

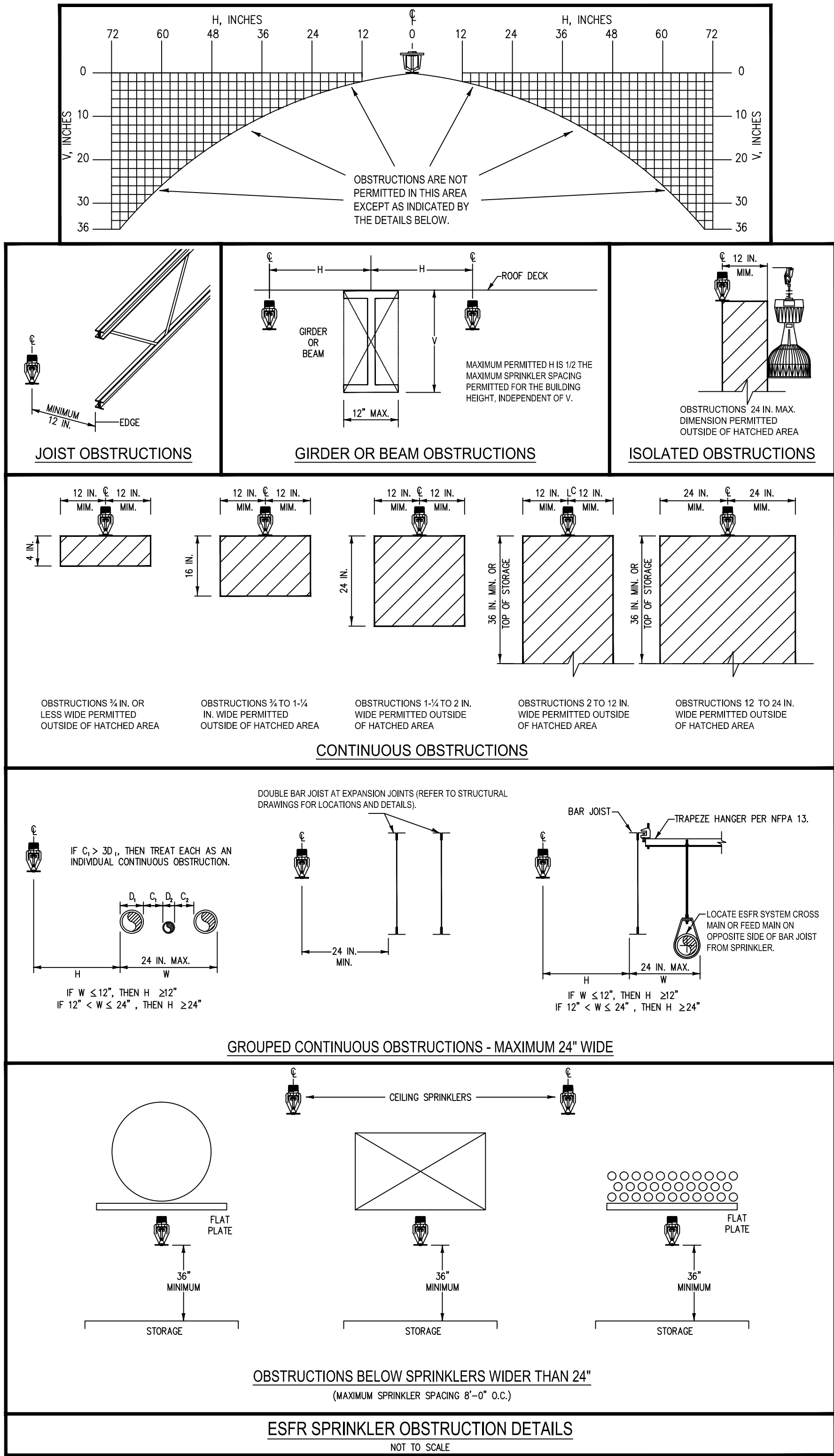
- GENERAL NOTES:
- ALL HOLES IN WALLS AND FLOORS SHALL BE CORE DRILLED OR HAVE METALLIC PIPE SLEEVES INSTALLED.
  - ALL PENETRATIONS IN FIRE RESISTIVE RATED ASSEMBLIES SHALL BE FIRE STOPPED BY APPROVED MEANS AND THE ASSEMBLY SHALL BE RESTORED TO ITS REQUIRED FIRE RESISTANCE RATINGS.
  - SEE ARCHITECTURAL PLANS FOR CEILING TYPES AND HEIGHTS.
  - WATER DAMAGE CANNOT BE TOLERATED. TAKE ANY NECESSARY MEASURES TO KEEP THE PREMISES DRY AT ALL TIMES. REPAIR WATER DAMAGE RESULTING FROM THE WORK, WHETHER INTENTIONAL OR NOT, AT NO COST TO AND TO THE SATISFACTION OF THE OWNER.
  - PRIOR TO THE OPERATION (OPEN OR CLOSE) OF ANY VALVE CONTROLLING WATER TO THE DOMESTIC OR FIRE SYSTEMS, NOTIFICATION SHALL BE GIVEN TO, AND APPROVAL OBTAINED FROM, THE GENERAL CONTRACTOR.
  - NEITHER THE ARCHITECT, OWNER, NOR ENGINEER SHALL BE RESPONSIBLE FOR PROVIDING A SAFE WORKING PLACE FOR THE CONTRACTOR, SUBCONTRACTORS, OR THEIR EMPLOYEES, OR ANY INDIVIDUAL RESPONSIBLE TO THEM FOR THE WORK. THIS RESPONSIBILITY RESTS WITH THE CONTRACTOR.

- COMPUTER ROOM FIRE SPRINKLER NOTES:
- THE COMPUTER ROOM SPRINKLER SYSTEM SHALL BE AN ELECTRIC/PNEUMATIC DOUBLE INTERLOCK PREACTION SPRINKLER SYSTEM.
  - THE ELECTRIC INTERLOCK OF THE PREACTION SYSTEM SHALL RELEASE UPON INPUT FROM A DEDICATED LISTED INTELLIGENT/ADDRESSABLE RELEASING CONTROL PANEL (RCP) CONNECTED TO SPOT-TYPE PHOTOELECTRIC SMOKE DETECTORS INSTALLED IN THE COMPUTER ROOM.
  - UPON THE ACTIVATION OF A SPOT-TYPE PHOTOELECTRIC SMOKE DETECTOR IN THE COMPUTER ROOM, THE RCP SHALL ENERGIZE THE PREACTION SYSTEM SOLENOID.
  - THE RCP SHALL BE SUPERVISED FOR ALARM, SUPERVISORY, AND TROUBLE SIGNALS BY THE MAIN FIRE ALARM CONTROL PANEL.
  - THERE SHALL BE A MINIMUM OF THREE SPOT-TYPE PHOTOELECTRIC SMOKE DETECTORS INSTALLED IN THE COMPUTER ROOM. THE FINAL QUANTITY AND SPACING SMOKE DETECTORS SHALL BE BASED ON THE AIR FLOW IN THE ROOM.

SEISMIC LOADS ANALYSIS	
IBC (2009) Section 1613	
SEISMIC IMPORTANCE FACTOR	$I_e$ 1.00
OCCUPANCY CATEGORY	II
MAPPED SPECTRAL RESPONSE ACCELERATION	$S_D$ 0.258 g $S_1$ 0.092 g
SITE CLASS	CLASS C
SPECTRAL RESPONSE COEFFICIENTS	$S_{DS}$ 0.206 g $S_{D1}$ 0.104 g
SEISMIC DESIGN CATEGORY	CATEGORY B
RESPONSE MODIFICATION FACTOR	$R_p$ 4.5
SEISMIC DESIGN FORCE	$F_p = \frac{N_A}{W_p} \times W_p$
* SEISMIC BRACING NOT REQUIRED	

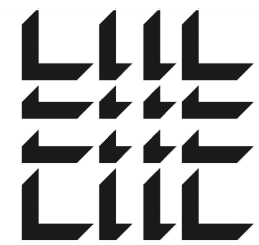
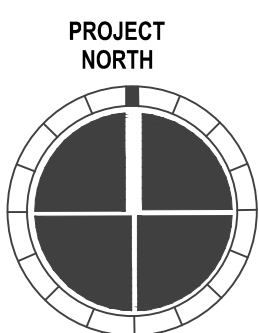
- FIRE SPRINKLER NOTES:
- CONTRACTOR SHALL PROVIDE A COMPLETE AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH DRAWINGS, SPECIFICATIONS AND NFPA 13.
  - CONTRACTOR SHALL HYDRAULICALLY PROVE THE REMOTE AREA OF EACH SEPARATE HAZARD GROUP OF EACH SYSTEM.
  - CONTRACTOR SHALL BE RESPONSIBLE FOR AVOIDING ALL CONFLICTS WITH LIGHTING FIXTURES, SKYLIGHTS, UNIT HEATERS, DIFFUSERS, GRILLES, DUCTS, CONDUIT, PIPING, CONVEYORS AND ALL OTHER OBSTRUCTIONS ENCOUNTERED. CONTRACTOR SHALL COORDINATE WITH ARCHITECTURAL, ELECTRICAL, AND MECHANICAL WORK. ANY DEVIATIONS FROM APPROVED SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE PROCEEDING WITH THE WORK.
  - CONTRACTOR SHALL COORDINATE THE POSITION AND HANGING METHOD OF ALL SPRINKLER PIPING 4 IN. AND LARGER WITH THE STRUCTURAL DRAWINGS.
  - CONTRACTOR SHALL ENSURE ALL HORIZONTAL PIPING RUNS ARE LOCATED ABOVE THE BOTTOM CHORD OF ROOF JOIST GIRDERS.
  - CONTRACTOR SHALL ENSURE ALL HORIZONTAL PIPING RUNS BENEATH THE MEZZANINE ARE LOCATED ABOVE THE BOTTOM CHORD OF THE MEZZANINE BAR JOISTS.
  - CONTRACTOR SHALL PROVIDE ALL NECESSARY MAIN AND/OR AUXILIARY DRAINS IN THE SPRINKLER SYSTEMS AND ON RISERS AS REQUIRED BY NFPA 13. TO THE MAXIMUM EXTENT POSSIBLE, ALL DRAINS SHALL TERMINATE ON EXTERIOR WALLS WITHIN 8 IN. OF GRADE. CONCRETE SPLASH BLOCKS SHALL BE PROVIDED UNDER EACH DRAIN OUTLET WHERE NECESSARY TO PREVENT SOIL EROSION.
  - ALL MECHANICAL FITTINGS SHALL BE HELD IN PLACE WITH MECHANICAL COUPLINGS OF THE SAME MANUFACTURER.
  - SPRINKLER HANGERS AND SEISMIC BRACING SHALL BE DESIGNED, LOCATED, AND INSTALLED IN ACCORDANCE WITH NFPA 13.
  - FIRE SPRINKLER CONTRACTOR SHALL PROVIDE AND INSTALL WATERFLOW ALARM DEVICES ON ALL SPRINKLER SYSTEMS FOR MONITORING BY THE FACP.
  - FIRE SPRINKLER CONTRACTOR SHALL PROVIDE AND INSTALL VALVE SUPERVISORY TAMPER DEVICES ON ALL INTERIOR FIRE PROTECTION CONTROL VALVES IN ACCORDANCE WITH IBC/IFC 903.4 FOR MONITORING BY THE FACP.
  - AUXILIARY AREA (I.E., SATELLITE OFFICE AREAS AND BATHROOMS) SPRINKLER SYSTEMS SHALL BE FED FROM THE NEAREST CEILING SYSTEM CROSS MAIN. EACH AUXILIARY AREA SHALL HAVE A SEPARATE, LISTED, ACCESSIBLE, SUPERVISED, AND INDICATING CONTROL VALVE.
  - ALL SPRINKLERS SHALL BE INSTALLED AFTER THE PIPING HAS BEEN INSTALLED AT CEILING LEVEL, AND NOT WHILE THE PIPING IS ON GROUND LEVEL.
  - ALL MAIN AND AUXILIARY DRAINS AND INSPECTOR'S TEST CONNECTIONS TERMINATING ON THE DOCK WALLS SHALL BE RUN DOWN THE DOCK WALL ONLY AT THE PERSONNEL DOORS AND NOT BETWEEN DOCK DOORS. COORDINATE PLACEMENT OF PIPING WITH CONTROLS AND OTHER EQUIPMENT, AS REQUIRED.
  - THE DESIGN BASIS WATER SUPPLY SHALL BE THE LESSER OF THE PUBLISHED DESIGN BASIS WATER SUPPLY ON SHEET F-1.0 OR ANY NEW HYDRANT FLOW TEST.

- ESFR SPRINKLER (PENDENT TYPE) COORDINATION NOTES:
- THE SPRINKLER CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER CONSIDERATION AND COORDINATION OF ALL OBSTRUCTIONS AND OTHER INSTALLED EQUIPMENT WHICH MAY HAVE AN IMPACT ON THE OPERATION OF ESFR SPRINKLERS.
  - PRIOR TO THE START OF CONSTRUCTION, THE SPRINKLER CONTRACTOR SHALL CLOSELY COORDINATE WITH ALL OTHER TRADES--INCLUDING, BUT NOT LIMITED TO, STRUCTURAL STEEL, MECHANICAL, ELECTRICAL, PLUMBING, DATA PROCESSING, AND MATERIAL HANDLING--TO ENSURE THE WATER DISCHARGE FROM ESFR SPRINKLERS WILL NOT BE PROHIBITED FROM REACHING BURNING COMMODITIES AT HIGH VOLUME AND HIGH MOMENTUM.
  - THE STANDARD TO BE UTILIZED IN IDENTIFYING ESFR SPRINKLER PLACEMENT AND OBSTRUCTION ISSUES SHALL BE THE LATEST VERSION OF FM GLOBAL PROPERTY LOSS PREVENTION DATA SHEET 2-0 FOR STORAGE SPRINKLERS. ANY OBSTRUCTION ISSUE IDENTIFIED DURING THE COURSE OF CONSTRUCTION OR ACCEPTANCE INSPECTIONS SHALL BE CORRECTED TO MEET THE REQUIREMENTS OF THIS STANDARD AT NO ADDITIONAL COST TO THE CONTRACT.
  - THE FOLLOWING ARE THE MOST COMMON RULES FOUND IN THE STANDARD FOR HANDLING OBSTRUCTIONS LOCATED ENTIRELY BELOW THE SPRINKLERS. COMPLIANCE WITH THESE RULES IN NO WAY RELIEVES THE CONTRACTOR FROM FULL COMPLIANCE WITH THE STANDARD.
    - INDIVIDUAL OBSTRUCTIONS MEASURING 3/4-IN. WIDE OR LESS AND AT LEAST 4 IN. BELOW THE SPRINKLER DEFLECTOR OR LOCATED AT LEAST 12 IN. HORIZONTALLY FROM THE CENTERLINE OF THE SPRINKLER MAY BE IGNORED.
    - CONTINUOUS OBSTRUCTIONS WIDER THAN 3/4 IN. AND NO WIDER THAN 1-1/4 IN. SHALL BE LOCATED AT LEAST 12 IN. HORIZONTALLY FROM THE CENTERLINE OF THE SPRINKLER OR AT LEAST 16 IN. VERTICALLY BELOW THE SPRINKLER DEFLECTOR.
    - CONTINUOUS OBSTRUCTIONS WIDER THAN 1-1/4 IN. AND NO WIDER THAN 2 IN. SHALL BE LOCATED AT LEAST 12 IN. HORIZONTALLY FROM THE CENTERLINE OF THE SPRINKLER OR AT LEAST 24 IN. VERTICALLY BELOW THE SPRINKLER DEFLECTOR.
    - CONTINUOUS OBSTRUCTIONS WIDER THAN 2 IN. AND NO WIDER THAN 12 IN. SHALL BE LOCATED AT LEAST 12 IN. HORIZONTALLY FROM THE CENTERLINE OF THE SPRINKLER.
    - CONTINUOUS OBSTRUCTIONS WIDER THAN 12 IN. AND NO WIDER THAN 24 IN. SHALL BE LOCATED AT LEAST 24 IN. HORIZONTALLY FROM THE CENTERLINE OF THE SPRINKLER.
    - ISOLATED RECTANGULAR OR ROUND OBSTRUCTIONS (SUCH AS LIGHT FIXTURES, JUNCTION BOXES, ETC.), IN WHICH ALL DIMENSIONS PARALLEL TO THE FLOOR ARE NO GREATER THAN 24 IN., SHALL BE LOCATED AT LEAST 12 IN. FROM THE CENTERLINE OF THE SPRINKLER.
    - OBSTRUCTIONS WIDER THAN 24 IN. IN LENGTH AND WIDTH SHALL BE POSITIONED IN ACCORDANCE WITH FIGURE 31 OF THE STANDARD, OTHERWISE ADDITIONAL SPRINKLERS SHALL BE INSTALLED UNDERNEATH THE OBSTRUCTION. IF ADDITIONAL SPRINKLERS ARE INSTALLED BENEATH A CONTINUOUS OBSTRUCTION, UP TO TWO SPRINKLERS OPERATING AT THE SAME PRESSURE AS THOSE AT THE CEILING SHALL BE ADDED TO THE CEILING DEMAND.
  - THE RULES NOTED ABOVE ASSUME OBSTRUCTIONS ARE LOCATED ON ONE SIDE OF THE ESFR SPRINKLER ONLY. ALL OBJECTS ON THE OPPOSITE SIDE OF THE SPRINKLER SHALL BE POSITIONED IN ACCORDANCE WITH FIGURE 31 OF THE STANDARD.
  - VERTICAL DUCT WORK SUPPLYING UNIT HEATERS SHALL BE CENTERED BETWEEN ESFR SPRINKLERS.
  - THE CONTRACTOR SHALL SPACE ESFR SPRINKLERS WITH CONSIDERATION OF THE LOCATION OF ALL SKYLIGHTS SO THAT AN ESFR SPRINKLER IS NOT LOCATED DIRECTLY UNDERNEATH A SKYLIGHT. REFER TO ARCHITECTURAL DRAWINGS FOR THE LOCATIONS OF SKYLIGHTS. INDICATE COORDINATION ON THE SHOP DRAWINGS.
  - THE HYDRAULIC DESIGN OF THE ESFR SPRINKLER SYSTEM SHALL CONSIDER TWO ADDITIONAL SPRINKLERS IN THE SYSTEM DESIGN AREA TO ACCOUNT FOR ADDITIONAL SPRINKLERS INSTALLED BENEATH CONVEYORS, OR OTHER OBSTRUCTIONS. REFER TO THE SPECIFICATIONS.
  - ESFR SPRINKLER LOCATIONS SHALL BE COORDINATED WITH THE LIGHTING FIXTURE LOCATIONS, AS INDICATED ON THE ELECTRICAL DRAWINGS, IN ORDER TO AVOID POTENTIAL OBSTRUCTION ISSUES. SEE DETAIL ON ELECTRICAL DRAWINGS FOR THE MINIMUM REQUIRED CLEARANCES TO THE FIXTURE. INDICATE COORDINATION ON THE SHOP DRAWINGS.
  - COORDINATE THE LOCATION OF ALL HIGH-VOLUME LOW-SPEED (HVLS) CEILING FANS SUCH THAT THE FAN HUB IS INSTALLED CENTERED BETWEEN FOUR ESFR SPRINKLERS AND THAT THE TOP OF THE FAN BLADES (AIRFOILS) ARE A MINIMUM OF 36" BELOW THE SPRINKLER DEFLECTOR. INDICATE COORDINATION ON THE SHOP DRAWINGS.
  - PROVIDE SPRINKLER PROTECTION BELOW CONVEYOR OBSTRUCTIONS INDICATED ON THE PLANS. SPRINKLER PROTECTION SHALL CONSIST OF ESFR SPRINKLERS (OF THE SAME TYPE AT THE CEILING) HYDRAULIC DESIGN SHALL CONSIDER TWO OF THESE SPRINKLERS OPERATING SIMULTANEOUSLY WITH 12 SPRINKLERS AT THE CEILING. REFER TO SPRINKLER DESIGN SCHEDULE FOR ADDITIONAL DESIGN REQUIREMENTS.



SPRINKLER DESIGN SCHEDULE (REFERENCE SPECIFICATION SECTION 13930)																							
AREA DESIGNATION	AREA DESCRIPTION	AREA CEILING HEIGHT	AREA MIN. CLEAR HEIGHT	TOP OF PRODUCT	HAZARD DESCRIPTION	CEILING SYSTEM								IN-RACK SPRINKLERS								INSIDE/ OUTSIDE HOSE (GPM)	NOTES
						SYSTEM NO.	SYSTEM TYPE	DENSITY (GPM/ SQFT)	REMOTE AREA (SQFT)	NO. SPKRS	PRESSURE OR FLOW	SPKR TYPE	SPKR SPACING	SYSTEM NO.	NO. SPKRS	PRESSURE OR FLOW	SPKR TYPE	MRR # LEVELS & TYPE	DRR # LEVELS & TYPE	SRR # LEVELS & TYPE			
A	GENERAL OFFICE SPACE	SEE ARCH.	N/A	N/A	LIGHT HAZARD	36	WET CONTROL	0.10	1,500	-	-	QR K-5.6 ORD. TEMP.	225 MAX.	-	-	-	-	-	-	0 / 100	REMOTE AREA REDUCTION PERMITTED IN ACCORDANCE WITH NFPA 13.  ROOMS SUCH AS STORAGE, ELECTRICAL, AND COMPUTER ROOMS LARGER THAN 130 SQ. FT. SHALL BE PROTECTED IN ACCORDANCE WITH ORDINARY HAZARD GROUP I CRITERIA.		
B	LOW BAY GENERAL STORAGE WAREHOUSE CEILING	40'-0"	32'-0"	35'-0"	ORDINARY CLASS I-HV COMBUSTIBLES & CARTONED GROUP A PLASTICS IN RACKS W/8' AISLES	7 THRU 18 & 23	WET SUP-PRESSION	-	-	12	122 GPM	ESFR, PENDENT, K-16.8, ORD. TEMP.	100 SQFT MAX., 80 SQFT MIN.	-	-	-	-	-	-	100 / 150	REFERENCE: NFPA 13, FMDS 8-9, AND FMDS 2-0  UP TO 2 ADDITIONAL SPRINKLERS SHOULD BE INCLUDED IN THE HYDRAULIC DESIGN TO ACCOUNT FOR POTENTIAL OBSTRUCTIONS		
C	HIGH BAY GENERAL STORAGE WAREHOUSE IN-RACK	51'-8"	45'-0"	45'-0"	ORDINARY CLASS I-HV COMBUSTIBLES & CARTONED GROUP A PLASTICS IN RACKS W/8' AISLES	7 THRU 18	WET CONTROL	0.45	2,000	-	-	QR UPR K=11.2 ORD. TEMP.	100 SQFT MAX.	-	-	-	-	-	-	-	REFERENCE: NFPA 13, FMDS 8-9, AND FMDS 2-0  BALANCE THE IN-RACK AND CEILING SPRINKLER WATER DEMANDS		
D	HIGH BAY GENERAL STORAGE WAREHOUSE	51'-8"	45'-0"	45'-0"	ORDINARY CLASS I-HV COMBUSTIBLES & CARTONED GROUP A PLASTICS IN RACKS W/8' AISLES	-	WET CONTROL	-	-	-	-	-	-	32 THRU 35	14 ON 2 LEVELS	30 GPM	QR K-8.0 ORD. TEMP.	-	-	-	REFERENCE: NFPA 13, FMDS 8-9, AND FMDS 2-0  BALANCE THE IN-RACK AND CEILING SPRINKLER WATER DEMANDS  SEE SHEET F-1.2 FOR BASE AND ALTERNATE IN-RACK SPRINKLER LAYOUT		
-	HIGH BAY IDLE PALLET STORAGE	-	-	-	IDLE WOOD PALLETS IN RACKS	-	-	-	-	-	-	-	-	-	4 ON 2 LEVELS	50 PSI	QR K=8.0 ORD. TEMP.	-	-	-	REFERENCE: NFPA 13, FMDS 8-9, AND FMDS 2-0  BALANCE THE IN-RACK AND CEILING SPRINKLER WATER DEMANDS		
E	BELOW FUTURE MEZZANINES	UNK.	UNK.	UNK.	ORDINARY CLASS I-HV COMBUSTIBLES & CARTONED GROUP A PLASTICS	24 THRU 31	WET CONTROL	0.40	2,500	-	-	QR UPR K=11.2 ORD. TEMP.	100 SQFT MAX.	-	-	-	-	-	-	100 / 400	REFERENCE: NFPA 13		
F	SHIPPING PROJECTIONS	28'-6"	UNK.	25'-0"	ORDINARY CLASS I-HV COMBUSTIBLES & CARTONED GROUP A PLASTICS IN RACKS W/8' AISLES	1 THRU 6	WET SUP-PRESSION	-	-	12	99.4 GPM	ESFR, PENDENT, K-14.0 OR K-16.8, ORD. TEMP.	100 SQFT MAX., 80 SQFT MIN.	-	-	-	-	-	-	100 / 150	REFERENCE: NFPA 13, FMDS 8-9, AND FMDS 2-0  UP TO 2 ADDITIONAL SPRINKLERS SHOULD BE INCLUDED IN THE HYDRAULIC DESIGN TO ACCOUNT FOR POTENTIAL OBSTRUCTIONS		
G	SHIPPING CONVEYOR PLATFORMS	20'-0"	UNK.	12'-0"	ORDINARY CLASS I-HV COMBUSTIBLES & CARTONED GROUP A PLASTICS	1 THRU 6	WET CONTROL	0.40	2,500	-	-	QR UPR K=11.2 ORD. TEMP.	100 SQFT MAX.	-	-	-	-	-	-	100 / 400	REFERENCE: NFPA 13		
H	FIRE PUMP ROOM	SEE ARCH.	N/A	N/A	ORDINARY HAZARD GROUP 1	-	WET CONTROL	0.30	ENTIRE	-	-	QR K-8.0 HIGH TEMP.	130 MAX.	-	-	-	-	-	-	100 / 400	REFERENCE: NFPA 13		
I	COMPUTER ROOM	SEE ARCH.	N/A	N/A	ORDINARY HAZARD GROUP 1	-	PREACTION CONTROL	0.15	ENTIRE	-	-	QR K-5.6 ORD. TEMP. DRY PENDENT	130 MAX.	-	-	-	-	-	-	100 / 150	SEE COMPUTER ROOM NOTES FOR SPECIAL INSTRUCTIONS.  CONCEALED SPRINKLERS WITH WHITE COVER PLATES.		

LEGEND			
FACP	FIRE ALARM CONTROL PANEL	2-WAY FIRE HYDRANT	
ANN	REMOTE FIRE ALARM ANNUNCIATOR	3-WAY FIRE HYDRANT	
TVSS	SURGE SUPPRESSOR	AWWA GATE VALVE WITH POST INDICATOR	
NAC	POWER SUPPLY FOR NOTIFICATION APPLIANCES	AWWA GATE VALVE WITH ROADWAY BOX	
F	MANUAL FIRE ALARM PULL STATION	FIRE DEPT. CONNECTION (4 INLETS)	
R	ADDRESSABLE RELAY MODULE	SPRINKLER DESIGN SCHEDULE ITEM	
M	ADDRESSABLE MONITORING MODULE	DRY CONTACTS	
C	ADDRESSABLE CONTROL MODULE	FLOW SWITCH	
XX	STROBE ONLY WITH CANDELA RATING	TAMPER SWITCH	
XX	HORN/STROBE WITH CANDELA RATING	DUCT SMOKE DETECTOR	
P	SMOKE DETECTOR, PHOTOELECTRIC-TYPE	INDICATES WEATHERPROOF DEVICE	
RCP	PREACTION RELEASING CONTROL PANEL	INDICATES CEILING MOUNTED DEVICE	
DACT	DIGITAL ALARM COMMUNICATOR TRANSMITTER	HEAT DETECTOR	



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PRINT RECORD

NUMBER	DATE	DESCRIPTION
07/31/2013		ISSUED FOR BID/PERMIT
08/09/2013		ADDENDUM NO. 1

PROJECT INFORMATION

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THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS AT THE SITE BEFORE PROCEEDING WITH EACH PHASE OF HIS WORK.  
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DATE	PROJECT NO
07/24/13	2013-018

SHEET TITLE  
FIRE PROTECTION  
NOTES AND DETAILS

SHEET NUMBER

F-0.0

FOR CONSTRUCTION



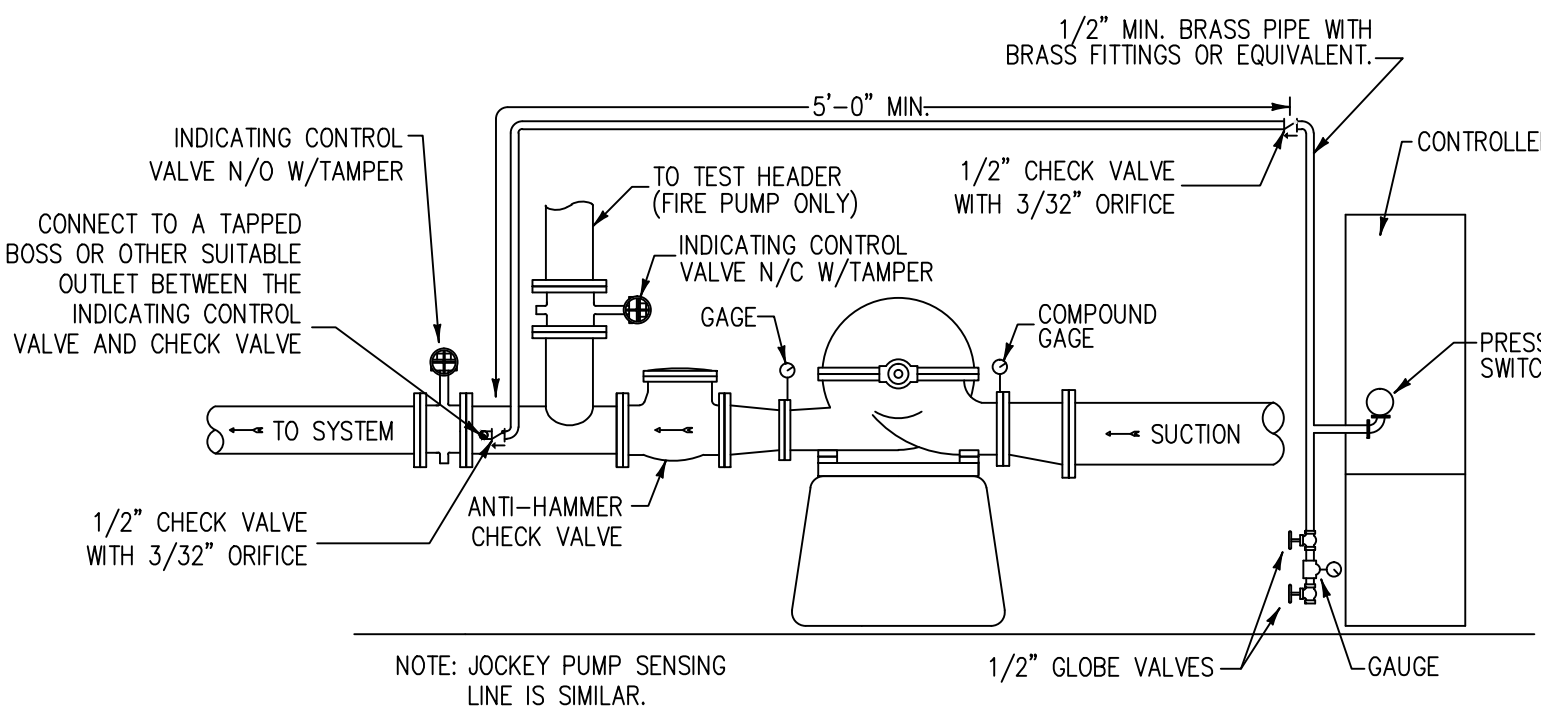
DIESEL FIRE PUMP NOTES:

- A COMPLETE DIESEL ENGINE DRIVEN FIRE PUMP AND ASSOCIATED PUMP ROOM INSTALLATION SHALL BE PROVIDED IN ACCORDANCE WITH NFPA 20 AND NFPA 24 AND THE DRAWINGS AND SPECIFICATIONS.
- PUMP CASING RELIEF VALVE (IF PROVIDED) DISCHARGE AND PACKING GLAND DRAIN PORTS SHALL BE SEPARATELY ROUTED TO FLOOR DRAIN OR EXTERIOR. ROUTE PIPE TO AVOID CREATING TRIP HAZARDS. FLOOR DRAIN SHALL DISCHARGE AS REQUIRED PER LOCAL REQUIREMENTS.
- FIRE PUMP AND JOCKEY PUMP CONTROLLER PRESSURE SENSING LINES SHALL BE COMPLETELY SEPARATE AND INDEPENDENT. SENSING LINE CONNECTIONS SHALL BE MADE BETWEEN THE DISCHARGE CHECK VALVES AND DISCHARGE CONTROL VALVES.
- PROVIDE PIPE STANDS, HANGERS AND SEISMIC BRACING IN ACCORDANCE WITH NFPA 13 AND NFPA 20.
- FIRE ALARM CONTROL PANEL SHALL MONITOR THE FOLLOWING CONDITIONS FROM THE FIRE PUMP CONTROLLER:
  - ENGINE RUNNING CONDITION (SUPERVISORY).
  - CONTROLLER/ ENGINE TROUBLE (SUPERVISORY), INCLUDING ALL CONDITIONS REQUIRED BY NFPA 20
  - FIRE PUMP CONTROLLER MAIN SWITCH IN THE OFF OR MANUAL POSITION (SUPERVISORY).
  - FUEL LEAKAGE IN ANNULAR SPACE OF FUEL TANK (SUPERVISORY)
  - LOW PUMP ROOM TEMPERATURE (SUPERVISORY)
  - DIESEL FUEL LEVEL SWITCH
- SEQUENCE OF OPERATION:
  - MAIN RELIEF VALVE SET POINT SHALL BE 175 PSI.
  - JOCKEY PUMP STOP POINT SHALL BE 175 PSI.
  - JOCKEY PUMP START POINT SHALL BE 160 psi.
  - FIRE PUMP START POINT SHALL BE 155 PSI.
  - THE FIRE PUMP SHALL BE ARRANGED TO RUN UNTIL MANUALLY SHUT OFF. AUTOMATIC SHUTOFF CAPABILITIES SHALL NOT BE INSTALLED OR CONNECTED.
- FIRE PUMP SHALL BE CERTIFIED PER NFPA 20. FIRE PUMP AND CONTROLLER MANUFACTURER'S REPRESENTATIVES MUST BE PRESENT FOR ACCEPTANCE TESTING.
- FIRE SPRINKLER CONTRACTOR SHALL PROVIDE AND INSTALL THE FOLLOWING DEVICES REQUIRED TO BE MONITORED BY THE FIRE ALARM SYSTEM AS EITHER DISTINCT ADDRESSABLE POINTS OR THROUGH THE COMMON TROUBLE CONTACT
  - PUMP ROOM LOW TEMPERATURE SWITCH
  - DIESEL FUEL LEAKAGE SWITCH
  - DIESEL FUEL LEVEL SWITCH
- COORDINATE DEVICE AND EQUIPMENT LOCATIONS IN THE PUMP ROOM WITH ACTUAL DOOR PLACEMENT.
- PDL HAS BEEN UTILIZED DUE TO THE MAXIMUM ANTICIPATED STSTIC PRESSURE.

DIESEL FIRE PUMP ROOM EQUIPMENT LIST			
NO.	NAME	NO.	NAME
1	SUPPLY PIPING	16	ECCENTRIC REDUCER (IF REQUIRED)
2	OS&Y VALVE WITH TAMPER SWITCH	17	45° ELBOW (ANGLED DOWN) AND CONCRETE SPLASH BLOCK
3	2000 GPM DIESEL FIRE PUMP (CW ROTATION)	18	10"x10"x6" REDUCING TEE TO RELIEF VALVE
4	BATTERIES	19	JOCKEY PUMP (JP-1)
5	CONCENTRIC REDUCER (IF REQUIRED)	20	JOCKEY PUMP CONTROLLER
6	6" PRESSURE RELIEF VALVE AND 6"x10" ENCLOSED WASTE CONE	21	VENTILATION OPENING
7	CHECK VALVE - ANTI-HAMMER TYPE	22	STAINLESS STEEL JACKETED, INSULATED EXHAUST PIPE AND MUFFLER
8	BUTTERFLY VALVE WITH TAMPER SWITCH (SUPERVISED CLOSED)	23	NOT USED
9	FIRE PUMP TEST HEADER W/SIX 2-1/2" HOSE VALVES WITH BALL DRIP	24	MONITOR MODULES FOR FLOW AND TAMPER SWITCHES
10	10"x10"x8" REDUCING TEE TO TEST HEADER	25	AIR RELEASE
11	BUTTERFLY VALVE WITH TAMPER SWITCH	26	PIPE STAND
12	CHECK VALVE FOR BY-PASS LINE	27	1-1/4" OS&Y VALVE
13	FIRE PUMP CONTROLLER (PDL CONTROL MAY BE CONSIDERED)	28	1-1/4" RUBBER-SEATED SPRING LOADED CHECK VALVE
14	FUEL TANK WITH CONTAINMENT DOUBLE WALL FUEL TANK	29	WALL POST INDICATOR
15	MONITOR MODULES FOR FIRE PUMP MONITORING	30	NOT USED

PUMP SCHEDULE						
MARK	SERVICE	RATED FLOW (GPM)	MAX. NET SHUT-OFF PRESSURE (PSI)	RPM	MAX. RATED HP	VOLTAGE PHASE HERTZ
FP-2	FIRE PUMP	2,000	95	2,100	154	120 / 3 / 60
JP-1	JOCKEY PUMP	15	130	3,500	3	460 / 3 / 60

NOTES: PREFERRED FIRE PUMP MANUFACTURERS: PATTERSON, PEERLESS



3 TYPICAL PUMP SENSING LINE DETAIL  
F-1.2 SCALE: NONE

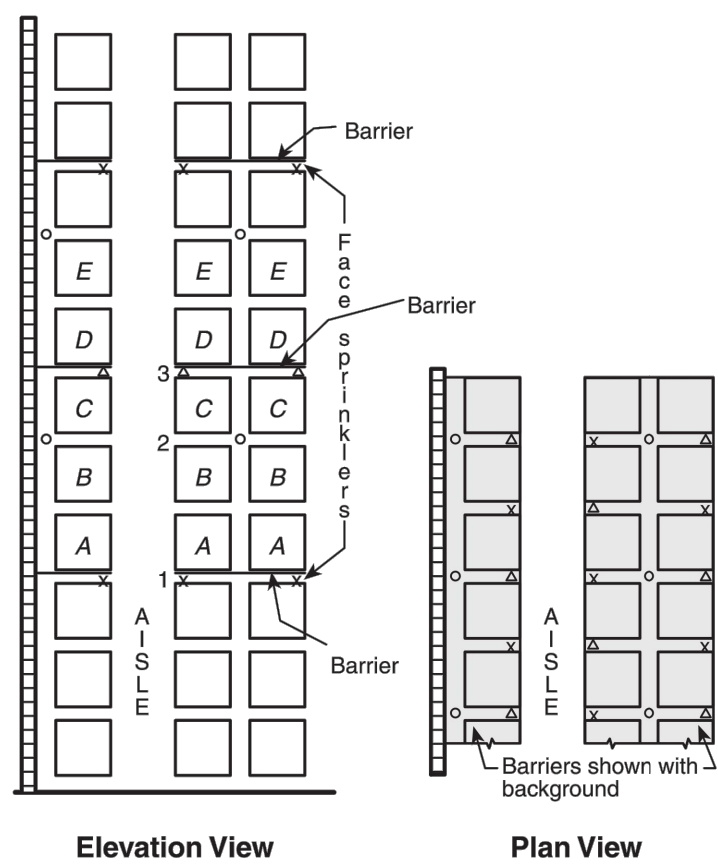


FIGURE 17.3.1.2(a) In-Rack Sprinkler Arrangement, Group A Plastic Commodities, Storage Height Over 25 ft (7.6 m) — Option 1.

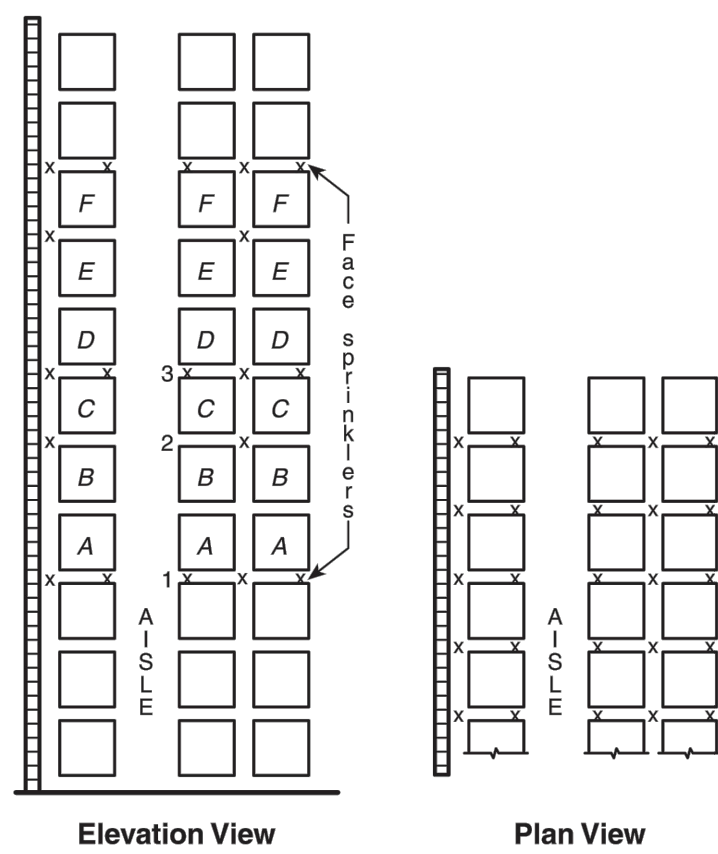


FIGURE 17.3.1.2(b) In-Rack Sprinkler Arrangement, Group A Plastic Commodities, Storage Height Over 25 ft (7.6 m) — Option 2.

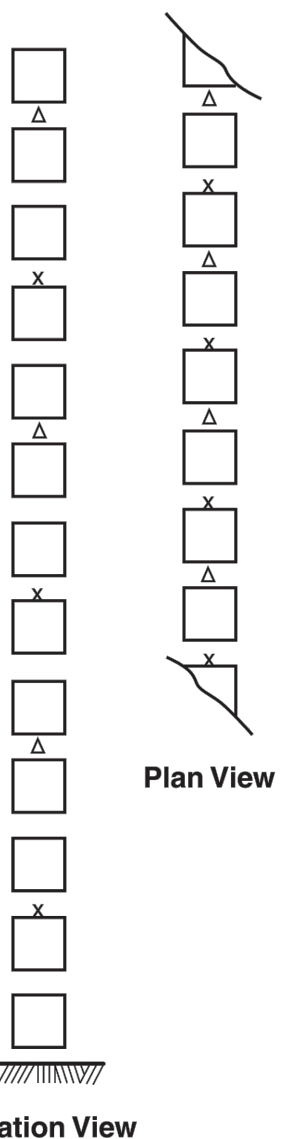


FIGURE 17.3.1.2.1(a) In-Rack Sprinkler Arrangement, Group A Plastic Commodities, Single-Row Racks, Storage Height Over 25 ft (7.6 m) — Option 1.

A BASE BID IN-RACK SPRINKLER LAYOUT  
F-1.2

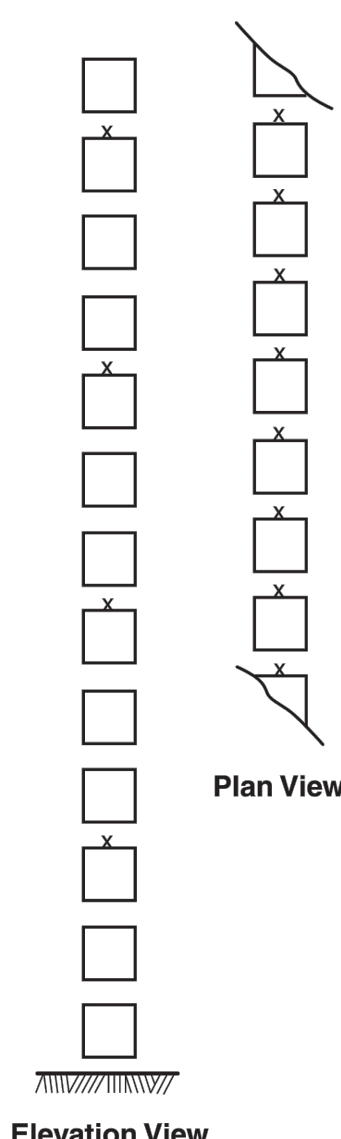
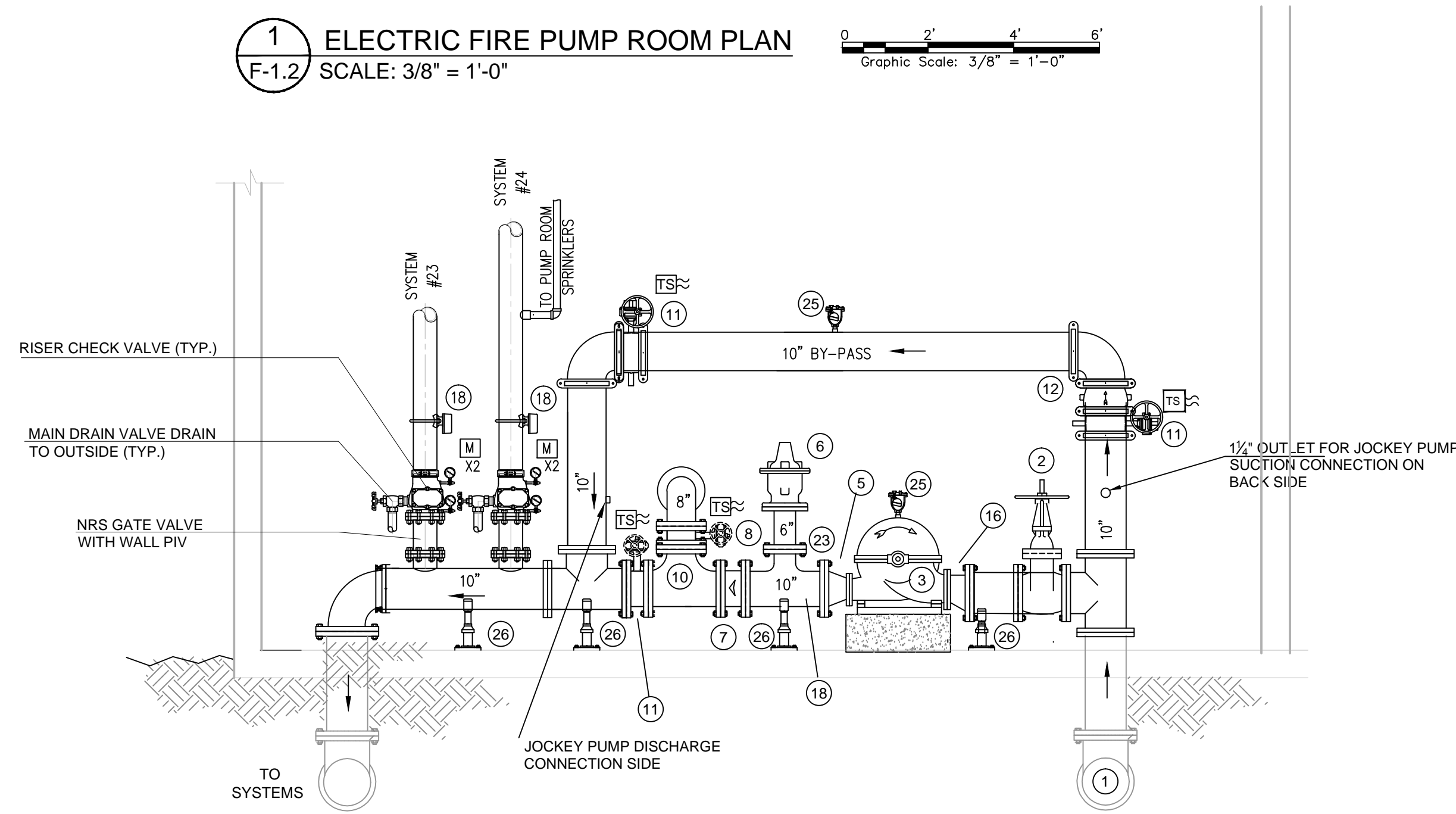


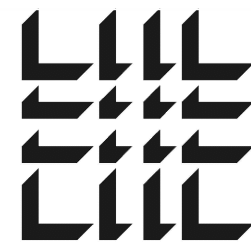
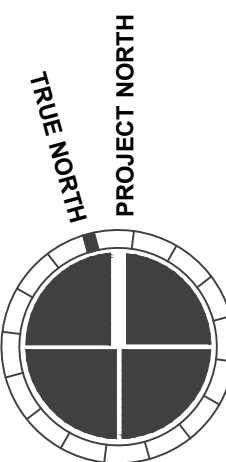
FIGURE 17.3.1.2.1(b) In-Rack Sprinkler Arrangement, Group A Plastic Commodities, Single-Row Racks, Storage Height Over 25 ft (7.6 m) — Option 2.

B ALTERNATE BID IN-RACK SPRINKLER LAYOUT  
F-1.2

1 ELECTRIC FIRE PUMP ROOM PLAN  
F-1.2 SCALE: 3/8" = 1'-0"



2 ELECTRIC FIRE PUMP ROOM SECTION  
F-1.2 SCALE: 3/8" = 1'-0"



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HG Project No.: 13MAC003.0000

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NUMBER	DATE	DESCRIPTION
07/31/2013	ISSUED FOR BID/PERMIT	
08/09/2013	ADDENDUM NO. 1	

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DATE	PROJECT NO
07/24/13	2013-018

SHEET TITLE

FIRE PUMP PLAN  
NOTES AND DETAILS

SHEET NUMBER

F-1.2

FOR CONSTRUCTION

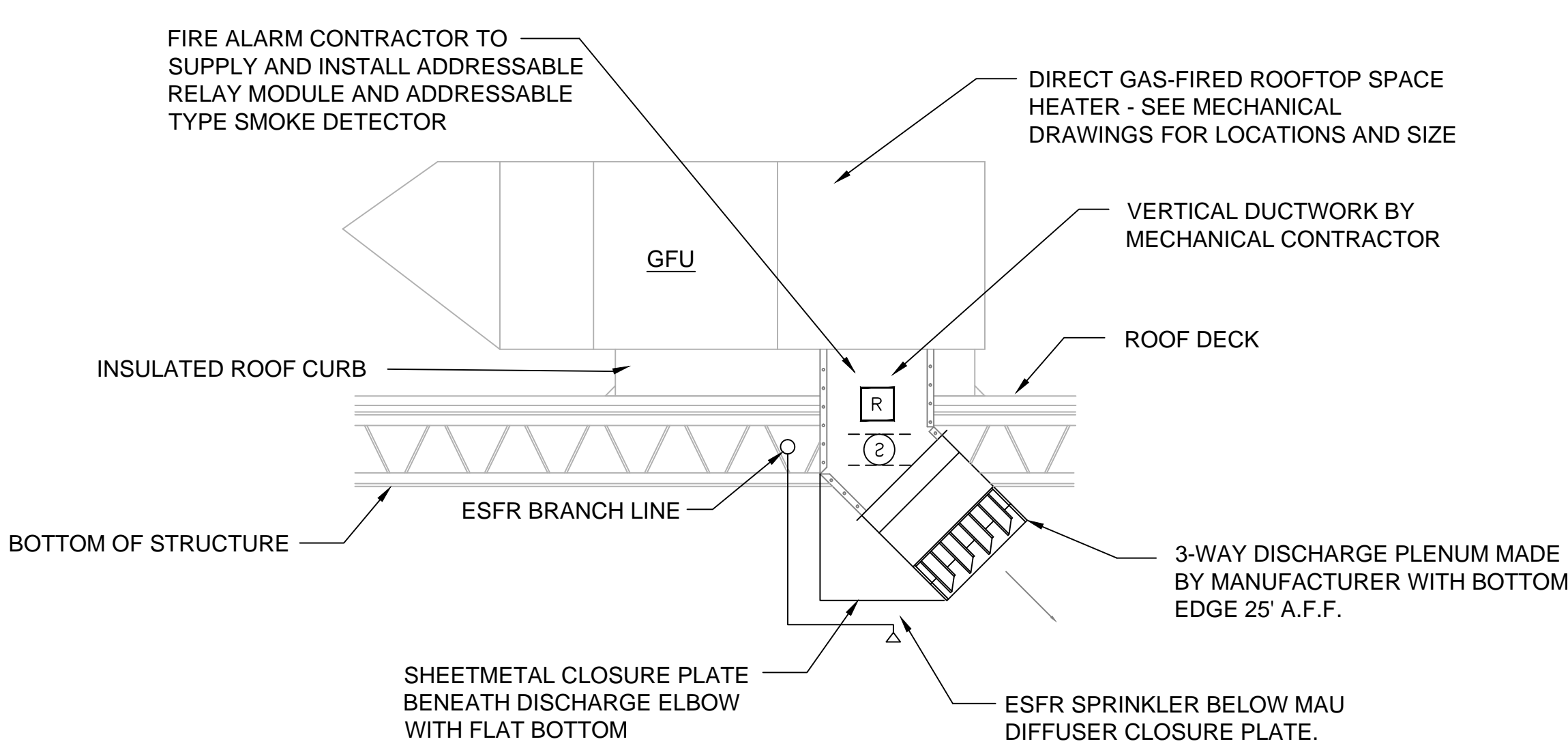


FIRE ALARM SYSTEM NOTES:

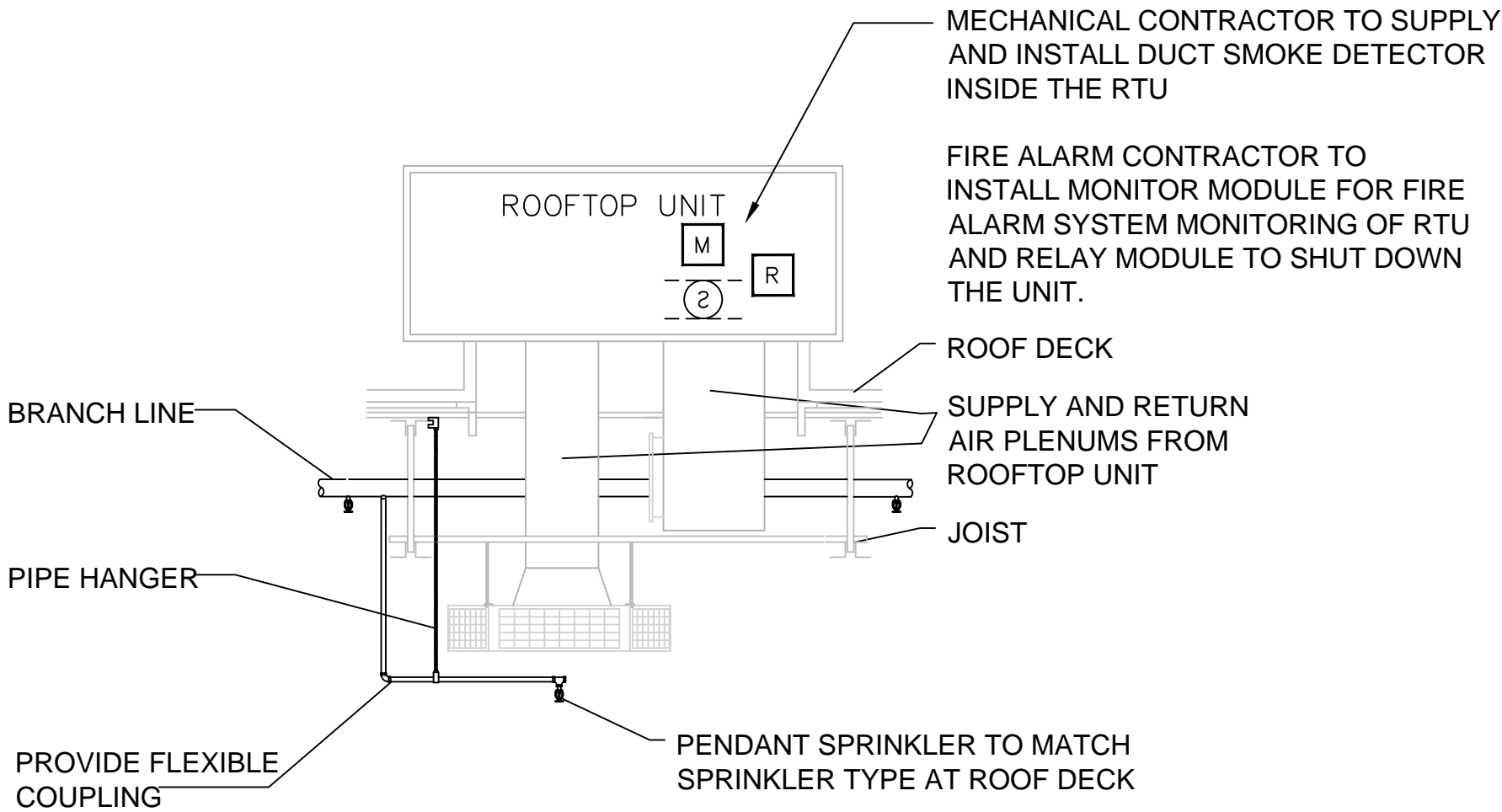
- AN INTELLIGENT/ADDRESSABLE FIRE ALARM SIGNALING SYSTEM SHALL BE INSTALLED TO MONITOR SMOKE DETECTORS, WATERFLOW ALARM SWITCHES, VALVE TAMPER SUPERVISORY SWITCHES, AND FIRE PUMP SUPERVISORY CONDITIONS AND INITIATE EMERGENCY FORCES/OCCUPANT NOTIFICATION IN ACCORDANCE WITH THE DRAWINGS, SPECIFICATIONS, AND NFPA 72.
- PROVIDE VISUAL OCCUPANT NOTIFICATION APPLIANCES FOR THE BULK AND RACK STORAGE AREAS AS INDICATED ON THE DRAWINGS.
- AUDIBLE OCCUPANT NOTIFICATION SHALL BE DESIGNED IN ACCORDANCE WITH NFPA 72 REQUIREMENTS FOR THE ENTIRE FACILITY. THE CONTRACTOR IS RESPONSIBLE FOR ADDING HORNS OR SPEAKERS AS NECESSARY TO ENSURE AUDIBILITY THROUGHOUT THE BUILDING. THE EXPECTED VARIOUS AMBIENT NOISE LEVEL ARE AS FOLLOWS:

OFFICE AREAS	45 dBA
BULK AND RACK STORAGE AREAS	60 dBA
ABOVE PROCESS MEZZANINE	75 dBA
BELOW PROCESS MEZZANINE	75 dBA
STORAGE MEZZANINE	75 dBA
ADJACENT TO CONVEYORS	90 dBA
- THE FIRE ALARM SYSTEM SHALL BE UL-LISTED FOR CENTRAL STATION SERVICE AND RELEASING SERVICE.
- THE FIRE ALARM CONTROL PANEL (FACP) SHALL BE INSTALLED IN THE FIRE PUMP ROOM.
- A MANUAL FIRE ALARM PULL STATION SHALL BE INSTALLED ADJACENT TO THE FACP ACROSS FROM THE SECURITY DESK AND RECESSED IN THE WALL.
- ALL INITIATING DEVICES SHALL BE INTELLIGENT/ADDRESSABLE WHERE POSSIBLE. SEPARATE ADDRESSABLE MONITOR MODULES SHALL BE PROVIDED FOR EACH CONVENTIONAL INPUT DEVICE SUCH THAT EACH ALARM DEVICE CAN COMMUNICATE WITH THE FACP AS A DISTINCT ALARM INPUT.
- A DIGITAL ALARM COMMUNICATOR TRANSMITTER (DACT) SHALL BE PROVIDED WITH THE CAPABILITY TO TRANSMIT DISTINCT ALARM, SUPERVISORY, AND TROUBLE SIGNALS BY DEVICE ADDRESS TO THE CENTRAL STATION USING CONTACT ID FORMAT.
- FIRE ALARM CONTROL PANEL SHALL MONITOR THE FOLLOWING CONDITIONS FROM THE FIRE PUMP CONTROLLERS.

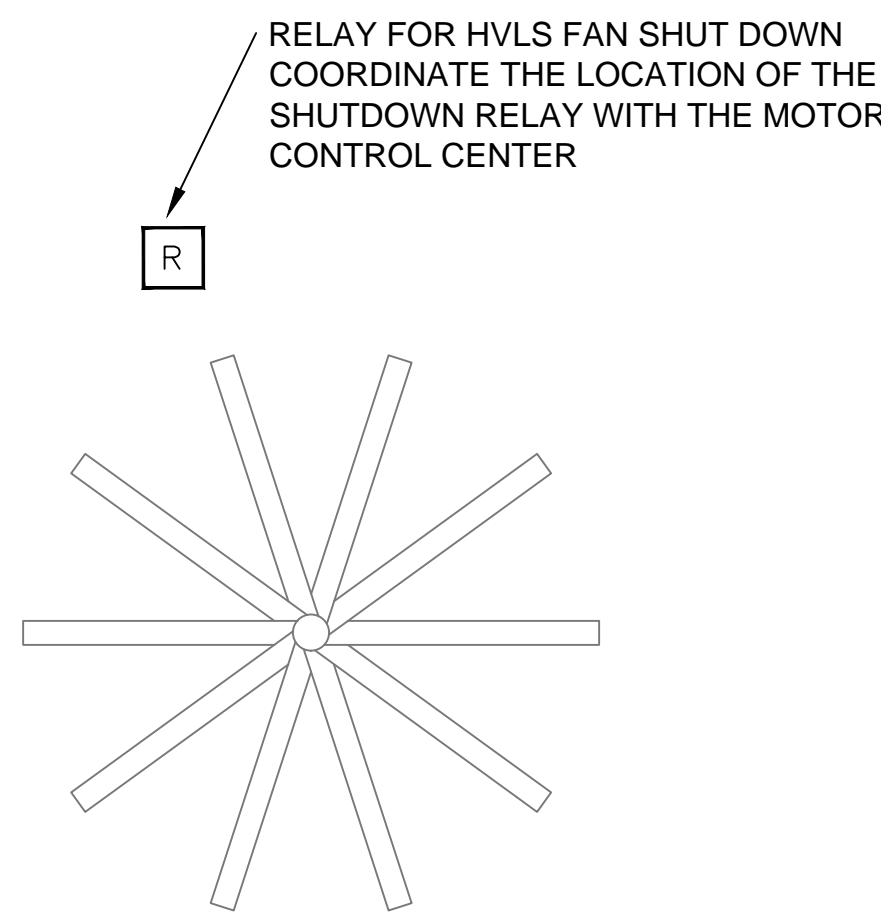
A. PUMP RUNNING CONDITION (SUPERVISORY)
B. LOSS OF PHASE (POWER) AT CONTROLLER (SUPERVISORY)
C. PHASE REVERSAL (SUPERVISORY)
D. FIRE PUMP CONTROLLER MAIN SWITCH IN THE OFF OR MANUAL POSITION (SUPERVISORY)
- ALL WIRES SHALL BE CHECKED FOR GROUNDS, SHORTS, OPENS, AND CORRECT RESISTANCE, CAPACITANCE AND OTHER APPLICABLE PARAMETERS PRIOR TO TERMINATION OF THE CIRCUITS AT THE FIRE ALARM CONTROL PANEL OR SUBPANELS AND PRIOR TO THE INSTALLATION OF DEVICES. THE CONTRACTOR SHALL PROVIDE WRITTEN DOCUMENTATION AND CERTIFICATION OF THIS TESTING ON A PER CIRCUIT BASIS.
- THE FIRE ALARM SYSTEM SHALL BE INTERLOCKED TO SHUT DOWN ALL HVAC EQUIPMENT TO INCLUDE: RTUs, GFUs, AND ALL HIGH VOLUME/LOW VELOCITY (HVLV) CEILING FANS IN THE WAREHOUSE PER THE FIRE ALARM SEQUENCE OF OPERATIONS. REFER TO MECHANICAL/ELECTRICAL PLANS FOR NUMBER AND LOCATIONS OF FANS AND CONTROLS.
- WATERFLOW SWITCHES, VALVE TAMPER SWITCHES, AND OTHER SPRINKLER SYSTEM SUPERVISORY CONTACTS SHALL BE PROVIDED AND INSTALLED BY THE FIRE SPRINKLER CONTRACTOR AND UTILITY CONTRACTOR FOR MONITORING BY THE FACP VIA ADDRESSABLE MONITOR MODULES. FIRE ALARM CONTRACTOR IS RESPONSIBLE TO CONNECT MONITOR MODULE TO THE SWITCHES AND TO THE FACP. REFER TO PLANS FOR LOCATION AND NUMBER OF SWITCHES REQUIRED.
- ALL ADDRESSABLE DUCT DETECTORS (GFUs) ARE TO BE FURNISHED AND INSTALLED BY THE FIRE ALARM CONTRACTOR. ALL NON-ADDRESSABLE DUCT DETECTORS (RTUs) ARE TO BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR. THE FIRE ALARM CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION OF ALL MONITOR MODULES, RELAY MODULES, SUPPLEMENTAL RELAYS, AND INTERCONNECTING WIRING ASSOCIATED WITH ALL DUCT DETECTORS AND RELATED FACP MONITORING, SHUTDOWN AND CONTROL FUNCTIONS. REFER TO MECHANICAL PLANS FOR NUMBER AND LOCATIONS OF AIR HANDLING UNITS TO BE EQUIPPED WITH DUCT DETECTORS.
- THE DESIGN CONTEMPLATES UP TO 12 NAC POWER SUPPLY PANELS IN SIX LOCATIONS. THE NAC POWER SUPPLY PANELS ARE TO BE LOCATED ON THE PERIMETER WALLS OF THE WAREHOUSE, IN EITHER OF THE UTILITY ELECTRICAL ROOMS OF THE MAIN OFFICE, OR IN ONE OF THE REMOTE ELECTRICAL ROOMS. UNDER NO CONDITIONS WILL NAC POWER SUPPLY PANELS BE PERMITTED IN OTHER LOCATIONS, INCLUDING ALONG THE EXTERIOR WALL OF THE OFFICE OR UNDER THE MEZZANINES. IF THE CONTRACTOR DESIRES TO UTILIZE ADDITIONAL NAC POWER SUPPLY PANELS, THE CONTRACTOR SHALL PROVIDE ADDITIONAL POWER CIRCUITS AT NO ADDITIONAL COST TO THE OWNER.
- THE NAC POWER SUPPLY PANELS AND PREACTION RELEASING PANEL SHALL BE PROVIDED WITH AN ADDRESSABLE PHOTOELECTRIC SPOT-TYPE SMOKE DETECTOR MOUNTED ON THE WALL WITHIN 6 FT OF THE PANEL WHERE THE CEILING HEIGHT EXCEEDS 15 FT IN ACCORDANCE WITH THE 2010 EDITION OF NFPA 72.



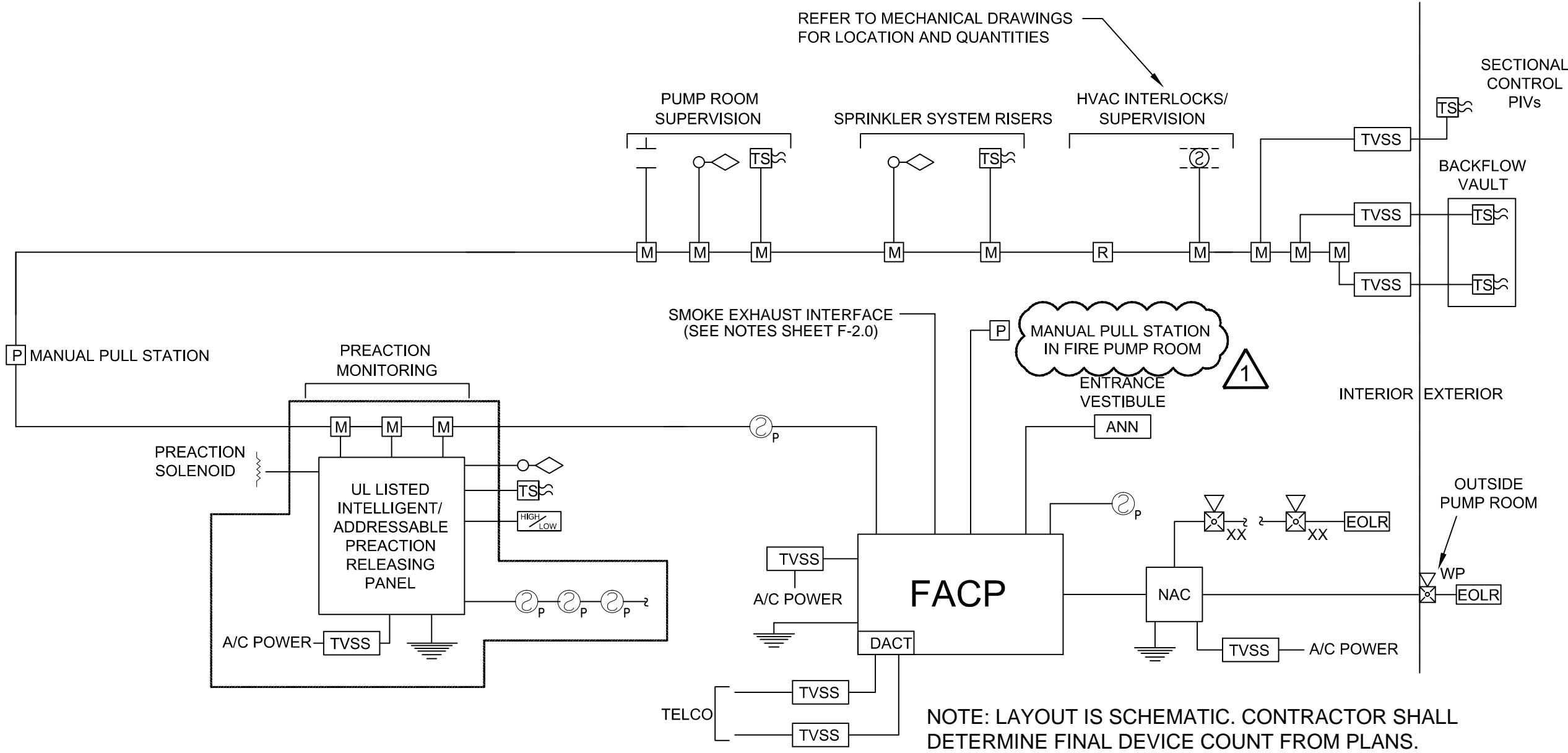
1 ROOF TOP GAS FIRED SPACE HEATER DETAIL  
F-2.0 SCALE: NONE



2 ROOF TOP UNIT DETAIL  
F-2.0 SCALE: NONE



3 HVLS FAN DETAIL  
F-2.0 SCALE: NONE



FIRE ALARM SCHEMATIC

System Outputs

	Control Unit Annunciation	Notification	Misc.
Actuate common Alarm signal indicator			
Actuate audible signal at panel			
Actuate common Supervisory indicator			
Actuate common Trouble indicator			
Annunciate origin and description of signal on LCD display			
Transient distinct Alarm signal to FACP			
Transient distinct Supervisory signal to FACP			
Transient distinct Trouble signal to FACP			
Energize preaction solenoid			

System Inputs

	A	B	C	D	E	F	G	H	I	
1 Preaction System Waterflow	+	+			+	+				1
2 Smoke detector(s) (MDF Room)	+	+			+	+			+	2
3 Valve tamper switch		+	+	+		+				3
4 High/ low air pressure		+	+		+	+				
5 Releasing Panel AC power failure		+		+	+			+		4
6 Releasing Panel low battery		+		+	+			+		5
7 Open circuit		+		+	+			+		6
8 Ground fault		+		+	+			+		7
9 Wire-to-wire short (SLC & NAC)		+		+	+			+		8
10 Wire-to-wire short (IDC) Alarm devices		+	+		+	+				9
11 Wire-to-wire short (IDC) Supervisory devices		+	+		+	+				10
	A	B	C	D	E	F	G	H	I	

PREACTION SYSTEM SEQUENCE OF OPERATIONS

System Inputs

	A	B	C	D	E	F	G	H	I	J	K	L	
1 Sprinkler waterflow	+	+			+	+	+			+		+	1
2 Smoke detector (FACP)	+	+			+	+	+			+		+	2
3 Manual pull station		+			+	+	+			+		+	3
4 Duct smoke detector		+	+	+				+			+		4
5 Valve tamper switch		+	+	+				+					5
6 Fire alarm system AC power failure		+		+	+				+				6
7 Fire alarm system low battery		+	+		+			+					7
8 Open circuit		+		+	+				+				8
9 Ground fault		+		+	+				+				9
10 Wire-to-wire short (SLC & NAC)		+	+	+	+				+				10
11 Wire-to-wire short (IDC) Alarm devices		+	+		+	+	+			+		+	11
12 Wire-to-wire short (IDC) Supervisory devices		+	+		+	+		+					12
13 Loss of carrier		+		+	+				+				13

PREACTION SYSTEM MONITORING

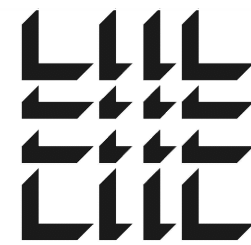
14 Preaction Alarm Signal	+	+			+	+	+					+	14
15 Preaction Supervisory Signal		+	+		+				+				15
16 Preaction Trouble Signal		+	+	+					+				16

DIESEL FIRE PUMP MONITORING :

17 Fire pump – engine running		+	+		+			+					17
18 Fire pump main switch in "off" or "manual" position		+	+		+			+					18
19 Fire pump/ pump room trouble		+	+	+				+					19
20 Fire pump room/ house low temperature		+	+	+				+					20
21 Low fuel level		+	+		+								21
22 Diesel fuel tank leak		+	+		+			+					22

A As applicable for supplied electric fire pump controller  
\* When equipped with an automatic transfer switch

FIRE ALARM SYSTEM SEQUENCE OF OPERATIONS



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1	07/15/2013	ISSUED FOR BID/PERMIT
	08/09/2013	ADDENDUM NO.1

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DATE	PROJECT NO
07/24/13	2013-018

SHEET TITLE

FIRE ALARM  
NOTES AND DETAILS

SHEET NUMBER

F-2.0

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