

ABBREVIATIONS, LEGENDS AND GENERAL NOTES

FIRE PROTECTION SYSTEM SERVES

TOTAL AREA — 5452 S.F. SPRINKLERS
CLASSIFICATION — LIGHT HAZARD
WET PIPE SYSTEM
DENSITY — 1 GPM
COVERAGE PER SPRINKLER 225 SF MAX
NO. OF SPRINKLER HEADS CALCULATED — 20
SPRINKLER "K" FACTOR — 5.6
HMD MINIMUM RESIDUAL PRESSURE — 7.0 PSI
HOSE STREAM ALLOWANCE — 100 GPM
SCHEDULE 10 AND 40 STEEL PIPE —
SCREWED AND GROOVED CONNECTIONS

FIRE HAZARD — LIGHT
FIRE PUMP DATA
.1/1500SF 9TH FLOOR 524 GPM AT 194.1 PSI RESIDUAL
STANDPIPE#1— 1000 GPM AT 175.6 PSI
EAST COAST FIRE PROTECTION, FIRE & LIFE SAFETY AMERICA
407-688-1949

ABBREVIATIONS

AD ACCESS DOOR
AFF ABOVE FINISHED FLOOR
AP ACCESS PANEL
BFF BELOW FINISHED FLOOR
BOT BOTTOM CEILING
CLE CLEANOUT
CW COLD WATER
CO DUCTILE IRON PIPE
DIP ELEVATION
EL EQUIPMENT
EQUIP EXISTING
F FIRE SERVICE
FD FLOOR DRAIN
FDC FIRE DEPARTMENT CONNECTIONS
FDV FIRE DEPARTMENT VALVE
FH FIRE HYDRANT
FL FLOOR
FSP FIRE STANDPIPE RISER
HB HOSE BIBB
OS&Y OUTSIDE SCREW & YOKE
SPK SPRINKLER
TYP TYPICAL
UG UNDERGROUND
UON UNLESS OTHERWISE NOTED
W/TS WITH TAMPER SWITCH

FIRE PROTECTION

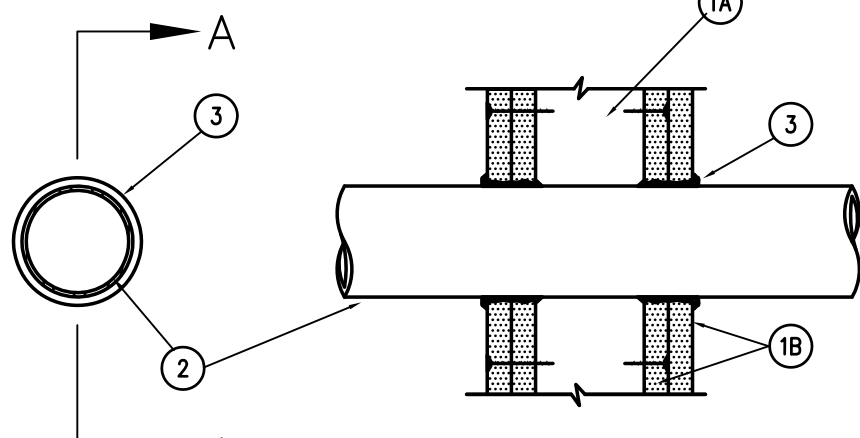
○ SPRINKLER HEAD — UPRIGHT
○ SPRINKLER HEAD — PENDENT
⊗ SPRINKLER HEAD — SPECIAL
▢ SPRINKLER HEAD — SIDEWALL
○ VALVE IN RISER
○ FIRE DEPARTMENT CONNECTION
→ DIRECTION OF PIPE PITCH (DOWN)
→ DIRECTION OF FLOW
— ANCHOR
— REDUCER OR INCREASER
— ECCENTRIC REDUCER
— TOP CONNECTION, 45 OR 90 DEG.
— BOTTOM CONNECTION, 45 OR 90 DEG.
— SIDE CONNECTION
— CAPPED OUTLET
— RISE OR DROP IN PIPE
— UNION
— ORIFICE UNION
— STRAINER
— PRESSURE GAGE
— EXISTING PIPE TO BE REMOVED
— GATE VALVE
— GLOBE VALVE
— CHECK VALVE
— BALL VALVE
— BUTTERFLY VALVE
— GATE VALVE W/ ADAPTER TO 3/4" HOSE THREAD
— ANGLE GLOBE VALVE
— OUTSIDE SCREW & YOKE (O S & Y)

DRAWING SYMBOLS

2 — DETAIL NUMBER
FP5 — DRAWING NUMBER WHERE DRAWN
A — SECTION LETTER
FP5 — DRAWING NUMBER WHERE DRAWN
P.O.C — POINT OF INTERFACE BETWEEN NEW & EXISTING P.O.C.
P.O.D — POINT OF DEMOLITION P.O.D.
— POINT OF INTERFACE BETWEEN CONTRACTORS

SYSTEM NO. WL1001

(Formerly System No. 147)
F Ratings— 1, 2, 3 and 4Hr. (See Item 2 and 3)
T Ratings— 0, 1, 2, 3, and 4 Hr. (See Item 3)



SECTION A-A

WALL ASSEMBLY — THE 1,2,3 OR 4 HOUR FIRE-RATED GYPSUM WALLBOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER DESCRIBED IN THE INDIVIDUAL U300 OR U400 SERIES WALL OR PARTITION DESIGN IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:

- A. STUDS — WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS OR STEEL CHANNEL STUDS. WOOD STUDS CONSIST OF NOMINAL 2 BY 4 IN. LUMBER SPACED 16 INCHES OC WITH NOMINAL 2 BY 4 IN. LUMBER END PLATES AND CROSS BRACES. STEEL STUDS TO BE MIN. 3-5/8 IN. WIDE BY 1-3/8 IN. DEEP CHANNELS SPACED MAX. 24 IN. OC.
- B. WALL BOARD GYPSUM* — 1/2 IN. OR 5/8 IN. THICK 4 FOOT WIDE WITH SQUARE OR TAPERED EDGES. THE GYPSUM WALLBOARD TYPE, THICKNESS, NUMBER OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES DESIGN IN THE UL FIRE RESISTANCE DIRECTORY. MAX. DIAM OF OPENING IS 13-1/2 IN.

PIPE OR CONDUIT — NOMINAL 12 IN. DIAM. (OR SMALLER) SCHEDULE 10 (OR HEAVIER STEEL CONDUIT, NOM. 4 IN. DIAM (OR SMALLER) STEEL ELECTRICAL CONDUIT MECHANICAL OR TYPE L OR (HEAVIER) COPPER TUBING OR MON. 1 IN. DIAM (OR SMALLER) FLEXIBLE STEEL CONDUIT.

FILL, VOID OR CAVITY MATERIAL* — CAULK — CAULK FILL MATERIAL INSTALLED TO COMPLETELY FILL ANNULAR SPACE BETWEEN PIPE OR CONDUIT AND GYPSUM WALLBOARD AND W/ A MIN. 1/4 IN. DIAM BEAD OF CAULK APPLIED TO PERIMETER OF PIPE OR CONDUIT AT ITS EGRESS FROM THE WALL. CAULK INSTALLED SYMMETRICALLY ON BOTH SIDES OF WALL ASSEMBLY. THE HOURLY F RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED, AS SHOWN IN THE FOLLOWING TABLE. THE HOURLY T RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE TYPE OR SIZE OF THE PIPE OR CONDUIT AND THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED, AS TABULATED BELOW:

MAX. PIPE OR CONDUIT DIAM. in.	ANNULAR SPACE	F RATING	T RATING
1 in.	0 to 3/16 in.	1 or 2	0+, 1 or 2
1 in.	1/4 to 1/2	3 or 4	3 or 4
4 in.	0 to 1 1/2	1 or 2	0
6 in.	1/4 to 1 1/2	3 or 4	0
12 in.	3/16 to 3/8	1 or 2	0

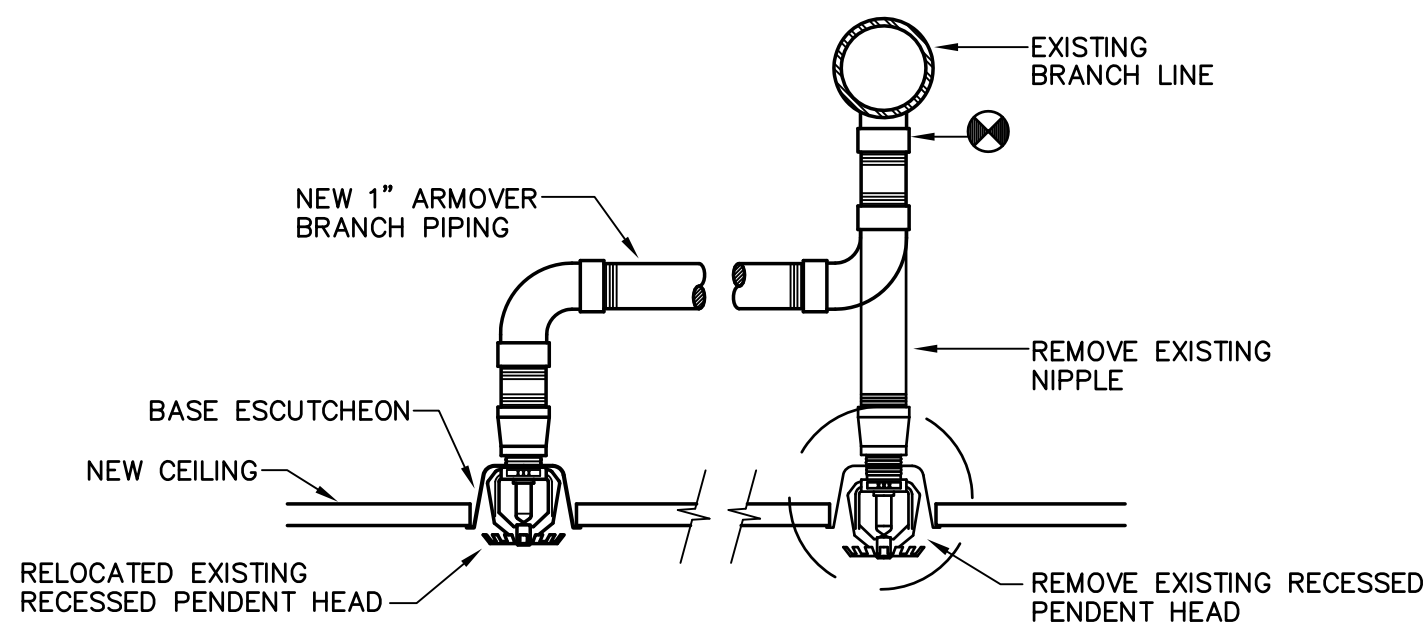
+WHEN COPPER PIPE IS USED, T RATING IS 0 H.

MINNESOTA MINING & MANUFACTURING CO. — TYPES CP-25 S/L, CP-25 N/S, CP-25 WB, CP-25 WB+

*BEARING THE UL CLASSIFICATION MARKING

UL PENETRATION DETAILS

NOT TO SCALE



RELOCATED SPRINKLER HEAD DETAIL

NOT TO SCALE

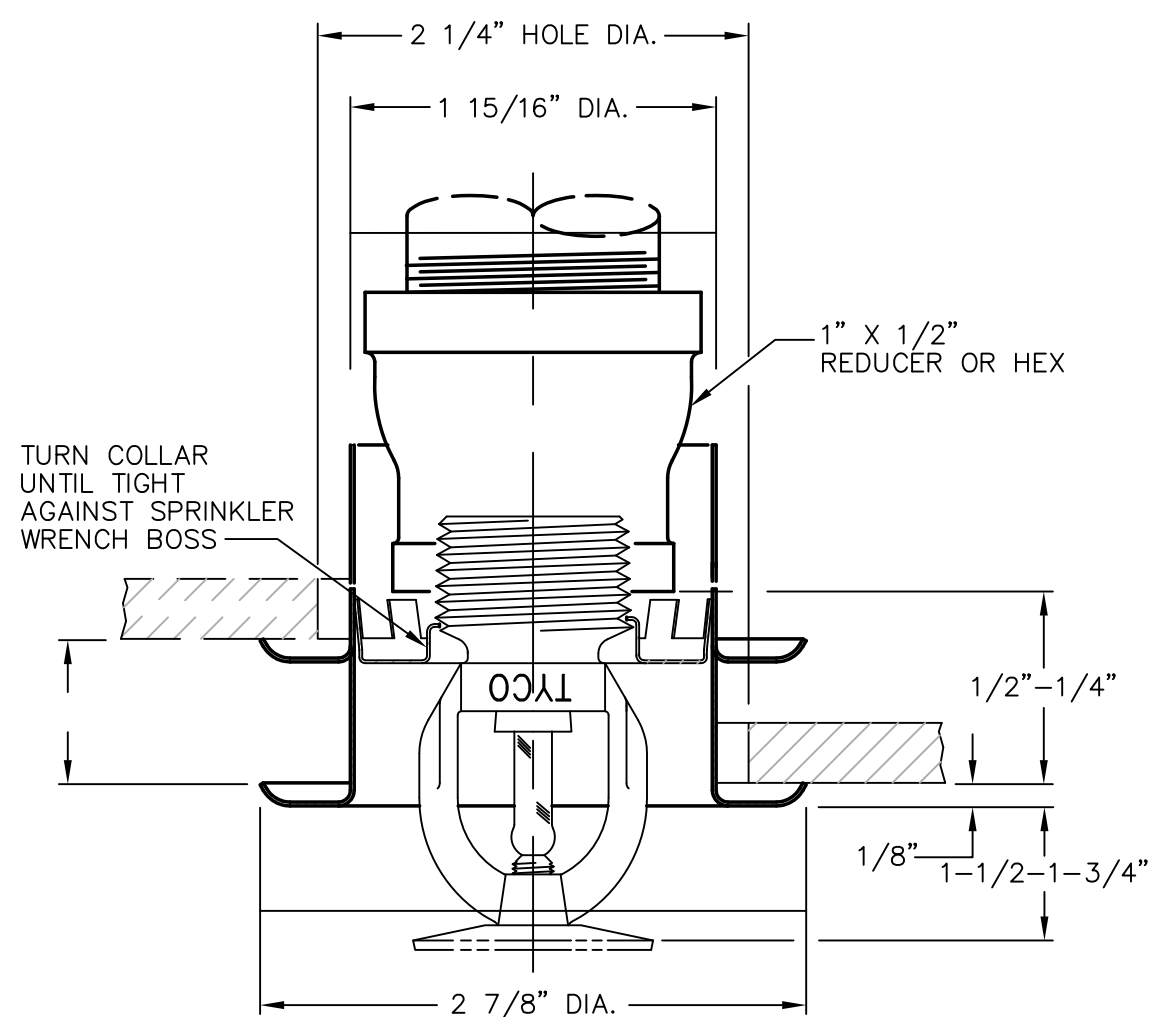
GENERAL NOTES

- FIRE PROTECTION WORK SHALL BE DESIGNED, INSTALLED, AND TESTED IN ACCORDANCE WITH NFPA 13 NFPA 14 AND 25 LATEST EDITION OR AS ADOPTED BY THE AUTHORITY HAVING JURISDICTION. THE PROJECT CONSISTS OF RELOCATION OF FIRE SPRINKLERS IN EXISTING SPACES. THE AREA OF WORK (4TH FLOOR) IS AN OFFICE. THE TOTAL NUMBER OF REMOVED, AND RELOCATED IS 49 SPRINKLER HEADS. AN FM200 SYSTEM IS TO BE INSTALLED IN THE IT ROOM. REFER TO THE FM 200 SYSTEM DESIGN. HYDRAULIC CALCULATIONS PROVIDED FOR FIRE FLOW AND STAND PIPE FLOW FOR THIS FLOOR WERE COMPLETED BY THE ORIGINAL FIRE PROTECTION CONTRACTOR "EAST COAST FIRE PROTECTION". THE FIRE FLOW ACTUAL DATA IS FOR THE 9TH FLOOR OF THE JUDICIAL CENTER AND THE ELEVATOR PENTHOUSE HOSE CONNECTION ON THE JUDICIAL CENTER.
- PLANS PROVIDED ARE FOR USE IN CRITERIA FOR THE FACILITY RENOVATION, AS REQUESTED BY THE CITY OF BRADENTON FIRE MARSHAL. HYDRAULIC CALCULATIONS SHALL BE PROVIDED.
- INCLUDE ANY INCIDENTAL APPARATUS, APPLIANCES, MATERIAL LABOR AND SERVICES NECESSARY TO MAKE NEW WORK COMPLETE IN ALL RESPECTS AND FULLY READY FOR OPERATION.
- MAKE SUCH OFFSETS AND DEVIATIONS FROM WORK SHOWN ON THE DRAWINGS, AS MAY BE NECESSARY TO FIT THE ACTUAL SPACE CONDITIONS.
- THE INSTALLER SHALL VISIT THE JOB SITE, INSPECT ALL EXISTING CONDITIONS AFFECTING THE WORK. SUBMISSION OF HIS PROPOSAL SHALL BE CONSTRUED AS INDICATING SUCH KNOWLEDGE. NO ADDITIONAL PAYMENT WILL BE MADE ON CLAIMS THAT ARISE FROM THE CONTRACTOR'S FAILURE TO COMPLY WITH THIS REQUIREMENT.
- INSTALLER SHALL COORDINATE AT SITE WITH ALL PLUMBING, HVAC, FIRE PROTECTION, AND ELECTRICAL WORK SO AS NOT TO CONFLICT IN LOCATION WITH OTHER WORK UNDER THIS CONTRACT OR THAT MAY BE EXISTING. CONTRACTOR SHALL ADJUST PIPE ROUTING AS NECESSARY TO AVOID CONFLICTS WITH EXISTING DUCTWORK, EQUIPMENT, LIGHTING, ETC.
- INSTALLER SHALL NOT CUT ANY STRUCTURAL MEMBERS WITHOUT FIRST SECURING WRITTEN APPROVAL FROM THE PROJECT REPRESENTATIVE.
- PIPE SIZED, GENERAL ROUTING, AND CONFIGURATION IN SYSTEMS REQUIRED TO BE HYDRAULICALLY CALCULATED SHALL BE INSTALLED PER THIS ENGINEER'S CONSTRUCTION DOCUMENTS. ANY DEVIATION SUBMITTED BY THE CONTRACTOR SHALL BE RE-DESIGNED BY THIS ENGINEER WITH RELATED RE-DESIGN FEES BORN BY THE CONTRACTOR.
- CONTRACTOR SHALL ARRANGE FOR, OBTAIN AND BEAR THE COST OF NECESSARY PERMITS, BONDS, AND FEES.
- ALL MATERIALS SHALL BE U.L. LISTED AND BEAR THE U.L. LABEL.
- CONDITIONS SHOWN AS EXISTING (LOCATIONS, MATERIALS, ELEVATIONS, SIZED, ETC.) ARE BASED ON AVAILABLE EXISTING DATA AND SHOULD BE INTERPRETED TO BE APPROXIMATE. CONTRACTOR SHALL VERIFY CONDITIONS IN THE FIELD. EXISTING CONDITIONS FOUND TO DEVIATE FROM THOSE SHOWN SHALL BE REPORTED TO THE ENGINEER.
- PENETRATIONS THROUGH FIRE RATED ASSEMBLIES. PENETRATIONS FOR PIPES, CONDUITS, OR OTHER PURPOSES THROUGH ASSEMBLIES (FLOORS, ROOF, WALLS, PARTITIONS, ETC.) WITH A REQUIRED FIRE STOP MATERIAL FIRE STOP MATERIAL SHALL BE U.L. LISTED AND INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS TO MEET OR EXCEED THE FIRE RATING OF THE PENETRATED ASSEMBLY.
- BEFORE SHUTTING OFF ANY SECTION OF THE FIRE PROTECTION SYSTEM TO MAKE ADJUSTMENTS OR ADDITIONAL CONNECTIONS, COORDINATE WITH THE OWNER/COUNTY AND NOTIFY THE AUTHORITY HAVING JURISDICTION. PLAN THE WORK CAREFULLY AND ASSEMBLE ALL MATERIALS TO ENABLE COMPLETION IN THE SHORTEST POSSIBLE TIME. WORK SHALL BE USED TO COMPLETION WITHOUT INTERRUPTION, AND PROTECTION SHALL BE RESTORED AS PROMPTLY AS POSSIBLE.
- WHERE ELECTRICAL PANELS EXIST, PROVIDE DEFLECTORS ON ELECTRICAL EQUIPMENT TO PREVENT WETTING PANELS. SPRINKLER PIPING SHALL NOT BE INSTALLED DIRECTLY ABOVE ELECTRIC PANELS.
- PROVIDE FLUSHING CONNECTION AT END OF SPRINKLER SYSTEM WHERE LAY-IN CEILING OCCURS. ALL SPRINKLER PIPING THAT REQUIRES CHANGE IN ELEVATION DUE TO COORDINATION ROUTING OF PIPING SHALL HAVE FLUSH CONNECTION AT ALL LOWER ELEVATION. THE SPRINKLER SYSTEM SHALL BE INSTALLED WITH COMPLETE DRAINABLE SYSTEM.
- VERIFY THE EXACT LOCATION OF EXISTING FIRE PROTECTION PIPING, FROM THE ACTUAL JOB SITE. ALL NEW LINES ARE TO BE ROUTED TO AND/OR FROM VERIFIED LOCATIONS. TAPS, WHEN NOT PROVIDED BY PREVIOUS INSTALLER SHALL BE PROVIDED BY THIS INSTALLER.
- PROVIDE AND MAINTAIN TEMPORARY CONNECTIONS TO KEEP EXISTING FIRE PROTECTION SYSTEM IN SERVICE. ANY SHUT DOWNS ARE TO BE APPROVED BY OWNER/COUNTY'S REPRESENTATIVE.
- NEW SPRINKLER HEADS IN RENOVATION AREA AND NEW ADDITION SHALL MATCH EXISTING TYPE SPRINKLER HEADS. PROVIDE PROJECT REPRESENTATIVE SPARE SPRINKLERS IN ACCORDANCE WITH NFPA 13 SECTION 6.9.
- THE ENGINEER HAS MADE AN EXTENSIVE EFFORT TO IDENTIFY ABOVE CEILING CONFLICTS. THE CONTRACTOR IS RESPONSIBLE TO ALSO CHECKING FIELD CONDITIONS PRIOR TO BIDDING AND REPORT ANY PROBLEMS/CONFLICTS TO THE ENGINEER WITHIN 2 DAYS OF DISCOVERY. ANY CHANGES RESULTING FROM CONDITIONS ARISING IN THE FIELD WHICH WERE NOT BROUGHT TO THE ENGINEER'S ATTENTION ARE TO BE MADE BY THIS CONTRACTOR WITH NO ADDITIONAL COST TO THE OWNER/COUNTY.
- ALL WORK IS TO BE FREE OF DEFECTS IN WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE(1) YEAR FROM DATE OF FINAL ACCEPTANCE. ALL DEFECTS WHICH DEVELOP OR ARE DISCOVERED WITHIN THIS PERIOD SHALL BE REPAIRED BY THE CONTRACTOR TO THE SATISFACTION OF THE OWNER/COUNTY AT NO ADDITIONAL COST TO THE OWNER/COUNTY.

- UPON COMPLETION OF THE WORK UNDER THIS CONTRACT, THE CONTRACTOR SHALL REMOVE ALL TOOLS, APPLIANCES, SURPLUS MATERIALS, AND SCRAP. ALL IDENTIFIED EXISTING EQUIPMENT TO BE REMOVED SHALL BE TURNED OVER TO THE OWNER/COUNTY.
- WHEN CONFLICTS OCCUR IN CONTRACT SPECIFICATIONS OR IN THE DRAWINGS, OR BETWEEN EITHER, THE ITEMS OF GREATER QUANTITY OR HIGHER COST SHALL BE PROVIDED.
- THE CONTRACTOR SHALL COORDINATE WORK WITH OTHER TRADES IN ORDER TO AVOID CONFLICTS.
- MECHANICAL ROOM NOTE — SPRINKLER HEADS IN THE MECHANICAL ROOMS MUST BE COORDINATED WITH THE EQUIPMENT AND DUCTWORK. THE CONTRACTOR SHALL COORDINATE HIS SHOP DRAWINGS WITH THOSE OF THE HVAC CONTRACTOR AND PROVIDE HEADS BETWEEN EQUIPMENT AND UNDER DUCTWORK AS REQUIRED. ADDITIONAL SPRINKLERS SHALL BE PROVIDED UNDER ALL DUCTS AND OBSTRUCTIONS GREATER THAN 4 FEET IN WIDTH AS REQUIRED BY NFPA 13, 8.10.7.3.2 (2010).
- CONTRACTOR SHALL PROVIDE TO LOCAL AHJ OR PERMITTING AGENCY A COPY OF ALL MAJOR EQUIPMENT CUTS SHEETS AT TIME OF APPLICATION.
- COORDINATE ALL WORK WITH THE PROJECT REPRESENTATIVE AS TO SCHEDULING OF MODIFICATIONS AND BUILDING SHUT DOWNS. ALL WORKERS SHALL BE CLEARED FOR WORK PRIOR TO START.
- ALL WORK SHALL BE SCHEDULED AND CLEARED THROUGH THE PROJECT REPRESENTATIVE.
- PROVIDE A UNIT PRICE FOR REPLACEMENT HEADS ON THE EXISTING PIPING TO THE PROJECT REPRESENTATIVE AS AN ALTERNATE.
- PROVIDE A FULLY COMPREHENSIVE 3 YEAR WARRANTY ON ALL MATERIALS, EQUIPMENT, AND LABOR. THIS STATEMENT TAKE PRECEDENTS OVER THE CONTRACT SPECIFICATIONS. IF THE MANUFACTURER'S WARRANTY EXCEEDS THREE YEARS THEN THE PROVIDE THE MANUFACTURER'S WARRANTY WITH MATERIALS, PARTS, EQUIPMENT, AND LABOR FOR AT LEAST THREE YEARS.
- SEE THE ELECTRICAL PLAN E3.0 FOR FIRE ALARM SYSTEM. COORDINATE CONNECTIONS WITH EXISTING FIRE ALARM SYSTEM AND SPRINKLER PIPING.

Preliminary Sprinkler Calculation Sheet

Flow Test Data			
Static Pressure:	172		
Residual Pressure:	139.1		
Flow (GPM): (From fire pump tag)	1000		
Data Taken:			
Time:			
Test Taken By:	East Coast Fire Protection		
Elevation of fire pump	26 ft		
Building floor	26 ft		
GPM Demand of Building:			
Most Remote Area or Highest Demand (Room Name)	5th floor building D	Judicial Center	
Design Density (NFPA 13 or supplies by Insurance Co.)	0.1		
Design Area (Square Footage)	1500 sq. ft		
Overage Factor(1.20 typ.)	1.2		
Remote Area GPM Demand(Density x Area x Overage)	180 gpm		
Standpipe GPM Demand(If required)500 gpm for first, 250 after)	500 gpm		
Hose GPM demand (100 light, 250 ordinary, 500 for extra hazard)	100 gpm		
Total GPM (Remote Area + Standpipe + Hose) (Total Q)	780 gpm		
Available Pressure:			
Density	0.1		
Max Sprinkler Head Coverage(As per NFPA 13 table 8.6.2.2)	168 sq. ft.		
Square footage spacing x Density= GPM sprinkler head (Q)	16.8 gpm		
K-Factor of Sprinkler head (K)	5.6 (K)		
Equation: Pressure required at head = (Q/K)^2	9.0000 psi		
Elevation difference from fire pump to base of riser x .433	13 ft	5.6 psi	
Elevation difference from base of riser to remote area x .433	68 ft	29.4 psi	
Backflow Preventer Pressure Drop	0 psi		
Safety Factor (Sf=1 min.) (SF)	9 psi		
Fixed Pressure Drops=	53.1 psi		
Estimated Friction Drop Through Fire Line:			
Length of run from pump to riser (HR)	104.4 Lin. Ft.		Riser to floor
Pipe G-Factor (Steel C-120) (G-Factor)	120		94 Lin. Ft.
Nominal Pipe Inside Diameter (8"-6", 4")-(D)	8		4
Hazen-William's Eq: Pd = 4.52x(Total Q^4.85)/((C Factor)^1.85x(D^4.87))			
Friction Loss in pipe (psi/ft)Based upon Hazen William Eq.(HW1)	0.0058 psi/ft		0.1687 psi/ft
HRx1.30xHW1 =	0.78 Est. psi required		20.61 Est. psi required
Length of run from riser to last sprinkler head(estimated.) (RS)	85 Lin. Ft.		4TH FLOOR
Base of Riser to furthest sprinkler	283.4		
Pipe G-Factor (Black Steel C-120)	120		
Nominal Pipe Inside Diameter (6"-4", 3" 2 1/2")	2.5		
Hazen-William's Eq: Pd = 4.52x(Total Q^4.85)/((C Factor)^1.85x(D^4.87))			
Friction Loss in pipe (psi/ft)Based upon Hazen William Eq.(HW1)	0.1104 psi/ft		
HRx1.30xHW1 =	12.20 Est psi required		



RECESSED

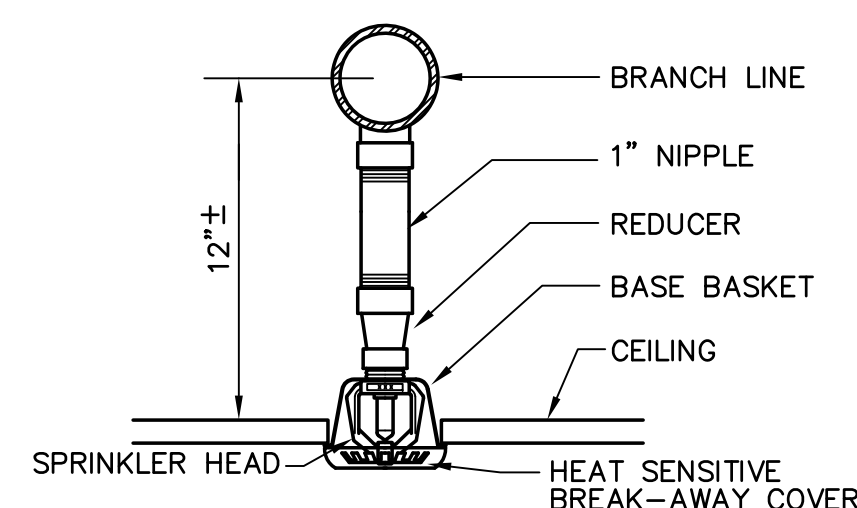
TYCO TY-FRL 165 DEGREE F SPRINKLER, QUICK RESPONSE, 1/2 INCH, K=5.6
VERIFY PRIOR TO PURCHASE AND INSTALLATION, CENTRAL RECESSED UNITS.
WHITE SPRINKLE HEAD, AND ESCUTCHEON MATCHING HEAD, PROVIDE PENDANT HEADS ON IN AREAS WHERE EXISTING UNITS ARE PENDANTS LIKE F1FR56 RELIABLE PENDANT, AND UPRIGHTS, 165 DEGREE F QUICK RESPONSE, WHITE.

SPRINKLER HEAD PENETRATION DETAIL

NOT TO SCALE

UPRIGHT SPRINKLER HEAD DETAIL

NOT TO SCALE



RECESSED PENDENT SPRINKLER HEAD

NOT TO SCALE

NOTE:

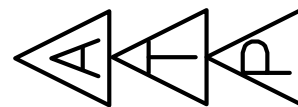
THESE ARE STANDARD SYMBOLS AND MAY NOT ALL APPEAR ON THE PROJECT DRAWINGS; HOWEVER WHEREVER THE SYMBOL APPEARS ON THE PROJECT DRAWINGS, THE ITEM SHALL BE PROVIDED AND INSTALLED.

NOTE:

REFER TO ARCHITECTURAL PLANS FOR ALTERNATE BIDS FOR UPRIGHT SPRINKLER OR PENDENT SPRINKLERS WITH A CEILING.

FL#5468

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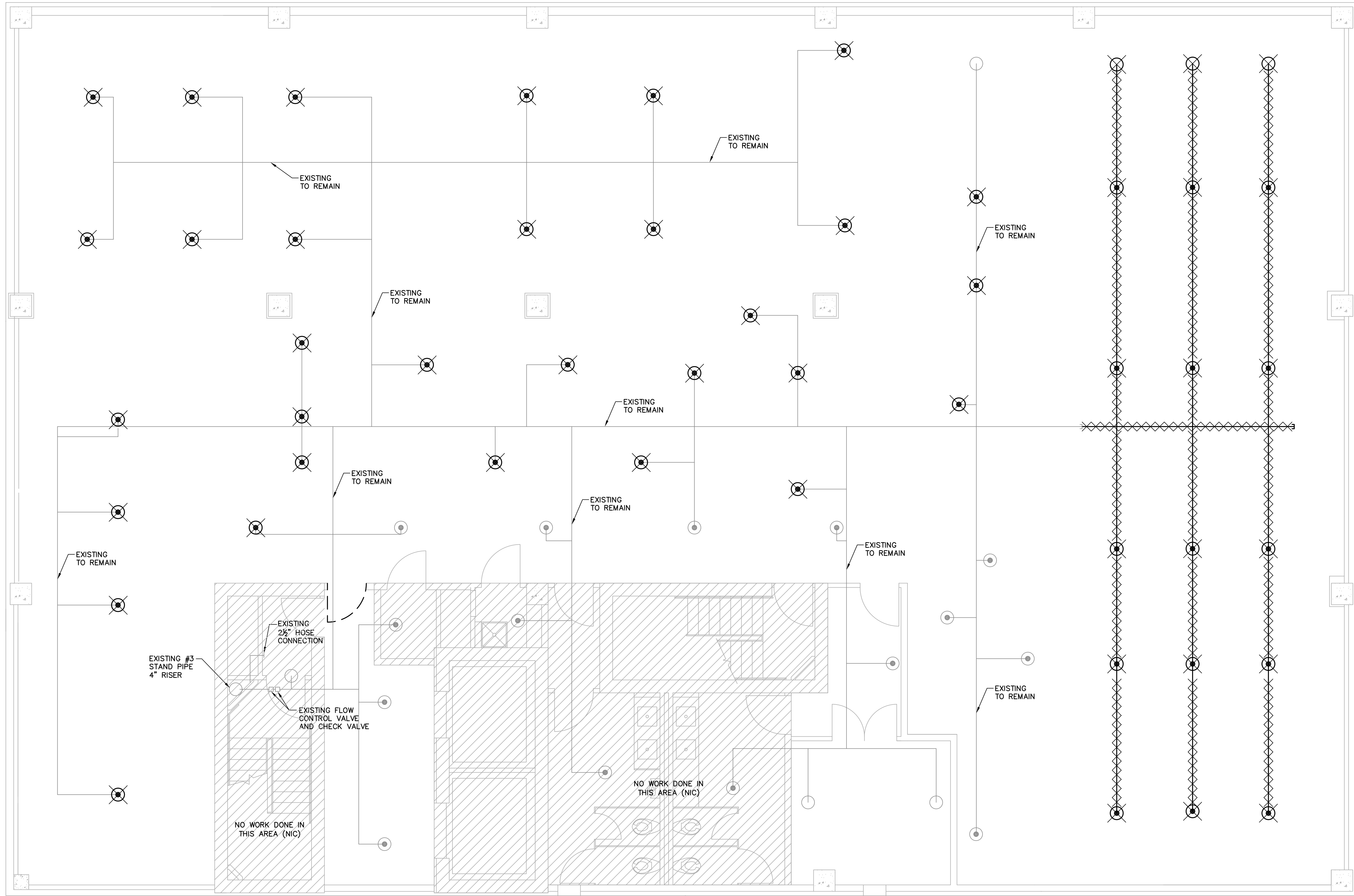
REV.#	DESCRIPTION	DATE
01	OWNED/COUNTY REVIEW	09/26/2013

MANATEE COUNTY HENSLEY WING
4TH FLOOR IT RENOVATIONS
1051 MANATEE AVE. W., BRADENTON, FL 34208
IF-AS# W1300147 WA#10

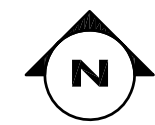
DRAWING TITLE
FIRE PROTECTION
LEGEND AND
GENERAL NOTES

FILE: MC HENSLEY 4TH FL
JOB NO.: 2013.35
DATE : 3/20/2013
PLOT SIZE: 1:1
DRAWN BY: DC
CHECKED BY: JOC
SHEET No.:

FP1.0



- ⊗ EXISTING TO BE REMOVED
- ⊙ EXISTING TO BE REMOVED
- EXISTING TO BE REMAIN
- ⊙ NEW SPRINKLER
- ⊗⊗⊗⊗ EXISTING SPRINKLER LINE TO BE REMOVED



1
FP2.0

4th FL FIRE PROTECTION DEMOLITION FLOOR PLAN
1/4" = 1'-0"

GENERAL NOTES:

- REFER TO PLANS AND CONTRACT SPECIFICATIONS FOR ADDITIONAL SCOPE OF WORK.
- CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO START OF WORK. ANY QUESTIONS SHALL BE ANSWERED BY THE ENGINEER AND PROJECT REPRESENTATIVE PRIOR TO START WORK.
- ITEMS IN GRAYSCALE ARE EXISTING AND TO REMAIN. FOR DUCTWORK AND DIFFUSERS THAT ARE "TO REMAIN" PRESERVE EXISTING LOCATION.
- CONTRACTOR SHALL COORDINATE ALL FINAL HEAD LOCATIONS WITH ARCHITECT AND CONFORM TO NFPA 13.
- REMOVE AND RELOCATE EXISTING SPRINKLER HEADS FOR FM 200 SYSTEM. CAP PIPING AS INDICATED.
- REFER TO GENERAL NOTES AND CONTRACT SPECIFICATIONS FOR ADDITIONAL SCOPE OF WORK.
- ALL SPRINKLER HEADS IN AREA OF WORK ARE TO BE REMOVED OR RELOCATED AS INDICATED.
- CONTRACTOR SHALL FIELD VERIFY ALL EXISTING PIPING AND SPRINKLER LOCATIONS PRIOR TO FIT UP.
- COORDINATE PIPING LOCATIONS WITH EXISTING AND NEW CEILING SYSTEMS PRIOR TO PLACEMENT AND FIT UP.
- CENTER ALL SPRINKLERS IN CENTER OF NEW ACOUSTICAL TILE. (TYP)
- REFER TO PLANS AND CONTRACT SPECIFICATIONS FOR ADDITIONAL SCOPE OF WORK .

DRAWING TITLE
**FIRE PROTECTION
DEMO FLOOR
PLAN**

FILE: MC HENSLEY 4TH FL
JOB NO.: 2013.35
DATE : 3/20/2013
PLOT SIZE: 1:1
DRAWN BY: DC
CHECKED BY: JDC
SHEET No.:

FP2.0

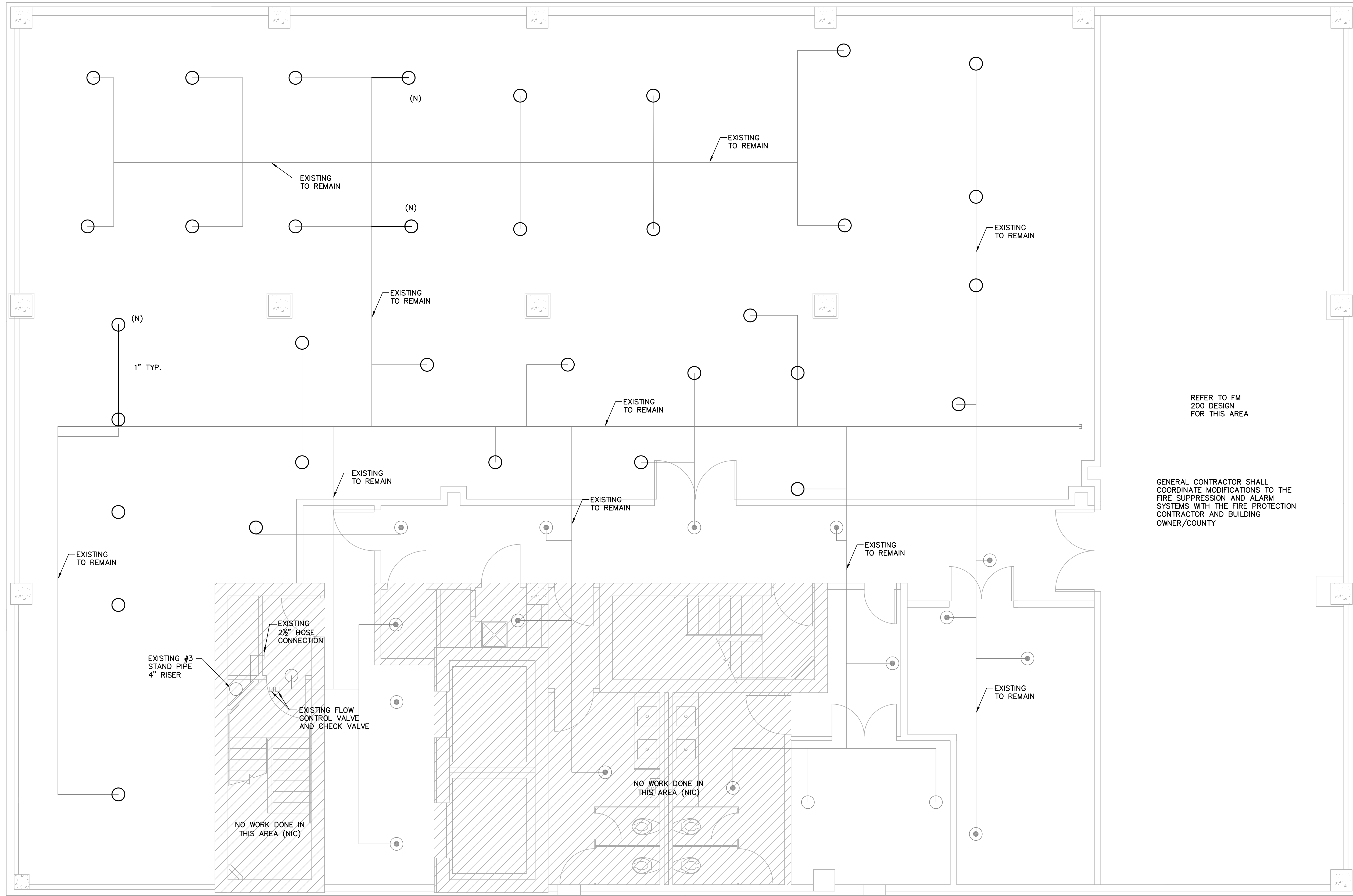
**MANATEE COUNTY HENSLEY WING
4TH FLOOR IT RENOVATIONS
1051 MANATEE AVE. W., BRADENTON, FL 34208
IFAS# W1300147 WA#10**

REV #	DESCRIPTION	OWNER/COUNTY REVIEW	DATE
			09/06/2013

A ATP ENGINEERING SOUTH, PL
SARASOTA, FLORIDA
ENGR. BUSINESS #8908
941-751-6485

SJL

FL#5468



- EXISTING TO BE REMAIN
- NEW SPRINKLER (N) RELOCATED (R)
REFER TO LEGEND SHEET FOR SPRINKLER TYPE-PENDANT



1
FP2.1

4th FL FIRE PROTECTION FLOOR PLAN
1/4" = 1'-0"

REFER TO FM
200 DESIGN
FOR THIS AREA

GENERAL CONTRACTOR SHALL
COORDINATE MODIFICATIONS TO THE
FIRE SUPPRESSION AND ALARM
SYSTEMS WITH THE FIRE PROTECTION
CONTRACTOR AND BUILDING
OWNER/COUNTY

GENERAL NOTES:

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- ITEMS IN GRAYSCALE ARE EXISTING AND TO REMAIN. FOR DUCTWORK AND DIFFUSERS THAT ARE "TO REMAIN" PRESERVE EXISTING LOCATION.
- CONTRACTOR SHALL COORDINATE ALL FINAL HEAD LOCATIONS WITH ARCHITECT AND CONFORM TO NFPA 13.
- REMOVE EXISTING SPRINKLERS AT LOCATIONS SHOWN ON DEMOLITION PLANS. REUSE AND RELOCATE SPRINKLER HEADS AS INDICATED.
- CONTRACTOR SHALL FIELD VERIFY ALL EXISTING PIPING AND SPRINKLER LOCATIONS PRIOR TO FIT UP.
- COORDINATE PIPING LOCATIONS WITH EXISTING AND NEW CEILING SYSTEMS PRIOR TO PLACEMENT AND FIT UP.
- CENTER ALL SPRINKLERS IN CENTER OF NEW ACOUSTICAL TILE. (TYP)
- REPLACE ESCUTCHEON OF EXISTING REUSED SPRINKLERS AREAS OF NEW CEILING REPLACEMENT, REFER TO ARCHITECTURAL REFLECTING CEILING PLAN FOR AREAS.

DRAWING TITLE
**FIRE PROTECTION
NEW FLOOR
PLAN**

FILE: MC HENSLEY 4TH FL
JOB NO.: 2013.35
DATE : 3/20/2013
PLOT SIZE: 1:1
DRAWN BY: DC
CHECKED BY: JDC
SHEET No.:

FP2.1

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4TH FLOOR IT RENOVATIONS
1051 MANATEE AVE. W., BRADENTON, FL 34208
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	OWNER/COUNTY REVIEW	09/26/2013

A ATP ENGINEERING SOUTH, PL
SARASOTA, FLORIDA
ENGR. BUSINESS #8908
941-751-6485

SJL

FL#5468

ABBREVIATIONS

AC	AIR CONDITIONING
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
AI	ANALOG INPUT
AO	ANALOG OUTPUT
AP	ACCESS PANEL
BFF	BELOW FINISHED FLOOR
BHP	BRAKE HORSE POWER
BOT	BOTTOM
CC	COOLING COIL
CD	CONDENSATE DRAIN
CFM	CUBIC FEET PER MINUTE
CH	CHILLER
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CLG	CEILING
CO	CLEANOUT
CRU	COMPUTER ROOM UNIT
CT	COOLING TOWER
CU	CONDENSING UNIT
CW	COLD WATER
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
DB	DRY BULB
DCC	DIRECT DIGITAL CONTROL
DG	DOOR GRILLE
DI	DIGITAL INPUT
DO	DIGITAL OUTPUT
DP	DEW POINT
DX	DIRECT EXPANSION
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EC	ELECTRICAL CONTRACTOR
ECC	ENERGY CONTROL CENTER
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
ET	EXPANSION TANK
EL	ELEVATION
EQUIP	EQUIPMENT
EW	ELECTRIC WATER COOLER
EW	ENTERING WATER TEMPERATURE
EXIST	EXISTING
FA	FIRE ALARM
FAC	FIRE ALARM CONTRACTOR
FDPR	FIRE DAMPER
FCU	FAN COIL UNIT
FD	FLOOR DRAIN
FL	FLOOR
FPI	FINS PER INCH
FPF	FINS PER FOOT
FPM	FEET PER MINUTE
G	GUARD
GC	GENERAL CONTRACTOR
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
H	HUMIDITY
HB	HOSE BIBB
HC	HEATING COIL
HE	HEAT EXCHANGER
HP	HORSE POWER
HW	HOT WATER
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
KW	KILOWATT
LAT	LEAVING AIR TEMPERATURE
LWT	LEAVING WATER TEMPERATURE
MC	MECHANICAL CONTRACTOR
MD	MOTORIZED DAMPER
MAX	MAXIMUM
MIN	MINIMUM
NC	NORMALLY CLOSED
NO	NORMALLY OPENED
OA	OUTSIDE AIR
OS&Y	OUTSIDE SCREW & YOKE
PC	PLUMBING CONTRACTOR
PD	PRESSURE DROP
PRESS	PRESSURE
RA	RETURN AIR
RD	ROOF DRAIN
RL	RAIN LEADER
RTU	ROOF TOP UNIT
S	SANITARY
SDPR	SMOKE DAMPER
SA	SUPPLY AIR
SP	STATIC PRESSURE
TCC	TEMPERATURE CONTROL CONTRACTOR
T	TEMPERATURE
TYP	TYPICAL
UC	UNDERCUT
UG	UNDERGROUND
UON	UNLESS OTHERWISE NOTED
UV	UNIT VENTILATOR
V	VENT
VAC	VACUUM
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
VFD	VARIABLE FREQUENCY DRIVE
VSD	VARIABLE SPEED DRIVE
VTR	VENT THRU ROOF
W	WASTE
WB	WET BULB
WCO	WALL CLEANOUT

DUCTWORK

	UP		DN	SUPPLY DUCT (UP & DOWN)
	UP		DN	EXHAUST DUCT (UP & DOWN)
	UP		DN	RETURN AIR DUCT (UP & DOWN)
				CEILING DIFFUSERS
				SIDE WALL REGISTER OR GRILLE
				RETURN OR EXHAUST CEILING GRILLE
				EXHAUST OR RETURN WALL MTD GRILLE
	10x8			NEW DUCT - WIDTH X DEPTH
				(SINGLE LINE)
				EXISTING DUCT TO REMAIN
				(SINGLE LINE)
				EXISTING DUCT TO BE REMOVED
				(SINGLE LINE)
				FLEXIBLE DUCTWORK (INSULATED)
				(SINGLE LINE)
				SPIN-IN FITTING
				(SINGLE LINE)
				DUCT SIZE TRANSITION (CONCENTRIC)
				(SINGLE LINE)
				DUCT SIZE TRANSITION (ECCENTRIC)
				(SINGLE LINE)
				DUCT TRANSITION (RECTANGULAR TO ROUND)
				(SINGLE LINE)
				ACOUSTICALLY LINED DUCT
				INCLINED RISE, IN DIRECTION OF AIR FLOW
				INCLINED DROP, IN DIRECTION OF AIR FLOW
				FLEXIBLE CONNECTION
				LOUVER
				MANUAL VOLUME DAMPER
				FIRE DAMPER
				SMOKE DAMPER
				FIRE / SMOKE DAMPER
				SMOKE DETECTOR
				DUCT HEATER
				VANED ELBOW (PROVIDE ALL SQUARE OR RECTANGULAR ELBOWS WITH VANES EVEN IF SYMBOL IS MISSING)
				VANED ELBOW (SHORT RADIUS)
				STANDARD RADIUS ELBOW
				VANE TURN ELBOW & AIR SPLIT TYPE DUCT TAKE-OFF
				THERMOSTAT / TEMPERATURE SENSOR
				HUMIDISTAT / HUMIDITY SENSOR
				UNDERCUT (1" U.O.N.)
				DOOR GRILLE (18"x12" U.O.N.)
	A			AIR DEVICE TYPE
	100			AIR FLOW CFM
	6"			NECK SIZE
				4-WAY AIR FLOW
				3-WAY AIR FLOW
				2-WAY AIR FLOW
				1-WAY AIR FLOW
				SMOKE EXHAUST GRILLE

NOTE:

THESE ARE STANDARD SYMBOLS AND MAY NOT ALL APPEAR ON THE PROJECT DRAWINGS; HOWEVER WHEREVER THE SYMBOL APPEARS ON THE PROJECT DRAWINGS, THE ITEM SHALL BE PROVIDED AND INSTALLED.

PIPING

	CWS	CONDENSER WATER SUPPLY
	CWR	CONDENSER WATER RETURN
	CHWS	CHILLED WATER SUPPLY
	CHWR	CHILLED WATER RETURN
	CD	CONDENSATE LINE
	RL	REFRIGERANT LIQUID
	RS	REFRIGERANT SUCTION
	RHG	REFRIGERANT HOT GAS
	HWS	HOT WATER SUPPLY
	HWR	HOT WATER RETURN
		DOMESTIC WATER
		GATE VALVE
		GLOBE VALVE
		CHECK VALVE
		BALL VALVE
		PLUG VALVE
		PRESSURE REDUCING VALVE
		2-WAY CONTROL VALVE
		3-WAY MODULATING CONTROL VALVE
		SAFETY OR PRESSURE RELIEF VALVE
		MANUAL AIR VENT
		BUTTERFLY VALVE
		HOSE BIBB
		ANGLE GLOBE VALVE
		MOTOR OPERATED GATE VALVE
		MOTOR OPERATED GLOBE VALVE
		TEST PLUG (PRESSURE / TEMPERATURE)
		OUTSIDE SCREW & YOKE (O S & Y)
		DIRECTION OF FLOW
		ANCHOR
		REDUCER OR INCREASER
		ECCENTRIC REDUCER
		TOP CONNECTION, 45 OR 90 DEG.
		BOTTOM CONNECTION, 45 OR 90 DEG.
		SIDE CONNECTION
		CAPPED OUTLET
		RISE OR DROP IN PIPE
		UNION
		STRAINER
		THERMOMETER
		PRESSURE GAGE
		WATER FLOW MEASURING DEVICE
		EXISTING PIPE TO BE REMOVED

DRAWING SYMBOLS

	2	DETAIL NUMBER
	FP5	DRAWING NUMBER WHERE DRAWN
	A	SECTION LETTER
	FP5	DRAWING NUMBER WHERE DRAWN
		POINT OF INTERFACE BETWEEN NEW & EXISTING P.O.C.
		POINT OF DEMOLITION P.O.D.
		POINT OF INTERFACE BETWEEN CONTRACTORS

GENERAL NOTES

- HVAC WORK CONSISTS OF PROVIDING AND INSTALLING AIR CONDITIONING SYSTEMS FOR A COMPLETE OPERATING SYSTEM AND INDICATED ON THE DRAWINGS. ALL WORK SHALL COMPLY WITH APPLICABLE CODES IN CONTRACT SPECIFICATIONS. IT IS THE INTENTION OF THE CONTRACT DRAWINGS AND CONTRACT SPECIFICATIONS TO CALL FOR COMPLETE, FINISHED WORK, TESTED, AND READY FOR OPERATION. MANATEE COUNTY PURCHASING DOCUMENTS TAKE PRECEDENCE ON THIS PROJECT.
- TEST AND BALANCE SHALL BE PROVIDED BY A COMPANY SPECIALIZING IN THE TESTING AND BALANCING OF HVAC SYSTEMS AS SUBCONTRACTOR TO THE HVAC CONTRACTOR, GENERAL CONTRACTOR. THE TEST AND BALANCE CONTRACTOR SHALL BE A MEMBER OF NEBB.
- DUCT DIMENSIONS SHOWN ON THE DRAWINGS ARE CLEAR INSIDE AIR PASSAGE DIMENSIONS.
- PROVIDE SPIN-IN FITTINGS AT ALL FLEXIBLE DUCT RUNOUTS TO DIFFUSERS WITH AIR EXTRACTOR AND DAMPER.
- MAXIMUM LENGTH OF FLEXIBLE DUCT SHALL BE 6'-0".
- ALL PIPING SUBJECT TO THERMAL EXPANSION AND/OR CONTRACTION THAT PENETRATES A SMOKE, FIRE, OR FIRE/SMOKE WALL, PARTITION, OR FLOOR SLAB SHALL BE SUITABLY SLEEVED AND FIRE SAFED.
- SMOKE DAMPERS ARE REQUIRED TO BE OPERATED BY THE TEMPERATURE CONTROL CONTRACTOR AND CONTROLLED BY THE FIRE ALARM MASTER SYSTEM. ALL WIRING AND CONDUIT TO THE SMOKE DAMPER IS BY THE TEMPERATURE CONTROL CONTRACTOR.
- METAL DUCTS WHICH PENETRATE 1 HOUR RATED FIRE WALLS AND ARE LESS THAN 100 SQUARE INCHES SHALL EXTEND A MINIMUM OF 5 FEET ON BOTH SIDES OF THE WALL WITHOUT AN OPENING (TO PRECLUDE THE REQUIREMENT OF A FIRE DAMPER). DUCTWORK SHALL IN NO CASE BE LIGHTER (TO PRECLUDE THE REQUIREMENT OF A FIRE DAMPER). DUCTWORK SHALL IN NO CASE BE LIGHTER THAN 24 GAUGE STEEL.
- PROVIDE IDENTIFICATION OF THE LOCATION OF ALL FIRE AND BALANCING DAMPERS. IDENTIFICATION TAGS SHALL BE AFFIXED TO THE WALLS OR CEILINGS AND SHALL BE VISIBLE FROM THE OCCUPIED SPACE.
- ALL PIPING SHALL BE SUPPORTED WITH COMMERCIAL MANUFACTURED CLAMPS. PROVIDE ISOLATION SLEEVES TO PREVENT CONTACT OF DISSIMILAR METALS.
- INSTALL ALL EQUIPMENT IN STRICT ACCORDANCE WITH THE MANUFACTURERS' INSTRUCTIONS AND RECOMMENDATIONS.
- CONTRACTOR TO PROVIDE ALL SUPPLEMENTARY STEEL REQUIRED TO SUSPEND MECHANICAL EQUIPMENT AND MATERIALS.
- PENETRATIONS THROUGH FIRE RATED ASSEMBLIES, PENETRATIONS FOR PIPES, CONDUITS, OR OTHER PURPOSES THROUGH ASSEMBLIES (FLOORS, ROOF, WALLS, PARTITIONS, ETC.) WITH A REQUIRED FIRE RESISTANCE RATING FIRE STOP MATERIAL. FIRE STOP SEALANTS SHALL BE UL LISTED. APPLY FIRE STOP AS RECOMMENDED BY THE MANUFACTURER AND IN ACCORDANCE WITH ITS LISTING TO MEET OR EXCEED THE FIRE RATING OF THE ASSEMBLY IN WHICH IT IS INSTALLED.
- ALL INSULATION SHALL BE FIRE RATED IN ACCORDANCE WITH ASHRAE 90A 50/25 SMOKE DEVELOPMENT AND FLAME SPREAD REQUIREMENTS. INSULATION "R" VALUES SHALL COMPLY WITH THE FLORIDA ENERGY CODE.
- MOUNT ALL SPACE THERMOSTATS AND/OR SENSORS 4 FEET ABOVE THE FLOOR, UNLESS OTHERWISE NOTED.
- INSTALL DUCT MOUNTED SMOKE DETECTORS (FURNISHED AND INSTALLED BY EC AND FAC CONTRACTOR, MECH. CONTRACTOR SHALL CUT HOLE FOR DETECTOR AS DIRECTED BY THE EC AND FAC.) IN SUPPLY AND RETURN AIR DUCTWORK CONNECTED TO EACH A/C UNIT. WIRE DUCT MOUNTED SMOKE DETECTORS SUCH THAT ACTIVATION WILL DE-ENERGIZE AIR HANDLING UNIT FAN. LOCATE DUCT MOUNTED SMOKE DETECTORS THE REQUIRED DISTANCE DOWNSTREAM FROM BENDS OR INLETS AS RECOMMENDED BY THE MANUFACTURER.
- AIR HANDLING UNITS SHALL BE SHUT DOWN BY THE FIRE ALARM SYSTEM. WIRE THROUGH FIRE ALARM RELAY CONTACT (PROVIDED BY THE FIRE ALARM CONTRACTOR, FAC) TO SHUT DOWN AIR HANDLING UNITS UPON FIRE ALARM ACTIVATION. COORDINATE WITH FIRE ALARM CONTRACTOR ACCORDINGLY. WHEN AIR HANDLING UNITS SHUT DOWN FOR FIRE ALARM OR MAINTENANCE, INTERLOCKED EXHAUST FANS SHALL ALSO SHUT DOWN.
- ACTIVATION OF THE FIRE ALARM SHALL CLOSE ALL SMOKE DAMPERS. SMOKE DAMPERS SHALL RE-OPEN AUTOMATICALLY UPON RESTORATION OF THE FIRE ALARM "ALL CLEAR" SIGNAL. COORDINATE THE WIRING OF THE COMBINATION SMOKE/FIRE DAMPERS WITH THE FIRE ALARM CONTRACTOR ACCORDINGLY.
- SEE ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION OF ALL AIR DEVICES LOCATED IN THE CEILING.
- SEE ELECTRICAL DRAWINGS FOR ELECTRICAL CHARACTERISTICS OF MECHANICAL EQUIPMENT.
- UNLESS OTHERWISE NOTED, INSTALL ALL DUCTWORK AS HIGH AS POSSIBLE, TIGHT TO THE BOTTOM OF THE STRUCTURE. COORDINATE ELEVATION AND LOCATION WITH RAIN LEADERS, WATER PIPING, PLUMBING VENTS, AND MAJOR ELECTRICAL CONDUITS OR CABLE TRAY.
- PROVIDE LOW LEAKAGE MOTORIZED DAMPERS IN ALL OUTSIDE AIR DUCTS.
- PROVIDE DRAIN P--TRAPS IN THE CONDENSATE LINES AT ALL AIR HANDLING UNITS.
- ROUTE FULL SIZE (MIN. 1") COPPER DRAIN PIPE FROM EACH AHU DRAIN PAN TO RESPECTIVE FLOOR DRAIN. INSULATE WITH 3/4" ARMSTRONG "ARMAFLEX" INSULATION.
- THE ENGINEER HAS MADE AN EXTENSIVE EFFORT TO IDENTIFY ABOVE CEILING CONFLICTS. THE CONTRACTOR IS RESPONSIBLE TO ALSO CHECKING FIELD CONDITIONS PRIOR TO BIDDING AND REPORT ANY PROBLEMS/CONFLICTS TO THE ENGINEER WITHIN 2 DAYS OF DISCOVERY. ANY CHANGES RESULTING FROM CONDITIONS ARISING IN THE FIELD WHICH WERE NOT BROUGHT TO THE ENGINEER'S ATTENTION ARE TO BE MADE BY THIS CONTRACTOR WITH NO ADDITIONAL COST TO THE OWNER/COUNTY.
- THE WORK INDICATED ON THESE DRAWINGS IS GENERALLY DIAGRAMMATIC AND IS INTENDED TO CONVEY THE SCOPE OF WORK AND INDICATE THE GENERAL ARRANGEMENT OF DUCTWORK AND EQUIPMENT, ETC.
- ALL WORK IS TO BE FREE OF DEFECTS IN WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE(1) YEAR FROM DATE OF FINAL ACCEPTANCE. ALL DEFECTS WHICH DEVELOP OR ARE DISCOVERED WITHIN THIS PERIOD SHALL BE REPAIRED BY THE CONTRACTOR TO THE SATISFACTION OF THE OWNER/COUNTY AT NO ADDITIONAL COST TO THE OWNER/COUNTY.
- UPON COMPLETION OF THE WORK UNDER THIS CONTRACT, THE CONTRACTOR SHALL REMOVE ALL TOOLS, APPLIANCES, SURPLUS MATERIALS, AND SCRAP. ALL IDENTIFIED EXISTING EQUIPMENT TO BE REMOVED SHALL BE TURNED OVER TO THE OWNER/COUNTY.
- WHEN CONFLICTS OCCUR IN CONTRACT SPECIFICATIONS OR IN THE DRAWINGS, OR BETWEEN EITHER, THE ITEMS OF GREATER QUANTITY OR HIGHER COST SHALL BE PROVIDED.
- THE CONTRACTOR SHALL COORDINATE WORK WITH OTHER TRADES IN ORDER TO AVOID CONFLICTS.
- PROVIDE BALANCING DAMPER IN EACH BRANCH CONNECTION.
- ALL DUCTWORK INSTALLED ON THIS PROJECT SHALL BE OF SHEET METAL CONSTRUCTION. DUCTWORK SHALL BE FABRICATED AND CONSTRUCTED IN ACCORDANCE WITH SMACNA REQUIREMENTS.
- ALL ROOF ATTACHED EQUIPMENT AND APPURTENANCES INCLUDED IN THE SCOPE OF THIS PROJECT ARE REQUIRED TO BE SECURED TO THE UNDERLYING BUILDING STRUCTURE. THE FASTENING SYSTEMS SHALL BE DESIGNED TO WITHSTAND A 140 MPH WIND LOAD.
- CONTRACTOR SHALL PROVIDE TO LOCAL AHJ OR PERMITTING AGENCY A COPY OF ALL MAJOR EQUIPMENT CUTS SHEETS AT TIME OF APPLICATION.
- PROVIDE A FULLY COMPREHENSIVE 3 YEAR WARRANTY ON ALL MATERIALS, EQUIPMENT, AND LABOR. THIS STATEMENT TAKE PRECEDENTS OVER THE CONTRACT SPECIFICATIONS. IF THE MANUFACTURER'S WARRANTY EXCEEDS THREE YEARS THEN THE PROVIDE THE MANUFACTURER'S WARRANTY WITH MATERIALS, PARTS, EQUIPMENT AND LABOR FOR AT LEAST THREE YEARS.

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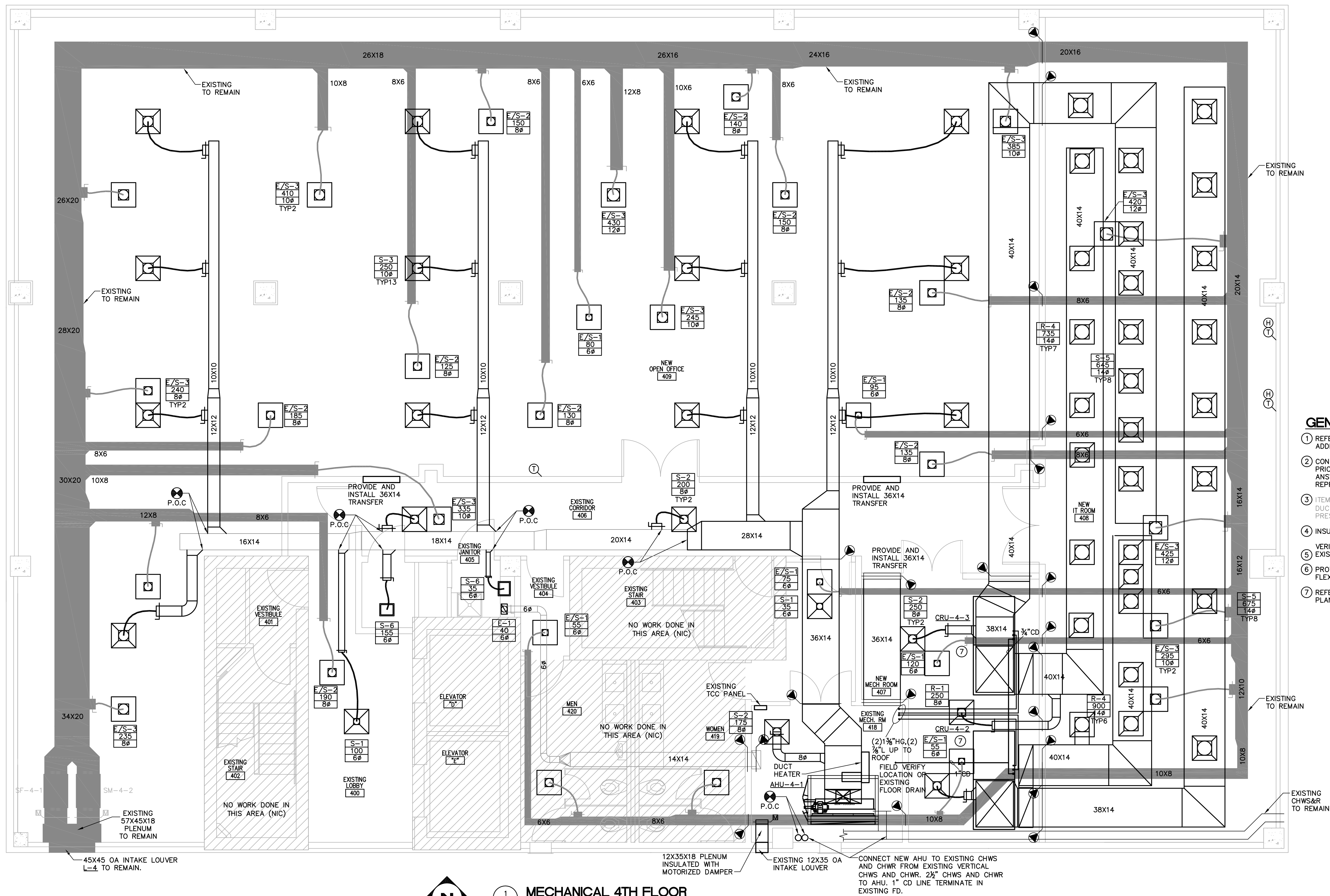
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IFAS# W1



GENERAL NOTE:

- 1 REFER TO PLANS AND CONTRACT SPECIFICATIONS FOR ADDITIONAL SCOPE OF WORK.
- 2 CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO START OF WORK. ANY QUESTIONS SHALL BE ANSWERED BY THE ENGINEER AND PROJECT REPRESENTATIVE PRIOR TO START WORK.
- 3 ITEMS IN GRAYSCALE ARE EXISTING AND TO REMAIN. FOR DUCTWORK AND DIFFUSERS THAT ARE "TO REMAIN" PRESERVE EXISTING LOCATION.
- 4 INSULATE OUTSIDE AIR DUCT AND PLENUM COMPLETELY.
- 5 VERIFY FINAL LOCATION OF GRILLE AND DUCTWORK IN EXISTING GRID PRIOR TO INSTALLATION
- 6 PROVIDE AND INSTALL RA PLENUMON UNIT FOR EACH AHU, FLEXIBLE CONNECTION TO RA DUCT AT UNIT.
- 7 REFER TO REFLECTED CEILING PLAN ON ARCHITECTURAL PLANS FOR FINAL GRILLES LOCATIONS

DRAWING TITLE:
**MECHANICAL
PROPOSED FLOOR
PLAN**

FILE: MC HENSLEY 4TH FL
JOB NO.: 2013.35
DATE : 3/20/2013
PLOT SIZE: 1:1
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SHEET No.:

M2.1

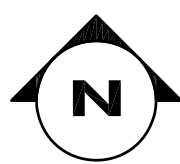
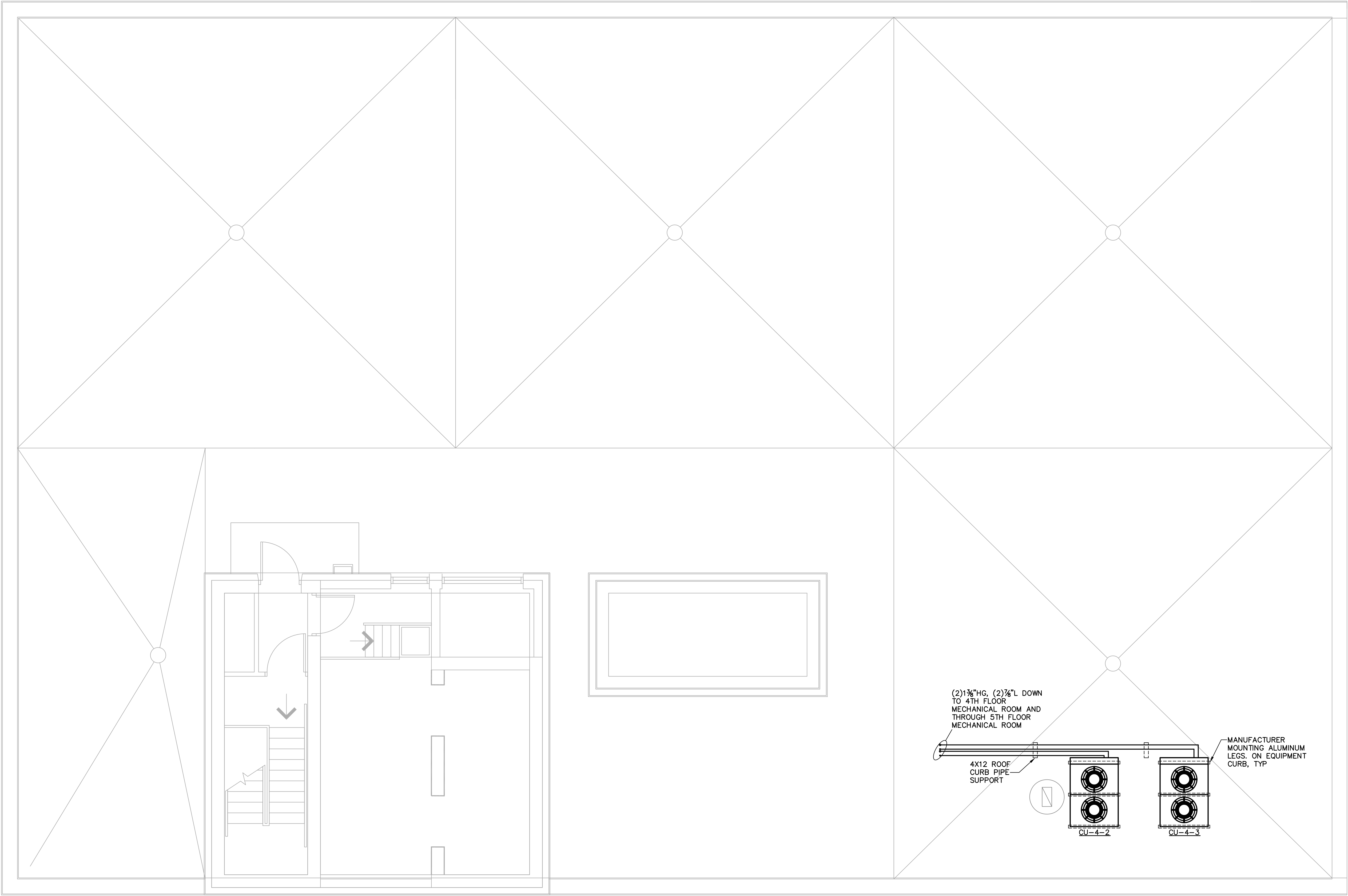
**MANATEE COUNTY HENSLEY WING
4TH FLOOR IT RENOVATIONS, FL 34208**
1051 MANATEE AVE. W., BRADENTON, FL 34208
IFAS# W1300147 WA#10

REV.#	DESCRIPTION	DATE
	OWNED/COUNTY REVIEW	09/06/2013

ATP ENGINEERING SOUTH, PL
SARASOTA, FLORIDA
ENGR. BUSINESS #8908
941-751-6485

SJL

FL#5468



1
M2.2

MECHANICAL ROOF FLOOR
1/4" = 1'-0"

GENERAL NOTES:

- 1 REFER TO PLANS AND CONTRACT SPECIFICATIONS FOR ADDITIONAL SCOPE OF WORK.
- 2 CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO START OF WORK. ANY QUESTIONS SHALL BE ANSWERED BY THE ENGINEER AND PROJECT REPRESENTATIVE PRIOR TO START WORK.
- 3 ITEMS IN GRAYSCALE ARE EXISTING AND TO REMAIN. FOR DUCTWORK AND DIFFUSERS THAT ARE "TO REMAIN" PRESERVE EXISTING LOCATION.

DRAWING TITLE

**MECHANICAL
ROOF PLAN**

FILE: MC HENSLEY 4TH FL

JOB NO.: 2013.35

DATE : 3/20/2013

PLOT SIZE: 1:1

DRAWN BY: DC

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M2.2

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4TH FLOOR IT RENOVATIONS
1051 MANATEE AVE. W., BRADENTON, FL 34208
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A ATP ENGINEERING SOUTH, PL
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SJAL

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SREGRILLE, REGISTER AND DIFFUSER SCHEDULE											
TAG NO.	PATTERN	NECK SIZE	MODULE SIZE	FRAME STYLE	MATERIAL	FINISH	CFM RANGE	ACCESSORIES	MANUFACTURER	MODEL NO.	REMARKS
S-1	4 WAY	6"ø	24X24	TBAR	ALUM	WHITE	0-120	1	TITUS	PAS-AA	2
S-2	4 WAY	8"ø	24X24	TBAR	ALUM	WHITE	105-230	1	TITUS	PAS-AA	2
S-3	4 WAY	10"ø	24X24	TBAR	ALUM	WHITE	165-415	1	TITUS	PAS-AA	2
S-4	4 WAY	12"ø	24X24	TBAR	ALUM	WHITE	240-525	1	TITUS	PAS-AA	2
S-5	4 WAY	14"ø	24X24	TBAR	ALUM	WHITE	320-740	1	TITUS	PAS-AA	2
S-6	DBL DFL	10X12	12X14	SURF	ALUM	WHITE	216-504	1	TITUS	300FL	2,7
S-7	DBL DFL	12X12	14X14	SURF	ALUM	WHITE	264-616	1	TITUS	300FL	2,7
E-1	35	12X8	13 X9	SURF	ALUM	WHITE	0-400	1	TITUS	350FL	2,3
E/S-1	EGG/TBAR	6X6	24X24	SURF	ALUM	WHITE	0-120	1	TITUS	50FNT	2,4
E/S-2	EGG/TBAR	14X6	24X24	SURF	ALUM	WHITE	105-230	1	TITUS	50FNT	2,5
E/S-3	EGG/TBAR	12X12	24X24	SURF	ALUM	WHITE	240-525	1	TITUS	50FNT	2,6
E/S-4	EGG/SURF.	6X6	8X8	SURF	ALUM	WHITE	0-152	1	TITUS	50F	2,4
R-1	PERF	8"ø	24X24	TBAR	ALUM	WHITE	0-240	1	TITUS	PAR-AA	2
R-2	PERF	10"ø	24X24	TBAR	ALUM	WHITE	165-430	1	TITUS	PAR-AA	2
R-3	PERF	12"ø	24X24	TBAR	ALUM	WHITE	235-750	1	TITUS	PAR-AA	2
R-4	PERF	14"ø	24X24	TBAR	ALUM	WHITE	320-1050	1	TITUS	PAR-AA	2

- NOTES:
- COORDINATE CEILING FRAMES WITH CEILING TYPE ON ARCHITECTURAL PLANS. E/S GRILLES ARE USED IN SMOKE SYSTEM USE.
 - OPPOSED BLADE DAMPER, ADJUSTABLE FROM UNIT FRONT
 - CEILING MOUNT GRILLE, PROVIDE RECTANGULAR BOX WITH ROUND TRANSITION. MIN. 8 INCH ROUND.
 - CEILING MOUNT GRILLE, PROVIDE RECTANGULAR BOX WITH ROUND TRANSITION. MIN. 6 INCH ROUND.
 - CEILING MOUNT GRILLE, PROVIDE RECTANGULAR BOX WITH ROUND TRANSITION. MIN. 8 INCH ROUND.
 - CEILING MOUNT GRILLE, PROVIDE RECTANGULAR BOX WITH ROUND TRANSITION. MIN. 10 INCH ROUND.
 - FIELD MEASURE AND ADAPT EXISTING DUCTWORK FOR REPLACEMENT SMOKE SUPPLY GRILLES
 - ALL NEW DIFFUSERS AND GRILLES INSTALLED IN THE OPEN CEILING AREAS SHALL BE SUPPORTED FROM THE STRUCTURE WITH GALVANIZED STRAPPING AS IS EXISTING.

HVAC LOAD CALCULATIONS SUMMARY		
	ZONE 1- AHU4-1	ZONE 2 - AHU4-2, 3
SIZING METHOD	CARRIER E20II	CARRIER E20II
AREA (SQ. FEET)	5452 SF	1916 SF
TOTAL COOLING REQUIRED W/ OUTSIDE AIR (MBH)	174.3	273
OUTDOOR DRY BULB USED	93	93
OUTDOOR WET BULB USED	79	79
RELATIVE HUMIDITY %	48	50
INDOOR DRY BULB	75	75
TOTAL HEATING REQUIRED W/ OUTSIDE AIR (MBH)	32	0
TOTAL SENSIBLE GAIN (MBH)	122.7	256.3
TOTAL LATENT GAIN (MBH)	51.6	20.7
LB/LB SPECIFIC HUMIDITY ACROSS COIL	.00231	.00027

Reference: 503.2 SIZING, 2010 FLORIDA BUILDING CODE – ENERGY

COMPUTER ROOM A/C UNIT SCHEDULE		
CONDENSING UNIT	----	CU4-2, 4-3
CAPACITY	TONS	16 upflow AHU
NO. OF COMPRESSORS IN EVAPORATOR SECTION		2
COMPRESSOR FLA	AMPS	30.1 FLA
NO. OF CONDENSER FANS	----	2
CONDENSER FAN MOTOR	HP	0.75
ELECTRICAL	V/PH/HZ	208/3/60
MCA/MOCP	AMPS	10.5/15
WEIGHT	LBS.	615
MANUFACTURER	----	DATA AIRE
MODEL NO.	----	DARC-1732
COMPUTER ROOM UNIT	----	CRU 4-2, 4-3
COOLING CAPACITY	BTUH	195,000
SENSIBLE CAPACITY	BTUH	142,700
SUPPLY AIR	CFM	5400
ENTERING AIR (DB/WB)	F/F	75/62.5
LEAVING AIR (DB/WB)	F/F	53.8/51.0
FAN MOTOR	HP	3.70
STATIC PRESS. (EXTERNAL/TOTAL)	----	.50 ESP
ELECTRICAL	V/PH/HZ	208/3/60
MCA/MOCP	AMPS	132/150
ELECTRIC HEAT 3 STAGE	KW	22.50
FILTER TYPE	----	PLEATED 4" MERV 8
WEIGHT	LBS.	1805
MANUFACTURER	----	DATA AIRE
MODEL NO.	----	GFAU-5632
NOTES:		
1. DX COOLING, VIBRATION ISOLATION STANDS, CONDENSATE DRAIN PAN AND CONNECTION, HUMIDIFIER, AUTO FLUSH SYSTEM, FILTERS AND 5 ROW 12FPI COIL.		
2. VARIABLE SPEED CONDENSER FAN DRIVE WITH COMPRESSORS, PLUG FAN IN THE AHU.		
3. NON-LOCKING DISCONNECT SWITCH		
4. SMOKE DETECTOR, HUMIDIFIER, REHEAT, FLOAT SWITCH		
5. LT-460 LEAK DETECTION SYSTEM WITH 25' CABLE		
6. 12" ISOLATION FLOOR STAND/ PLENUM(VERIFY) WITH TURNING VANE FOR RETURN DUCT CONNECTION		
7. NETWORK INTERFACE CARD-INTEGRATION INTO BMS-AUTOMATED LOGIC, UNITS ARE STAND ALONE WITH 100% BACK UP AS PER OWNER/COUNTY. ONE UNIT SHUTS DOWN THE OTHER UNIT OPERATES. ALARM IS SENT TO OWNER/COUNTY FOR FAILURE SEQUENCE		
8. START UP BY FACTORY REPRESENTATIVE.		
9. PROVIDE AND INSTALL 7/8" LIQUID LINES ON VERTICAL & HORIZONTAL RUN. PROVIDE AND INSTALL 1 1/2" HG ON HORIZONTAL & VERIFY VERTICAL RUN SIZE WITH MFR.		
10. COORDINATE REFRIGERANT, WATER, CONDENSATE AND LINE SIZES, AND FLOOR FOOTPRINT IF COMPARABLE ALTERNATE IS USED.		
11. TOP DISCHARGE WITH PLENUM BOX AND DUCTED RETURN CONFIGURATION		
12. 1 1/8" S, 5/8" L AT CONDENSER, 3/4" CONDENSATE, 5/8" L, 3/4" S, 3/4" HUMIDIFIER, AT THE EVAPORATOR, VERIFY W/ MFR IF MULTIPLES AT EVAPORATOR.		

AIR HANDLING UNIT SCHEDULE		
ITEM NO.	----	AHU 4-1
LOCATION	----	MECH EQUIPMENT
TOTAL SUPPLY AIR	CFM	4300
RETURN AIR	CFM	3750
OUTSIDE AIR	CFM	550
STATIC PRESS. EXT./TOTAL	IN. WTR.	2.00/2.69
MAX. FAN SPEED/TYPE/SIZE	RPM/--/IN.	1628/FC/10
MOTOR	BHP/HP	4.16/5.0
ELECTRICAL	V/PH/HZ	460/3/60
COOLING COIL	ROWS/FINS	6/9
TOTAL COOLING CAPACITY	BTUH	146,100
SENSIBLE COOLING CAPACITY	BTUH	109,900
CHILLED WATER FLOW	GPM	29.2
COIL WATER P.D. (MAX)	FT	9.4
CHILLED WATER TEMP. (ENT/LVG)	F/F	45/55
ENTERING AIR (DB/WB)	F/F	77.3/64.5
LEAVING AIR (DB/WB)	F/F	54.2/53.1
FACE VELOCITY	FPM	483
AIR PRESSURE DROP	IN.	.47
ELECTRIC DUCT HTR. (KW)/ STEPS/MCA/MOCP	(29)/ SCR/	43.5/55
FILTERS	2' TA	MERV 8
WEIGHT	LBS	1884
MANUFACTURER	----	YORK
MODEL NO.	----	SOLUTION 33X69
NOTES:		
1. PROVIDE NEW MODULAR DOUBLE WALL AIR HANDLER WITH FLANGED SECTIONS FOR INSTALLATION IN AN EXISTING ROOM FROM AN EXISTING ELEVATOR.		
2. PROVIDE UNIT WITH FILTER FRAME, OUTLET FLANGE, VFD DRIVEN FAN MOTOR L SHAPED FILTER SECTION, WITH FAN VIBRATION ISOLATED FRAME, COOLING COIL SECTION WITH DRAIN PAN AND CHWS/ CHWR PIPE CONNECTIONS, AND SMOKE DETECTION, FAN SECTION WITH FLEX CONNECTION OUTLET, BASE RAIL, AND DISCONNECT BY EC.		
3. PROVIDE & INSTALL 2 WAY CHW CONTROL VALVE WITH MANUAL BYPASS WITH BELIMO ACTUATOR, PROVIDE NEW OA DAMPER AND ACTUATOR ON EXISTING LOUVER. REFER TO DETAILS FOR PIPING FIT UP.		
4. VFD DRIVE BY EC. 5. DUCT HEATER, SAILSWITCH, WITH DISCONNECT BY EC, SENSORS AND CONTROL BY TCC.		

OUTDOOR AIR LOAD CALCULATIONS

FMC TABLE 403.3 AND ASHRAE STD 62 2010

4TH FLOOR

50 CFM/ WC RESTROOMS

JANITOR 1 CFM/SF

OFFICE 3614.8 SF

5 / 1000SF X 5 + .06/SF = 307.2 CFM

IT SPACE 1261.37 SF

5 /1000 SF X 5 + .06 /SF = 182.88 CFM

CORRIDOR, STORAGE, MECH SPACE 278 SF

278 X.06 CFM/SF = 16.7 CFM

TOTAL REQUIRED OA =506.76 CFM

550 CFM SCHEDULED

2 RESTROOMS, 1 UR, 3 WC., 19 SF JANITOR(1CFM/SF) = 219 CFM TOTAL EXHAUST

275 CFM SCHEDULED

ALL SMOKE EVACUATION CALCULATIONS WERE MADE BASED UPON ASHRAE APPLICATIONS 2003 HANDBOOK CHAPTER 52 AND NFPA 92A. STATIC PRESSURE MAXIMUM IS .14 FOR STAIRS AND ELEVATORS

SMOKE EVACUATION SYSTEMS ARE OPERATONAL FOR THE 4TH FLOOR AND ALL EXIST. STAIRS AND ELEVATORS. SYSTEMS ARE TIED TO THE EXISTING JUDICIAL CENTER SMOKE CONTROL

ALL VOLUMES AS CROSS-CHECKED EXCEED 6 AIR CHANGES FOR THE STAIRS, ELEVATOR AREAS. DOOR PULLS WERE VERIFIED IN ACCORDANCE WITH TABLE A.5.2.2 OF NFPA 92A

FL#5468

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DRAWING TITLE

MECHANICAL
SCHEDULES

FILE:

MC HENSLEY 4TH FL

JOB NO.:

2013.35

DATE :

3/20/2013

PLOT SIZE:

1:1

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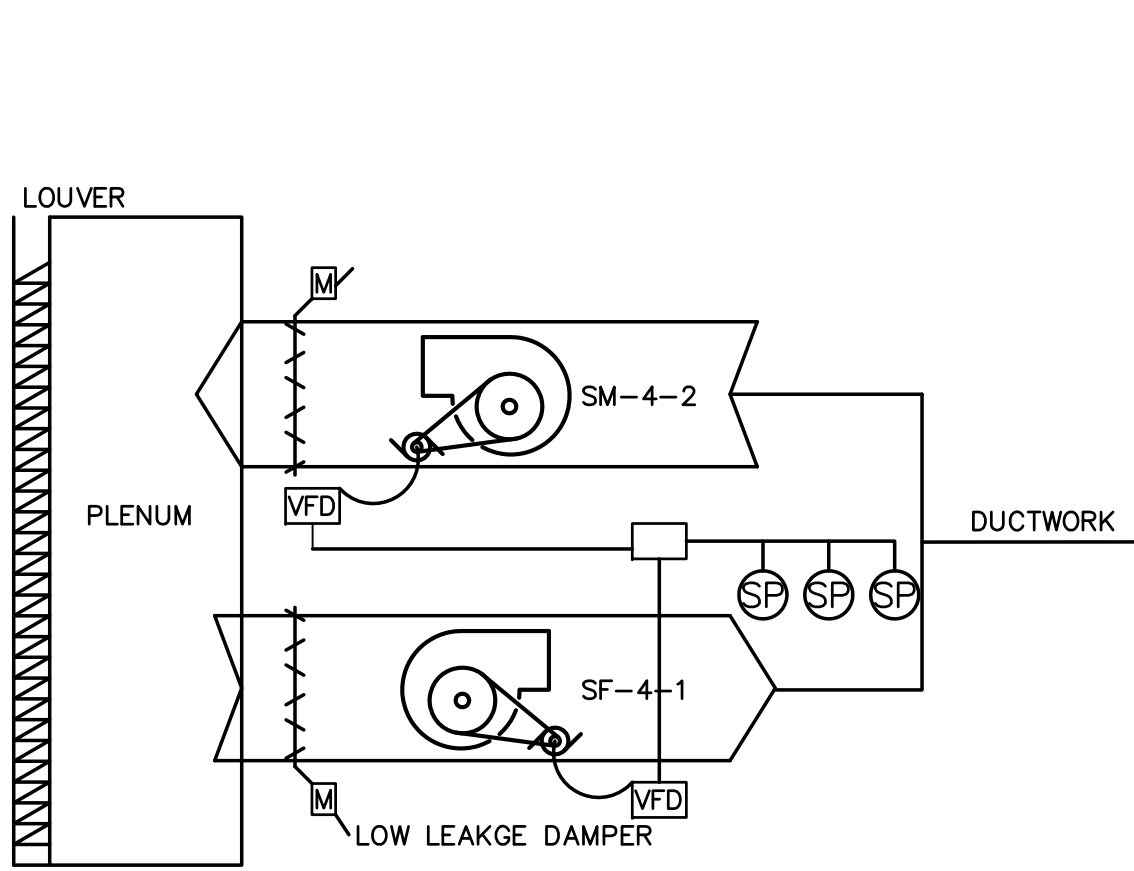
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SEQUENCE OF OPERATIONS

IN CASE OF FIRE ON THE FLOOR, SMOKE EXHAUST SM-4-2 DAMPER SHALL OPEN SMOKE FAN SHALL OPERATE TO MAINTAIN NEGATIVE PRESSURE IN THE SPACE.

IN CASE OF FIRE ON ANY OTHER FLOOR IN THE BUILDING OR COMPLEX, THE SMOKE FAN SM-4-2 SHALL REMAIN OFF WITH DAMPER CLOSED.

SF-4-1 DAMPER SHALL OPEN
SF-4-1 FAN SHALL OPERATE
NFPA 92A MAX. PRESSURE .14 IN WC. PROVIDE STATIC PRESSURE SENSOR IN 3 SPACES.

IN CASE OF NORMAL SEQUENCE BOTH FANS SM-1, SF-1 SHALL BE OFF. DAMPERS CLOSED.

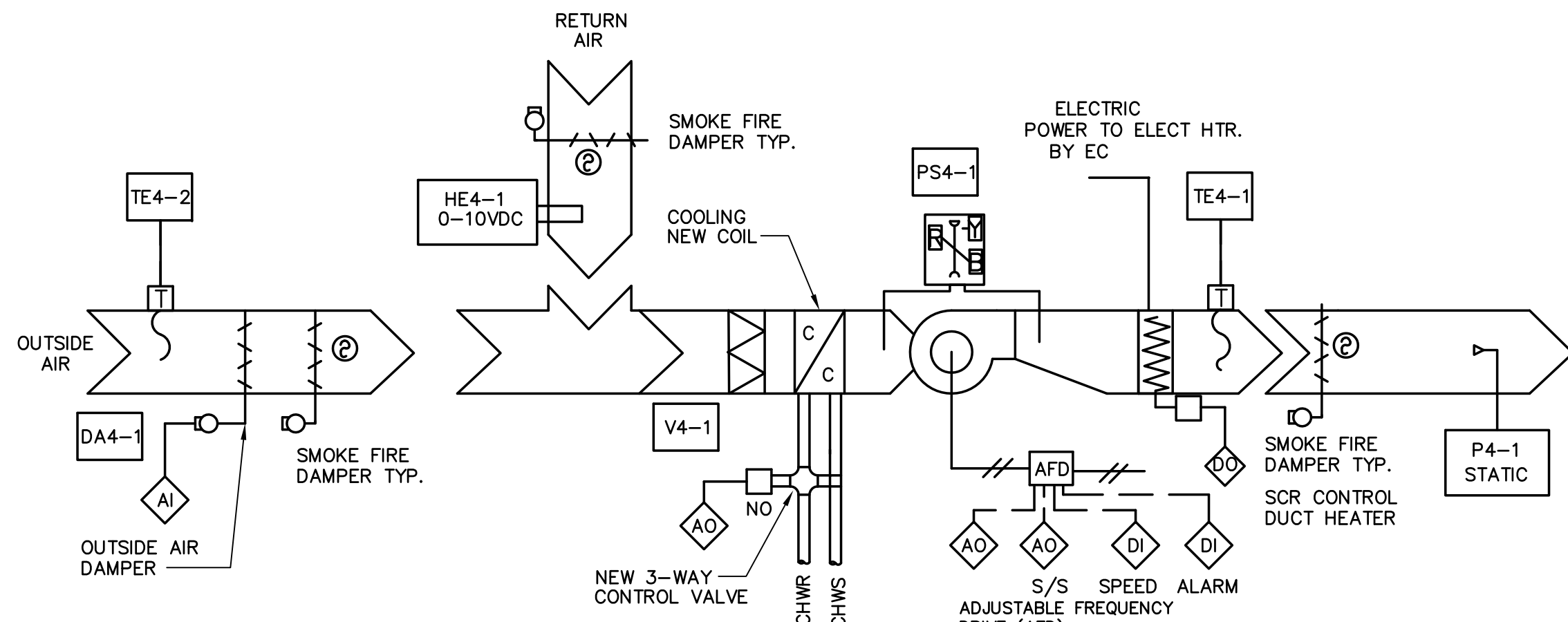
IN CASE OF FM200 SYSTEM ACTUATION DAMPERS IN IT ROOM AREA STAY CLOSED UNTIL MANUALLY OPERATED TO EXHAUST AREA TO ALLOW FOR GAS REMOVAL.

EXISTING SF-4 TO REMAIN DETAIL

NOT TO SCALE

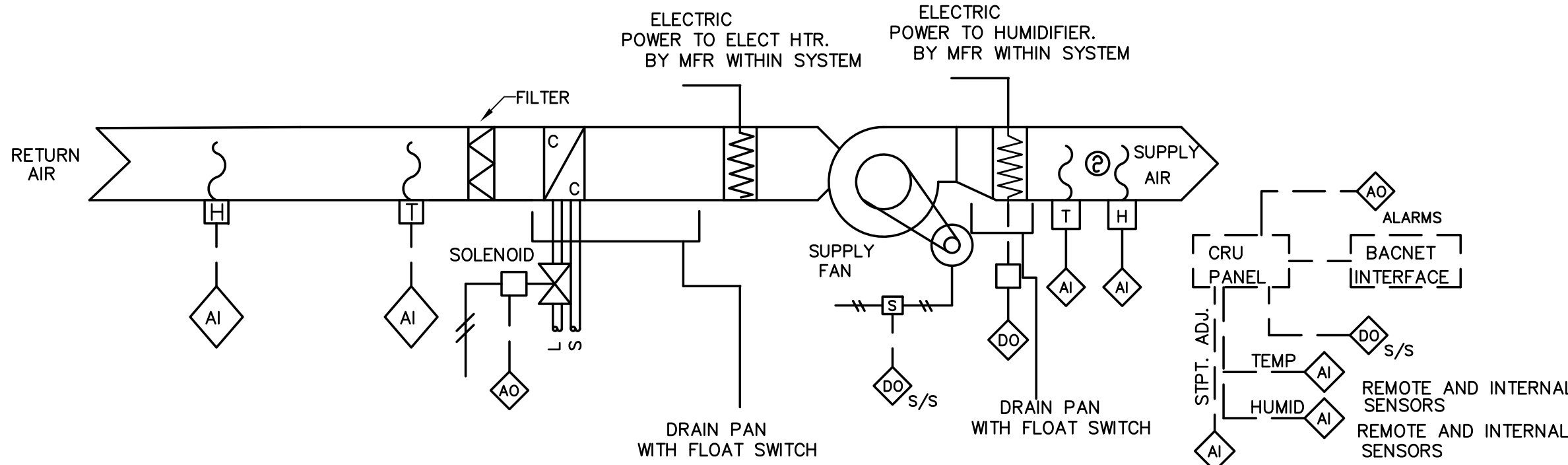
CONTROL POINT ABBREVIATION LEGEND

DI	DIGITAL INPUT
DO	DIGITAL OUTPUT
AI	ANALOG INPUT
AO	ANALOG OUTPUT
S/S	START/STOP
VFD	VARIABLE FREQUENCY DRIVE
CHWS	CHILLED WATER SUPPLY
CHWR	CHILLED WATER RETURN
T	TEMPERATURE
H	HUMIDITY
C	CO ₂
SP	STATIC PRESSURE
FS	FLOW SWITCH
LAT	LEAVING AIR TEMPERATURE
S	STARTER
Ⓢ	SMOKE DETECTOR
S	SUCTION REFRIGERANT LINE
L	LIQUID REFRIGERANT LINE



AIR HANDLING UNIT #4-1 CONTROL DIAGRAM (CV/FUTURE VW UNIT)

NOT TO SCALE



TYPICAL COMPUTER ROOM AIR HANDLING UNIT DETAIL (AHU-4-2, 3)

NOT TO SCALE

SEQUENCE OF OPERATION

DIAGNOSTIC SELF - TEST

WHENEVER THE DIAGNOSTIC CONTROLLER IS TURNED ON, IT PERFORMS A DIAGNOSTIC SELF-TEST

SYSTEM START DELAY

AFTER THE DIAGNOSTIC SELF-TEST IS COMPLETE, THE TIMED START DELAY WILL BE DISPLAYED AND WILL START COUNTING DOWN FROM THE PROGRAMMED DELAY. THE FACTORY SETTING IS FIVE (5) SECONDS.

BLOWER

1. THE BLOWER WILL START UPON COMPLETION OF THE TIMED START DELAY AND IS PROGRAMMED AND WIRED TO RUN CONTINUOUSLY DURING UNIT OPERATION.
2. COOLING, REHEAT, HUMIDIFICATION AND DEHUMIDIFICATION FUNCTIONS ARE INHIBITED FOR ONE (1) MINUTE AFTER THE BLOWER STARTS. THIS ALLOWS THE TEMPERATURE AND HUMIDITY SENSORS TIME TO ADJUST.

COMPRESSOR DX COOLING

1. THERE IS A FIVE (5) MINUTE DELAY BETWEEN START-TO-START OF THE SAME PRIMARY STAGE COMPRESSOR. THE DELAY WILL BE INCREASED TO SIX (6) MINUTES FOR ONE (1) HOUR FOLLOWING THE DETECTION OF A COMPRESSOR SHORT-CYCLE CONDITION EVEN IF THE COMPRESSOR SHORT CYCLE ALARM IS DISABLED.
2. THERE IS A TWO (2) MINUTE DELAY BETWEEN STOP-TO-START OF THE SAME PRIMARY STAGE COMPRESSOR.
3. THERE IS A ONE (1) MINUTE DELAY BETWEEN STOP-TO-START OF THE SAME SECONDARY UNLOADER STAGE COMPRESSOR OR STOP-TO-START OF A SECOND SECONDARY UNLOADER STAGE COMPRESSOR.

REHEAT

1. THERE IS A ONE (1) MINUTE DELAY BETWEEN THE STOP OF ANY REHEAT STAGE TO START OF ANY REHEAT STAGE.
2. THERE IS A ONE (1) MINUTE DELAY FROM START-TO-START OF DIFFERENT REHEAT STAGES. REHEAT STAGES ROTATE EVERY 100 HOURS OF RUNTIME.

HUMIDIFICATION

1. THERE IS A ONE (1) MINUTE DELAY BETWEEN STOP-TO-START OF HUMIDIFICATION.
2. THERE IS A FIVE (5) MINUTE DELAY BETWEEN STOP OF DEHUMIDIFICATION AND START OF HUMIDIFICATION.
3. WHEN THE HUMIDIFIER VALVE IS OPENED, ITS POSITION WILL FOLLOW A LINEAR RAMP THAT GOES FROM 25% OPEN WITH THE HUMIDITY AT SETPOINT MINUS 0.5% TO 100% OPEN AT SETPOINT MINUS HUMIDITY DEADBAND.

DEHUMIDIFICATION

1. IF DEHUMIDIFICATION IS PROGRAMMED FOR "WITHIN REHEAT LIMITS" DEHUMIDIFICATION WILL INHIBIT REHEAT IF THE RETURN AIR TEMPERATURE DROPS TO TEMPERATURE SETPOINTS MINUS TEMPERATURE DEADBAND MINUS 0.90 F. DEHUMIDIFICATION WILL BE INHIBITED UNTIL THE RETURN AIR TEMPERATURE RISES TO THE SETPOINT. COMPRESSOR SHORT-CYCLE TIME WILL NOT BE VIOLATED.

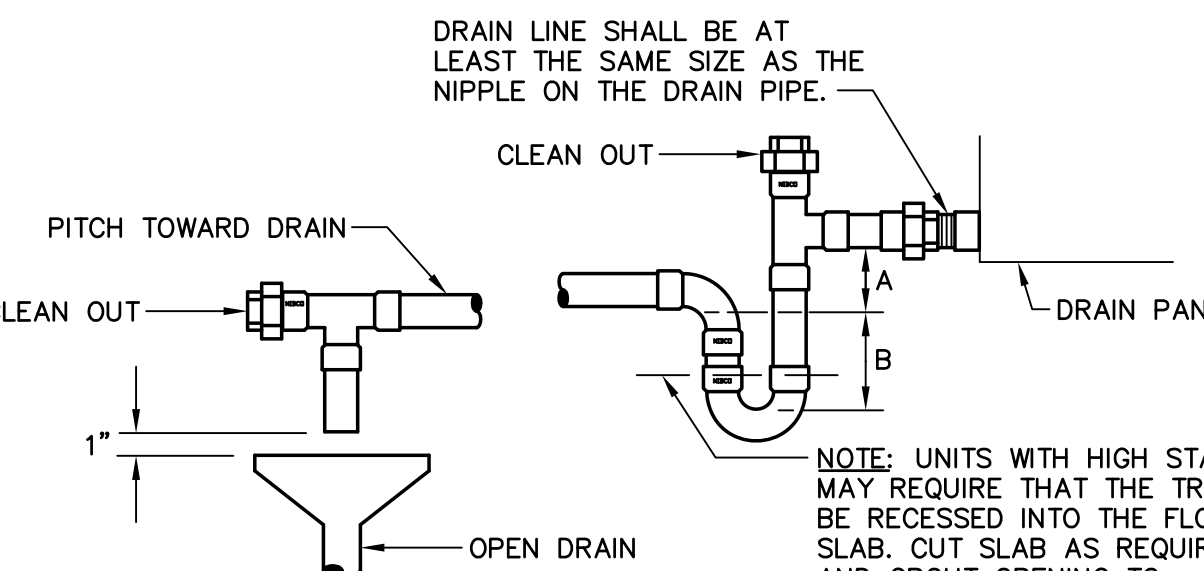
SYSTEM SETPOINTS

1. THE UNIT SETPOINT IS 75 DEGREES F WITH 50% RH ADJUSTABLE +/- .9 DEGREES F AND +/- 5% RH.

BACNET CAPABILITY

1. THE MANUFACTURER SHALL PROVIDE BACNET CAPABILITY FOR READING ALARMS, OPERATING THE UNIT REMOTELY, SETTING SETPOINTS, AND PROVIDING A COOLING OPERATION TIED TO THE EXISTING BUILDING AUTOMATED LOGIC SYSTEM. PROVIDE STAND ALONE CONTROLS AS BASE BID WITH ALTERNATING UNIT OPERATION OR BOTH ON AT SAME TIME. UNITS SHALL BE SHUT DOWN BY FIRE SYSTEM.

REFER TO SPECIFICATIONS FOR ADDITIONAL ALARM AND CHANGEOVER CONTROL REQUIREMENTS.



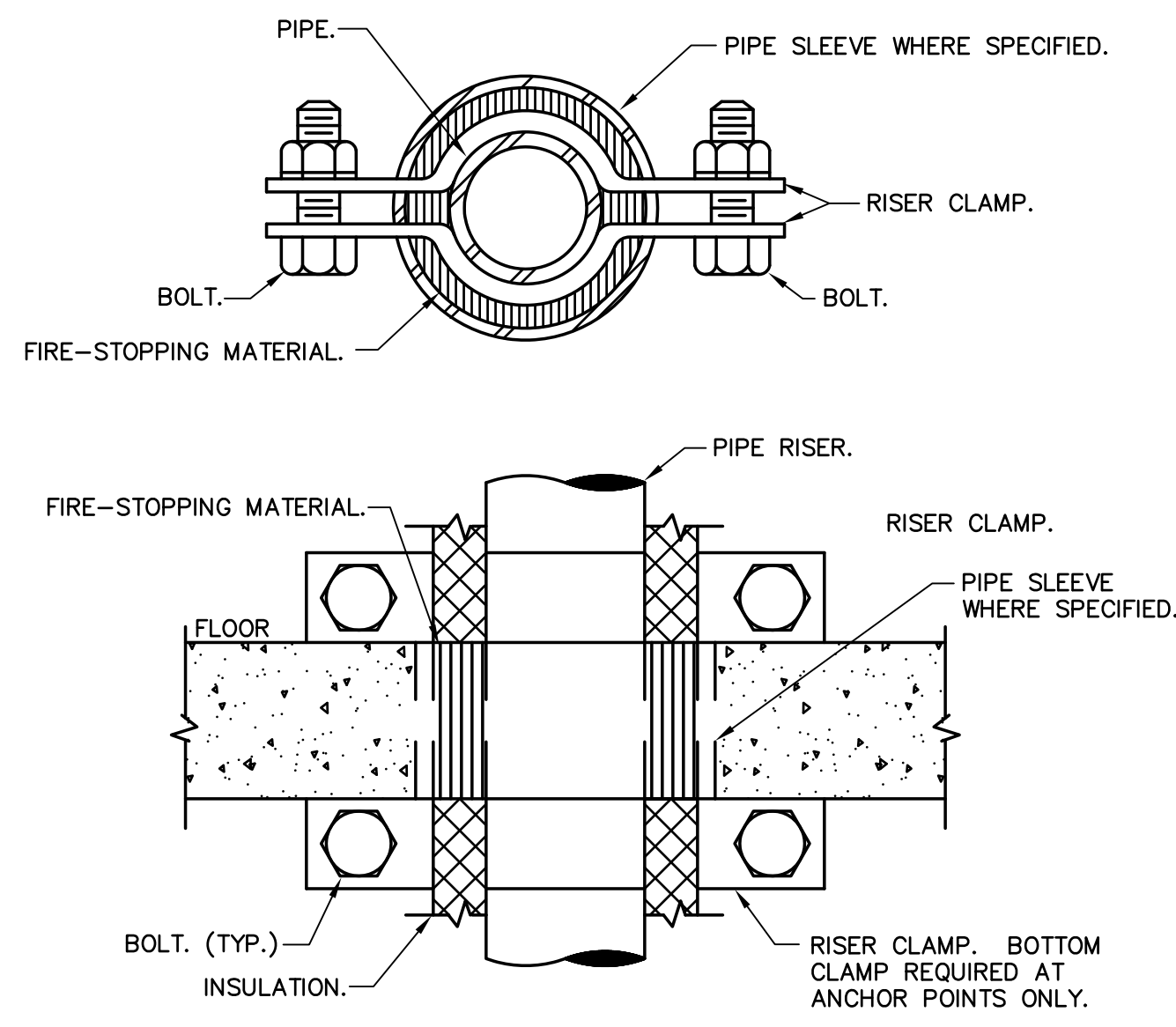
UNIT TYPE	A	B
DRAW THRU	X + 1"	2"
BLOW THRU	1" MIN.	2.0 X

WHERE X = STATIC PRESSURE IN PAN

AIR HANDLING UNIT CONDENSATE TRAP DETAIL

NOT TO SCALE

ALL SMOKE DAMPER WIRING SHALL BE BY THE TOC. SMOKE DAMPER VOLTAGES SHALL BE 12 VOLTS. THE FIRE ALARM CONTRACTOR SHALL COORDINATE ALL POINTS WITH THE MASTER CONTROL SYSTEM AND THE TEMP.CONTROL CONTRACTOR PRIOR TO BID.

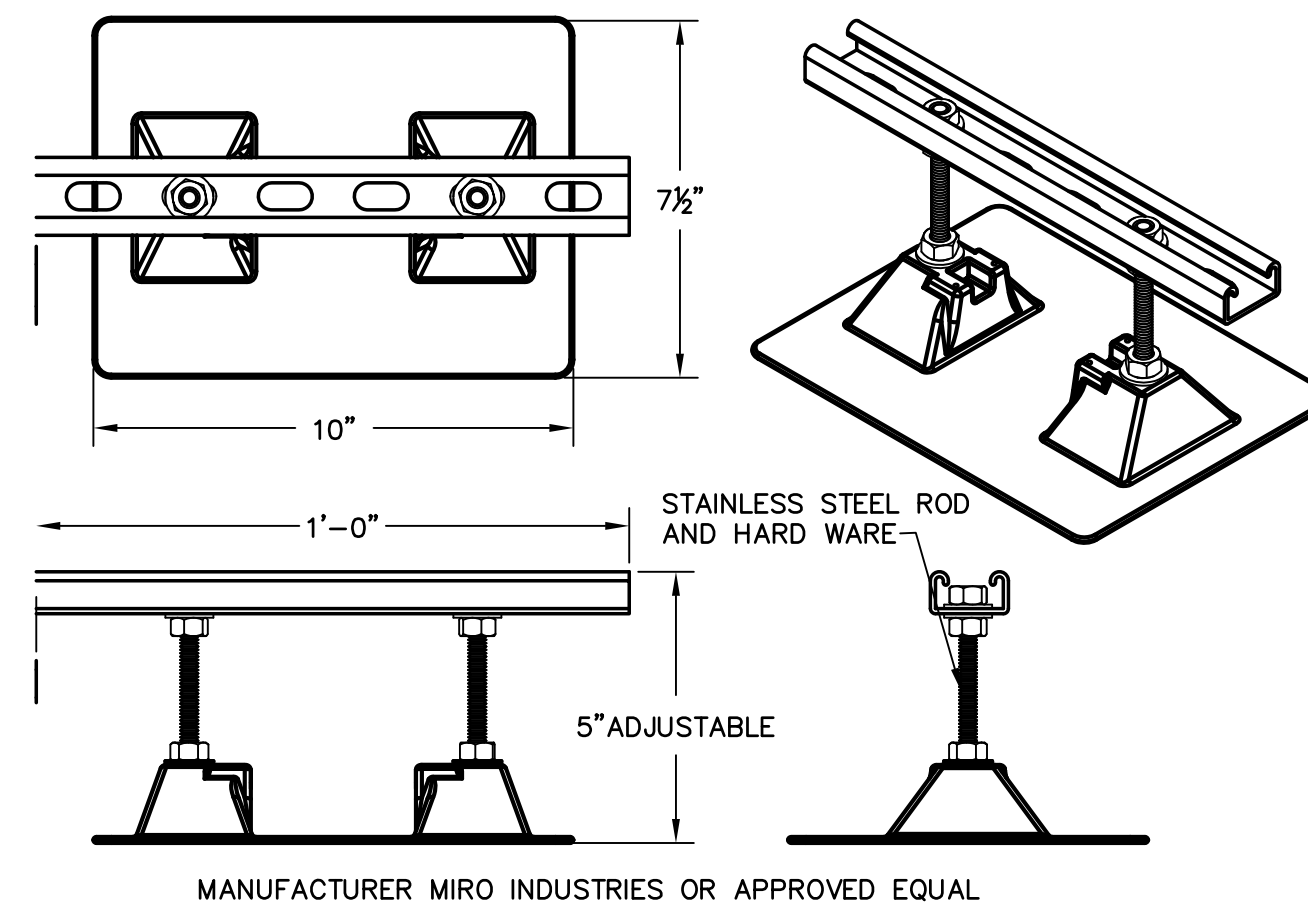


PENETRATION THROUGH FLOOR SLAB

ALL PIPING SHALL BE PROVIDED WITH SEISMIC RESTRAINTS IN ACCORDANCE WITH SEISMIC REQUIREMENTS OF FEMA 412 & 414. RESTRAINT GUIDE: GUIDELINES FOR SEISMIC RESTRAINTS OF MECHANICAL SYSTEMS AND PLUMBING PIPING SYSTEMS AS PUBLISHED BY FEMA AND IN ACCORDANCE WITH THE FLORIDA BUILDING AND MECHANICAL CODE.

PIPE FLOOR PENETRATION DETAIL

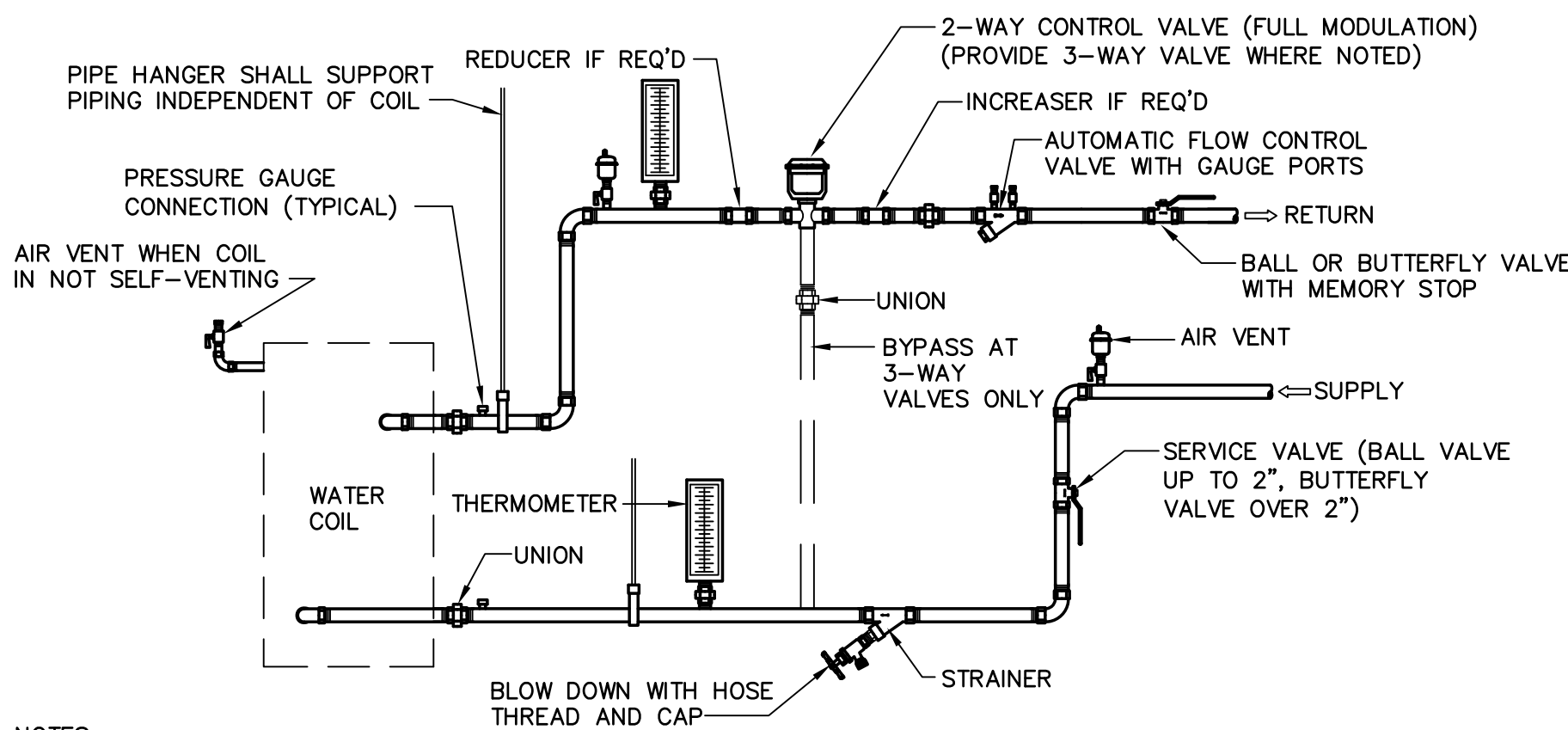
NOT TO SCALE



PIPE SUPPORT REFRIGERATION DETAIL

NOT TO SCALE
PROVIDE AND INSTALL PADS FOR FIBERTITE ROOF WITH SUPPORTS.

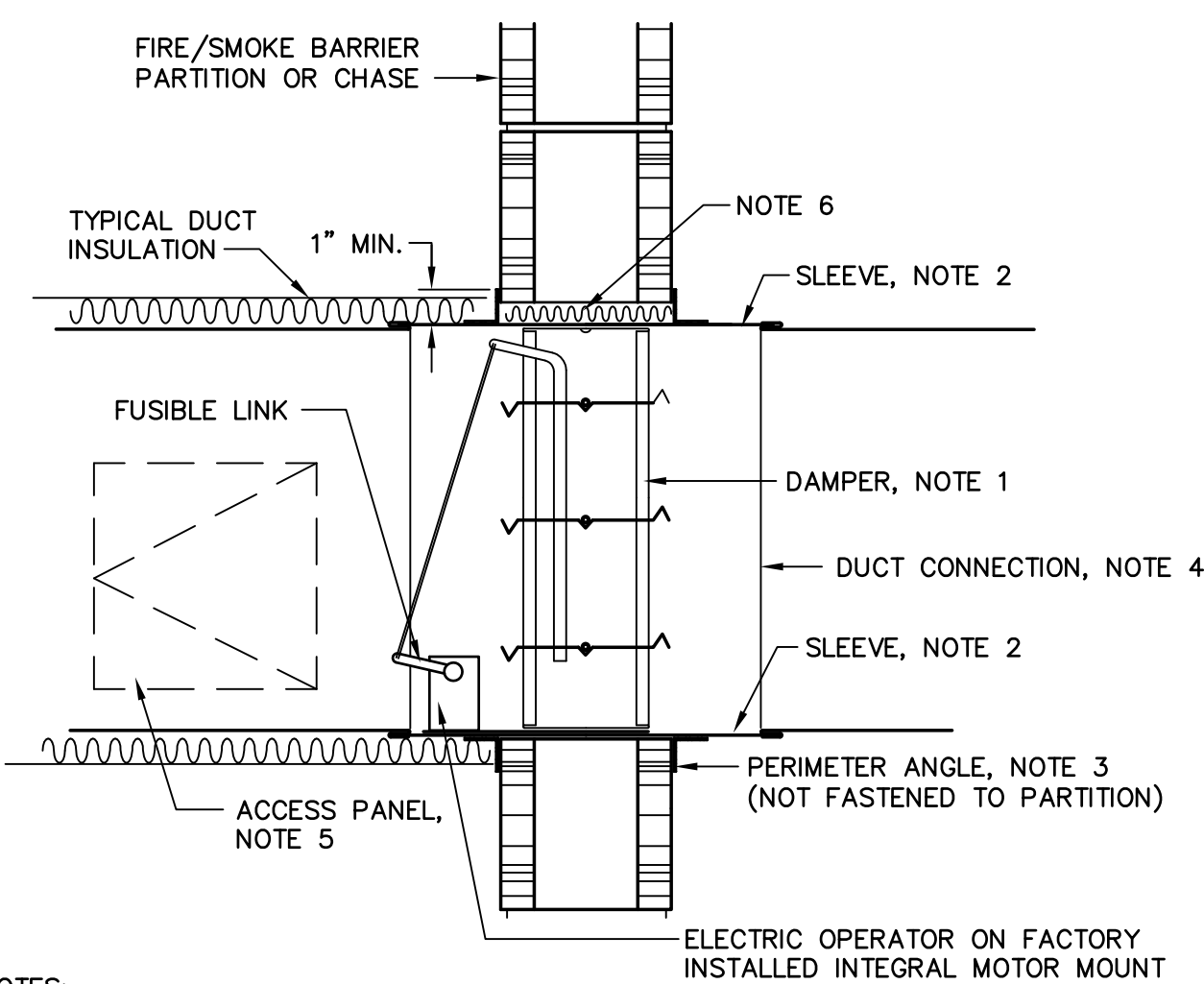
POINT DESCRIPTION	TEMPERATURE CONTROLS POINT SCHEDULE											
	SYSTEM						SOFTWARE					
	OUTPUT			INPUT			ALARMS			EMCS FUNCTIONS		
	DIGITAL	ANALOG		DIGITAL	ANALOG		DIGITAL	ANALOG				
AIR HANDLING UNIT AHU-4-1:												
AIR HANDLING UNIT AHU-4-1 (ON/OFF) (MS4-1)												
AIR HANDLING UNIT AHU-4-1 (STATUS) (PS41)												
AIR HANDLING UNIT AHU-4-1 (VFD) (A4-1)												
AIR HANDLING UNIT AHU-4-1 (SA TEMP) (TE4-1)												
AIR HANDLING UNIT AHU-4-1 (DUCT STATIC PRESSURE) (P4-1)												
AIR HANDLING UNIT AHU-4-1 (CHW VALVE) (V4-1)												
AIR HANDLING UNIT AHU-4-1 (REL. HUMIDITY) (HE4-1)												
AIR HANDLING UNIT AHU-4-1 (OA TEMP) (TE4-2)												
AIR HANDLING UNIT AHU-4-1 (DUCT HEATER) (TE4-3)												
AIR HANDLING UNIT AHU-4-2,3 (SA TEMP) (TE 4-4,5)												
AIR HANDLING UNIT AHU-4-2,3 (REL. HUMIDITY) (HE4-4,5)												
AIR HANDLING UNIT AHU-4-2,3 (ON/OFF) (MS4-4,5)												
NOTES:												
1. PROVIDE STARTING RELAY AND CONTACTOR IN CONTROL PANEL RATED FOR MOTOR LOAD.												
2. THE CHWP SHALL RUN AND THE CHW CONTROL VALVE SHALL OPEN TO THE COIL WHEN TS4-1, TS4-2 INDICATES A TEMPERATURE OF 35°F OR LOWER.												
3. THE OUTSIDE AIR DAMPER SHALL CLOSE WHEN ATS1 INDICATES A TEMPERATURE OF 35°F OR LOWER.												
4. VFD ON AHU-4-1 SHALL HAVE AUXILIARY CONTROLS FOR INPUT/OUTPUT FOR FAN SPEED CONTROL.												
5. AIR HANDLING UNIT SHALL SHUT DOWN IN SMOKE SUPPLY AND SMOKE EXHAUST MODE. SMOKE AND OA DAMPERS CLOSED. FAN SHALL BE DISABLED.												
6. PROVIDE THERMOSTAT MONITOR FOR IT ROOM DX SYSTEM, SET FOR OPERATIONAL ALARM ABOVE 85 DEGREES F.												



- NOTES:
1. PIPING SHALL BE INSTALLED IN SUCH MANNER THAT IT WILL NOT BLOCK THE SWING OR USE OF ACCESS DOORS OR PANELS. NEITHER SHALL IT BLOCK THE SERVICING OF FILTERS, VALVES OR EQUIPMENT.
 2. PROVIDE ALL VALVES WITH EXTENDED STEMS AND ALL GAUGE PORTS WITH EXTENSIONS TO PROTRUDE BEYOND INSULATION.

1 AIR HANDLING UNIT COIL PIPING WITH AUTOMATIC FLOW CONTROL VALVE

NOT TO SCALE



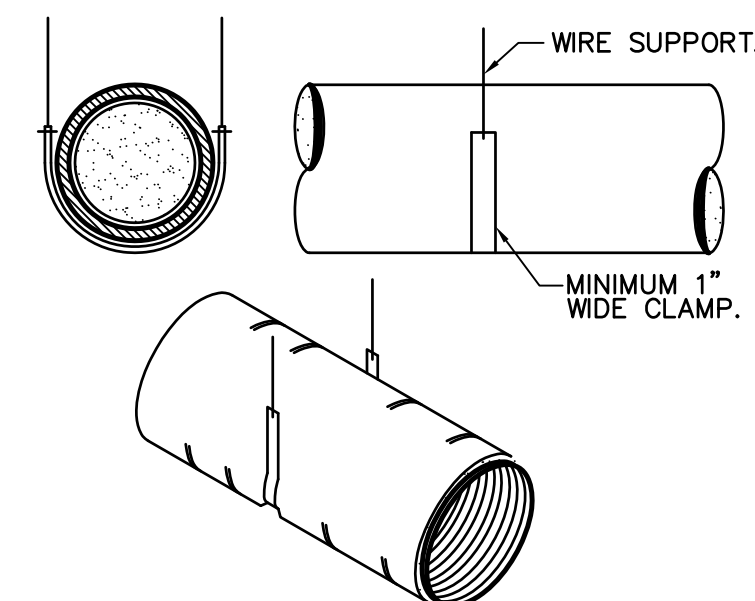
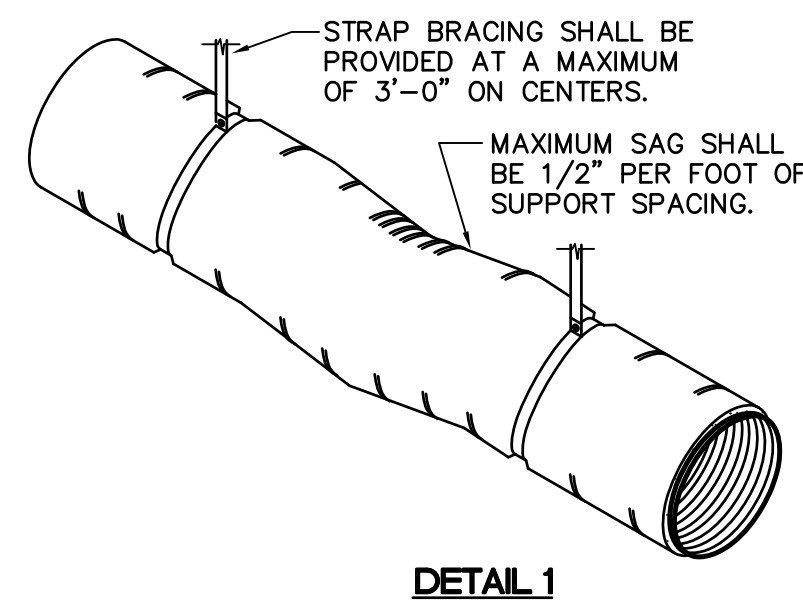
- NOTES:
1. A VERTICAL DAMPER IS SHOWN. HORIZONTAL DAMPER INSTALLATION IS SIMILAR. FOLLOW DAMPER MANUFACTURER'S INSTRUCTIONS, INCLUDING FASTENER OPTIONS AND GAUGES FOR SLEEVE AND PERIMETER ANGLES. FIRE DAMPERS MUST BE INSTALLED IN THE PARTITION OR FLOOR, NOT OUTSIDE THE PARTITION.
 2. GALVANIZED SLEEVE: GAGE NOT LESS THAN CONNECTING DUCT. FASTEN SLEEVE TO DAMPER FRAME AND TO PERIMETER ANGLES.
 3. PERIMETER ANGLES: GALVANIZED STEEL, NOT LESS THAN 1/2" X 1/2" 14 GAUGE, TO PROVIDE 1 INCH MINIMUM OVERLAP OF OPENING ON ALL 4 SIDES.
 4. BREAKAWAY DUCT CONNECTION: CONTRACTOR'S OPTION OF TYPES SHOWN IN SMACNA LPDS, FIG. 2-13. SEAL JOINTS.
 5. ACCESS PANELS: SIZE AND LOCATION TO PERMIT SERVICING THE FUSIBLE LINK AND OPERATOR.
 6. PROVIDE 1/4 TO 1/2 INCH CLEARANCE ON HEIGHT AND WIDTH. FILL OPEN SPACE WITH ROCK WOOL FIRE STOP FIBER.
 7. ALL DUCT WORK RISERS WHICH ARE RUN EXPOSED, SUCH AS THRU ATTIC FLOORS AND MECHANICAL ROOM FLOORS, SHALL BE PROVIDED WITH A 3" HIGH CONCRETE CURB AROUND OPENING FOR DUCT.

OPERATION:

- A. FIRE DAMPER MODE: HIGH TEMPERATURE MELTS THE FUSIBLE LINK, CLOSING FIRE DAMPER.
- B. SMOKE DAMPER MODE: ACTIVATED BY THE BUILDING FIRE ALARM SYSTEM TO CLOSE WHEN THE ZONE IN WHICH THE DAMPER IS LOCATED OR THE ASSOCIATED AIR HANDLING UNIT IS IN ALARM.

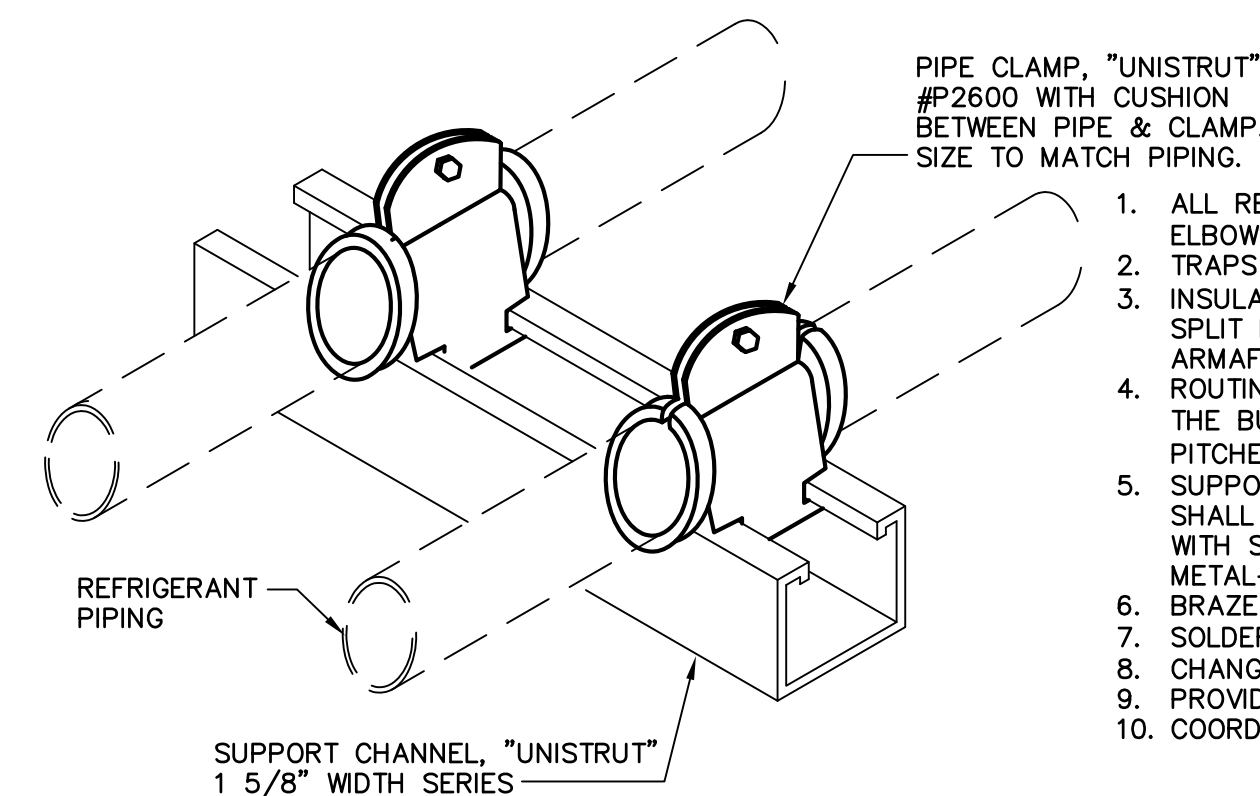
2 FIRE/SMOKE DAMPER DETAIL

NOT TO SCALE

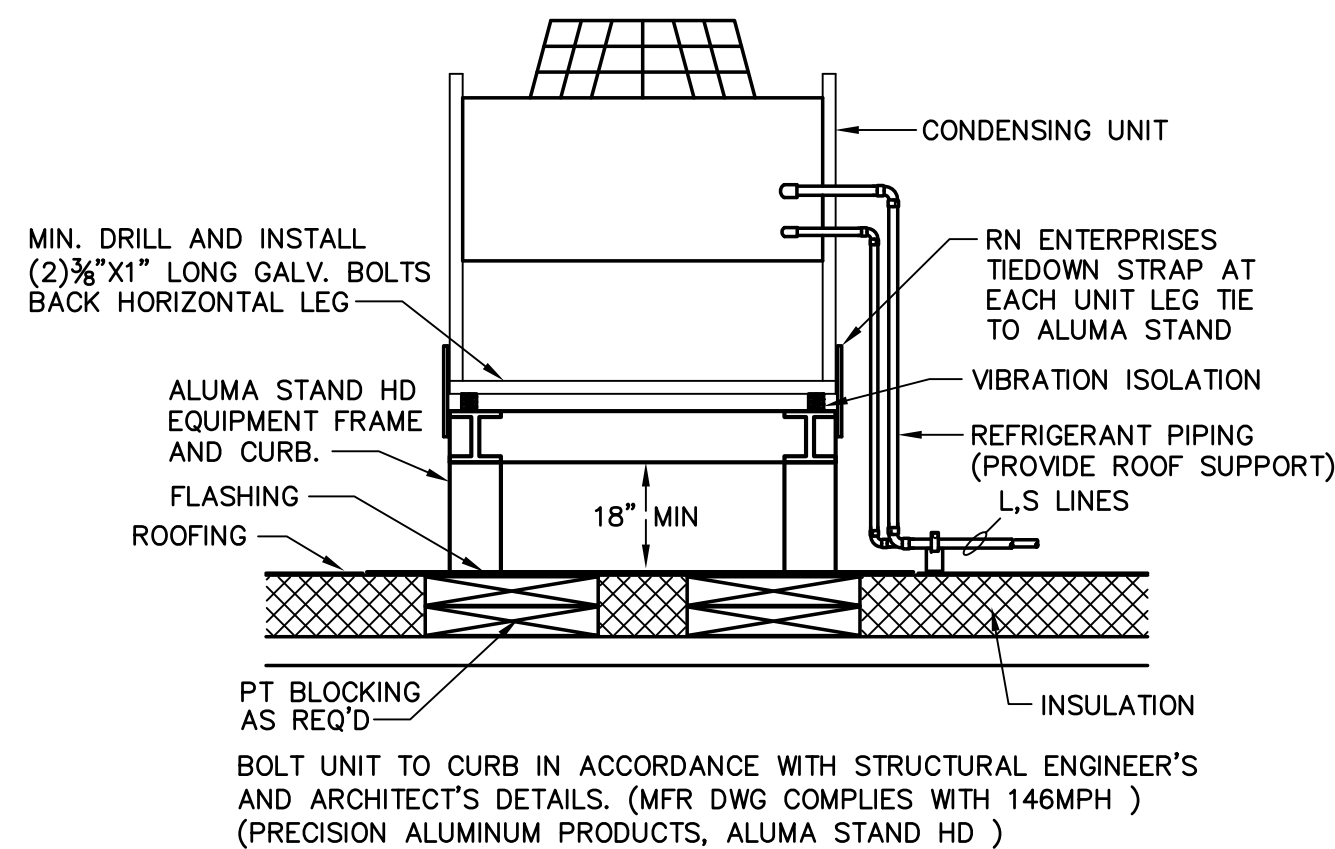


4 INSULATION FLEXIBLE DUCTWORK DETAIL

NOT TO SCALE



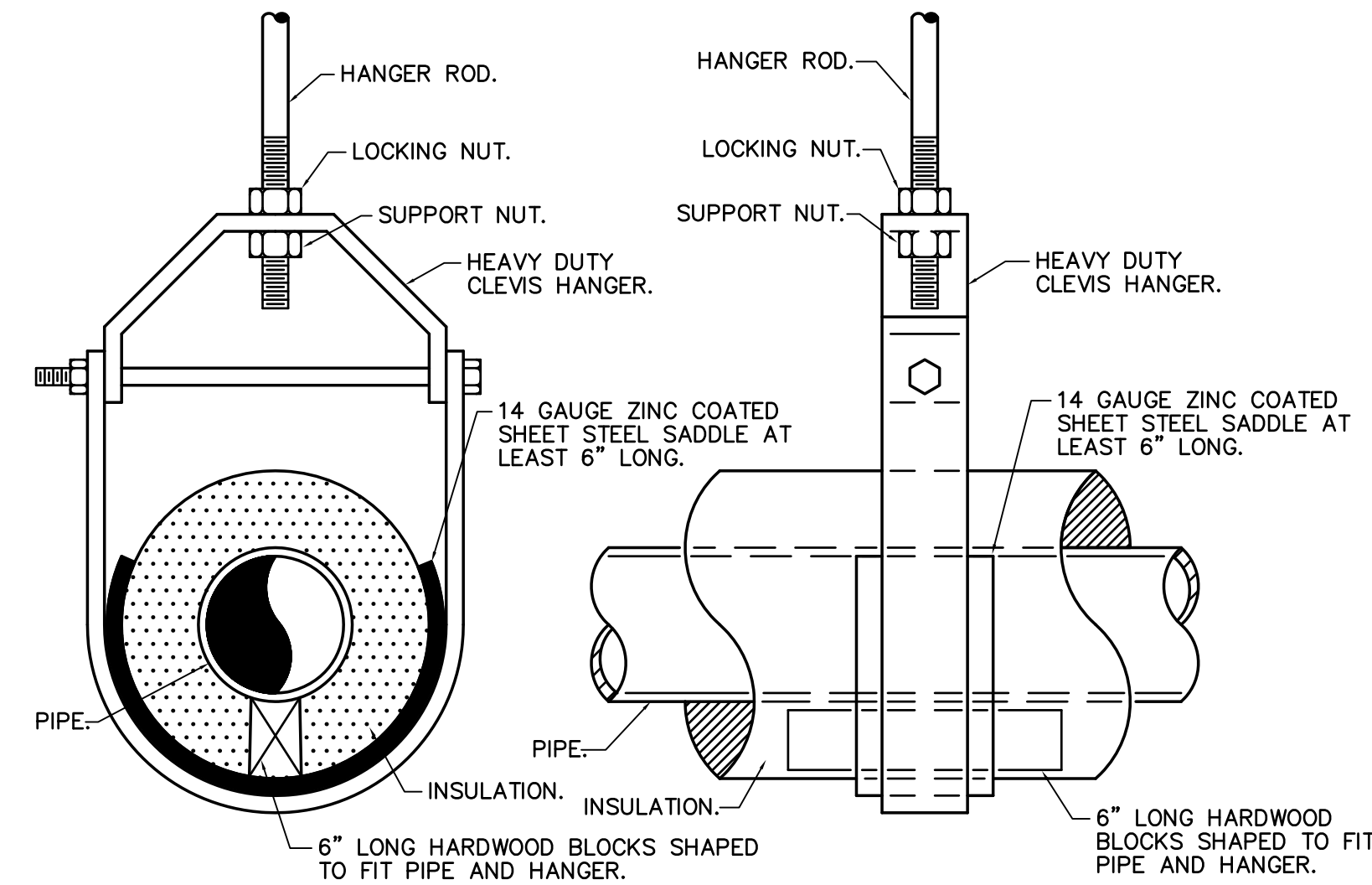
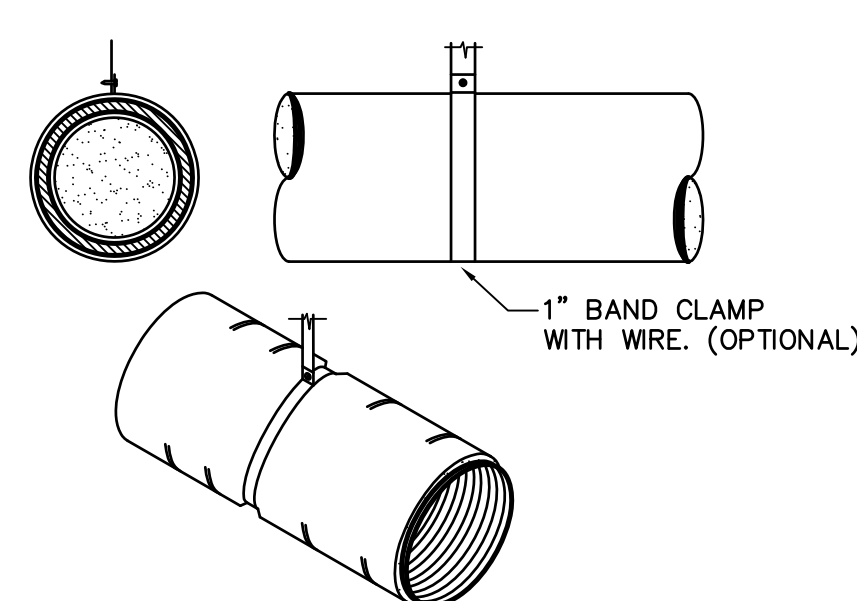
REFER TO ARCHITECTURAL PLANS AND STRUCTURAL PLANS FOR ADDITIONAL DETAILS.



5 CONDENSING UNIT ON ROOF DETAIL

NOT TO SCALE
FOR CU-5 MIN. HT PER FBC IS 30" FROM UNIT BOTTOM

- NOTES:
1. METALLIC FLEXIBLE DUCTWORK SHALL BE ATTACHED USING A MINIMUM OF THREE (3) #8 SHEET METAL SCREWS EQUALLY SPACED AROUND THE DUCTWORK CIRCUMFERENCE. DUCTWORK LARGER THAN 12" SHALL HAVE A MINIMUM OF FIVE (5) #8 SHEET METAL SCREWS. SCREWS SHALL BE LOCATED AT LEAST 1/2" FROM THE DUCTWORK END.
 2. NONMETALLIC FLEXIBLE DUCTWORK SHALL BE SECURED TO THE SLEEVE OR COLLAR USING A DRAW BAND. IF THE DUCTWORK COLLAR EXCEEDS 12", THE DRAW BAND MUST BE POSITIONED BEHIND A BEAD ON THE METAL COLLAR.
 3. INSULATION AND VAPOR BARRIERS PRESENT ON FACTORY-FABRICATED DUCTWORK SHALL BE FITTED OVER THE CORE CONNECTION AND SHALL BE SUPPLEMENTALLY SECURED WITH A DRAW BAND.
 4. FLEXIBLE DUCTWORK SEALING SHALL BE A CLASS "B" SEAL FOR LOW PRESSURE DUCTWORK.
 5. SUPPORT SYSTEM SHALL NOT DAMAGE OR CAUSE OUT-OF-ROUND SHAPE.



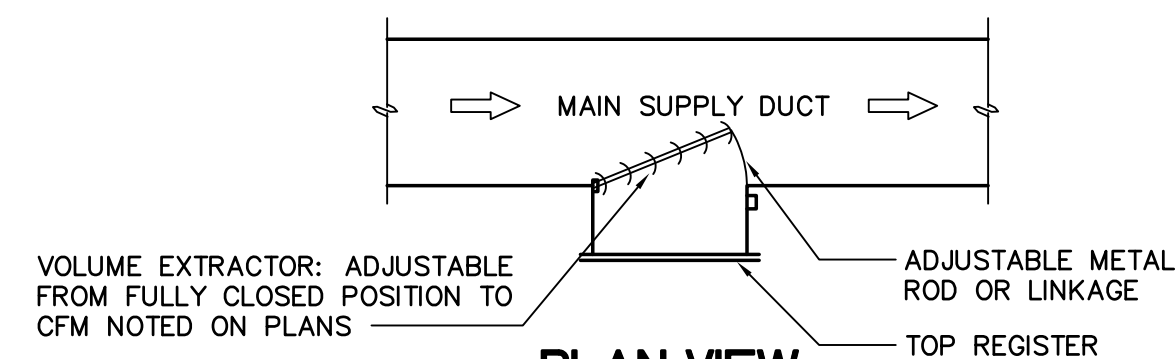
MAXIMUM SPACING FOR PIPE HANGERS (SCHEDULE 40 PIPING)										
NOM. PIPE SIZE (IN.)	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4	5	6
SPACING (FT.)	7	7	7	9	10	10	13	14	16	17

NOTE: REFER TO CONTRACT SPECIFICATIONS FOR PIPING OTHER THAN SCHEDULE 40.

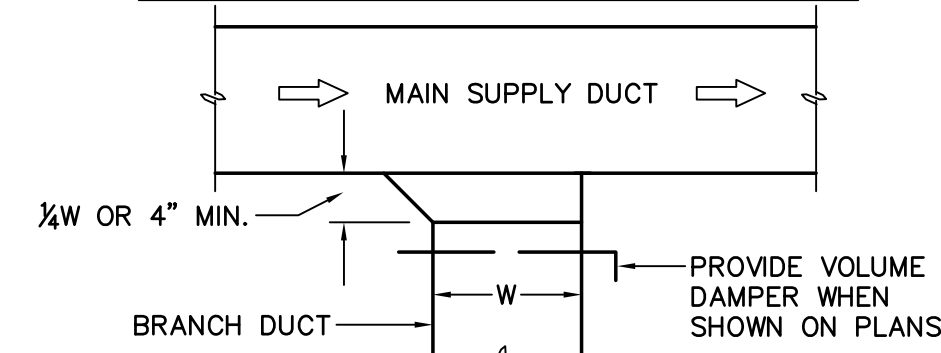
ALL PIPING SHALL BE PROVIDED WITH SEISMIC RESTRAINTS IN ACCORDANCE WITH SEISMIC REQUIREMENTS OF FEMA 412 & 414. RESTRAINT GUIDE: GUIDELINES FOR SEISMIC RESTRAINTS OF MECHANICAL SYSTEMS AND PIPING SYSTEMS AS PUBLISHED BY FEMA AND IN ACCORDANCE WITH THE FLORIDA BUILDING AND MECHANICAL CODE.

6 PIPE HANGER (6" AND SMALLER) DETAIL

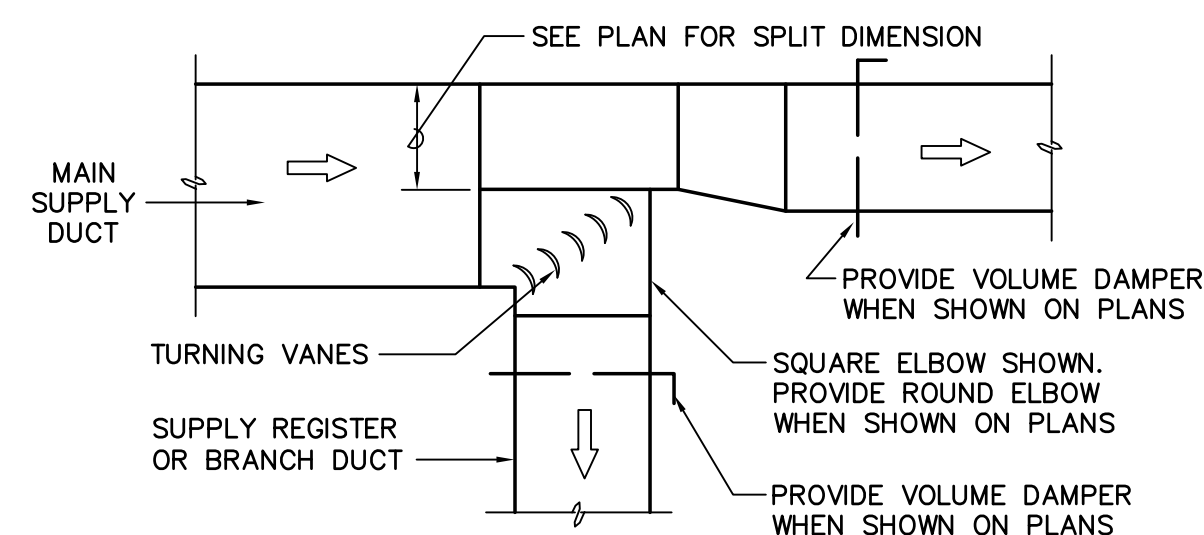
NOT TO SCALE



PLAN VIEW SUPPLY REGISTER TAKE-OFF



PLAN VIEW BRANCH DUCT TAKE-OFF



PLAN VIEW AIR SPLIT TYPE DUCT TAKE-OFF

7 SUPPLY DUCT TAKE-OFFS

NOT TO SCALE

5 REFRIGERANT PIPING DETAIL

NOT TO SCALE

ABBREVIATIONS, LEGENDS AND GENERAL NOTES

ABBREVIATIONS

AC	AIR CONDITIONING
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
AHU	AIR HANDLING UNIT
AI	ANALOG INPUT
AO	ANALOG OUTPUT
AP	ACCESS PANEL
BFF	BELOW FINISHED FLOOR
BHP	BRAKE HORSE POWER
BTUH	BRITISH THERMAL UNIT PER HOUR
BOT	BOTTOM
CC	COOLING COIL
CFM	CUBIC FEET PER MINUTE
CH	CHILLER
CHWS	CHILLED WATER RETURN
CHWR	CHILLED WATER SUPPLY
CLG	CEILING
CO	CLEANOUT
CS	CABINET SINK
CT	COOLING TOWER
CU	CONDENSING UNIT
CW	COLD WATER
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
DB	DRY BULB
DCC	DIRECT DIGITAL CONTROL
DG	DOOR GRILLE
DI	DIGITAL INPUT
DN	DIGITAL OUTPUT
DO	DOWN
DP	DEW POINT
DX	DIRECT EXPANSION
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
ECC	ENERGY CONTROL CENTER
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
ET	EXPANSION TANK
EL	ELEVATION
EQUIP	EQUIPMENT
EW	ELECTRIC WATER COOLER
EWT	ENTERING WATER TEMPERATURE
EXIST	EXISTING
F DPR	FIRE DAMPER
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
FL	FLOOR
FPI	FINS PER INCH
FPF	FINS PER FOOT
PFM	FEET PER MINUTE
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
H	HUMIDITY
HB	HOSE BIBB
HC	HEATING COIL
HE	HEAT EXCHANGER
HP	HORSE POWER
HW	HOT WATER
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
KS	KILOWATT
KW	KITCHEN SINK
LAT	LEAVING AIR TEMPERATURE
LS	LAUNDRY SINK
LWT	LEAVING WATER TEMPERATURE
MD	MOTORIZED DAMPER
MAX	MAXIMUM
MIN	MINIMUM
NC	NORMALLY CLOSED
NO	NORMALLY OPENED
OA	OUTSIDE AIR
OS&Y	OUTSIDE SCREW & YOKE
PD	PRESSURE DROP
PRESS	PRESSURE
RA	RETURN AIR
RD	ROOF DRAIN
RL	RAIN LEADER
RTU	ROOF TOP UNIT
S	SANITARY
SEER	SEASONAL ENGINEERING EFFICIENCY RATIO
SD	SMOKE DAMPER
SA	SUPPLY AIR
SP	STATIC PRESSURE
SS	SERVICE SINK
T	TEMPERATURE
TYP	TYPICAL
UC	UNDERCUT
UG	UNDERGROUND
UON	UNLESS OTHERWISE NOTED
UV	UNIT VENTILATOR
V	VENT
VAC	VACUUM
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
VFD	VARIABLE FREQUENCY DRIVE
VSD	VARIABLE SPEED DRIVE
VTR	VENT THRU ROOF
W	WASTE
WB	WET BULB
WC	WATER CLOSET
WCO	WALL CLEANOUT

SYMBOLS

	VALVE - SEE CONTRACT SPECIFICATIONS FOR TYPE, GATE VALVE WHEN NOT SPECIFIED.
	GATE VALVE
	GLOBE VALVE
	PRESSURE REDUCING VALVE
	OS&Y VALVE
	CHECK VALVE
	BACK WATER VALVE
	BACK FLOW PREVENTER
	UNION
	BUTTERFLY VALVE
	BALL VALVE
	GAS COCK
	STRAINER
	EXPANSION JOINT
	GRADE CLEANOUT IN-LINE
	CONCENTRIC REDUCER
	ECCENTRIC REDUCER
	PIPE ANCHOR
	FLOW DIRECTION
	PRESSURE GAUGE
	HAMMER ARRESTOR (PDI SIZE INDICATED)
	TEMPERATURE GAUGE
	SAFETY OR PRESSURE RELIEF VALVE
	ANGLE GLOBE VALVE
	MANUAL AIR VENT
	CLEANOUT EXPOSED
	FLOOR CLEANOUT
	GRADE CLEANOUT END-LINE
	CAPPED OUTLET
	VALVE IN RISER
	GATE VALVE W/ ADAPTER TO 3/4" HOSE THREAD
	P-TRAP
	HOSE BIBB W/ VACUUM BREAKER
	WALL HYDRANT W/ VACUUM BREAKER
	FLOOR DRAIN
	ROOF DRAIN
	WALL CLEANOUT

NOTE:

THESE ARE STANDARD SYMBOLS AND MAY NOT ALL APPEAR ON THE PROJECT DRAWINGS; HOWEVER WHEREVER THE SYMBOL APPEARS ON THE PROJECT DRAWINGS, THE ITEM SHALL BE PROVIDED AND INSTALLED.

PIPING AND CONNECTIONS

	NEW SOIL OR WASTE PIPING
	EXISTING PIPING TO REMAIN
	EXISTING PIPING TO BE REMOVED
	VENT PIPING
	COLD WATER PIPING
	HOT WATER PIPING
	HOT WATER RETURN PIPING
	CHEMICAL RESISTANT PIPING
	FIRE PROTECTION PIPING
	GAS PIPING
	OXYGEN PIPING
	AIR PIPING
	NITROGEN PIPING
	VACUUM PIPING
	NITROUS OXIDE PIPING
	IN-LINE UP CONNECTION
	END-LINE UP
	IN-LINE DOWN/UP CONNECTION
	END-LINE DOWN CONNECTION
	BOTTOM CONNECTION, 45 OR 90 DEG.
	TOP CONNECTION, 45 OR 90 DEG.
	CROSSING BOTTOM CONNECTION
	SIDE CONNECTION
	Y-1/8 BEND

DRAWING SYMBOLS

	DETAIL NUMBER
	DRAWING NUMBER WHERE DRAWN
	SECTION LETTER
	DRAWING NUMBER WHERE DRAWN
	POINT OF INTERFACE BETWEEN NEW & EXISTING P.O.C.
	POINT OF DEMOLITION P.O.D.
	POINT OF INTERFACE BETWEEN CONTRACTORS

GENERAL NOTES

- CONTRACTOR SHALL PROVIDE COMPLETE PLUMBING SYSTEMS AS DETAILED ON THESE DRAWINGS. WORK CONSISTS OF FURNISHING ALL MATERIALS, EQUIPMENT, AND SERVICES REQUIRED FOR COMPLETE SYSTEMS. INCLUDE ANY INCIDENTAL APPARATUS, APPLIANCES, MATERIAL LABOR AND SERVICES NECESSARY TO MAKE NEW WORK COMPLETE IN ALL RESPECTS AND FULLY READY FOR OPERATION.
- ALL PLUMBING WORK SHALL BE DESIGNED, INSTALLED, TESTED, AND CLEANED IN ACCORDANCE WITH FLORIDA PLUMBING CODE REQUIREMENTS, LATEST EDITION ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ).
- VERIFY THE EXACT LOCATION OF EXISTING SOIL, WASTE, VENT, HOT AND COLD WATER PIPING MAINS FROM THE ACTUAL JOB SITE. ALL NEW LINES ARE TO BE ROUTED TO AND/OR FROM VERIFIED LOCATIONS. TAPS, WHEN NOT PROVIDED BY PREVIOUS INSTALLER, ARE TO BE PROVIDED BY THIS INSTALLER.
- MAKE SUCH OFFSETS AND DEVIATIONS FROM WORK SHOWN ON THE DRAWINGS, AS MAY BE NECESSARY TO FIT THE ACTUAL SPACE CONDITIONS.
- WHERE VALVES OCCUR ABOVE DRYWALL OR PLASTER OR ARE CONCEALED BEHIND WALLS, THIS CONTRACTOR SHALL FURNISH AND INSTALL ACCESS PANELS. PANELS SHALL MATCH EXISTING.
- FIRE RATED PANELS ARE REQUIRED IF PLACED INN CORRIDORS.
- THE INSTALLER SHALL VISIT THE JOB SITE AND INSPECT ALL EXISTING CONDITIONS AFFECTING THE WORK. SUBMISSION OF HIS PROPOSAL SHALL BE CONSTRUED AS INDICATING SUCH KNOWLEDGE. NO ADDITIONAL PAYMENT WILL BE MADE ON CLAIMS THAT ARISE FROM THE CONTRACTOR'S FAILURE TO COMPLY WITH THIS REQUIREMENT.
- THE PLANS AND DIAGRAMS OF PLUMBING PIPING ARE SCHEMATIC ONLY AND SHOULD NOT BE SCALED. INSTALLER SHALL COORDINATE AT SITE WITH ALL PLUMBING, HVAC, FIRE PROTECTION, AND ELECTRICAL WORK SO AS NOT TO CONFLICT IN LOCATION WITH OTHER WORK UNDER THIS CONTRACT OR THAT MAY BE EXISTING.
- PROVIDE AND MAINTAIN TEMPORARY CONNECTIONS TO KEEP EXISTING UTILITIES IN SERVICE. ANY SHUT DOWNS ARE TO BE APPROVED BY OWNER/COUNTY'S REPRESENTATIVE.
- EXACT LOCATION NUMBER AND TYPE OF PLUMBING FIXTURES SHALL BE DETERMINED FROM ARCHITECTURAL DRAWINGS AND THESE PLANS. VERIFY SUCH LOCATIONS BEFORE PROCEEDING ROUGH-IN.
- INSTALLER SHALL NOT CUT ANY STRUCTURAL MEMBERS WITHOUT FIRST SECURING WRITTEN APPROVAL FROM THE ARCHITECT/ PROJECT REPRESENTATIVE.
- PROVIDE DIELECTRIC UNIONS AT ALL CONNECTIONS BETWEEN DISSIMILAR PIPING METALS.
- FIELD VERIFY ALL EXISTING PIPE SIZES PRIOR TO INSTALLATION.
- PROVIDE ALL SINKS AND LAVATORIES WITH SLIP JOINT TRAP FITTINGS FOR CLEANOUT.
- THE ENGINEER HAS MADE AN EXTENSIVE EFFORT TO IDENTIFY ABOVE CEILING CONFLICTS. THE CONTRACTOR IS RESPONSIBLE TO ALSO CHECKING FIELD CONDITIONS PRIOR TO BIDDING AND REPORT ANY PROBLEMS/CONFLICTS TO THE ENGINEER WITHIN 2 DAYS OF DISCOVERY. ANY CHANGES RESULTING FROM CONDITIONS ARISING IN THE FIELD WHICH WERE NOT BROUGHT TO THE ENGINEER'S ATTENTION ARE TO BE MADE BY THIS CONTRACTOR WITH NO ADDITIONAL COST TO THE OWNER/COUNTY.
- ALL WORK IS TO BE FREE OF DEFECTS IN WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE(1) YEAR FROM DATE OF FINAL ACCEPTANCE. ALL DEFECTS WHICH DEVELOP OR ARE DISCOVERED WITHIN THIS PERIE SHALL BE REPAIRED BY THE CONTRACTOR TO THE SATISFACTION OF THE OWNER/COUNTY AT NO ADDITIONAL COST TO THE OWNER/COUNTY.
- UPON COMPLETION OF THE WORK UNDER THIS CONTRACT, THE CONTRACTOR SHALL REMOVE ALL TOOLS, APPLIANCES, SURPLUS MATERIALS, AND SCRAP. ALL IDENTIFIED EXISTING EQUIPMENT TO BE REMOVED SHALL BE TURNED OVER TO THE OWNER/COUNTY.
- WHEN CONFLICTS OCCUR IN CONTRACT SPECIFICATIONS OR IN THE DRAWINGS, OR BETWEEN EITHER, THE ITEMS OF GREATER QUANTITY OR HIGHER COST SHALL BE PROVIDED.
- THE CONTRACTOR SHALL COORDINATE WORK WITH OTHER TRADES IN ORDER TO AVOID CONFLICTS.
- CONTRACTOR SHALL PROVIDE TO LOCAL AHJ OR PERMITTING AGENCY A COPY OF ALL MAJOR EQUIPMENT CUTS SHEETS AT TIME OF APPLICATION.
- CONTRACTOR SHALL PROVIDE CUT SHEETS OF MAJOR EQUIPMENT AT TIME OF PERMIT APPLICATION TO THE BUILDING DEPARTMENT.
- FIRE STOP AND SEAL ALL PIPING PENETRATIONS AS INDICATED ON THE DETAILS.
- PROVIDE A FULLY COMPREHENSIVE 3 YEAR WARRANTY ON ALL MATERIALS, EQUIPMENT, AND LABOR. THIS STATEMENT TAKE PRECEDENTS OVER THE CONTRACT SPECIFICATIONS. IF THE MANUFACTURER'S WARRANTY EXCEEDS THREE YEARS THEN THE PROVIDE THE MANUFACTURER'S WARRANTY WITH MATERIALS, PARTS, EQUIPMENT AND LABOR FOR AT LEAST THREE YEARS.

DRAWING TITLE

PLUMBING
LEGEND AND
GENERAL NOTES

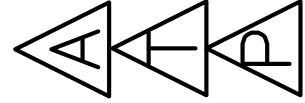
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JOB NO.:	2013.35
DATE :	3/20/2013
PLOT SIZE:	1:1
DRAWN BY:	DC
CHECKED BY:	JDC
SHEET No.:	

P1.0

MANATEE COUNTY HENSLEY WING
4TH FLOOR IT RENOVATIONS
1051 MANATEE AVE. W., BRADENTON, FL 34208
IFAS# W1300147 WA#10

REV.# DESCRIPTION

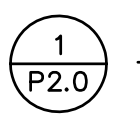
	DATE	09/09/2013
	OWNER/COUNTY REVIEW	



ATP ENGINEERING SOUTH, PL
SARASOTA, FLORIDA
ENGR. BUSINESS #8908
941-751-6485

SJL

FL#5468


$$1/4'' = 1' - 0''$$

- ① REFER TO PLANS AND CONTRACT SPECIFICATIONS FOR ADDITIONAL SCOPE OF WORK.
- ② CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO START. ANY QUESTIONS SHALL BE ANSWERED BY THE ENGINEER AND PROJECT REPRESENTATIVE PRIOR TO START WORK.
- ③ ITEMS IN GRAYSCALE ARE EXISTING AND TO REMAIN. FOR DUCTWORK AND DUCTUSERS THAT ARE "TO REMAIN" PRESERVE EXISTING LOCATION.
- ④ REMOVE ALL EXISTING COLD AND HOT WATER PIPING BACK TO ROOM FROM EXISTING CONNECTION AT WALL LINE.
- ⑤ CLEAN AND FLUSH ALL EXISTING SEWER PIPE AND REMAINING DOMESTIC WATER PIPING.

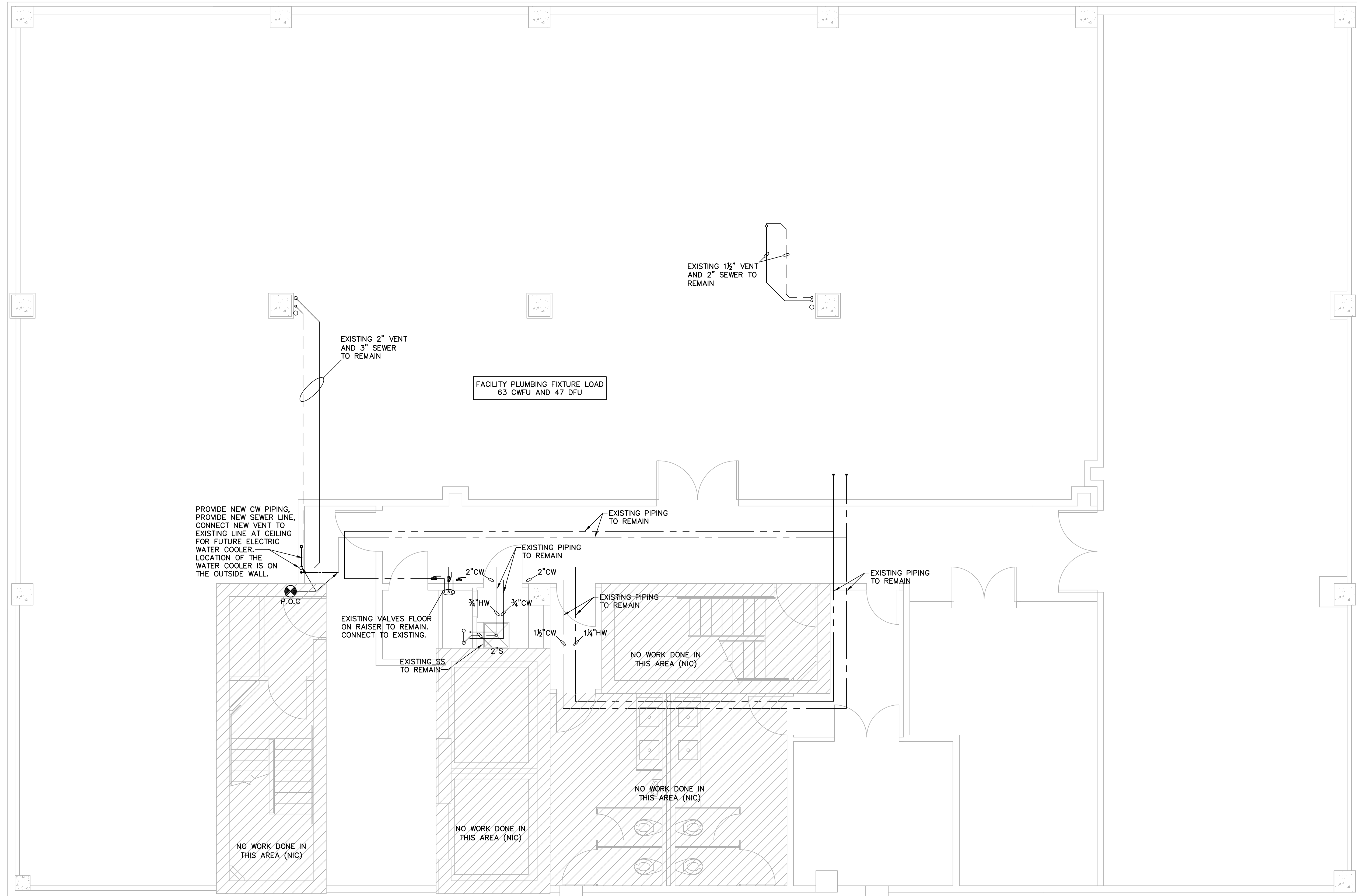
P2.0

MANATEE COUNTY HENSLEY WING
4TH FLOOR IT RENOVATIONS
1051 MANATEE AVE. W., BRADENTON, FL 34208
IFAS# W1300147 WA#10

ATP ENGINEERING SOUTH, PL
SARASOTA, FLORIDA
ENGR. BUSINESS #8908
941-751-6485

REV.#	DESCRIPTION	DATE
	OWNER/COUNTY REVIEW	09/06/2013

FL#53458



1
P2.1
PLUMBING NEW FLOOR PLAN
1/4"=1'-0"

GENERAL NOTE:

- 1 REFER TO PLANS AND CONTRACT SPECIFICATIONS FOR ADDITIONAL SCOPE OF WORK.
- 2 CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO START OF WORK. ANY QUESTIONS SHALL BE ANSWERED BY THE ENGINEER AND PROJECT REPRESENTATIVE PRIOR TO START WORK.
- 3 ITEMS IN GRAYSCALE ARE EXISTING AND TO REMAIN. FOR DUCTWORK AND DIFFUSERS THAT ARE "TO REMAIN" PRESERVE EXISTING LOCATION.

DRAWING TITLE

**PLUMBING
PROPOSED FLOOR
PLAN**

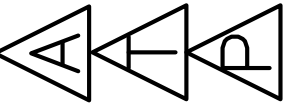
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JOB NO.: 2013.35
DATE : 3/20/2013
PLOT SIZE: 1:1
DRAWN BY: CMD/MC
CHECKED BY: JDC
SHEET No.:

P2.1

**MANATEE COUNTY HENSLEY WING
4TH FLOOR IT RENOVATIONS
1051 MANATEE AVE. W., BRADENTON, FL 34208
IFAS# W1300147 WA#10**

REV.# DESCRIPTION
OWNER/COUNTY REVIEW

DATE
09/06/2013



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ENGR. BUSINESS #8908
941-751-6485

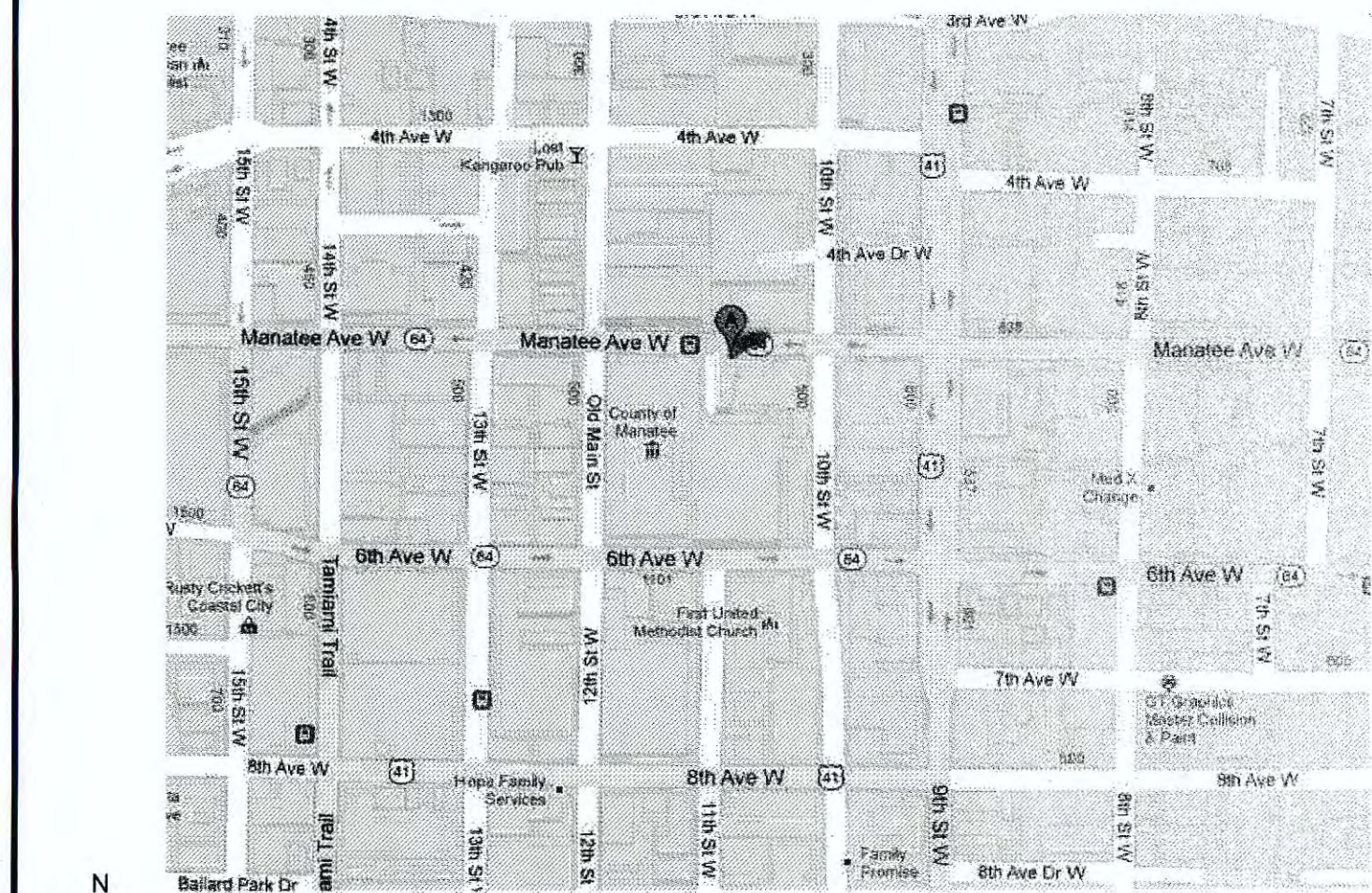
SJ/L

FL#5468

EQUIPMENT LIST

TYPE	MANUFACTURER	PART NUMBER	DESCRIPTION	QTY
FSCP	FIKE	10-063-1-R-1	FIRE SUPPRESSION CONTROL PANEL	1
CRM4	FIKE	10-2204	CONTROL RELAY MODULE MOUNTED WITHIN THE FSCP	1
BATTERY	WERKER	WKA12-7.5F	12 VOLT 7.5 AMP HOUR STORAGE BATTERY	2
SURGE	DITEK	DTK-120HW	120VAC SURGE SUPPRESSOR	1
PHOTO	FIKE	63-1024	PHOTOELECTRIC SMOKE DETECTOR	6
BASE	FIKE	63-1034	SMOKE DETECTOR BASE (430 OHM SEQUENTIAL COUNTING)	6
MREL	FIKE	10-1643	COMBINATION FIRE SUPPRESSION MANUAL RELEASE STATION AND ABORT STATION	1
BELL	GENTEX	904-1278-002	FIRE SUPPRESSION SYSTEM FIRST ALARM BELL	1
DCST	GENTEX	904-1321-002	FIRE SUPPRESSION SYSTEM DISCHARGE STROBE	1
PDHS	GENTEX	904-1317-002	FIRE SUPPRESSION SYSTEM PRE-DISCHARGE HORN/STROBE	1
CYLINDER	FIKE	70-269	375LB CLEAN AGENT SUPPRESSION CYLINDER FILLED WITH 297	1
IRM	FIKE	70-279	AGENT RELEASE - IMPULSE RELEASE MODULE KIT	1
NOZZLE	FIKE	80-048-3970	180 DEGREE DISCHARGE NOZZLE	1
NOZZLE	FIKE	80-048-4375	180 DEGREE DISCHARGE NOZZLE	1
SIGN	FIKE	02-10309	WARNING SIGN "EXIT AREA..."	1
SIGN	FIKE	02-10310	HFC-125 EXTINGUISHING SYSTEM ABORT	1
SIGN	FIKE	02-10311	HFC-125 EXTINGUISHING SYSTEM MAIN RESERVE	1
SIGN	FIKE	02-10313	WARNING SIGN "DO NOT ENTER..."	1
SIGN	FIKE	02-10314	WARNING SIGN "AREA IS PROTECTED BY HFC-125..."	1

PROJECT LOCATION



SYMBOL LEGEND

SYMBOL	DESCRIPTION
[FSCP]	FIRE SUPPRESSION CONTROL PANEL
[P] XXX	AGENT MANUAL RELEASE STATION (XXX = ZONE) (COMBINATION)
[A] XXX	AGENT ABORT STATION (XXX = ZONE) (COMBINATION)
[P] XXX	PHOTOELECTRIC SMOKE DETECTOR (XXX = ZONE)
[I] XXX	IMPULSE RELEASE MODULE (AGENT RELEASE)
[B]	FIRST ALARM BELL (2# = CIRCUIT)
[H] 2#	AGENT PRE-DISCHARGE HORN/STROBE 2#-CIRCUIT #
[L] 2#	AGENT DISCHARGE STROBE 2#-CIRCUIT #
[N] XXX	AGENT 180° DISCHARGE NOZZLE
[C] XXX	CLEAN AGENT CYLINDER (XXX = LBS)

PROJECT NOTES

PROJECT GENERAL INFORMATION

SYSTEM TYPE:

TOTAL FLOOD SUPPRESSION SYSTEM.

DESCRIPTION:

FIRE HFC-125 FIRE SUPPRESSION SYSTEM, UTILIZING A POWER LIMITED, FULLY SUPERVISED, MANUAL AND AUTOMATIC INITIATION/DETECTION SYSTEM. THIS SYSTEM SHALL BE MONITORED BY THE BUILDING FIRE ALARM SYSTEM.

HAZARD INFORMATION:

APPROX. SQUARE FOOTAGE THIS PROJECT ONLY: **1,271 sq. ft.**
1) TOTAL FLOOD (HFC-125) FIRE SUPPRESSION SYSTEM.

DESIGN STANDARDS

1. MANUFACTURERS' GUIDELINES
2. NFPA 72 (2007)
3. NFPA 70, 2004 (2008)
4. FFC (2010) AS AMENDED BY BRADENTON FLORIDA (A/HJ)

SCOPE OF WORK:

1. INSTALL ONE (1) NEW CLEAN AGENT TOTAL FLOOD FIRE SUPPRESSION SYSTEM TO PROVIDE INDEPENDENT PROTECTION IN THE 4TH FLOOR COMPUTER ROOM AT MANATEE COUNTY FACILITY IN BRADENTON, FLORIDA.
2. THE FIRE SUPPRESSION SYSTEM SHALL SEND AUTOMATIC SIGNALS TO THE BUILDING FIRE ALARM SYSTEM. REFER TO THE RISER DIAGRAM AND THE SEQUENCE OF OPERATIONS FOR THE SPECIFIC SIGNALS TO BE TRANSMITTED.
3. THE FIRE SUPPRESSION SYSTEM SHALL PROVIDE BATTERY BACKUP AS A SECONDARY POWER SOURCE. REFER TO THE BATTERY CALCULATIONS LOCATED ON THESE DRAWINGS FOR THE STANDBY TIME AND SIZE OF BATTERIES REQUIRED.
4. THIS PROJECT'S FIRE SUPPRESSION SYSTEM SHALL BE DESIGNED UTILIZING THE STANDARDS LOCATED IN THE "DESIGN STANDARDS" SECTION ON THESE DRAWINGS.

GENERAL NOTES:

1. THIS PROJECT'S FIRE SUPPRESSION SYSTEM SHALL BE INSTALLED IN A "WORKMAN LIKE MANNER" UTILIZING "GOOD COMMERCIAL PRACTICE".
2. TO ENSURE THE PROPER OPERATION OF THE FIRE SUPPRESSION SYSTEM, A COMPLETE FUNCTIONAL TEST SHALL BE PERFORMED PRIOR TO THE FINAL INSPECTION BY THE AUTHORITY HAVING JURISDICTION (A/HJ).
3. THE INSTALLING CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE ALL TESTING WITH THE LOCAL A/HJ, GENERAL CONTRACTOR AND ANY ASSOCIATED CONTRACTORS.
4. UPON COMPLETION OF THE PROJECT, THE INSTALLING CONTRACTOR SHALL PROVIDE INSPECTION REPORTS, OPERATIONS MANUALS, AND SHOP DRAWINGS TO THE OWNER REPRESENTATIVE.
5. ALL OF THE FIRE SUPPRESSION SYSTEM PROGRAMMING THAT IS REQUIRED SHALL BE PERFORMED BY THE INSTALLING CONTRACTOR.
6. ALL OF THE FIRE SUPPRESSION CONTROL PANEL TERMINATIONS SHALL BE PERFORMED BY THE INSTALLING CONTRACTOR.
7. THE FIRE SUPPRESSION INSTALLATION SHALL BE IN ACCORDANCE WITH THESE PLANS. CHANGES IN DEVICES, LOCATIONS, AND/OR CIRCUITS MUST BE APPROVED. IF THE CHANGES ARE SUFFICIENT TO REQUIRE RE-ENGINEERING A FEE MAY BE CHARGED TO THE CONTRACTOR REQUESTING THE CHANGES.
8. THE DISCHARGE TIME OF THE CLEAN AGENT SYSTEM SHALL BE WITHIN 10 SECONDS OR LESS. THE PROTECTED VOLUME SHALL BE TOTALLY FLOODED AT A MINIMUM OF 8% CONCENTRATION. THE PROTECTED VOLUME SHALL MAINTAIN THIS CONCENTRATION FOR A PERIOD OF 10 MINUTES.
9. ALL DOORS WITHIN THE PROTECTED AREA SHALL REQUIRE DOOR CLOSURES, DOOR SEALS AND DOOR SWEEPS TO PREVENT LEAKAGE AND MAINTAIN THE PROPER CLEAN AGENT CONCENTRATION LEVEL. (SEALING TO BE PERFORMED BY OTHERS)
10. A DOOR FAN TEST SHALL BE PERFORMED TO VERIFY THE INTEGRITY OF THE ROOM. ALL PENETRATIONS, HOLES, CABLE TRAYS, AND TRENCHES THAT LEAVE THE PROTECTED AREA SHALL BE SEALED. ADDITIONAL DOOR FAN TEST PERFORMED DUE TO INADEQUATE SEALING OF THE ROOM SHALL BE CONSIDERED A CHANGE IN SCOPE.

ELECTRICAL INSTALLATION NOTES:

1. THE FIRE SUPPRESSION SYSTEM WIRING SHALL BE INSTALLED UTILIZING THE STANDARDS LOCATED IN THE "DESIGN STANDARDS" ON THESE DRAWINGS.
2. REFER TO THE "WIRE CHART" LOCATED ON THESE DRAWINGS FOR QUANTITY, TYPE & SIZE OF THE WIRE.
3. ALL SIGNAL LINE CIRCUITS (i.e. SLC DATA) SHALL BE CLASS "B".
4. ALL NOTIFICATION APPLIANCE CIRCUITS (NAC) SHALL BE CLASS "B".
5. THE FIRE SUPPRESSION SYSTEM WIRING SHALL BE INSTALLED IN A MINIMUM OF 1/2" (EMT) CONDUIT.
6. A LICENSED ELECTRICAL CONTRACTOR SHALL PROVIDE THE INSTALLATION, LABOR, CONDUIT, AND WIRING FOR ALL 120VAC POWER CIRCUITS CONNECTED TO THE FIRE ALARM SYSTEM.

MOUNTING INSTRUCTIONS:

1. ALL DEVICES SHALL BE INSTALLED UTILIZING THE STANDARDS LOCATED IN THE "DESIGN STANDARDS" ON THESE DRAWINGS.
2. SMOKE DETECTORS SHALL BE MOUNTED AS FOLLOWS:
 - 2.1 CENTER OF CEILING TILES.
 - 2.2 NO CLOSER THAN THREE (3) FEET FROM AN AIR MOVING REGISTER.
 - 2.3 NO LESS THAN 4" FROM A SIDE WALL.
3. MANUAL RELEASE & ABORT STATIONS SHALL BE MOUNTED AS FOLLOWS:
 - 3.1 48" TO THE TOP OF THE DEVICE ABOVE THE FINISHED FLOOR.
 - 3.2 WITHIN 5' OF THE EXIT DOOR WHERE POSSIBLE.
4. DISCHARGE HORN/STROBE UNITS SHALL BE MOUNTED AS FOLLOWS:
 - 4.1 SHALL BE MOUNTED SUCH THAT THE ENTIRE LENS IS NOT LESS THAN 80" ABOVE THE FINISHED FLOOR.
 - 4.2 WHEN CEILING HEIGHTS ARE LESS THAN 80", MOUNT THE DEVICE 6" BELOW THE CEILING.
 - 4.3 SET ALL HORN/STROBES TO HIGH DBA SETTING.
 - 4.4 SET CANDELA RATING AS NOTED ON PLANS.
5. FIRST ALARM BELL UNITS SHALL BE MOUNTED AS FOLLOWS:
 - 5.1 SHALL BE MOUNTED NOT LESS THAN 80" ABOVE THE FINISHED FLOOR.
6. EXIT DISCHARGE STROBE ONLY UNITS SHALL BE MOUNTED AS FOLLOWS:
 - 6.1 AT EVERY DOOR EXITING THE PROTECTED AREA.

EXCLUSIONS:

THE LIST OF EXCLUSIONS WITHIN THIS SECTION ARE NOT PART OF THE SCOPE OF WORK AND ARE CONSIDERED TO BE PROVIDED BY OTHERS.

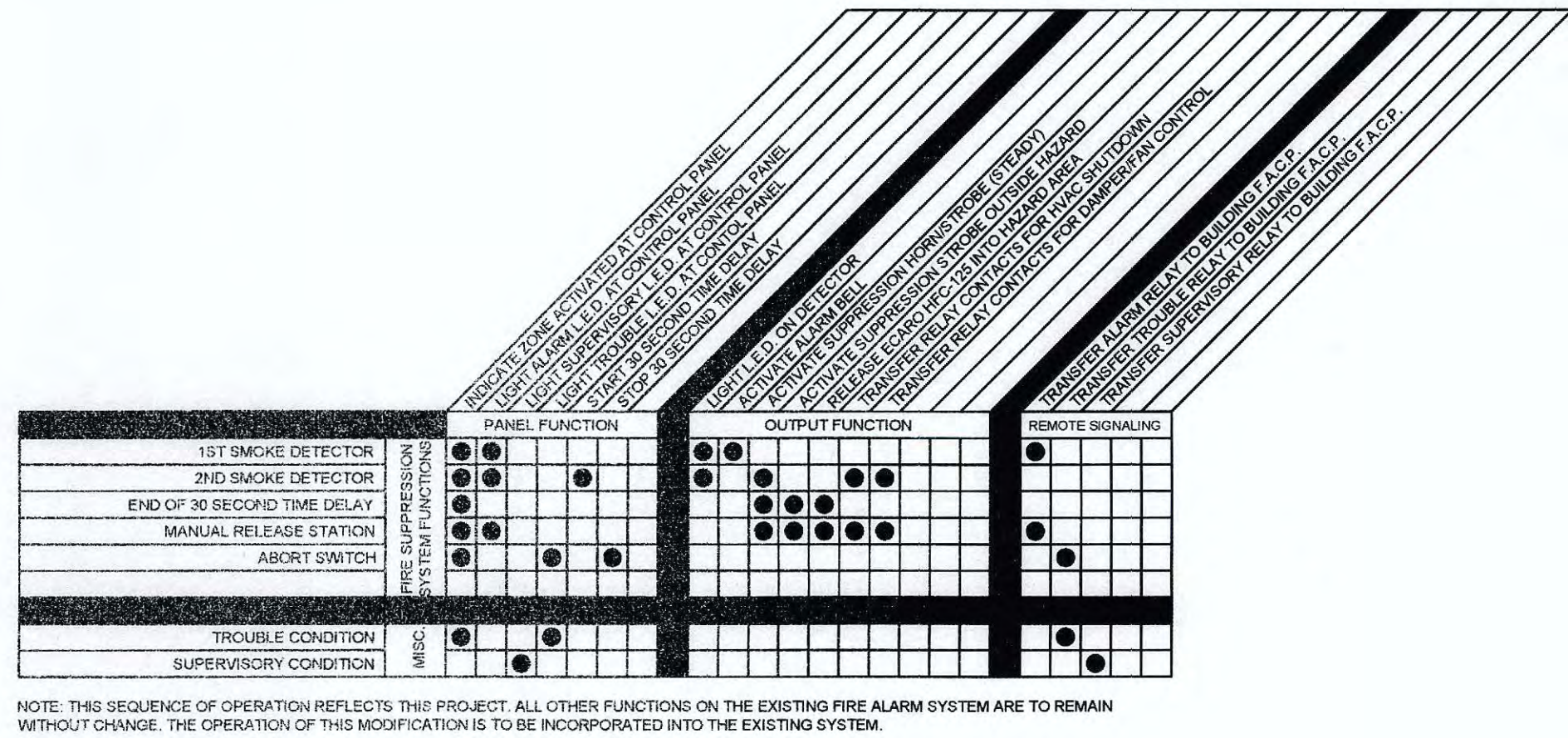
1. ALL 120VAC DEDICATED POWER CIRCUIT, CONDUIT, AND WIRING.
2. ALL AIR HANDLING UNIT SHUTDOWN CONDUIT AND WIRING.
3. ALL DUCT SMOKE DETECTORS, DETECTOR HOUSING, DETECTOR POWER, RELATED INSTALLATION LABOR, CONDUIT, AND WIRING.
4. DUCT SMOKE MANOMETER TESTING AND DOCUMENTATION.
5. DUCT SMOKE DETECTORS AND REMOTE LED TEST STATIONS.
6. DAMPER CONTROLS INSTALLATION, CONDUIT, AND WIRING.
7. SEALING THE ROOM TO MAINTAIN PROPER INTEGRITY OF THE ROOM. ADDITIONAL DOOR FAN TEST
8. THE BUILDING FIRE ALARM SYSTEM AND ANY CONNECTIONS REQUIRED TO MONITOR THE FIRE SUPPRESSION SYSTEM

CLEAN AGENT PIPING REQUIREMENTS:

1. REFER TO SYSTEM DRAWINGS AND HYDRAULIC CALCULATIONS FOR THE LOCATION AND LAYOUT OF THE AGENT DISTRIBUTION PIPING SYSTEM. EXAMINE THE CONFIGURATION OF THE PIPING SYSTEM TO ENSURE THE PIPING AND DISCHARGE NOZZLES DO NOT INTERFERE WITH SOLID STRUCTURE OBJECTS OR EQUIPMENT WITHIN THE HAZARDOUS AREA BEFORE THE PIPING CONSTRUCTION BEGINS. SHOULD ANY CONFLICTS OCCUR NOTIFY THE FIRE SUPPRESSION CONTRACTOR TO MAKE THE APPROPRIATE CHANGES ON THE SYSTEM DRAWINGS AND THE HYDRAULIC CALCULATIONS BEFORE ANY PIPING CONSTRUCTION BEGINS.
2. PIPING MATERIAL SHALL CONFORM TO THE REQUIREMENTS AS OUTLINED IN NFPA 2001, SECTION 2.2.3 OF THE CURRENT EDITION. MALLEABLE IRON FITTINGS (BLACK OR GALVANIZED) SHALL BE 300 LB (135 KG) CLASS FITTINGS CONFORMING TO ASTM SPECIFICATION A-197. ORDINARY CAST IRON FITTING AND 150 LB (68 KG) CLASS FITTINGS SHALL NOT BE PERMITTED. VICTALUC 77 OR GEM 7000 GROOVED FITTINGS SHALL BE PERMITTED AS LONG AS THEY ARE UL LISTED FOR THIS APPLICATION. THREADED, WELDED OR FLANGED FITTINGS SHALL BE PERMITTED AS LONG AS THEY CONFORM TO THE ABOVE REQUIREMENTS. ALL FITTINGS SHALL BE THREADED FITTINGS UNLESS OTHERWISE NOTED ON THE SYSTEM DRAWINGS. HOLE-OUT OR SIMILAR TYPE FITTINGS SHALL NOT BE USED.
3. PIPE FITTINGS SHALL CONFORM TO THE REQUIREMENTS OUTLINED IN NFPA 2001, SECTION 2.2.3 OF THE CURRENT EDITION. MALLEABLE IRON FITTINGS (BLACK OR GALVANIZED) SHALL BE 300 LB (135 KG) CLASS FITTINGS CONFORMING TO ASTM SPECIFICATION A-197. ORDINARY CAST IRON FITTING AND 150 LB (68 KG) CLASS FITTINGS SHALL NOT BE PERMITTED. VICTALUC 77 OR GEM 7000 GROOVED FITTINGS SHALL BE PERMITTED AS LONG AS THEY ARE UL LISTED FOR THIS APPLICATION. THREADED, WELDED OR FLANGED FITTINGS SHALL BE PERMITTED AS LONG AS THEY CONFORM TO THE ABOVE REQUIREMENTS. ALL FITTINGS SHALL BE THREADED FITTINGS UNLESS OTHERWISE NOTED ON THE SYSTEM DRAWINGS. HOLE-OUT OR SIMILAR TYPE FITTINGS SHALL NOT BE USED.
4. THE METHOD OF JOINING ALL PIPING SHALL BE IN ACCORDANCE WITH NFPA 2001. TEFLON TAPE IS RECOMMENDED AND SHALL BE APPLIED ON THE MALE PIPE THREADS. ALL GROOVED COUPLINGS SHALL BE LIBRICATED PER MANUFACTURERS SPECIFICATIONS. THREADS ON ALL PIPE AND FITTINGS SHALL BE TAPERED CONFORMING TO ANSI SPECIFICATION B-20.1.
5. REDUCTIONS IN PIPE SIZE SHALL BE DIRECTLY AFTER A TEE, UTILIZING A CONCENTRIC BELL REDUCER, WITH THE TEE BEING THE SAME PIPE SIZE AS THE INLET LINE TO THE TEE. REDUCTIONS IN PIPE SIZE MAY ALSO BE MADE USING A CONCENTRIC BELL REDUCER AFTER A UNION, PROVIDED THE NEXT CHANGE IN DIRECTION (TEE) IS LOCATED A MINIMUM OF 10 PIPE DIAMETERS DOWNSTREAM OF THE CONCENTRIC BELL REDUCER. CONCENTRIC BELL REDUCERS OR CONCENTRIC REDUCING COUPLINGS SHALL BE USED TO MAKE ALL REDUCTIONS IN PIPE SIZE. REDUCING BUSHINGS, WELD-O-LET, HOLE-OUT FITTINGS AND REDUCING TEES SHALL NOT BE PERMITTED.
6. ALL PIPING SHALL BE INSTALLED IN A PROFESSIONAL MANNER WITH "GOOD COMMERCIAL PRACTICE". ALL PIPING AND FITTINGS SHALL BE BLOWN CLEAR SWABBED WITH A SUITABLE SOLVENT (ACETONE, TRICHLOROETHANE, ECT.) AND ALL PIPE LENGTH SHALL BE REAMED TO REMOVE ALL BURRS PRIOR TO INSTALLATION. ALL PIPING SHALL BE RIGIDLY SUPPORTED BY A COMBINATION NETWORK COMPRISED OF PIPE HANGERS AND RIGID SUPPORT HANGERS. PIPE HANGERS ARE USED SUPPORT THE "DEAD LOAD" OF THE PIPING SYSTEM AND SHALL BE SPACED AT INTERVALS NOT TO EXCEED 15 FEET. RIGID PIPE SUPPORTS ARE REQUIRED TO SUPPORT THE "LIVE LOAD" OF THE PIPING SYSTEM DURING THE AGENT DISCHARGE AND IS REQUIRED AT EACH DIRECTIONAL CHANGE FITTING, TEE AND NOZZLE. ALL 180° NOZZLE REQUIRE BACK BRACING IN THE OPPOSITE DIRECTION OF THE DISCHARGE PATTERN. EARTHQUAKE BRACING SHALL BE USED WHERE REQUIRED BY LOCAL CODE. REFER TO ANSI B31.1 FOR BRACING REQUIREMENTS.
7. CARE SHOULD BE TAKEN WHEN BRACING THE PIPING TO INSURE THE NOZZLE LOCATIONS ARE WITHIN 1 FOOT OF THE LOCATIONS ON THE SYSTEM PLANS. CORRECT NOZZLES SHALL BE INSTALLED EXACTLY IN ACCORDANCE WITH THE SYSTEM PLANS AND DEFLECTOR SET SCREWS SHALL BE IN PLACE DURING A SYSTEM DISCHARGE OR AGENT DISTRIBUTION OR THE SYSTEMS ABILITY TO SUPPRESS A FIRE MAY ADVERSELY BE AFFECTED. NOZZLES SHALL BE INSTALLED PERPENDICULAR TO THE CEILING FOR PROPER AGENT DISTRIBUTION. 180° NOZZLES SHOULD BE ALIGNED PROPERLY WITH RESPECT TO ADJACENT WALLS (CRIBICE HOLES ORIENTED PARALLEL TO WALL SO NO DIRECT WALL IMPINGEMENT OF AGENT OCCURS)
8. FINAL INSTALLATION ACCEPTANCE SHALL BE IN ACCORDANCE WITH NFPA 2001 SECTION 4.7 OF THE LATEST EDITION.
9. ALL SYSTEM PIPING SHALL BE INSTALLED IN STRICT ACCORDANCE TO THE SYSTEM PLANS. IF BUILDING LAYOUT CHANGES AND THE SYSTEM PIPING CHANGES ARE NECESSARY, THEY MUST BE APPROVED BY THE FIRE SUPPRESSION CONTRACTOR.

SHEET INDEX

- FS-1: COVER SHEET
FS-2: AGENT PIPING SYSTEM LAYOUT
FS-3: AGENT PIPING ISOMETRIC DIAGRAM AND TANK DETAILS
FS-4: DEVICE LAYOUT RISER DIAGRAM AND CALCULATIONS
FS-5: FIRE SUPPRESSION CONTROL PANEL (FSCP) WIRING DIAGRAM
FS-6: MOUNTING DETAILS
FS-7: HANGER DETAILS



NOTE: THIS SEQUENCE OF OPERATION REFLECTS THIS PROJECT. ALL OTHER FUNCTIONS ON THE EXISTING FIRE ALARM SYSTEM ARE TO REMAIN WITHOUT CHANGE. THE OPERATION OF THIS MODIFICATION IS TO BE INCORPORATED INTO THE EXISTING SYSTEM.

FIRE SUPPRESSION SEQUENCE OF OPERATION



1500 15TH AVE. DR. E., SUITE 106
PALMETTO, FL 34221
PHONE: (941) 723-7230 / FAX: (941) 723-0181
VISIT OUR WEBSITE AT WWW.FLAGSHIPINC.COM
CONTRACTORS LICENSE NO. 1876860072006

DESCRIPTION

BY:

DATE:

REV.

NORTH ARROW

ENGINEER SEAL

MANATEE COUNTY 4TH FLOOR
COMPUTER ROOM

1112 MANATEE AVE.

BRADENTON, FL 34206-1000

FIRE SUPPRESSION SYSTEM

COVER SHEET

PROJECT

ADDRESS

DESCRIPTION

CITY OF BRADENTON

DRAWN BY:

5/8/13

DESIGNED BY:

5/8/13

CHECKED BY:

5/8/13

JOB#:

13067C

SCALE:

AS SHOWN

DRAWING SIZE:

24 X 36

SHEET:

FS1

OF

7

REV:

DATE:

CLEAN AGENT PIPING FLOOR PLAN

18'-10"

67'-5"

297 Lbs.











N


SCALE: 1/4" = 1'-0"

0 4 8 12 16 20

COMPUTER ROOM VOLUME CALCULATION								
SECTION	LENGTH	WIDTH	SQ. FEET	HEIGHT	VOLUME	CLEAN AGENT CONCENTRATION FACTOR	ALTITUDE CORRECTION FACTOR	TOTAL CLEAN AGENT
ROOM	67.42 Ft.	18.83 Ft.	1269.52 Sq. Ft.	8.50 Ft.	10790.91 Cu. Ft.	0.0274	1.00	295.67 lbs
						TOTAL CLEAN AGENT REQUIRED		295.67 lbs
						TOTAL CLEAN AGENT SUPPLIED		297.00 lbs

SPECIFIC VAPOR VOLUME S TEMP. T (°F/C)		WEIGHT REQUIREMENTS OF HAZARD VOLUME, W/V (LB/FT³)B														
		DESIGN CONCENTRATION (% BY VOLUME)														
		7	8	9	10	11	12	13	14	15	16					
20	2.8517	0.0264	0.0305	0.0347	0.039	0.0434	0.0478	0.0524	0.0571	0.0619	0.0668					
30	2.916	0.0258	0.0290	0.0339	0.0381	0.0424	0.0468	0.0513	0.0559	0.0605	0.0654					
40	2.98	0.0253	0.0292	0.0332	0.0373	0.0415	0.0458	0.0502	0.0546	0.0592	0.0639					
50	3.0438	0.0247	0.0286	0.0325	0.0365	0.0406	0.0448	0.0491	0.0535	0.058	0.0626					
60	3.1073	0.0242	0.028	0.0318	0.0358	0.0398	0.0439	0.0481	0.0524	0.0568	0.0613					
70	3.1707	0.0237	0.0274	0.0312	0.035	0.039	0.043	0.0471	0.0513	0.0557	0.0601					
80	3.2338	0.0233	0.0269	0.0306	0.0344	0.0382	0.0422	0.0462	0.0503	0.0546	0.0589					
90	3.2968	0.0228	0.0264	0.03	0.0337	0.0375	0.0414	0.0453	0.0494	0.0535	0.0578					
100	3.3596	0.0224	0.0259	0.0294	0.0331	0.0368	0.0406	0.0445	0.0484	0.0525	0.0567					
110	3.4223	0.022	0.0254	0.0289	0.0325	0.0361	0.0398	0.0437	0.0476	0.0516	0.0557					

SYMBOL LEGEND	
SYMBOL	DESCRIPTION
	FIRE SUPPRESSION CONTROL PANEL
 XXX	AGENT MANUAL RELEASE STATION (XXX = ZONE) (COMBINATION)
 XXX	AGENT ARMED STATION (XXX = ZONE) (COMBINATION)
 XXX	PHOTOELECTRIC SMOKE DETECTOR (XXX = ZONE)
	IMPULSIVE RELEASE MODULE (AGENT RELEASE)
	FIRST ALARM BELL (Z# = CIRCUIT)
 Z#	AGENT PRE-DISCHARGE HORN/STROBE 2#-CIRCUIT #
 Z#	AGENT DISCHARGE STROBE 2#-CIRCUIT #
	AGENT 180° DISCHARGE NOZZLE
 XXX	CLEAN AGENT CYLINDER (XXX= LBS)



Flagship Fire, Inc.

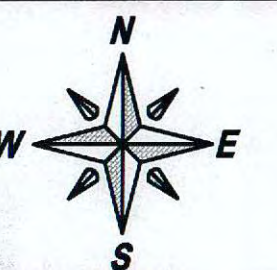
1500 15TH AVE. DR. E. , SUITE 106
PALMETTO, FL 34221

PHONE: (941) 723-7230 / FAX: (941) 723-0181

VISIT OUR WEBSITE AT WWW.FLAGSHIPFIRE.COM

CONTRACTORS LICENSE NO. 7876060072006

ENGINEER SEAL	NORTH ARROW	REV.	DATE:	BY:	DESCRIPTION



**MANATEE COUNTY 4TH FLOOR
COMPUTER ROOM**

**1112 MANATEE AVE.
BRADENTON, FL 34206-1000**

FIRE SUPPRESSION SYSTEM

AGENT PIPING LAYOUT AND VOLUME CALC.

DEC 03 2013

PROJECT	ADDRESS	DESCRIPTION
NAME: CITY OF BRADENTON		
DRAWN BY: TABII	DRAWN BY DATE: 5/8/13	
DESIGNED BY: TABII	DESIGNED BY DATE: 5/8/13	
CHECKED BY: MA	CHECKED BY DATE: 5/8/13	
NOB#: 13067C	SCALE: AS SHOWN	
DRAWING SIZE: 24 X 36	FILE NAME/NUMBER:	
SHEET: FS2 OF 7		
REV:	DATE:	

CYLINDER DATA

CONTAINER DATA/SPECIFICATIONS

Container	Fill range	Valve Size	Tare Weight	Dimensions (approximate)		Mounting Position
Size	P/N	Minimum	Maximum			
Lb. (L)		lbs. (kg)	lbs. (kg)	in. (mm)	lbs. (kg)	in. (mm)
5 (2)	70-272	4 (2.0)	4 (2.0)	1 (25)	11 (5.0)	4.2 (102)
10 (4)	70-273	4 (2.0)	8 (3.5)	1 (25)	15 (6.8)	4.2 (102)
20 (8.5)	70-263	8 (3.5)	16 (7.5)	1 (25)	22 (10.0)	7.0 (178)
35 (15)	70-264	14 (6.5)	30 (13.5)	1 (25)	32.5 (14.7)	7.0 (178)
60 (27)	70-265	25 (11.5)	54 (24.5)	1 (25)	52.5 (23.8)	10.75 (273)
100 (44)	70-266	39 (18.0)	87 (39.0)	1 (25)	77 (34.9)	10.75 (273)
150/150i (61)	70-267	54 (24.5)	120 (54.5)	3 (80)	118/114 (53.5/51.7)	20.0 (508)
215 (88)	70-268	78 (35.5)	173 (78.5)	3 (80)	146 (66.2)	20.0 (508)
375 (153)	70-269	136 (61.5)	302 (137.0)	3 (80)	213 (96.6)	20.0 (508)
650 (267)	70-270	236 (107.0)	528 (239.5)	3 (80)	373 (169.2)	24.0 (610)
1000 (423)	70-271	374 (169.5)	836 (379.5)	3 (80)	535 (242.7)	24.0 (610)

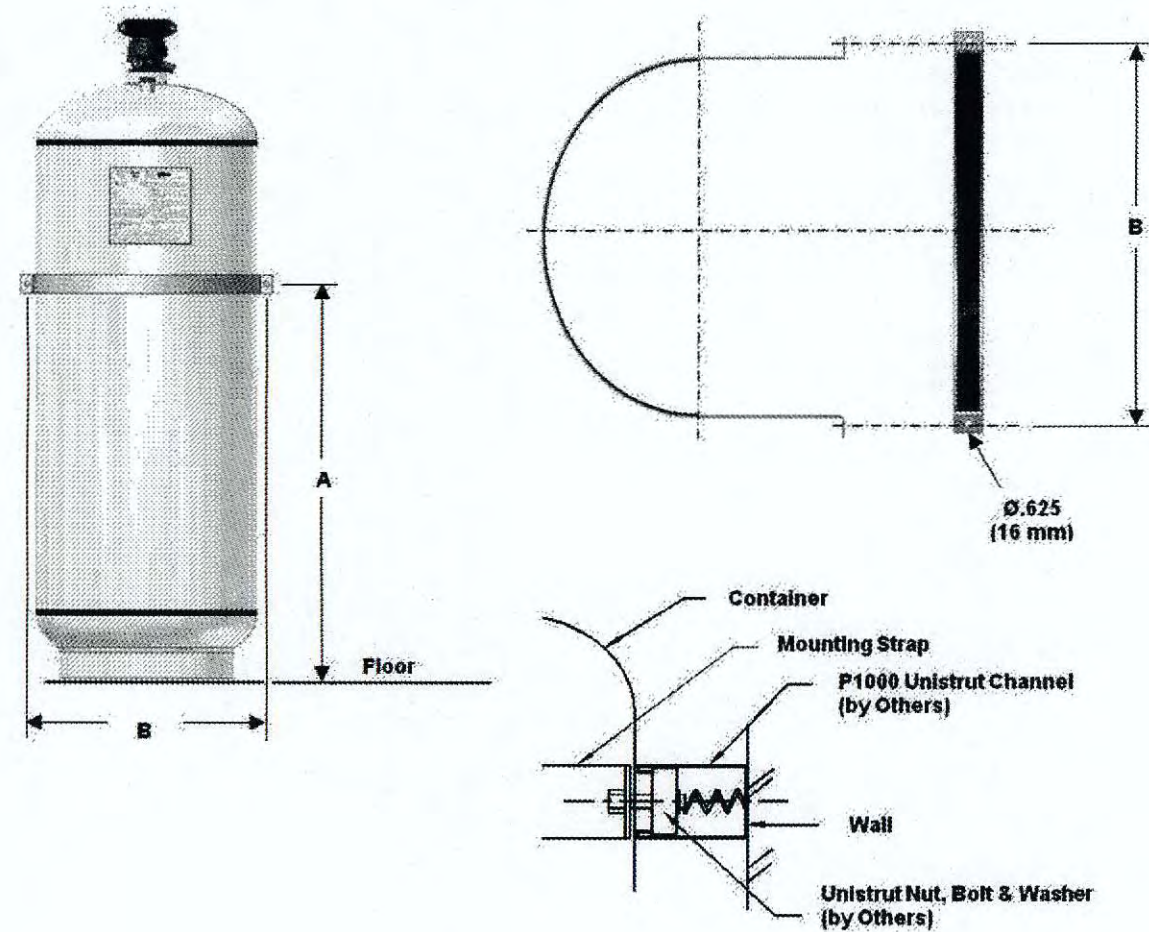
PROPER STRAPPING DETAIL

MOUNTING DETAILS - 100, 215, 375, 650 & 1000 LB. (44, 88, 153, 267, 423 L) CONTAINERS

P/N	Container Size	Dimension	Mounting Position
70-266	100 lb (44L)	20.00 (508)	Upright (Valve Up)
70-268	215 lb (88L)	11.00 (279)	Upright (Valve Up)
70-269	375 lb (153L)	24.00 (610)	Upright (Valve Up)
70-270	650 lb (267L)	28.00 (711)	Upright (Valve Up)
70-271	1000 lb (423L)	40.00 (1016)	Upright (Valve Up)

Notes:

- All dimensions are approximate
- Mounting Strap can be fastened to the Unistrut Channel with a Unistrut Spring Nut and Bolt.



375 LB. (70-269)

ACCEPTABLE PIPING CHART

PIPING MATERIALS

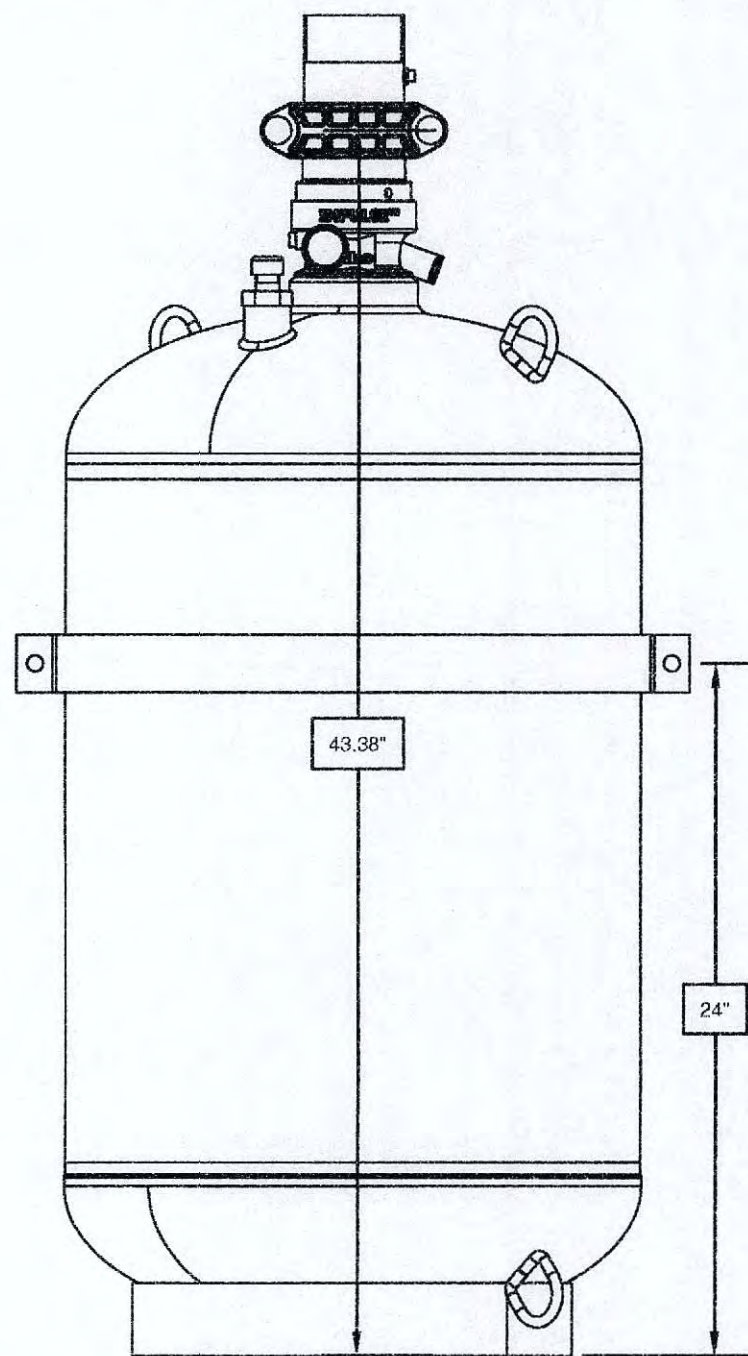
Piping materials must conform to the requirements as outlined in NFPA 2001, latest edition. The thickness of the piping wall shall be calculated in accordance with ASME B31.1 Power Piping Code. For Fire Clean Agent System, w/ 360 psig (24.8 bar) working pressure, use a minimum piping design pressure of 300 psig (34.4 bar) at 70°F (21°C).

Caution: Cast iron pipe, steel pipe conforming to ASTM A120, or nonmetallic pipe shall not be used.

The following piping materials and configurations are acceptable:
Schedule 40 Threaded, Welded & Grooved
Schedule 80 Threaded & Welded

The following piping types and grades are acceptable for pipe configurations utilizing threaded, welded or grooved end connections:

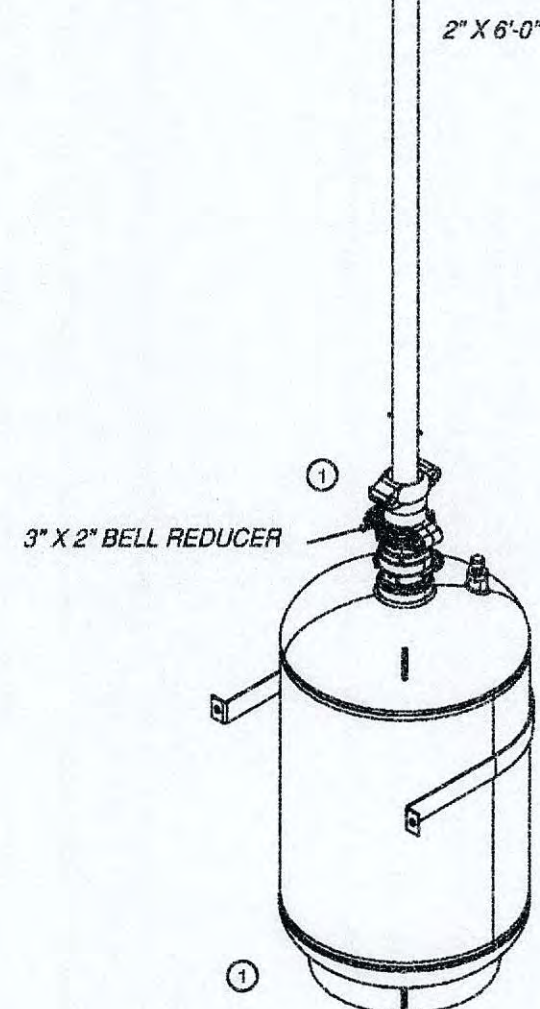
Pipe Schedule	NPS Pipe Size	Wall Thickness	Grade / Type					
			A-106C	A-53B A-105B	A-53B	A-53A A-106A	A-53A	A-53F
40	3/8	0.091	Seamless	Seamless	ERW	Seamless	ERW	Furnace
	1/2	0.109	✓	✓	✓	✓	✓	✓
	3/4	0.113	✓	✓	✓	✓	✓	✓
	1	0.133	✓	✓	✓	✓	✓	✓
	1 1/4	0.140	✓	✓	✓	✓	✓	✓
	1 1/2	0.145	✓	✓	✓	✓	✓	✓
	2	0.154	✓	✓	✓	✓	✓	✓
	2 1/2	0.203	✓	✓	✓	✓	✓	✓
	3	0.216	✓	✓	✓	✓	✓	✓
	4	0.237	✓	✓	✓	✓	✓	✓
	6	0.280	✓	✓	✓	✓	✓	✓



375 LB. (70-269)

NOTE: ALL PIPE LENGTHS ARE TAKEN FROM CENTER TO CENTER FIELD VERIFY ALL PIPE LENGTHS. DO NOT FABRICATE FROM THESE DRAWINGS

DISCHARGE NOZZLE SCHEDULE					
NOZZLE #	PART NUMBER	SIZE	MANUFACTURER	TYPE	LBS. OF AGENT DISCHARGED
101	80-048-4375	1-1/4"	FRK	180°	146.5 Lbs.
102	80-048-3070	1-1/4"	FRK	180°	146.5 Lbs.



CYLINDER FLOOR LOADING DATA

Container Size lb. (L)	Total Container Weight lbs. (kg) see note 1	Container Floor Area ft² (m²)	Container Floor Loading lbs/ft² (kg/m²)	Container Floor Area w/ Plate 1/4" x 2' x 2' plate (6.4mm x 0.6m x 0.6m plate) ft² (m²)	Container w/ Plate Floor Loading lbs/ft² (kg/m²) see note 2
1000 (423)	1386 (628)	3.14 (0.29)	441 (2166)	4.0 (0.36)	352 (1773)
650 (267)	913 (41)	3.14 (0.29)	291 (1431)	4.0 (0.36)	234 (1181)
375 (153)	527 (239)	2.18 (0.20)	242 (1195)	4.0 (0.36)	137 (692)
215 (88)	328 (148)	2.18 (0.20)	150 (740)	4.0 (0.36)	88 (439)
150 (61)	283 (128)	2.18 (0.20)	130 (640)	4.0 (0.36)	76 (384)
100 (44)	164 (74)	0.63 (0.06)	260 (1233)	4.0 (0.36)	47 (234)
60 (27)	106 (48)	0.63 (0.06)	168 (800)	4.0 (0.36)	32 (162)
35 (15)	51 (23)	0.27 (0.03)	189 (927)	4.0 (0.36)	18 (92)
20 (9.5)	37 (17)	0.27 (0.03)	137 (685)	4.0 (0.36)	15 (76)
10 (4)	23 (11)	0.10 (0.009)	230 (1222)	4.0 (0.36)	11 (59)
5 (2)	15 (7)	0.10 (0.009)	150 (778)	4.0 (0.36)	9 (48)

N.T.S.

1000LB (70-269) - 297# FILL ISOMETRIC DIAGRAM



1500 15TH AVE. DR. E. SUITE 106
PALMETTO, FL 34221
PHONE: (941) 723-7230 / FAX: (941) 723-0181
VISIT OUR WEBSITE AT WWW.FLAGSHIPINC.COM
CONTRACTORS LICENSE NO. 1706060072006

DESCRIPTION

BY:

DATE:

REV:

ENGINEER SEAL

MANATEE COUNTY 4TH FLOOR
COMPUTER ROOM

1112 MANATEE AVE.
BRADENTON, FL 34206-1000

FIRE SUPPRESSION SYSTEM
AGENT PIPING ISOMETRIC DIAGRAM & DETAILS

PROJECT

ADDRESS

DESCRIPTION

CITY OF BRADENTON

DRAWN BY:

DRAWN BY DATE:

DESIGNED BY:

DESIGNED BY DATE:

CHECKED BY:

CHECKED BY DATE:

JOB#:

SCALE:

13067C

AS SHOWN

DRAWING SIZE:

FILE NAME/NUMBER:

24 X 36

SHEET:

FS3

OF 7

REV:

DATE:

DEC 03 2013

CONDUCTOR PROPERTIES CHART

SIZE AWG KCMIL	SIZE AWG KCMIL	CONDUCTORS			DC RESISTANCE AT 75°C (167°F)			
		STRANDING		OVERALL	COPPER		ALUMINUM	
		QUANTITY	DIA. IN.	DIA IN. AREA IN.	OHMS/1000 FT.	OHMS/1000 FT.	OHMS/1000 FT.	
18	1620	1	0	0.040	0.001	7.77	8.08	12.8
18	1620	7	0.015	0.046	0.002	7.55	8.45	13.1
16	2590	1	0	0.051	0.002	4.89	5.08	8.05
16	2590	7	0.019	0.058	0.003	4.99	5.29	8.21
14	4110	1	0	0.064	0.003	3.07	3.19	5.06
14	4110	7	0.024	0.073	0.004	3.14	3.26	5.17
12	6530	1	0	0.081	0.005	1.93	2.01	3.18
12	6530	7	0.030	0.092	0.006	1.98	2.05	3.25

NFPA 70 (2008)

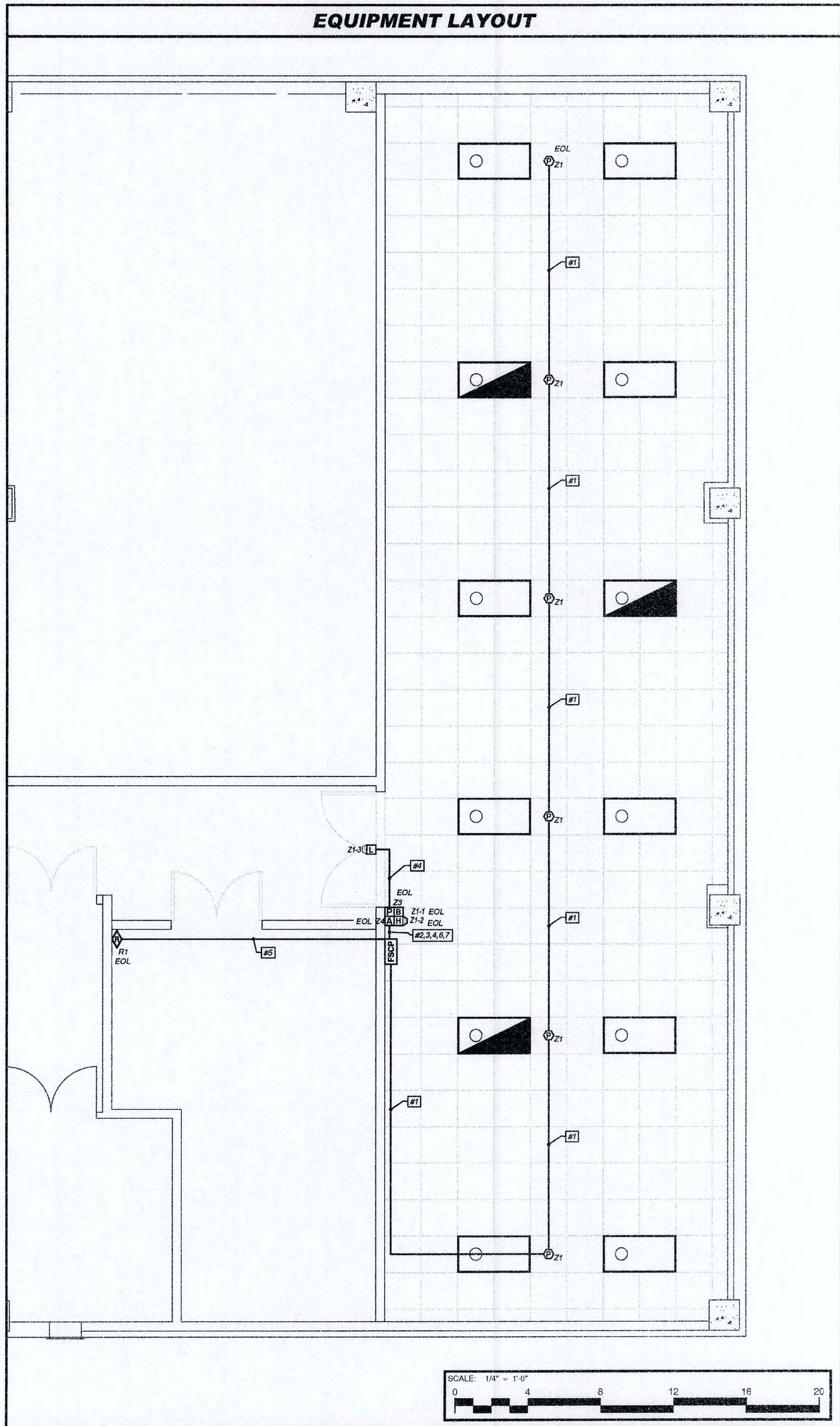
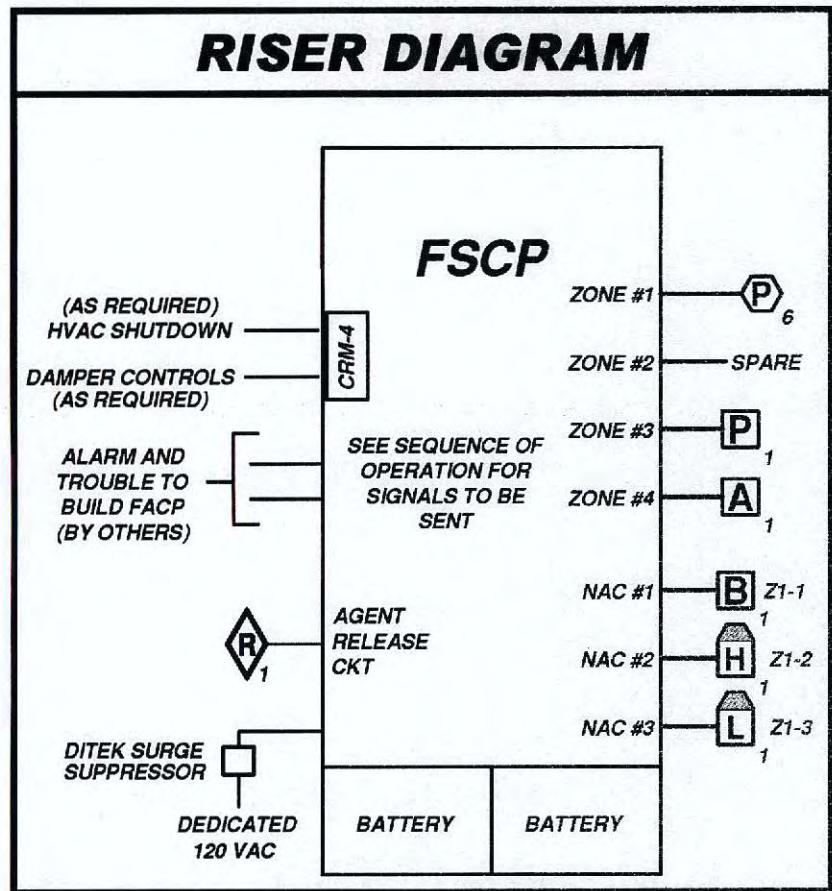
BATTERY CALCULATIONS

FIRE SUPPRESSION CONTROL PANEL BATTERY CALCULATION						
QTY	TYPE	PART NUMBER	STANDBY	TOTAL STANDBY	ALARM	TOTAL ALARM
1	FSCP	10-063-1-R-1	0.1350 Amps	0.1350 Amps	0.1350 Amps	0.1350 Amps
1	CRM4	10-2204	0.0400 Amps	0.0400 Amps	0.0400 Amps	0.0400 Amps
6	PHOTO	63-1024	0.0000 Amps	0.0000 Amps	0.0002 Amps	0.0012 Amps
1	BELL	904-1278-002	0.0000 Amps	0.0000 Amps	0.1000 Amps	0.1000 Amps
1	DCST	904-1321-002	0.0000 Amps	0.0000 Amps	0.1160 Amps	0.1160 Amps
1	PDHS	904-1317-002	0.0000 Amps	0.0000 Amps	0.1440 Amps	0.1440 Amps
1	IRM	70-279	0.0030 Amps	0.0030 Amps	0.0370 Amps	0.0370 Amps
TOTAL			0.1780 Amps	TOTAL	0.5732 Amps	
SEE VOLTAGE DROP CALCULATIONS FOR DETAILS ON THE NOTIFICATION APPLIANCE CIRCUITS. PROVIDE 24 HOURS OF BATTERY BACKUP WITH 5MIN (.083 HRS) OF ALARM.			24 Hrs	HOURS	0.083 Hrs	
			4.27 Ah	AMP HOUR	0.05 Ah	
			1.20	DERATING	1.20	
			5.13 Ah	TOTAL	0.06 Ah	
TOTAL REQUIRED					5.183 Ah	
TOTAL SUPPLIED					7.00 Ah	

VOLTAGE DROP CALCULATIONS

NOTIFICATION APPLIANCE CIRCUIT SCHEDULE						
CIRCUIT	TYPE	CANDELA	PART NUMBER	ALARM	QTY	TOTAL
R1	IRM	NA	70-279	0.037 Amps	1	0.037 Amps
Z1-1	BELL	NA	904-1278-002	0.100 Amps	1	0.100 Amps
Z1-2	PDHS	75Cd	904-1317-002	0.144 Amps	1	0.144 Amps
Z1-3	DCST	75Cd	904-1321-002	0.116 Amps	1	0.116 Amps

VOLTAGE DROP CALCULATION						
POWER SUPPLY	CIRCUIT	TOTAL AMPS	FOOTAGE	OHMS PER 1K	TOTAL OHMS	VOLTAGE DROP
A1	R1	0.037 Amps	100	3.19	0.32 Ohms	0.01 Vdc
A1	Z1-1	0.100 Amps	100	3.19	0.32 Ohms	0.03 Vdc
A1	Z1-2	0.144 Amps	100	3.19	0.32 Ohms	0.05 Vdc
A1	Z1-3	0.116 Amps	100	3.19	0.32 Ohms	0.04 Vdc



WIRE CHART

TAG #	QTY	GAUGE	TYPE	DESCRIPTION	COLOR	
1	2	14 AWG	THHN	SMOKE DETECTOR CIRCUIT	(+) YELLOW	(-) BLUE
2	2	14 AWG	THHN	FIRST ALARM BELL	RED	BLACK
3	2	14 AWG	THHN	HORN/STROBE	RED	BLACK
4	2	14 AWG	THHN	DISCHARGE STROBE	RED	BLACK
5	2	14 AWG	THHN	AGENT RELEASE CIRCUIT	WHITE	ORANGE
6	2	14 AWG	THHN	AGENT MANUAL RELEASE STATION	WHITE	BLUE
7	2	14 AWG	THHN	AGENT ABORT STATION	GREY	BROWN

EXAMPLE: CONDUIT WIRE TYPE SEE CHART

SYMBOL LEGEND

SYMBOL	DESCRIPTION
[FSCP]	FIRE SUPPRESSION CONTROL PANEL
[P] XXX	AGENT MANUAL RELEASE STATION (XXX = ZONE) (COMBINATION)
[A] XXX	AGENT ABORT STATION (XXX = ZONE) (COMBINATION)
[P] XXX	PHOTOELECTRIC SMOKE DETECTOR (XXX = ZONE)
[B]	IMPULSE RELEASE MODULE (AGENT RELEASE)
[B]	FIRST ALARM BELL (Z1 = CIRCUIT)
[H] Z1	AGENT PRE-DISCHARGE HORN/STROBE
[L] Z1	AGENT DISCHARGE STROBE
[N] XXX	AGENT 360° DISCHARGE NOZZLE
[N] XXX	CLEAN AGENT CYLINDER (XXX = LBS)

REV.	DATE	BY	DESCRIPTION



**MANATEE COUNTY 4TH FLOOR
COMPUTER ROOM**
1112 MANATEE AVE.
BRADENTON, FL 34206-1000
**FIRE SUPPRESSION SYSTEM
DEVICE LAYOUT RISER DIAGRAM AND CALC'S**

PROJECT	ADDRESS	DESCRIPTION

CITY OF BRADENTON	
DRAWN BY: TABII	DRAWN BY DATE: 5/8/13
DESIGNED BY: TABII	DESIGNED BY DATE: 5/8/13
CHECKED BY: MA	CHECKED BY DATE: 5/8/13
JOB#: 13067C	SCALE: AS SHOWN
DRAWING SIZE: 24 X 36	FILE NAME NUMBER:
SHEET: FS4	OF 7
REV:	DATE:

CAUTION
THIS AREA IS PROTECTED BY A
HFC-125 EXTINGUISHING SYSTEM

DO NOT ENTER AREA DURING
OR AFTER DISCHARGE

KEEP DOOR CLOSED AT ALL TIMES

1
FS6
WARNING SIGN
NOT TO SCALE

NOTICE
HFC-125 EXTINGUISHING
SYSTEM ALARM

IF ACTIVE
EXIT AREA IMMEDIATELY

2
FS6
LEAVE IMMEDIATELY SIGN
NOT TO SCALE

NOTICE
HFC-125 EXTINGUISHING
SYSTEM DISCHARGE ALARM

IF ACTIVE
DO NOT ENTER AREA

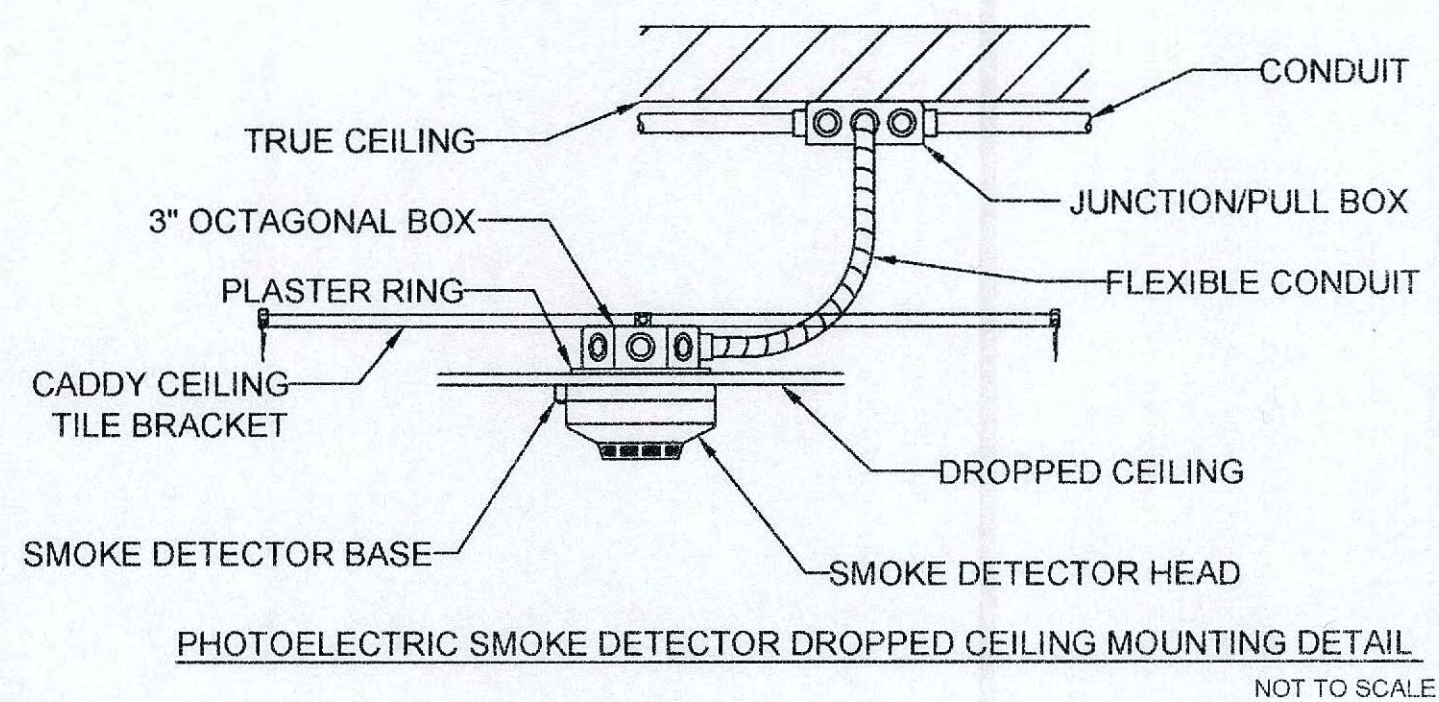
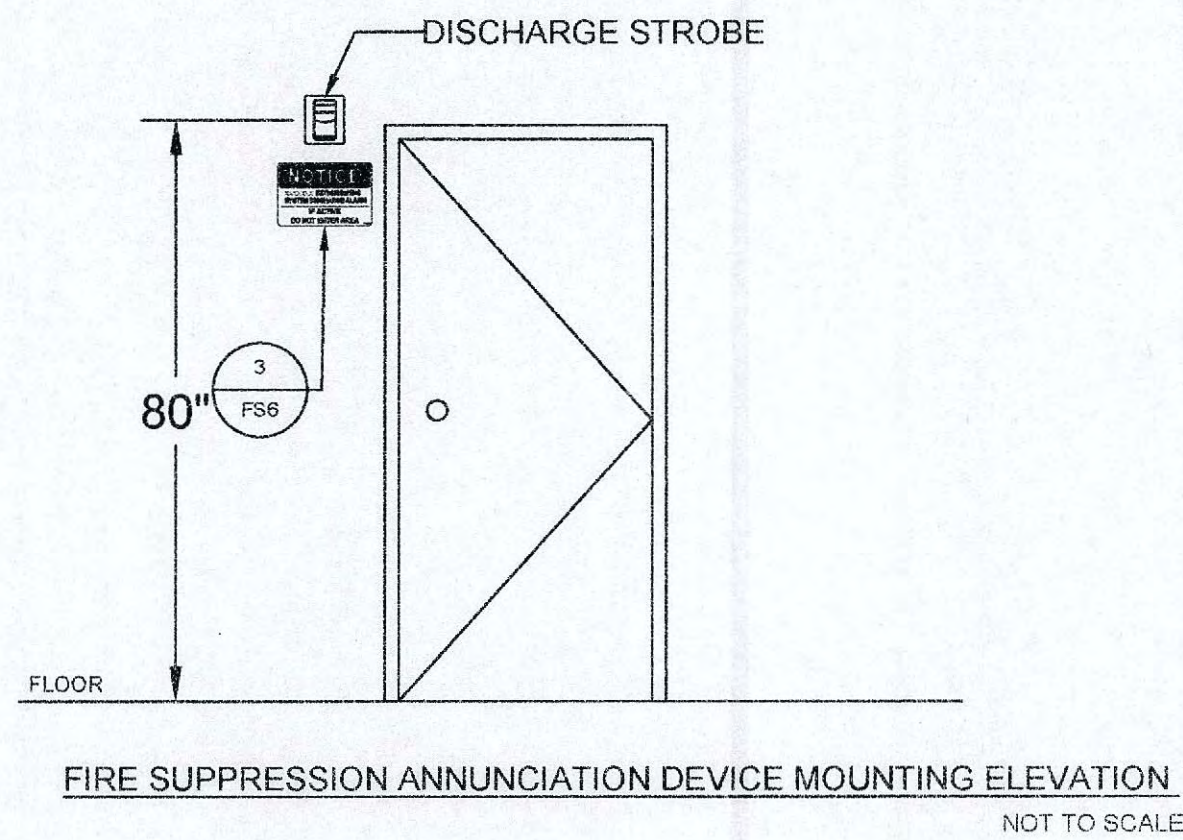
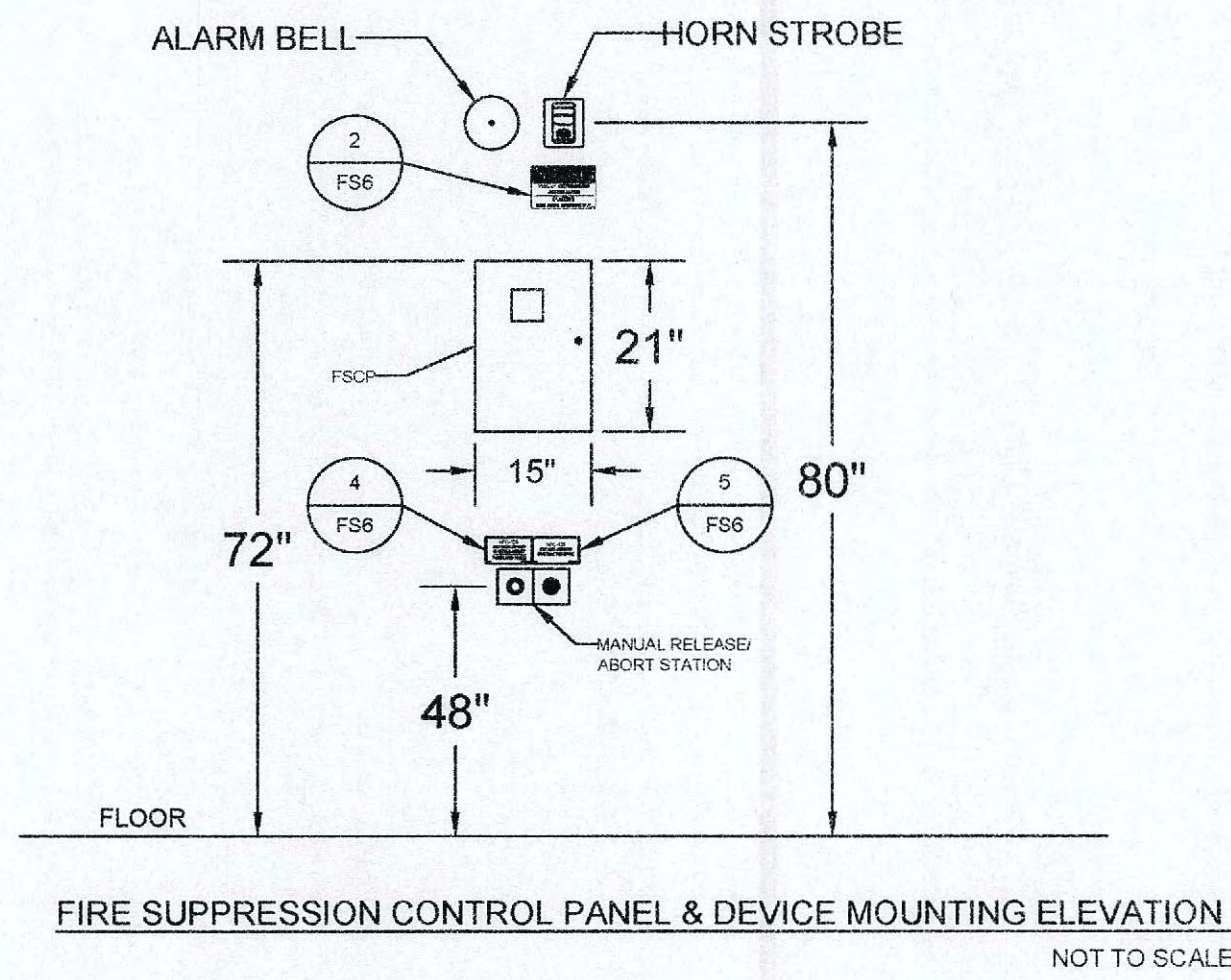
3
FS6
DISCHARGE, DO NOT ENTER SIGN
NOT TO SCALE

HFC-125
EXTINGUISHING
SYSTEM ABORT
PUSH AND HOLD

4
FS6
SYSTEM ABORT SIGN
NOT TO SCALE

HFC-125
EXTINGUISHING
SYSTEM RELEASE

5
FS6
DO NOT ENTER SIGN
NOT TO SCALE



1500 15TH AVE. DR. E. SUITE 106
PALMETTO, FL 34221
PHONE: (941) 723-7230 / FAX: (941) 723-0181
VISIT OUR WEBSITE AT WWW.FLAGSHIPFIRE.COM
CONTRACTORS LICENSE NO. 7870000012006

DESCRIPTION

BY:

DATE:

REV.

NORTH ARROW

ENGINEER SEAL



MANATEE COUNTY 4TH FLOOR
COMPUTER ROOM

1112 MANATEE AVE.
BRADENTON, FL 34206-1000

FIRE SUPPRESSION SYSTEM
MOUNTING DETAILS

PROJECT

ADDRESS

DESCRIPTION

CITY OF BRADENTON

DRAWN BY:

TABII

DRAWN BY DATE:

5/8/13

DESIGNED BY:

TABII

DESIGNED BY DATE:

5/8/13

CHECKED BY:

MA

CHECKED BY DATE:

5/8/13

JOB#:

13067C

SCALE:

AS SHOWN

DRAWING SIZE:

24 X 36

FILE NAME/NUMBER:

SHEET:

FS6

OF

7

REV:

DATE:

DEC 03 2013

DEC 03 2013