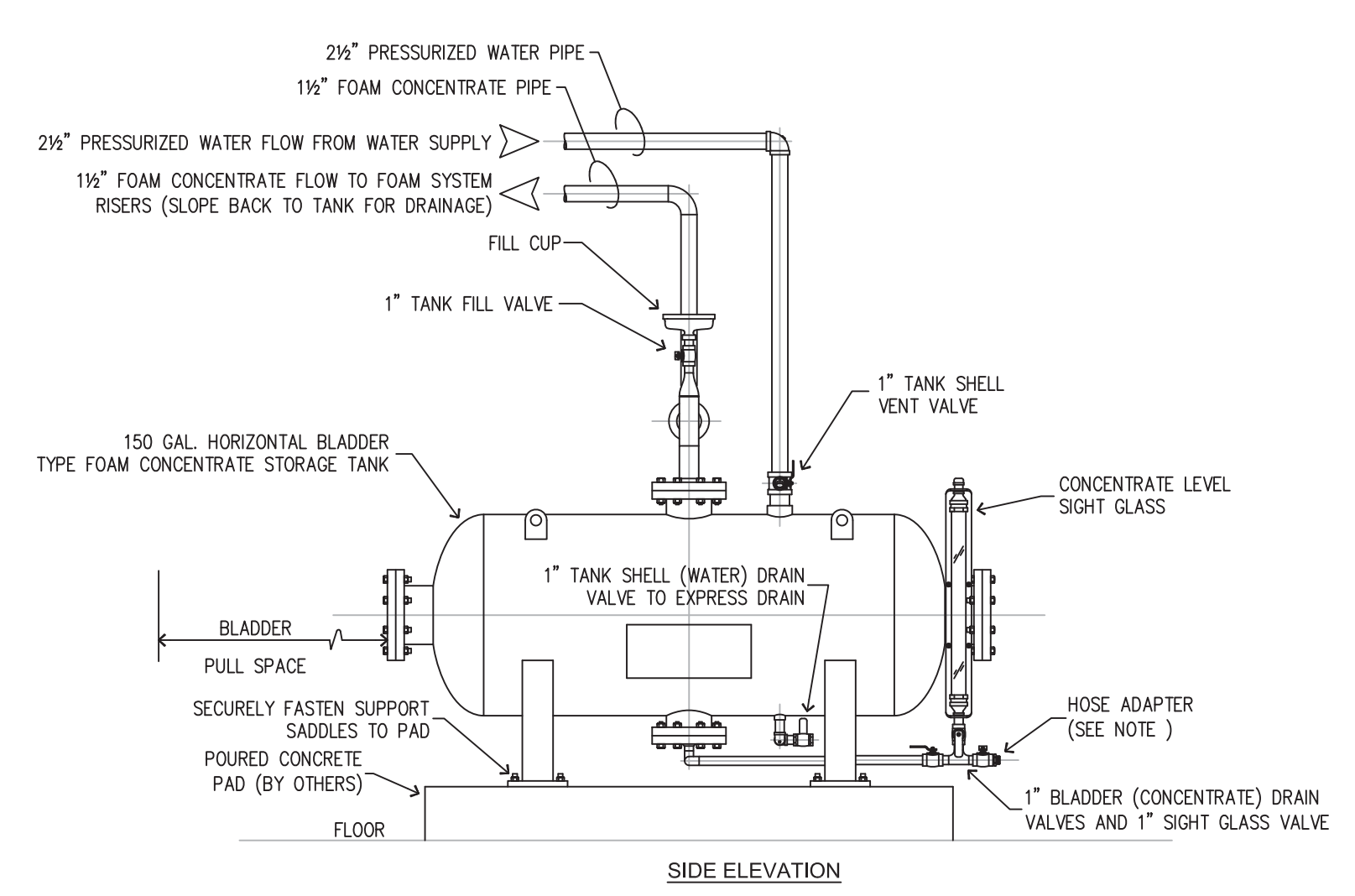
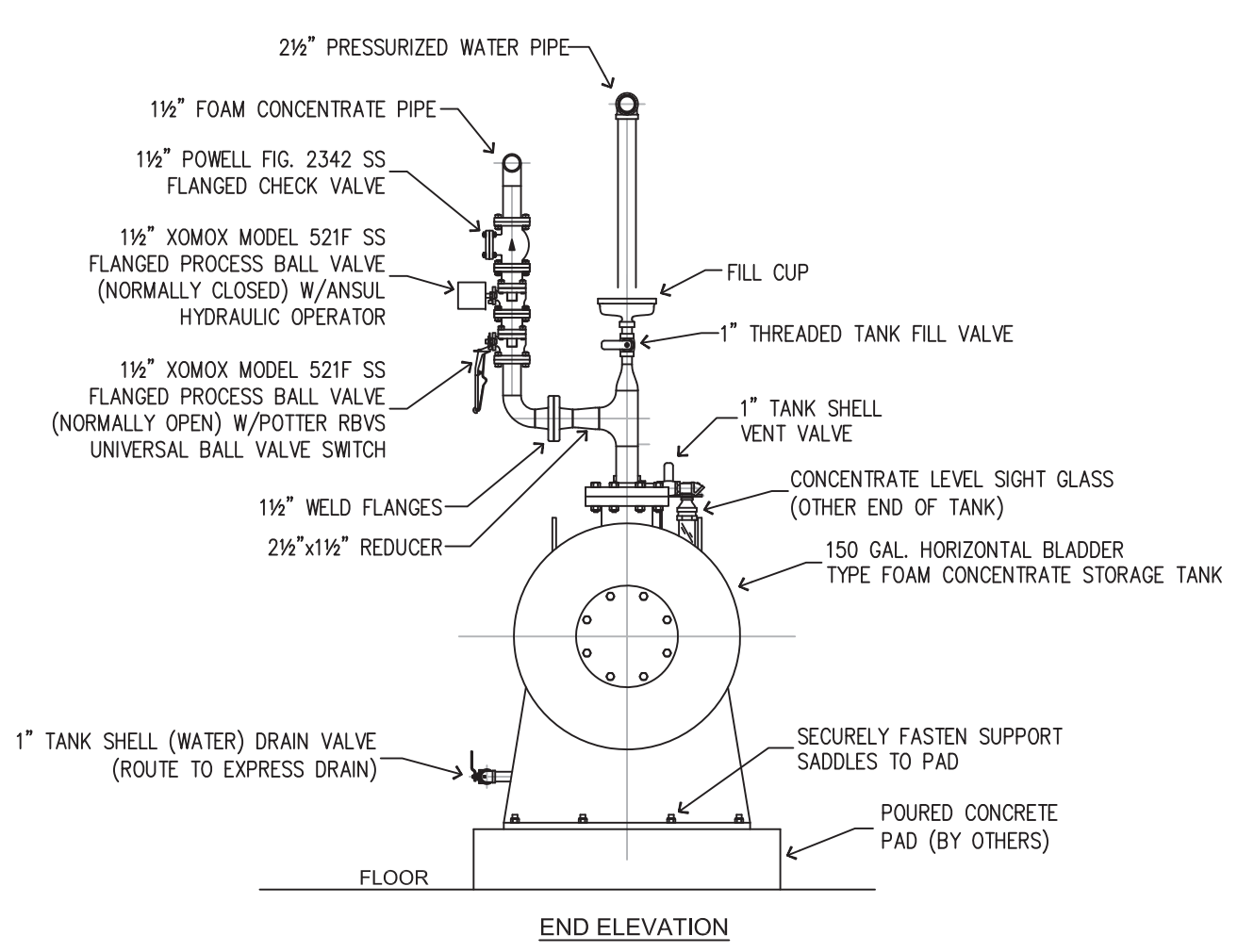
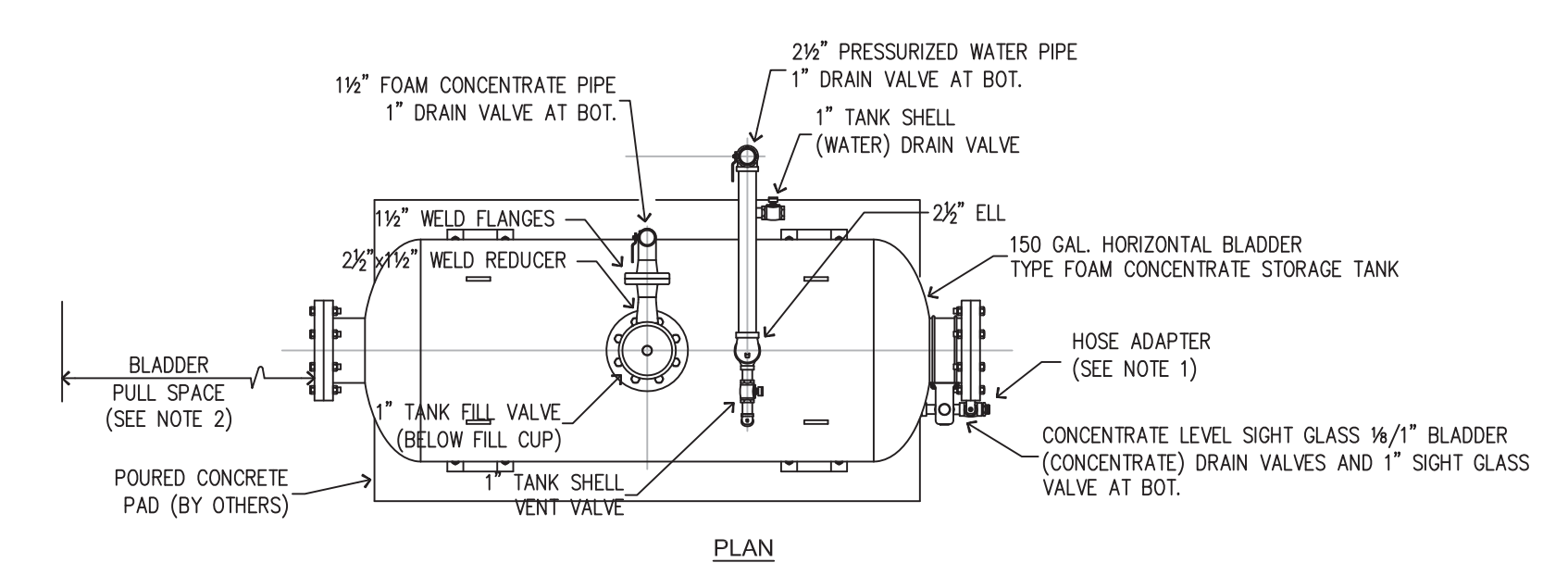


Section A
NOTE: THIS DETAIL WAS TAKEN FROM STRUCTURAL SHOP DRAWING E21 REVISION 1 DATED 4/12/13. ALL SUPPORT WORK TO BE PROVIDED BY STRUCTURAL CONTRACTOR.

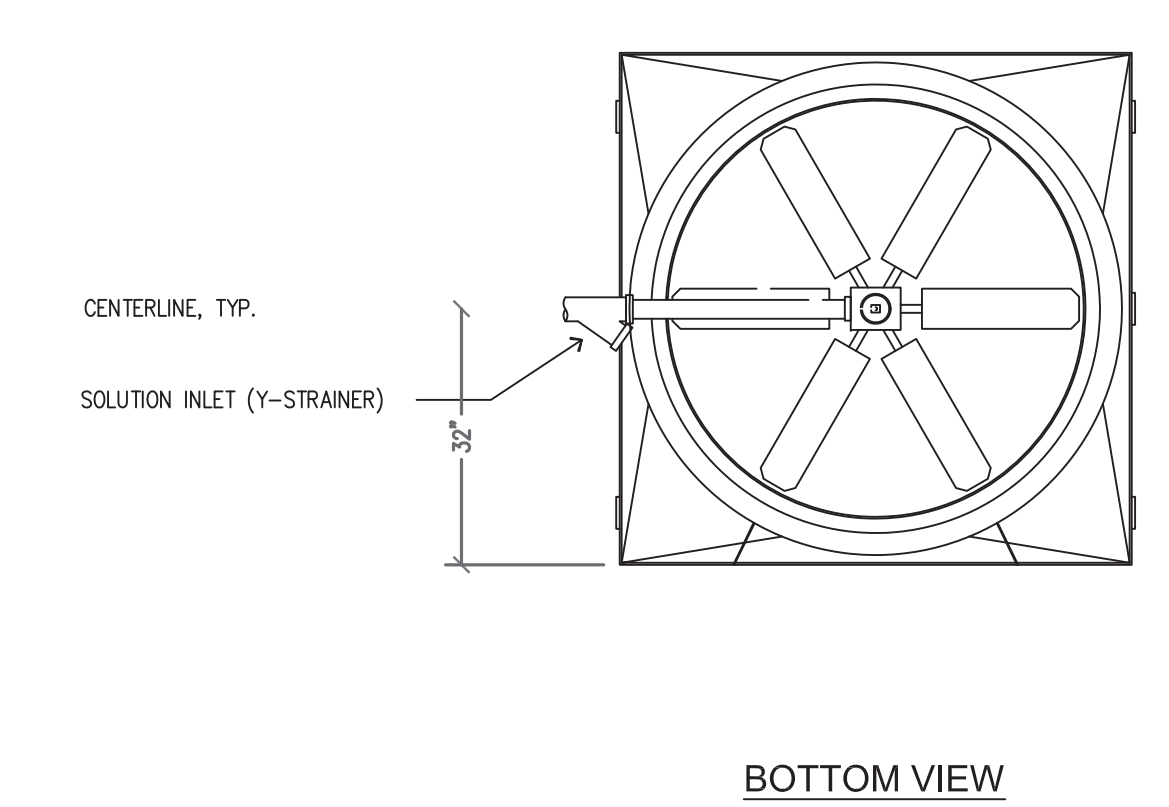
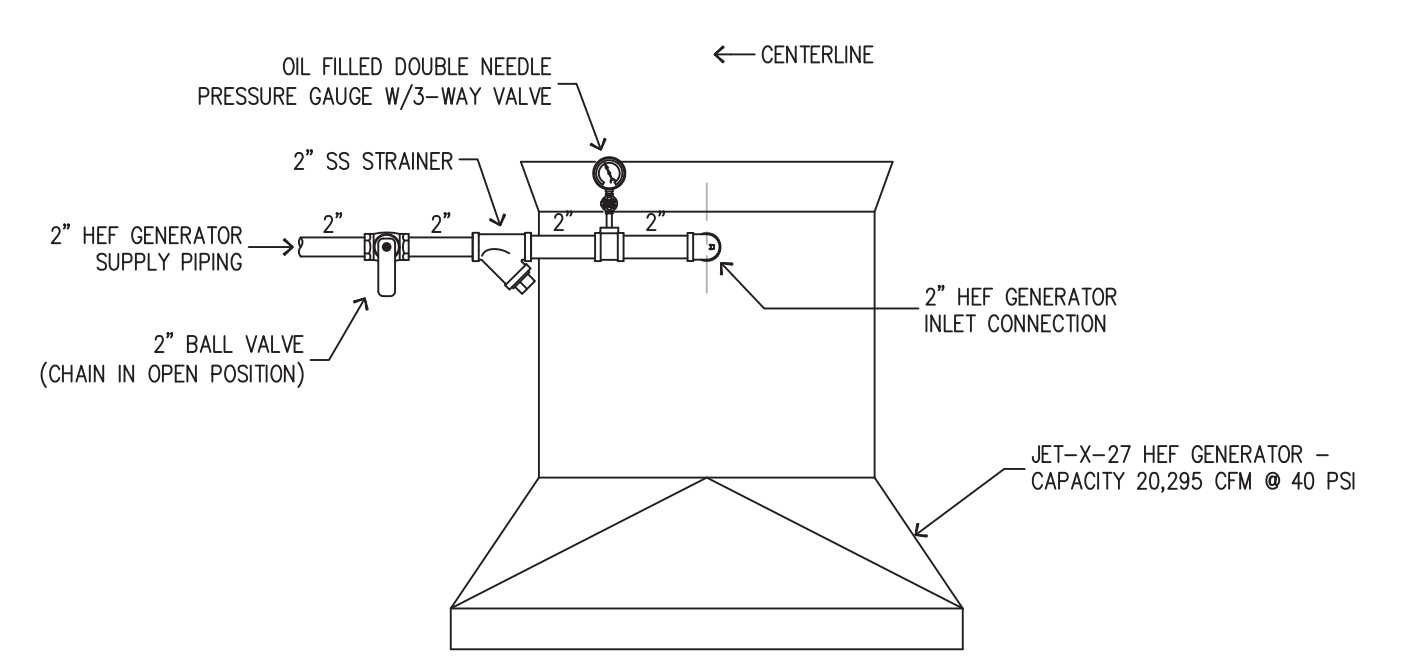
4 HEF GENERATOR SUPPORT DETAIL (BY OTHERS)
SCALE: NOT TO SCALE

FOAM CONCENTRATE STORAGE TANK NOTES:

1. BLADDER (FOAM CONCENTRATE) DRAINS AND FOAM CONCENTRATE SUPPLY PIPING DRAINS SHALL TERMINATE WITH A HOSE ADAPTER SUITABLE FOR CONNECTION TO A USER-SUPPLIED HOSE SO THE DRAINED FOAM CONCENTRATE MAY BE RECOVERED FOR RE-USE. THESE DRAINS SHALL NOT BE CONNECTED TO A SANITARY OR STORM DRAIN OR TO THE TEST AND DRAIN HEADER.
2. CLEAR AREA FOR BLADDER FULL SPACE SHALL BE IN ACCORDANCE WITH THE TANK MANUFACTURER'S INSTRUCTIONS.
3. FOAM CONCENTRATE SUPPLY SHUT OFF VALVE SHALL BE ELECTRICALLY SUPERVISED TO THE OPEN POSITION.
4. TANK SUPPORT SADDLES SHALL BE SECURELY FASTENED TO POURED CONCRETE PAD IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.



2 HEF STORAGE TANK SCHEMATIC DIAGRAM
SCALE: NOT TO SCALE



3 HEF GENERATOR DETAILS
SCALE: NOT TO SCALE

ICON FIRE SYSTEMS DESIGN
92-324 PUEONANI PLACE
KAPOLEI, HI 96707
PHONE/FAX: (808) 672-7214
WWW.ICONFIRE.COM

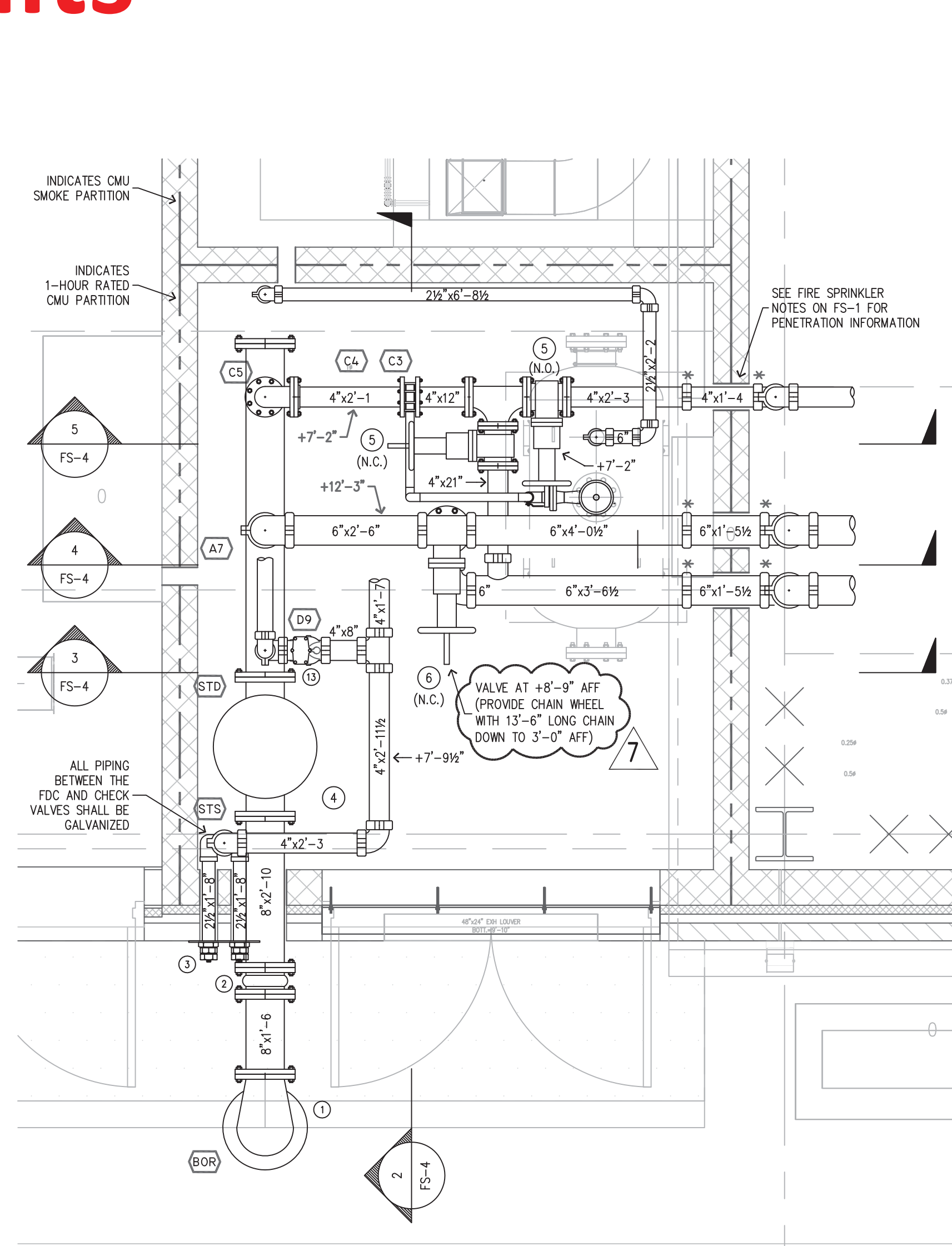
HAKO PLUMBING INC.
958 AKEPO LANE
HONOLULU, HI 96817
PHONE: (808) 832-4600
FAX: (808) 832-4599

SYMBOLS		
+10'-0"	ELEVATION ABOVE FLOOR	
+1'-0"	ELEVATION BELOW DECK	
—	RIGID COUPLING	
—	FLEXIBLE COUPLING	
—	CAP	
—	PLUG	
—	RISE	
—	DROP	
—	HANGER ASSEMBLY	
—	BRANCH LINE RESTRAINT	
—	2-WAY EARTHQUAKE BRACE	
—	4-WAY EARTHQUAKE BRACE	
—	HYDRAULIC NODE POINT	
—	MAIN FABRICATION SYMBOL	
—	BRANCH FABRICATION SYMBOL	

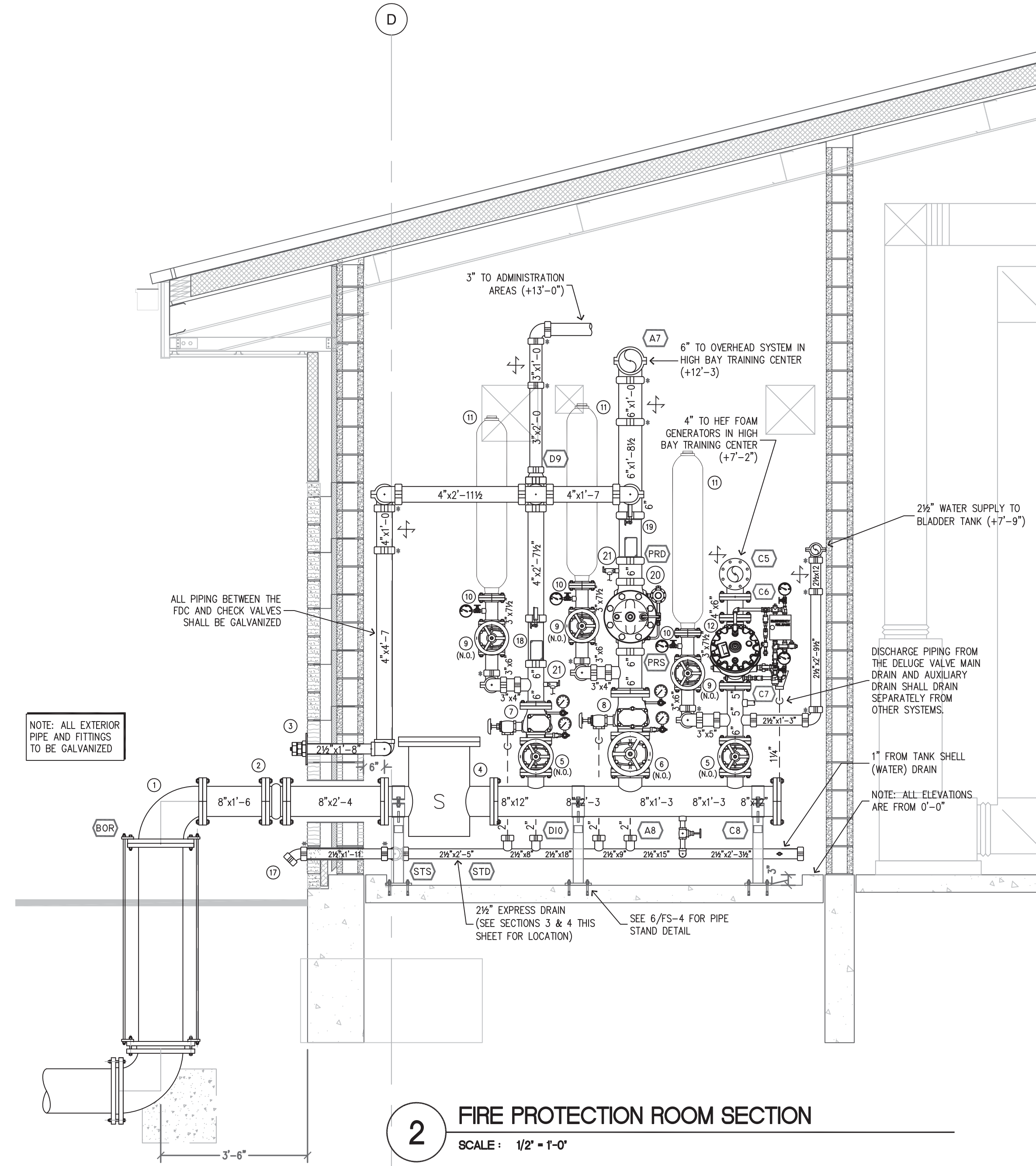
NO.	REVISION/ISSUE	DATE
1	S.S. DANNAWAY COMMENTS	6/26/14
2	S.S. DANNAWAY COMMENTS	6/29/14
3	RELOCATED RELIEF VALVES	2/24/14
4	RELOCATED VALVES	2/12/14
5	BURNS & MCDONNELL COMMENTS	1/28/14
6	REVISED UNDERGROUND SUPPLY	11/25/13

FIRE SPRINKLER SHOP DRAWINGS
TFI - F-22 SQUADRON
WEAPONS LOAD CREW TRAINING FACILITY
JOINT BASE PEARL HARBOR - HICKAM
HAWAII AIR NATIONAL GUARD
CONTRACT NO. W90FY09-D-0002

DRAWN BY: THOMAS BURTNESS NICET 094915, LEVEL IV DATE: MAY 23, 2013 SCALE: AS SHOWN	SHEET: FS-3 SHEET 3 OF 4
---	---------------------------------------



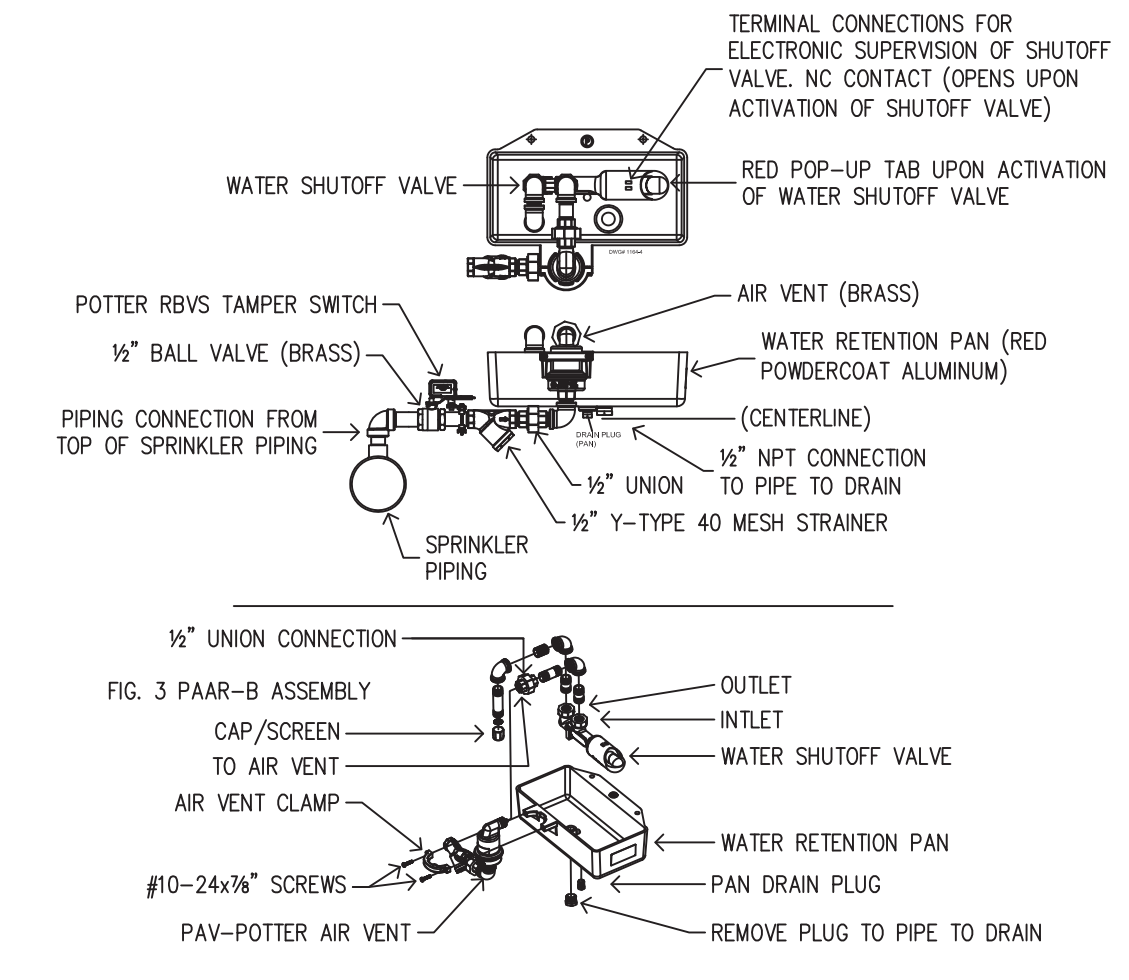
1 FIRE PROTECTION ROOM PLAN
SCALE: 1/2" = 1'-0"



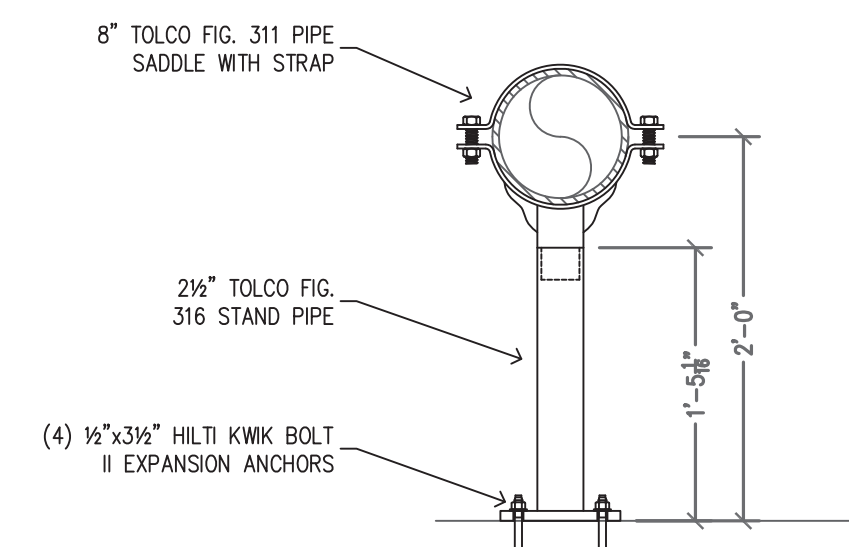
2 FIRE PROTECTION ROOM SECTION
SCALE: 1/2" = 1'-0"

KEYED NOTES:

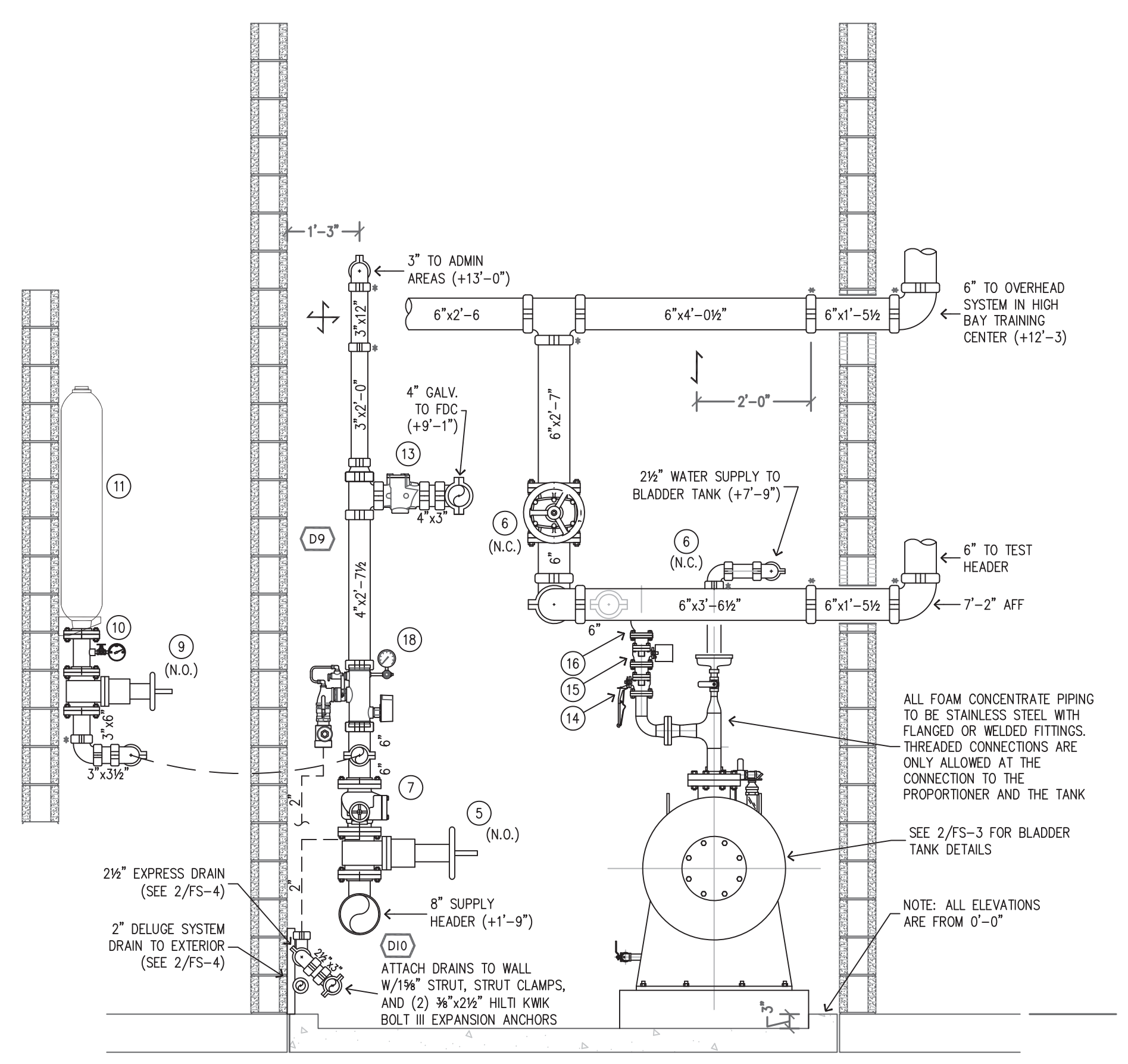
1. 1 1/2" GALVANIZED REDUCING FLANGED ELBOW
2. 8" FLANGED LIV RATED EXPANSION JOINT WITH CONTROL ROOPS
3. 2 1/2" x 4" POTTER-HODMER FIG. 5021 POLISHED CHROME FLUSH FIRE DEPT. CONNECTION (+3'-0")
4. 8" BASKET STRAINER
5. 4" FLANGED OS&Y GATE VALVE W/SUPERVISORY SWITCH
6. 6" FLANGED OS&Y GATE VALVE W/SUPERVISORY SWITCH
7. 4" TYCO MODEL AV-1-300 FLANGED ALARM CHECK VALVE W/2" DRAIN AND PRESSURE GAUGES
8. 6" TYCO MODEL AV-1-300 FLANGED ALARM CHECK VALVE W/2" DRAIN AND PRESSURE GAUGES
9. 3" FLANGED OS&Y GATE VALVE W/SUPERVISORY SWITCH
10. 1/4" PRESSURE GAUGE ASSEMBLY W/3-WAY VALVE
11. YOUNG ENGINEERING 10 GALLON SURGE SUPPRESSOR W/MOUNTING BRACKET
12. 4" ELECTRICALLY ACTUATED FLANGED DELUGE VALVE W/BRASS TRIM
13. 4" TYCO MODEL CV-11" GROOVED CHECK VALVE
14. 1 1/2" KOMOX MODEL 521F SS FLANGED PROCESS BALL VALVE (N.O.) W/POTTER RVBS UNIVERSAL BALL VALVE SWITCH
15. 1 1/2" ANSUL THREADED HYDRAULIC CONCENTRATE CONTROL VALVE (N.C.) W/ANSUL HYDRAULIC ACTUATOR
16. 1 1/2" POWELL FIG. 2342 SS FLANGED CHECK VALVE
17. DRAIN WILL DISCHARGE TO CONCRETE SIDEWALK. SPLASH BLOCK NOT REQUIRED.
18. 4" TYCO MODEL 513 RISER MANIFOLD WITH FLOW SWITCH, PRESSURE GAUGE, 1/2" ALARM TEST ORIFICE, 2" DRAIN, SIGHT GLASS, AND 175 PSI PRESSURE RELIEF VALVE.
19. 6" TYCO MODEL 513 RISER MANIFOLD WITH FLOW SWITCH, PRESSURE GAUGE, 1/2" ALARM TEST ORIFICE, 2" DRAIN, SIGHT GLASS.
20. CLA-VAL 900-21 PRESSURE REDUCING VALVE (SET OUTLET PRESSURE 68 PSI)
21. 1/2" 175 PSI PRESSURE RELIEF VALVE (CONNECT OUTLET TO 2" DRAIN PIPE FROM RISER MANIFOLD ABOVE)



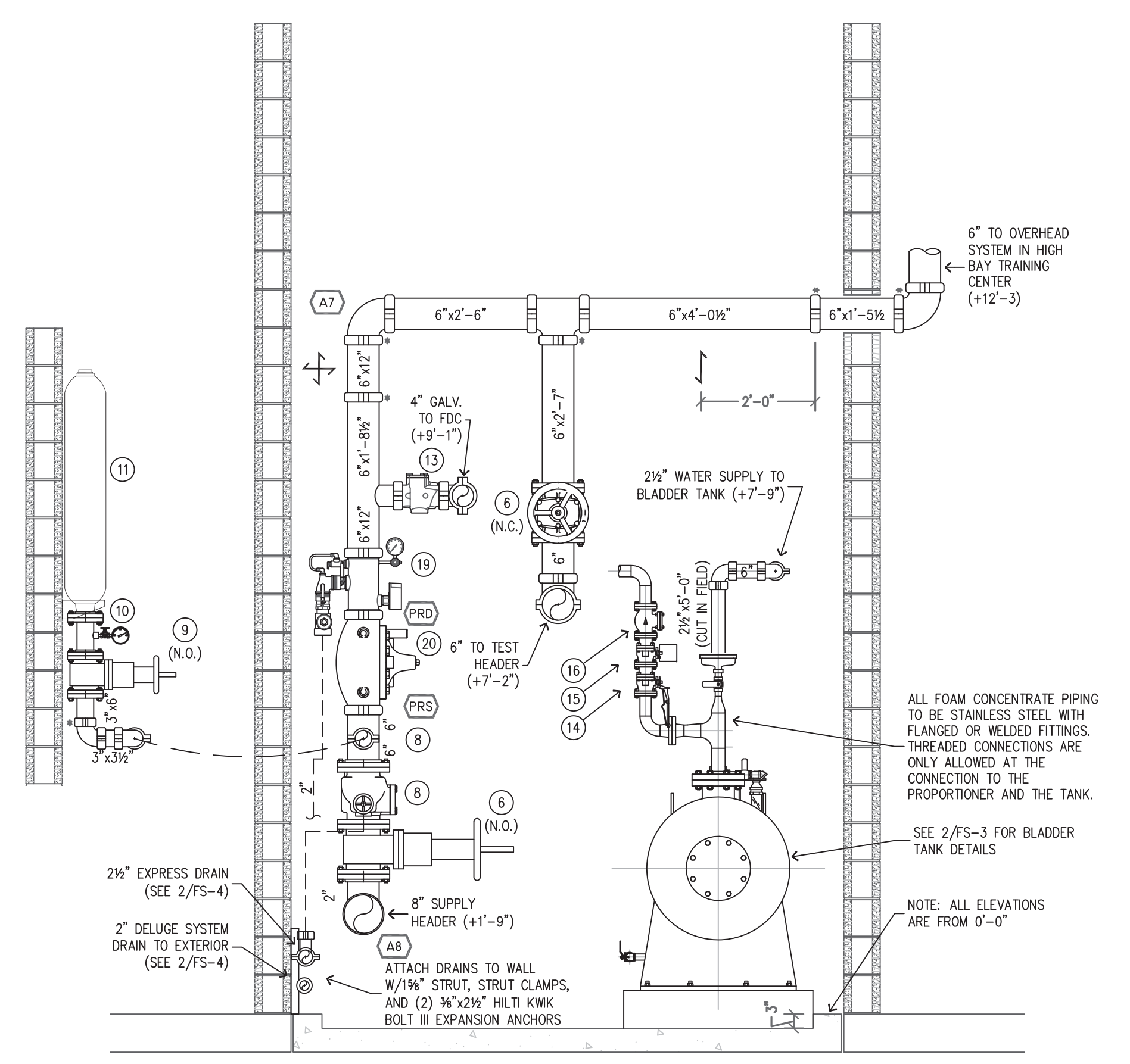
7 AIR VENT DETAIL
SCALE: NOT TO SCALE



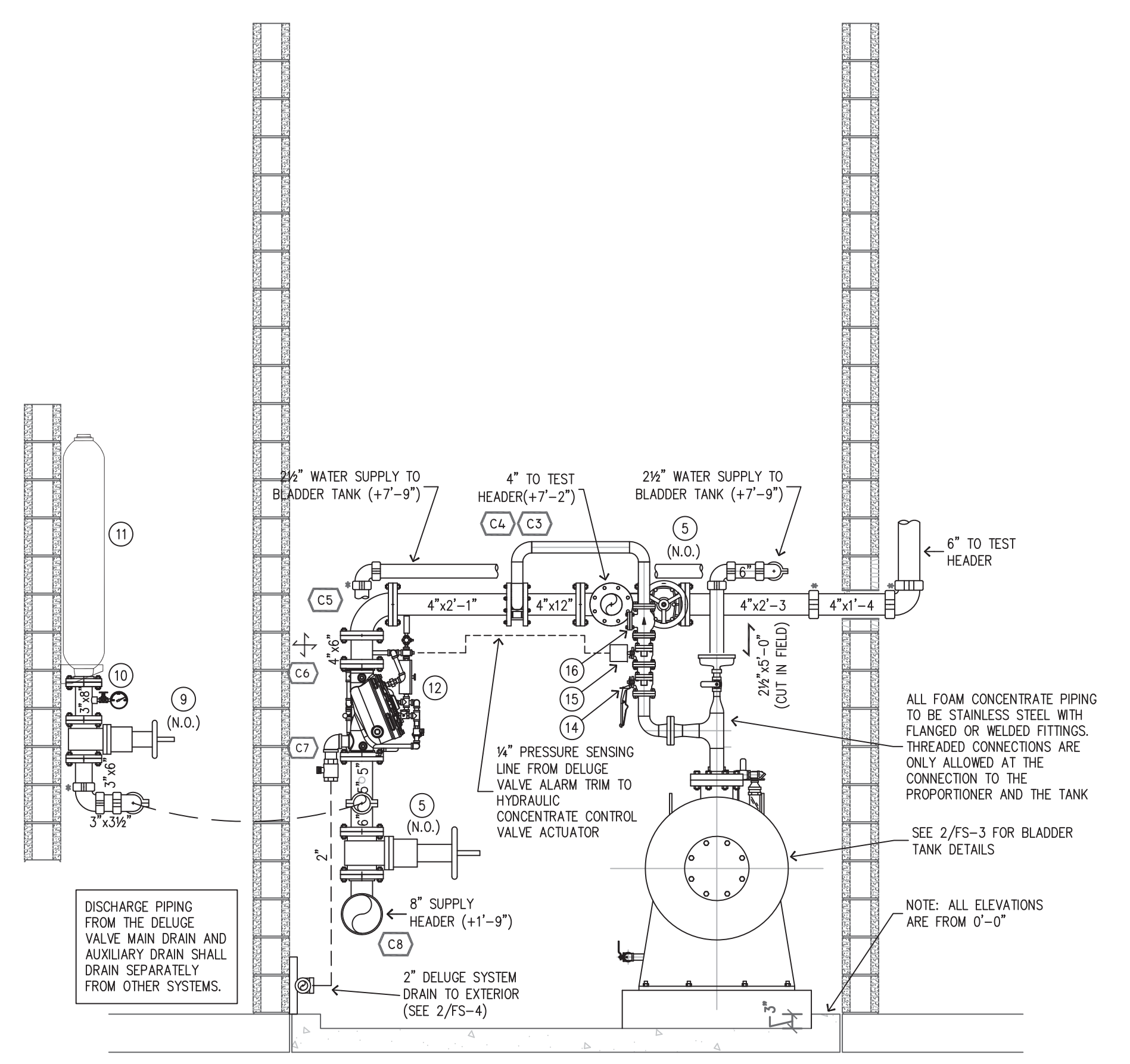
6 PIPE STAND DETAIL
SCALE: 1" = 1'-0"



3 FIRE PROTECTION ROOM SECTION
SCALE: 1/2" = 1'-0"



4 FIRE PROTECTION ROOM SECTION
SCALE: 1/2" = 1'-0"



5 FIRE PROTECTION ROOM SECTION
SCALE: 1/2" = 1'-0"

ICON FIRE SYSTEMS DESIGN

92-324 PUEONANI PLACE
KAPOLEI, HI 96707
PHONE/FAX: (808) 672-7214
WWW.ICONFIRE.COM

HAKO PLUMBING INC.
958 AKEPO LANE
HONOLULU, HI 96817
PHONE: (808) 832-4600
FAX: (808) 832-4599

SYMBOL	DESCRIPTION
+10'-0"	ELEVATION ABOVE FLOOR
+1'-0"	ELEVATION BELOW DECK
—	RIGID COUPLING
—	FLEXIBLE COUPLING
—	CAP
—	PLUG
—	RISE
—	DROP
—	HANGER ASSEMBLY
—	BRANCH LINE RESTRAINT
—	2-WAY EARTHQUAKE BRACE
—	4-WAY EARTHQUAKE BRACE
—	HYDRAULIC NODE POINT
—	MAIN FABRICATION SYMBOL
—	BRANCH FABRICATION SYMBOL

NO.	REVISION/ISSUE	DATE
1	S.S. DANNAWAY COMMENTS	6/26/14
2	S.S. DANNAWAY COMMENTS	6/26/14
3	RELOCATED RELIEF VALVES	2/24/14
4	RELOCATED VALVES	2/12/14
5	BURNS & MCDONNELL COMMENTS	1/28/14
6	REVISED UNDERGROUND SUPPLY	11/25/13

FIRE SPRINKLER SHOP DRAWINGS
TFI - F-22 SQUADRON
WEAPONS LOAD CREW TRAINING FACILITY
JOINT BASE PEARL HARBOR - HICKAM
HAWAII AIR NATIONAL GUARD
CONTRACT NO. W90FY09-D-0002

DRAWN BY: THOMAS BURTNESS
NICET 094915, LEVEL IV
DATE: MAY 23, 2013
SCALE: AS SHOWN
SHEET: FS-4
SHEET 4 OF 4