

GENERAL NOTES:

- ALL SYMBOLS AND ABBREVIATIONS MAY NOT APPLY TO THIS PROJECT.
- BOUNDARY LINES SHOWN ON THE DRAWINGS DO NOT LIMIT THE SCOPE OF WORK FOR THE PROJECT. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WORK NOTED ON THE DRAWINGS.
- CONTRACTOR SHALL COMPLY WITH ALL REGULATIONS AND LAWS OF AUTHORITIES HAVING JURISDICTION.
- CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND NOTIFY THE ENGINEER AT ONCE OF ANY DISCREPANCIES.
- ALL PENETRATIONS THROUGH DESIGNATED FIRE RATED WALLS, CEILINGS AND FLOOR SLABS (WHICH ARE 2-HOUR RATED) SHALL BE PROPERLY SEALED WITH AN APPROVED RATED FIRE AND SMOKE STOPPING MATERIAL. ALL FIRE AND SMOKE STOPPING MATERIAL SHALL BE SUPPLIED AND WORK PERFORMED AS PER PROJECT SPECIFICATIONS. CONTRACTOR SHALL SUBMIT MANUFACTURER'S CATALOG DATA AND INSTALLATION DETAIL AS PER SPECIFICATIONS FOR FIRE AND SMOKE STOPPING TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.
- THE CONTRACTOR SHALL NOT BE ALLOWED ANY STORAGE AREA OTHER THAN THAT AVAILABLE WITHIN THE LIMITS OF THE STAGING AREA AS DIRECTED BY THE CITY OF READING. CONFINES OF THE WORK AREA, OR AS DESIGNATED BY THE OWNER.
- ALL WORK AND MATERIALS SHALL COMPLY WITH APPLICABLE CODES, ORDINANCES AND REGULATIONS.
- A COPY OF THE CURRENT SET OF CONTRACT DOCUMENTS (WITH AS-BUILT INFORMATION) SHALL BE KEPT AT THE JOB SITE AT ALL TIMES BY THE CONTRACTOR.
- EACH CONTRACTOR SHALL REVIEW ALL PROJECT DOCUMENTS OF ALL TRADES FOR A THOROUGH UNDERSTANDING OF PROJECT AND ANY CROSS REFERENCING OF WORK. REVIEW ALL PROJECT REQUIREMENTS PRIOR TO BIDDING. IN CASE OF DISCREPANCIES, THE MOST STRINGENT SHALL GOVERN.
- THE CONTRACTOR SHALL GUARANTEE THE ENTIRE INSTALLATION FOR A PERIOD OF ONE YEAR (EXCEPT WHERE EXTENSIONS OF THIS ONE YEAR PERIOD ARE NOTED) FROM THE DATE OF ACCEPTANCE OF THE SYSTEM AS A WHOLE. ANY DEFECTS, IN WORKMANSHIP, MATERIALS, MALFUNCTION OF EQUIPMENT OR UNSATISFACTORY PERFORMANCE, AND ALL OTHER WORK OR PARTS OF THE BUILDING DAMAGED THEREBY, AS A RESULT OF THE WORK OF THE CONTRACTOR, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR SHALL PAY ALL REPAIR COSTS ACCORDINGLY WITHOUT ADDITIONAL COSTS TO OWNER.
- IN ADDITION TO SPECIFICATIONS, AS MAY BE DEFINED HEREAFTER, THE CONTRACTOR SHALL PROTECT THE WORK SITE AND ALL HIS OR HER WORK AGAINST ANY DAMAGE (INCLUDING BUT NOT LIMITED TO WATER, DUST, HEAT, FREEZING, ETC.) UNTIL FINAL COMPLETION AND ACCEPTANCE BY THE OWNER.
- CONTRACTOR SHALL, UPON COMPLETION OF THE WORK, SUBMIT AS-BUILT RECORD DRAWINGS SHOWING ALL CHANGES FROM THE CONTRACT DRAWINGS MADE IN THE INSTALLATION, AND SHOWING DIMENSION LOCATIONS OF CONCEALED EQUIPMENT.
- PRIOR TO DELIVERY OF ANY MATERIALS TO THE SITE, THE CONTRACTOR SHALL PROVIDE MATERIAL SAFETY DATA SHEETS FOR ALL ITEMS AND MATERIALS USED IN THIS WORK.
- DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL CAPACITIES AND LOCATIONS OF EQUIPMENT TO BE REMOVED. CONTRACTOR SHALL BE RESPONSIBLE FOR VISITING THE SITE TO DETERMINE ACTUAL PHYSICAL SIZE, CAPACITIES, AND LOCATIONS OF EXISTING EQUIPMENT TO BE REMOVED.
- CONTRACTOR SHALL OBTAIN AND PAY FOR ALL REQUIRED PERMITS, COORDINATE ALL REQUIRED EQUIPMENT AND SYSTEMS SHUTDOWN WITH OWNER, AND PROVIDE OWNER TWO WEEKS NOTICE OF THE SAME.
- THE MECHANICAL CONTRACTOR SHALL COORDINATE DEMOLITION WORK WITH ALL OTHER TRADES. PHASE WORK IN CONJUNCTION WITH OTHER TRADE PHASING AND PHASING DRAWINGS.
- CONTRACTOR SHALL FIELD VERIFY OTHER EQUIPMENT UTILITIES NOT ASSOCIATED WITH THIS WORK BUT LYING WITHIN THE WORK AREA, AND WILL NOT DISTURB THOSE EQUIPMENT UTILITIES. THOSE EQUIPMENT UTILITIES SHALL BE PROTECTED SO THAT THE SERVICE IS NOT INTERRUPTED. CONTRACTOR SHALL REPAIR ANY DAMAGE DONE TO THE EQUIPMENT UTILITIES IN PERFORMANCE OF THE WORK.
- CONTRACTOR SHALL KEEP WORK AREA CLEAN, ORDERLY, AND WORKMAN LIKE, AND REMOVE ALL DEMOLISHED TRASH, RUBBLE/CONSTRUCTION DEBRIS ON A DAILY BASIS FROM THE WORK AREA AND OFF OWNERS PROPERTY. ALL TRASH/RUBBLE/CONSTRUCTION DEBRIS DEEMED AS HAZARDOUS WASTE/MATERIAL SHALL BE DISPOSED OF IN ACCORDANCE WITH EPA OR ANY OTHER PERTINENT GOVERNING AGENCY AND DISPOSED OF ACCORDINGLY AT AN APPROVED HAZARDOUS WASTE DUMPSITE WITH ALL OF THE APPROVED/REQUIRED DOCUMENTATION.
- THE MECHANICAL CONTRACTOR SHALL COORDINATE AND PHASE WORK IN CONJUNCTION WITH OTHER TRADE PHASING.
- DURING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL HIS EMPLOYEES WITH SAFE AND HEALTHY WORKING CONDITIONS AS PRESCRIBED IN THE "SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION" OF THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION OF THE U.S. DEPARTMENT OF LABOR.
- SECURE AND DELIVER TO THE OWNER'S REPRESENTATIVE ALL CERTIFICATES OF COMPLIANCE REQUIRED BY LOCAL AUTHORITIES.
- ALL SMALL MOTORS UNDER 1 HORSEPOWER SHALL HAVE INTEGRAL OVERLOAD PROTECTION PER NEC 430.32 AND 430.53(A) IF PLANNING TO BE INSTALLED ON ONE BRANCH CIRCUIT DUE TO SMALL LOADS.

MECHANICAL GENERAL NOTES:

- CONTRACTOR SHALL FURNISH ALL LABOR, MATERIAL, AND EQUIPMENT REQUIRED FOR THE COMPLETION AND OPERATION OF ALL SYSTEMS IN THIS SECTION OF WORK IN ACCORDANCE WITH ALL APPLICABLE CODES.
- CONTRACTOR SHALL FURNISH AND COMPLETE ALL PIPING SYSTEMS TO ALL EQUIPMENT REQUIRING SUCH. VERIFY ALL ROUGH-IN LOCATIONS AND COORDINATE PIPING LOCATIONS WITH WORK UNDER OTHER DISCIPLINES AND DIVISIONS OF THE SPECIFICATIONS TO AVOID CONFLICTS.
- CONTRACTOR SHALL FURNISH AND INSTALL A COMPLETE HVAC DUCT SYSTEM TO ALL DIFFUSERS AND/OR EQUIPMENT REQUIRING SUCH. VERIFY ALL ROUGH-IN LOCATIONS AND COORDINATE HVAC LOCATIONS WITH WORK UNDER OTHER DIVISIONS OF THE SPECIFICATIONS TO AVOID CONFLICTS.
- CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS, INSPECTION CERTIFICATES, ETC. REQUIRED UNDER THE PROJECT SCOPE.
- CONTRACTOR SHALL FIELD VERIFY CONDITIONS AND DIMENSIONS PRIOR TO CONSTRUCTION, AND NOTIFY ENGINEERS OF ANY DISCREPANCIES BETWEEN THE PLAN AND CONDITIONS AND/OR POTENTIAL PROBLEMS OBSERVED PRIOR TO CONTINUING WORK.
- DO NOT SCALE THE PLANS. FIELD VERIFY EXACT LOCATIONS OF DOORS, WINDOWS, WALL DIMENSIONS, ETC.
- CONTRACTOR WILL GIVE SUITABLE NOTICE TO ALL APPLICABLE UTILITY COMPANIES AND OWNER PRIOR TO PERFORMING WORK INVOLVING UTILITIES PER PA ONE CALL.
- ALL EQUIPMENT SHALL BE HANDLED, STORED, AND PROTECTED TO PREVENT DAMAGE BEFORE AND DURING INSTALLATION IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
- ALL EQUIPMENT SHALL BE LOCATED AND INSTALLED IN A READILY ACCESSIBLE LOCATION SO AS TO PERMIT ACCESS FOR SERVICE WITHOUT DAMAGE TO BUILDING OR FINISHED MATERIALS, PER MANUFACTURER'S INSTRUCTIONS AND APPLICABLE CODES.
- ALL MATERIALS SHALL BE NEW AND SHALL FIT THE SPACE AVAILABLE. VERIFY DIMENSIONS AT SITE.
- ALL PIPING, APPARATUS, AND EQUIPMENT, ETC. SHALL BE PROPERLY SUPPORTED, BRACED VERTICALLY AND HORIZONTALLY IN ACCORDANCE WITH APPLICABLE CODES.
- VALVES AND FITTINGS SHALL BE OF THE SAME SIZE AS THE PIPING FOR WHICH THEY ARE INSTALLED, UNLESS OTHERWISE NOTED.
- CONTRACTOR SHALL VERIFY AND CORRECT SYSTEMS AS REQUIRED TO MEET ALL CODES AND REGULATIONS AND VERIFY AND CORRECT ANY/all POSSIBLE DISCREPANCIES BETWEEN TYPE AND SIZE OF CONNECTIONS SPECIFIED IN THE EQUIPMENT SCHEDULES AND EQUIPMENT ACTUALLY INSTALLED.
- CONTRACTOR IS RESPONSIBLE FOR COORDINATING INSTALLATION OF ALL EQUIPMENT SHOWN ON PLANS, INCLUDING COORDINATION OF ANY EQUIPMENT OF ALTERNATE MANUFACTURER. CONTRACTOR SHALL PROVIDE COMPOSITE DRAWINGS AS REQUIRED FOR INSTALLATION OF EQUIPMENT SHOWN ON PLAN FOR APPROVAL BY ENGINEER.
- ALL ROOF ACCESSORIES SHALL BE COMPATIBLE WITH ROOFING SYSTEMS AS REQUIRED.
- CONTRACTOR SHALL BECOME FAMILIAR WITH ALL CONDITIONS AFFECTING THIS PROJECT AND COORDINATE WITH ALL OTHER DISCIPLINES.
- PRIOR TO ACCEPTANCE OF THE SPACE, ALL SYSTEMS SHALL BE TESTED, BALANCED, AND OPERATED TO DEMONSTRATE TO THE OWNER, OR HIS OR HER DESIGNATED REPRESENTATIVE, THAT THE INSTALLATION AND PERFORMANCE OF THESE SYSTEMS AND/OR PARTS THEREOF CONFORM TO THE DESIGN INTENT.
- CONTRACTOR SHALL INSTALL DUCTWORK SYSTEMS PER LATEST SMACNA MANUALS. DUCT WORK SYSTEMS SHALL BE GALVANIZED G90 SHELL STEEL RATED FOR A PRESSURE CLASS OF 2" WG.
- CONTRACTOR SHALL REPAIR/PATCH ALL SURFACES/WALLS/ROOF AREAS DAMAGED BY CONSTRUCTION.
- UPON COMPLETION OF THE CONTRACT, THE CONTRACTOR SHALL PROVIDE THE OWNER WITH THREE (3) COMPLETE SETS OF THE MANUFACTURER'S OPERATING, MAINTENANCE AND PREVENTIVE MAINTENANCE INSTRUCTIONS (IN BOUND BOOK FORM) INCLUDING PARTS LIST, AND COMPLETE PROCUREMENT INFORMATION SPECIFYING EQUIPMENT NUMBERS AND DESCRIPTIONS. OPERATING STAFF PERSONNEL SHALL BE INSTRUCTED AS TO PROPER OPERATING AND SERVICE REQUIREMENTS OF THE SYSTEMS AND EQUIPMENT.

SPECIFICATIONS:

IN ADDITION TO BELOW, PLEASE REFER TO 230000-SERIES BOOK SPECIFICATION SECTIONS.

DUCTWORK:
COMPLY WITH SMACNA'S HVAC DUCT CONSTRUCTION STANDARDS-METAL AND FLEXIBLE FOR ACCEPTABLE MATERIALS, MATERIAL THICKNESS, AND DUCT CONSTRUCTION METHODS UNLESS OTHERWISE INDICATED. SHEET METAL MATERIALS SHALL BE FREE OF PITTING, SEAM MARKERS, ROLLER MARKS, STAINS, DISCOLORATIONS, AND OTHER IMPERFECTIONS.

CONDENSATE DRAIN PIPING:
CONDENSATE DRAIN PIPING SHALL BE TYPE M, DRAWN-TEMPER COPPER TUBING, WROUGHT COPPER FITTINGS, AND SOLDERED JOINTS. ROUTE PIPE TO SPLASH BLOCK.

NATURAL GAS PIPING:
NATURAL GAS PIPING SHALL BE STEEL PIPE COMPLYING WITH ASTM A53/A53M, BLACK STEEL, SCHEDULE 40, TYPE E OR S, GRADE B.

ABBREVIATIONS:

ABV	ABOVE
AC	AIR CONDITIONING UNIT
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
AP	ACCESS PANEL
BAS	BUILDING AUTOMATION SYSTEM
BD	BALANCING (VOLUME) DAMPER
BDD	BACKDRAFT DAMPER
BLW	BELOW
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
BTUH	BRITISH THERMAL UNITS PER HOUR
CFM	CUBIC FEET PER MINUTE
CLG	COOLING
CM	CONSTRUCTION MANAGER
CNTRL	CONTROL
CO	CLEAN OUT
COND	CONDENSATE
COND	CONDENSATE
CONT	CONTINUED
CP	CONDENSATE PUMP
CUH	CABINET UNIT HEATER
DB	DRY BULB TEMPERATURE
DBA	DECIBEL A-WEIGHTED
DB	DECIBEL
DIA	DIAMETER
DIM	DIMENSION
DN	DOWN
DSD	DUCT SMOKE DETECTOR
DWG	DRAWING
(E)	EXISTING
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EC	ELECTRICAL CONTRACTOR
EDB	ENTERING DRY BULB TEMPERATURE
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
EG	EXHAUST GRILLE
EL	ELEVATION
ELEC	ELECTRIC
EQUIP	EQUIPMENT
ER	EXHAUST REGISTER
EST	ESTIMATED
EUH	ELECTRIC UNIT HEATER
EWB	ENTERING WET BULB TEMPERATURE
EXT	EXTERNAL
F	DEGREES FAHRENHEIT
FD	FIRE DAMPER
FLR	FLOOR
FFM	FEET PER MINUTE
FSD	FIRE/SMOKE DAMPER
FT	FEET
G	NATURAL GAS PIPING
GA	GAUGE
GPH	GALLONS PER HOUR
GS	GALVANIZED STEEL
HP	HORSEPOWER
HTG	HEATING
IEER	INTEGRATED ENERGY EFFICIENCY RATIO
IN	INCH
IN WG	INCHES WATER GAGE
INV EL	INVERT ELEVATION
JAN	JANITOR'S
KW	KILOWATTS
LAT	LEAVING AIR TEMPERATURE
LBS	POUNDS
LRA	LOCKED ROTOR AMPS
LV	LOUVER
LWB	LEAVING WET BULB TEMPERATURE
MBH	BTU-H IN 1000'S
MCA	MAXIMUM CIRCUIT AMPACITY
MFS	MAXIMUM FUSE SIZE
MISC	MISCELLANEOUS

APPLICABLE CODES:

- 2015 INTERNATIONAL MECHANICAL CODE (2015 IMC)
- NFPA-90A STANDARD FOR THE INSTALLATION OF AIR CONDITIONING AND VENTILATION SYSTEMS
- NFPA-90B STANDARD FOR THE INSTALLATION OF WARM AIR HEATING AND AIR-CONDITIONING SYSTEMS
- NFPA-72 NATIONAL FIRE ALARM AND SIGNALING CODE
- 2015 INTERNATIONAL FUEL GAS CODE (2015 IFGC)
- 2015 INTERNATIONAL ENERGY CONSERVATION CODE (2015 IECC)
- 2015 INTERNATIONAL BUILDING CODE (2015 IBC)
- 2015 INTERNATIONAL EXISTING BUILDING CODE (2015 IEBCC)

NOTES:

- THE SPLIT LEVEL MAIN ENTRY CONSISTING OF THE FOLLOWING ROOMS CONNECTED BY A COMMON STAIRWAY (LANDING 021, WAITING 103, AND RECEPTION 201) DOES NOT CONSTITUTE AN ATRIUM CONNECTING MORE THAN TWO LEVELS UNDER THE 2015 INTERNATIONAL BUILDING CODE AS DETERMINED BY THE CITY OF READING CODE REVIEWER.
- THE LARGEST OF THE NEW AIR HANDLING UNITS (AHU-3) IS DESIGNED TO SUPPLY MAXIMUM 5840 CFM AND 20% OUTDOOR AIR. THE PROJECT TAKES PLACE IN CLIMATE ZONE 5A, PER TABLE C403.7.4 (1) ENERGY RECOVERY REQUIREMENT (VENTILATION SYSTEMS OPERATING LESS THAN 8,000 HOURS PER YEAR) IN THE 2015 IECC, ENERGY RECOVERY IS ONLY REQUIRED IF THE DESIGNED SUPPLY FAN AIRFLOW IS OVER 16,000 CFM AT 20-30% OUTDOOR AIRFLOW. THEREFORE, ENERGY RECOVERY IS NOT REQUIRED.

DESIGN CONDITIONS:

THE MECHANICAL SYSTEMS WERE DESIGNED TO MAINTAIN THE FOLLOWING INSIDE CONDITIONS PER 2015 ICC.

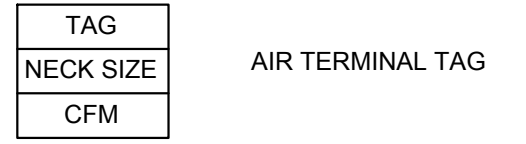
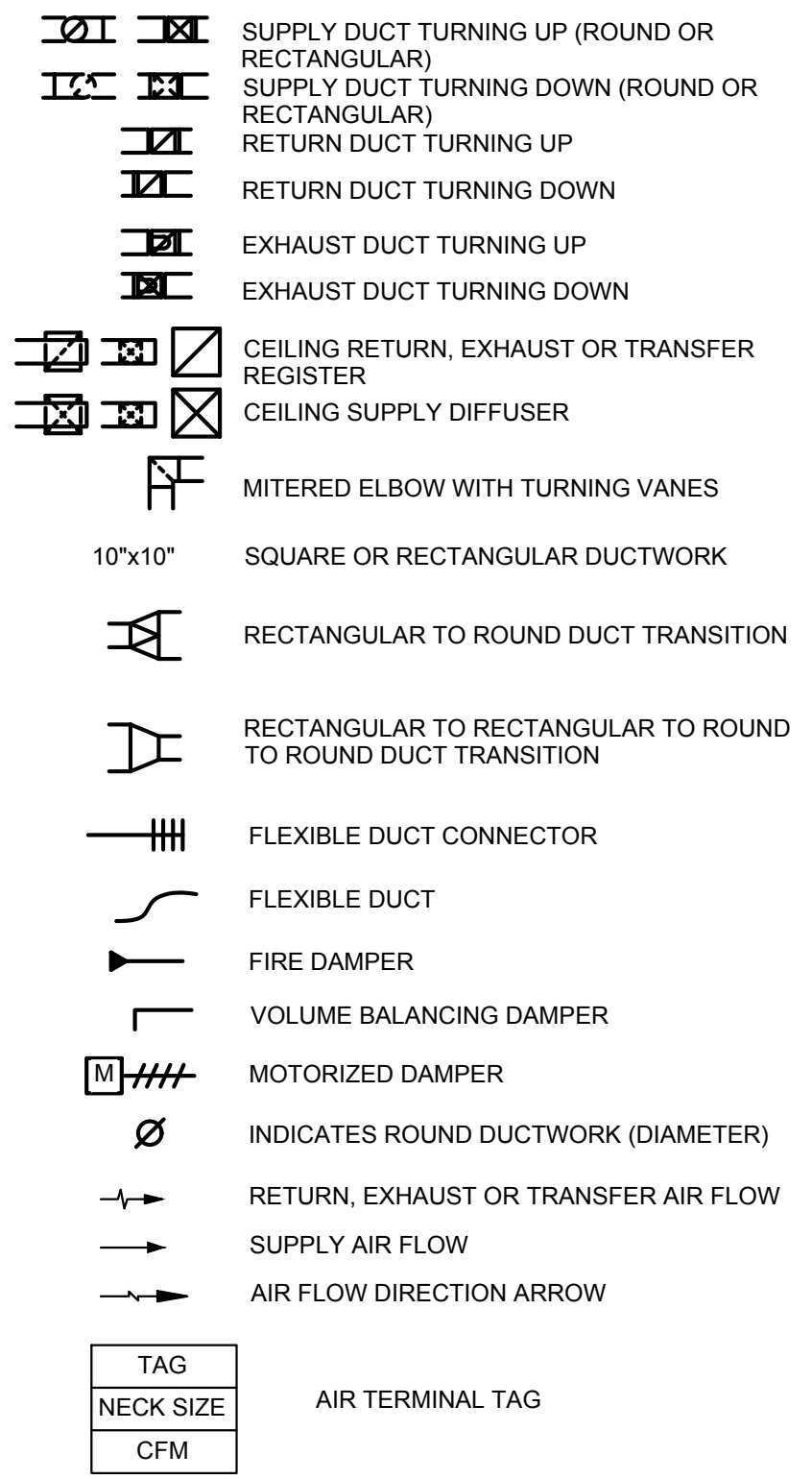
- SUMMER: 75°F AND 50% RH
- WINTER: 70°F. HUMIDIFICATION WILL NOT BE PROVIDED.

DESIGN LOADS:

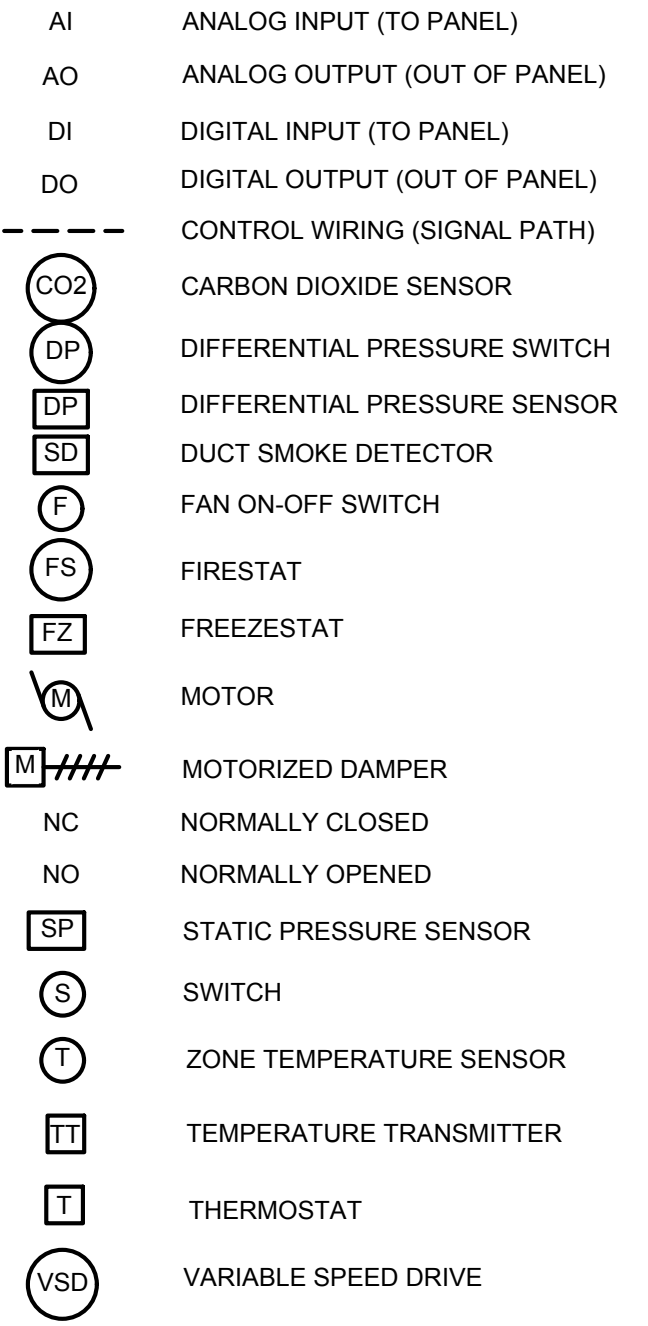
THE MECHANICAL SYSTEMS WERE DESIGNED BASED ON THE FOLLOWING OUTSIDE CONDITIONS FOR READING, PA. (BASED ON ASHRAE 0.4% FOR COOLING AND 99.6% FOR HEATING):

- SUMMER CONDITIONS 95°F DRY BULB, 75°F WET BULB
- WINTER CONDITIONS: 12°F DRY BULB

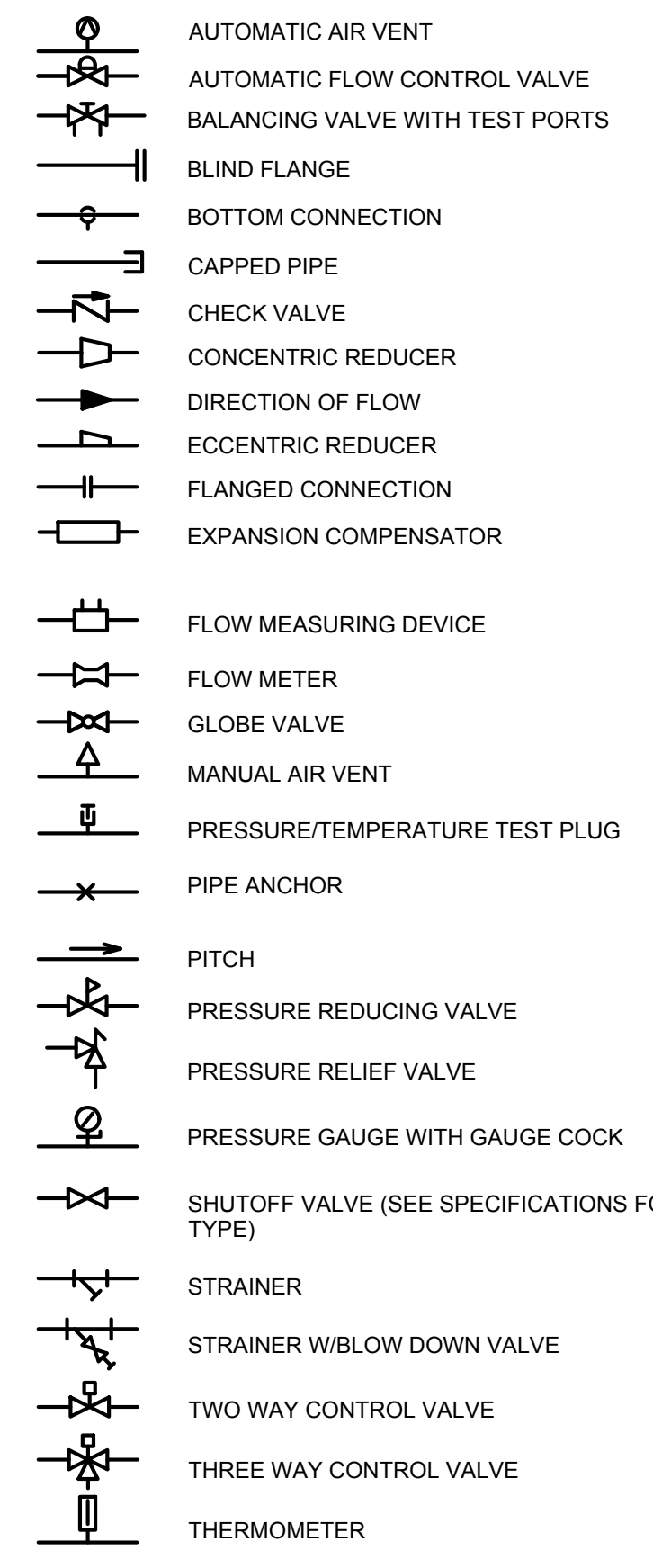
DUCT SYMBOLS:



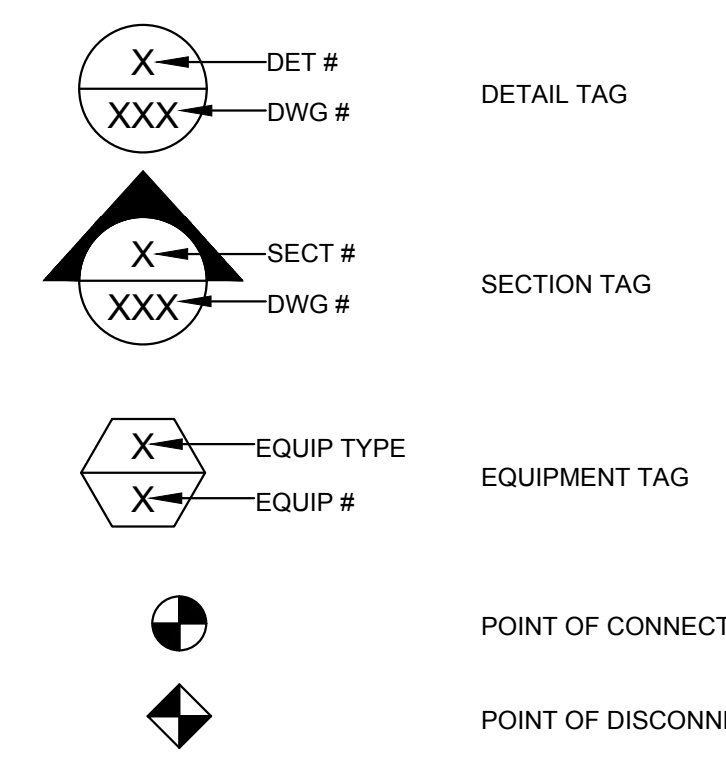
CONTROLS:



VALVES AND ACCESSORIES:



GENERAL SYMBOLS:



MEP / FP Engineer



ARORA ENGINEERS, INC.
61 WILMINGTON-WEST CHESTER PIKE,
CHADDS FORD, PA. 19317
610.459.7900

Architect

Civil Engineer

Structural Engineer

Seal

Revisions:

NO.	DESCRIPTION	DATE

**3RD AND SPRUCE
RECREATION CENTER**
320 S 3RD ST,
READING PA 19602
CITY OF READING DEPARTMENT
OF PUBLIC WORKS

**MECHANICAL NOTES,
SYMBOLS AND
ABBREVIATIONS**

Project Number	131021.001
Date	05/13/2022
Drawn By	AM
Checked By	DM
Scale	As Noted

M000

ISSUED FOR BID

J:\ACTIVE\131021.001 - HVAC D&C 3rd & Spruce Rec.Center\DWGS\CAD\MPHASE 2

THIS DRAWING IS FORMATTED TO BE PRINTED AT 30" X 42"

GENERAL NOTES:

1. REFER TO DRAWING M000 FOR GENERAL NOTES, SYMBOLS AND ABBREVIATIONS.

KEYED NOTES:

- 1 DISCONNECT AND REMOVE (E) AHU-3 AND (E) AHU-4. REMOVE ROOF CURB, CONDENSATE DRAIN LINE, ELECTRICAL CONNECTIONS, AND CONTROLS. PREP FOR NEW ROOF CURB AND NEW AHU INSTALLATION. CONTRACTOR SHALL DISCONNECT GAS PIPING, CAP, AND PREP FOR NEW CONNECTION TO NEW AHU.
- 2 DISCONNECT AND REMOVE EXHAUST FAN SERVING UPPER LEVEL RESTROOMS. PREP FOR NEW EXHAUST FAN INSTALLATION.
- 3 DISCONNECT AND REMOVE (E) CU-5 AND (E) CU-6. REMOVE ROOF CURB, ELECTRICAL CONNECTIONS, AND CONTROLS. PREP FOR NEW ROOF CURB AND NEW CU INSTALLATION.

MEP / FP Engineer



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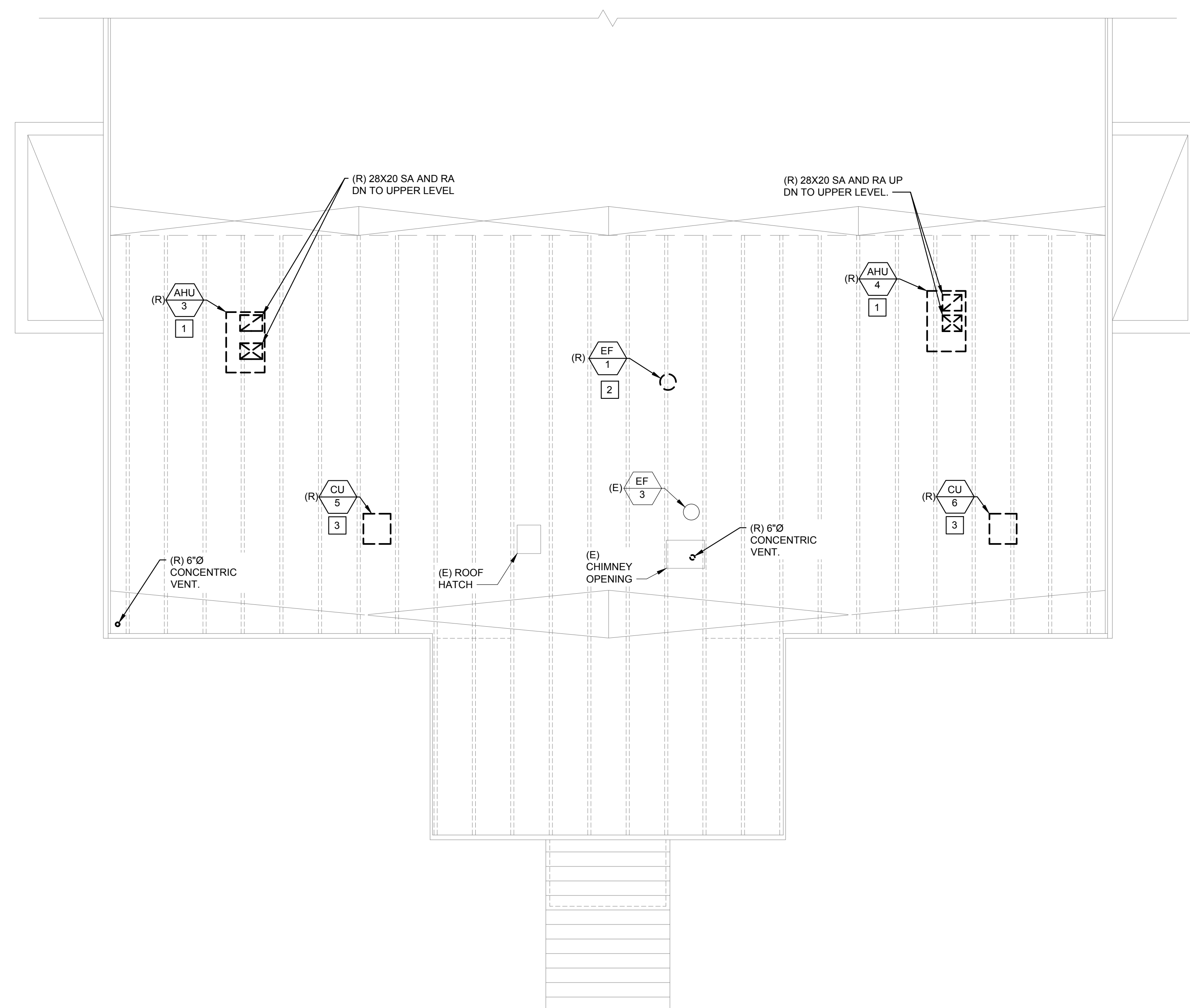
MECHANICAL DEMOLITION - ROOF LEVEL

Project Number	131021.001
Date	05/13/2022
Drawn By	AM
Checked By	DM

M101

Scale 1/8"=1'-0"

ISSUED FOR BID



1 MECHANICAL DEMOLITION - ROOF LEVEL
M101 Scale: 1/8" = 1'-0"



NO.	DESCRIPTION	DATE

3RD AND SPRUCE RECREATION CENTER
320 S 3RD ST.
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MECHANICAL NEW WORK - LOWER LEVEL AND UPPER LEVEL

Project Number 131021.001
Date 05/13/2022
Drawn By AM
Checked By DM

M200
Scale 1/8"=1'-0"

GENERAL NOTES:

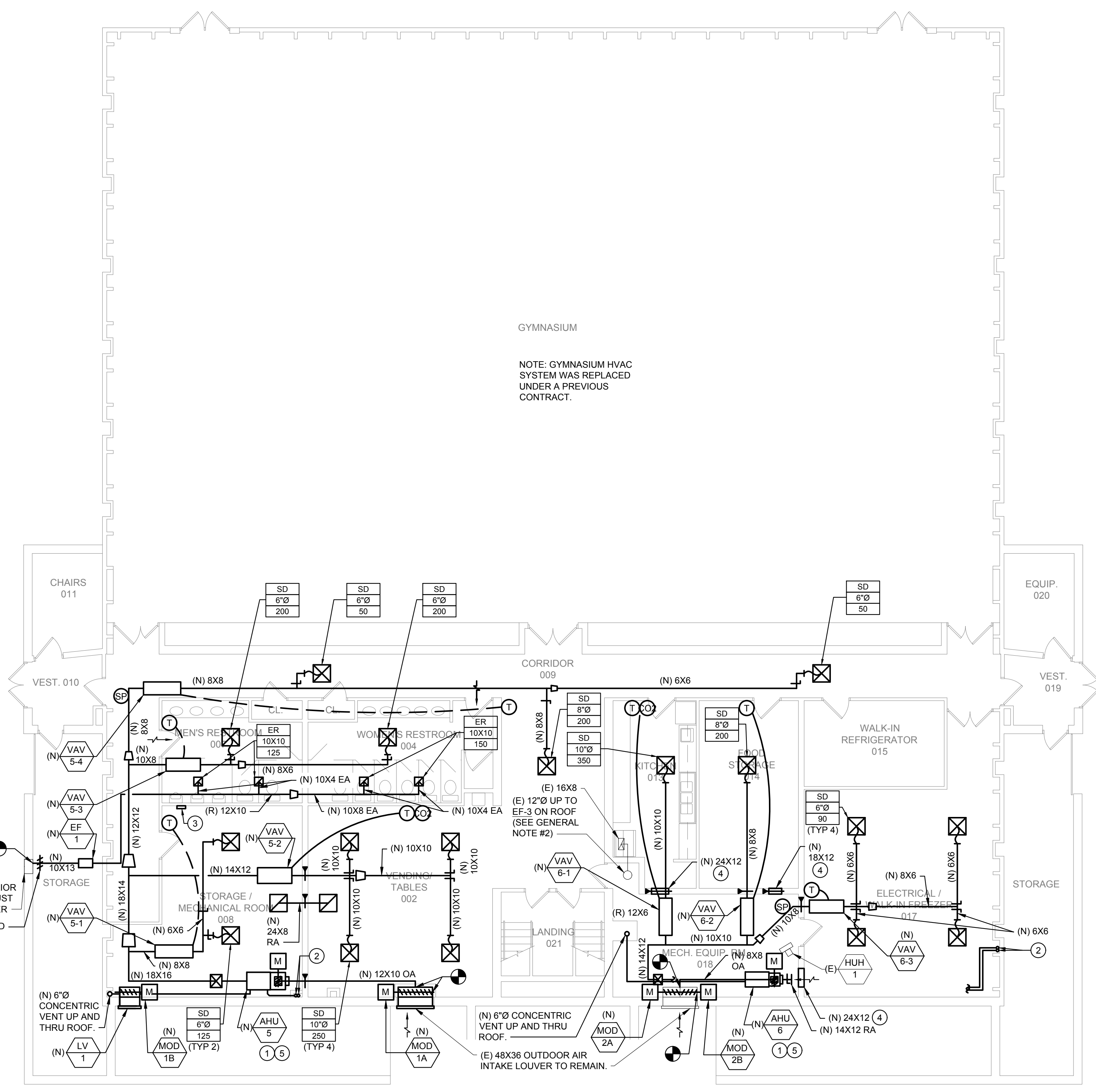
- REFER TO DRAWING M000 FOR GENERAL NOTES, SYMBOLS AND ABBREVIATIONS.
- CONTRACTOR SHALL RUN CONTROLS/COMMUNICATION WIRE(S) BETWEEN THE AHU AND CONTROL PANEL LOCATION SHOWN ON PLAN IN A CONDUIT AS PER MANUFACTURER'S RECOMMENDATION.
- FLEXIBLE DUCT SHALL CONNECT ALL SUPPLY DIFFUSERS TO HARD DUCT. FLEXIBLE DUCT SIZE SHALL MATCH SD NECK SIZE INDICATED ON DIFFUSER TAG.
- ALL DIFFUSERS ARE 4-WAY BLOW PATTERN UNLESS OTHERWISE NOTED.

LOWER LEVEL KEYED NOTES:

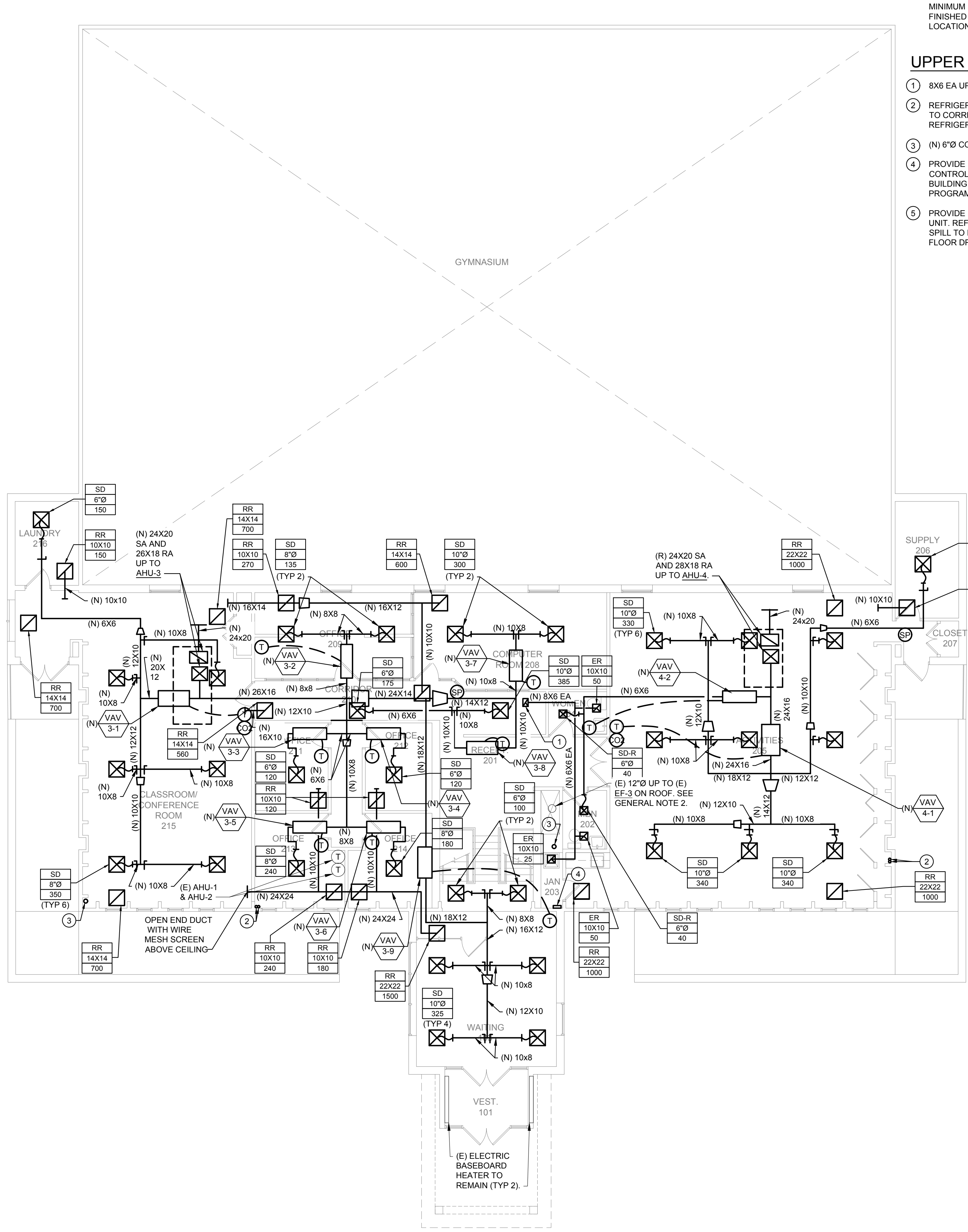
- NEW SPLIT AIR HANDLING UNIT. CONDENSING UNIT SHALL BE LOCATED ON ROOF (SEE ROOF PLAN). ROUTE CONDENSATE TO NEAREST FLOOR DRAIN WITHIN ROOM. PROVIDE NEW AHU-5 AND AHU-6 WITH NEW GAS PRESSURE REGULATOR AND SHUT-OFF VALVE. CONNECT TO EXISTING GAS PIPING AND MODIFY PIPING AS REQUIRED. FIELD VERIFY EXISTING GAS PIPE SIZE AND MATCH NEW PIPE SIZE TO EXISTING PIPE SIZE. CONTRACTOR SHALL DETERMINE EXISTING GAS PRESSURE AND COORDINATE NEW AHU-5 AND AHU-6 GAS PRESSURE REQUIREMENTS.
- REFRIGERANT PIPING UP TO CORRESPONDING CONDENSING UNIT ON ROOF. SIZE REFRIGERANT LINES PER MANUFACTURER'S RECOMMENDATION.
- PROVIDE ELECTRONIC PROGRAMMABLE 247/365 TIMELOCK TO CONTROL TOILET EXHAUST FAN EF-1. FAN SHALL RUN DURING BUILDING OCCUPIED PERIOD AND NOT RUN OTHERWISE, AS PROGRAMMED INTO TIMELOCK.
- PROVIDE WALL OPENING WITH FIRE DAMPER AND WALL SLEEVE OF SIZE INDICATED IN WALL BELOW ROOM CEILING. PROVIDE MINIMUM 50% FREE AREA FIXED HORIZONTAL BLADE GRILLE ON FINISHED SIDE OF WALL. SEE SPACES FOR TYPE. COORDINATE LOCATION WITH CITY OF READING.

UPPER LEVEL KEYED NOTES:

- 8X8 EA UP TO EF-2 ON ROOF.
- REFRIGERANT PIPING FROM AIR HANDLER ON LOWER LEVEL UP TO CORRESPONDING CONDENSING UNIT ON ROOF. SIZE REFRIGERANT LINES PER MANUFACTURER'S RECOMMENDATION.
- (N) 6"Ø CONCENTRIC VENT UP AND THRU ROOF.
- PROVIDE ELECTRONIC PROGRAMMABLE 247/365 TIMELOCK TO CONTROL TOILET EXHAUST FAN EF-2. FAN SHALL RUN DURING BUILDING OCCUPIED PERIOD AND NOT RUN OTHERWISE, AS PROGRAMMED INTO TIMELOCK.
- PROVIDE 3/4" CONDENSATE DRAIN PIPING FROM AIR HANDLING UNIT. REFER TO DETAIL 2 ON SHEET M301. CONDENSATE SHALL SPILL TO EXISTING FLOOR DRAIN. CONTRACTOR TO VERIFY FLOOR DRAIN LOCATION IN FIELD.



1 MECHANICAL NEW WORK-LOWER LEVEL
Scale: 1/8" = 1'-0"



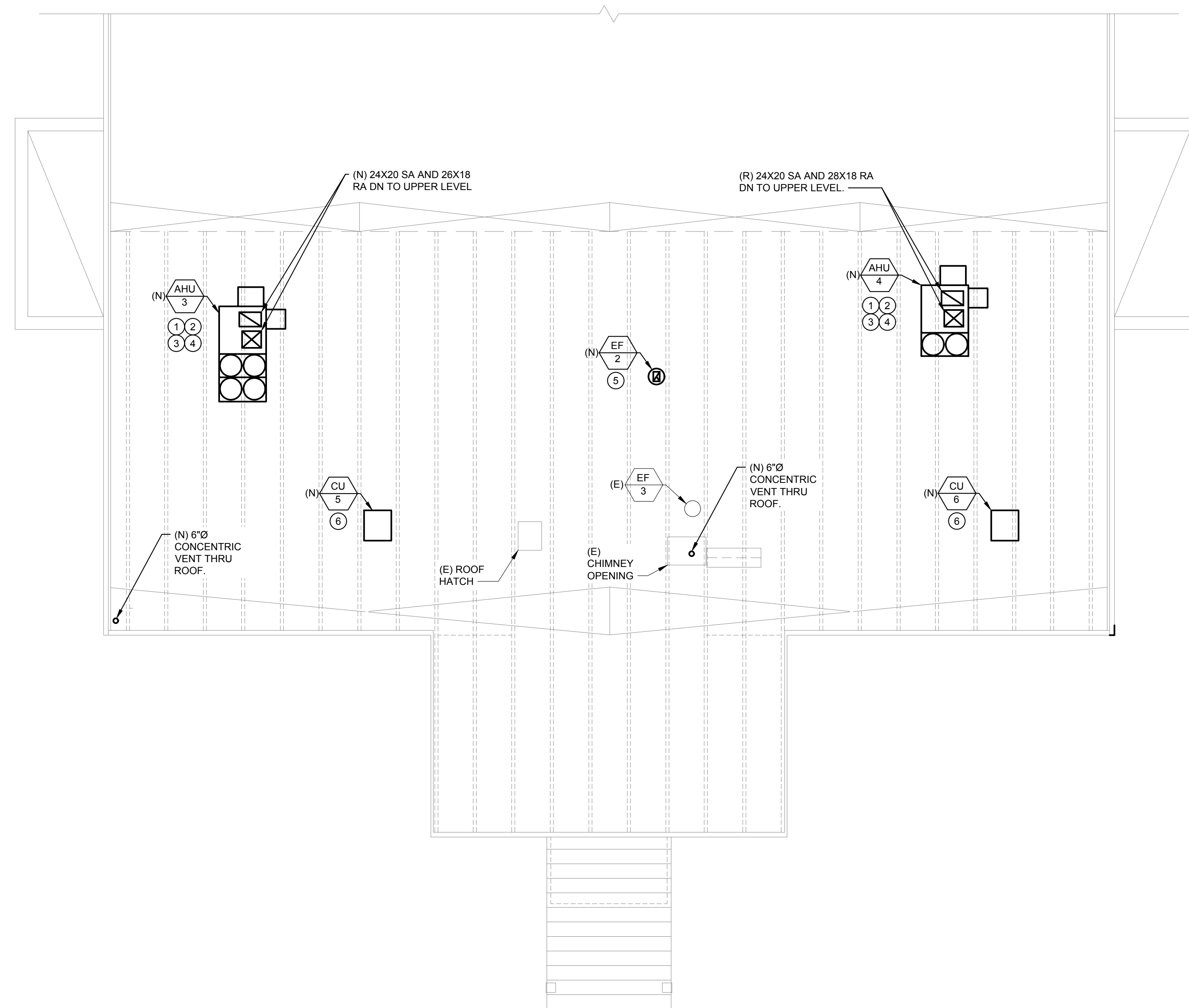
2 MECHANICAL NEW WORK-UPPER LEVEL
Scale: 1/8" = 1'-0"

GENERAL NOTES:

1. REFER TO DRAWING M000 FOR GENERAL NOTES, SYMBOLS AND ABBREVIATIONS.

KEYED NOTES:

- ① NEW MULTIZONE VAV AIR HANDLING UNIT LOCATED AT SAME LOCATION AS REMOVED AHU-3 AND AHU-4.
- ② PROVIDE 1" CONDENSATE PIPE WITH TRAP TO SPLASH BLOCK ON ROOF.
- ③ PROVIDE NEW AHU-3 AND AHU-4 WITH NEW GAS PRESSURE REGULATOR AND SHUT-OFF VALVE. CONNECT TO EXISTING GAS PIPING AND MODIFY PIPING AS REQUIRED. FIELD VERIFY EXISTING GAS PIPE SIZE AND MATCH NEW PIPE SIZE TO EXISTING PIPE SIZE. CONTRACTOR SHALL DETERMINE EXISTING GAS PRESSURE AND COORDINATE NEW AHU-3 AND AHU-4 GAS PRESSURE REQUIREMENTS.
- ④ PROVIDE NEW AHU-1 AND AHU-2 WITH NEW ROOF CURB. CONTRACTOR SHALL PROVIDE 1/4" NEOPRENE GASKET BETWEEN AHU AND ROOF CURB. PROVIDE 3" MINIMUM SEMI-RIGID INSULATION OVER ROOF INSIDE CURB. COVER WITH 2 LAYERS OF 5/8" WATER RESISTANT GYPSUM BOARD WITH STAGGERED JOINTS. SEAL JOINTS AND EDGES WITH NON-HARDENING SEALER. MODIFY ROOF FLASHING TO PROVIDE WEATHER TIGHT CONDITION. PACK ALL OPENING THROUGH ROOF WITH ACOUSTIC/FIREPROOF MATERIAL. PROVIDE NON-HARDENING SEALER ABOVE AND BELOW.
- ⑤ PROVIDE AND INSTALL NEW EXHAUST FAN SERVING UPPER LEVEL RESTROOMS. PROVIDE WITH GRAVITY BACKDRAFT DAMPER.
- ⑥ PROVIDE AND INSTALL (N) CU-5 AND (N) CU-6 ON (N) ROOF CURB AT SAME LOCATION AS REMOVED CU-5 AND CU-6. CONTRACTOR SHALL PROVIDE 1/4" NEOPRENE GASKET BETWEEN CU AND ROOF CURB. PROVIDE 3" MINIMUM SEMI-RIGID INSULATION OVER ROOF INSIDE CURB. COVER WITH 2 LAYERS OF 5/8" WATER RESISTANT GYPSUM BOARD WITH STAGGERED JOINTS. SEAL JOINTS AND EDGES WITH NON-HARDENING SEALER. MODIFY ROOF FLASHING TO PROVIDE WEATHER TIGHT CONDITION. PACK ALL OPENING THROUGH ROOF WITH ACOUSTIC/FIREPROOF MATERIAL. PROVIDE NON-HARDENING SEALER ABOVE AND BELOW.



Seal

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MECHANICAL NEW WORK - ROOF LEVEL

Project Number	131021.001
Date	05/13/2022
Drawn By	AM
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M201

Scale 1/8"=1'-0"

1 MECHANICAL NEW WORK - ROOF LEVEL
M201 Scale: 1/8" = 1'-0"



Architect

Civil Engineer

Structural Engineer

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3RD AND SPRUCE RECREATION CENTER
320 S 3RD ST,
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MECHANICAL SCHEDULES

Project Number 131021.001
Date 05/13/2022
Drawn By AM
Checked By DM

M300

Scale As Noted

DIFFUSER, REGISTER AND GRILLE SCHEDULE										
TAG	SERVICE	CFM RANGE	NECK DIA (IN)	FACE SIZE (IN)	MAX. PD (IN. WG)	MAX. NOISE (NC)	THROW @ 100 FPM (FT)	THROW PATTERN	MANUFACTURER AND MODEL NUMBER	REMARKS
SD	SQUARE CEILING DIFFUSER GENERAL SUPPLY CEILING	0-120	6	24 x 24	0.044	12	4	4 WAY	TITUS TMSA	ALL PATTERN SHALL BE 4-WAY UNLESS OTHERWISE NOTED. PROVIDE FRAME TO MATCH CEILING TYPE AS NECESSARY.
		121-210	8	24 x 24	0.050	12	4			
		211-330	10	24 x 24	0.070	15	5			
RG	RETURN GRILLE GENERAL RETURN CEILING	0-400	12 x 12	24 x 24	-	14	-	FIXED (35")	TITUS PXP	FRAME SHALL MATCH CEILING TYPE
		405-750	15 x 15	24 x 24	-	20	-			
		755-955	18 x 18	24 x 24	-	24	-			
		1000-1495	22 x 22	24 x 24	-	24	-			
ER	EXHAUST REGISTER GENERAL EXHAUST WALL	0-350	10 x 10	12 x 12	-	20	-	FIXED (35")	TITUS 350R	FRAME SHALL MATCH CEILING TYPE. PROVIDE WITH OPPOSED BLADE DAMPER.
SR	SUPPLY REGISTER GENERAL SUPPLY WALL	0-135	6 x 6	6 x 6	0.100	20	12	ADJUSTABLE DOUBLE	TITUS 300FS	FRAME SHALL MATCH CEILING TYPE. PROVIDE WITH OPPOSED BLADE DAMPER.
		136-240	10 x 6	10 x 6	0.100	23	15			

VARIABLE AIR VOLUME TERMINAL SCHEDULE																
TAG	CORRESPONDING AHU	SERVICE	LOCATION	MAXIMUM TOTAL CFM	MINIMUM TOTAL CFM	DUCT CONNECTIONS		HEATING COIL DATA			ELECTRICAL DATA		MAXIMUM DIMENSIONS		BASIS OF DESIGN	REMARKS
						INLET (IN DIA)	OUTLET (IN)	EAT (F)	LAT (F)	KW	VOLT/PH	L x W x H (IN)	MANUFACTURER	MODEL		
VAV-3-1	AHU-3	215 CLASSROOM/CONFERENCE/216 LAUNDRY	ABOVE CEILING	2250	450	12	15X14	55	90.0	5.0	208/1	48X24X15	JOHNSON CONTROLS	TSS-EH-12	SEE NOTES	
VAV-3-2	AHU-3	209 OFFICE	ABOVE CEILING	270	55	5	9X9	55	112.2	1.0	208/1	52X18X10	JOHNSON CONTROLS	TSS-EH-05	SEE NOTES	
VAV-3-3	AHU-3	211 OFFICE	ABOVE CEILING	120	35	4	9X9	55	99.9	0.5	208/1	52X18X10	JOHNSON CONTROLS	TSS-EH-04	SEE NOTES	
VAV-3-4	AHU-3	212 OFFICE	ABOVE CEILING	120	35	4	9X9	55	99.9	0.5	208/1	52X18X10	JOHNSON CONTROLS	TSS-EH-04	SEE NOTES	
VAV-3-5	AHU-3	213 OFFICE	ABOVE CEILING	240	50	4	9X9	55	86.5	0.5	208/1	52X18X10	JOHNSON CONTROLS	TSS-EH-04	SEE NOTES	
VAV-3-6	AHU-3	214 OFFICE	ABOVE CEILING	180	45	4	9X9	55	90.0	0.5	208/1	52X18X10	JOHNSON CONTROLS	TSS-EH-04	SEE NOTES	
VAV-3-7	AHU-3	208 COMPUTER ROOM	ABOVE CEILING	600	120	8	11X9	55	81.2	1.0	208/1	48X20X10	JOHNSON CONTROLS	TSS-EH-08	SEE NOTES	
VAV-3-8	AHU-3	201 RECEPTION/ 210 CORRIDOR	ABOVE CEILING	560	115	8	11X9	55	82.4	1.0	208/1	48X20X10	JOHNSON CONTROLS	TSS-EH-08	SEE NOTES	
VAV-3-9	AHU-3	103 WAITING	ABOVE CEILING	1500	260	10	13X12	55	91.3	3.0	208/1	48X22X13	JOHNSON CONTROLS	TSS-EH-10	SEE NOTES	
VAV-4-1	AHU-4	205 ACTIVITIES/206 SUPPLY	ABOVE CEILING	3150	750	14	19X17	55	96.9	5.0	208/1	48X28X18	JOHNSON CONTROLS	TSS-EH-14	SEE NOTES	
VAV-4-2	AHU-4	202 MEN/204 WOMEN	ABOVE CEILING	80	45	4	9X9	55	90.0	0.5	208/1	52X18X10	JOHNSON CONTROLS	PASTESPE	SEE NOTES	
VAV-5-1	AHU-5	008 STORAGE/ MECH ROOM	008 STORAGE/ MECH ROOM	250	75	4	9X9	55	96.9	1.0	208/1	52X18X10	JOHNSON CONTROLS	TSS-EH-04	SEE NOTES	
VAV-5-2	AHU-5	002 VENDING/TABLES	008 STORAGE/ MECH ROOM	1000	300	10	13X12	55	86.5	3.0	208/1	48X22X13	JOHNSON CONTROLS	TSS-EH-10	SEE NOTES	
VAV-5-3	AHU-5	004 WOMEN'S/ 007 MEN'S	007 MEN'S	400	120	6	9X9	55	81.2	1.0	208/1	48X18X10	JOHNSON CONTROLS	TSS-EH-06	SEE NOTES	
VAV-5-4	AHU-5	009 CORRIDOR	CORRIDOR	300	80	5	9X9	55	94.3	1.0	208/1	52X18X10	JOHNSON CONTROLS	TSS-EH-05	SEE NOTES	
VAV-6-1	AHU-6	013 KITCHEN	018 MECH EQUIP ROOM	350	70	5	9X9	55	99.9	1.0	208/1	52X18X10	JOHNSON CONTROLS	TSS-EH-05	SEE NOTES	
VAV-6-2	AHU-6	014 FOOD STORAGE	018 MECH EQUIP ROOM	200	45	4	9X9	55	90.0	0.5	208/1	52X18X10	JOHNSON CONTROLS	TSS-EH-04	SEE NOTES	
VAV-6-3	AHU-6	017 ELEC/ WALK-IN FREEZER	017 ELEC/ WALK-IN FREEZER	360	75	6	9X9	55	96.9	1.0	208/1	48X18X10	JOHNSON CONTROLS	TSS-EH-06	SEE NOTES	

NOTES:
1. PROVIDE 24 VOLT CONTROL TRANSFORMER WITH PRIMARY AND SECONDARY FUSING AND TOGGLE DISCONNECT SWITCH.
2. MINIMUM CFMS SHOWN ARE MINIMUM SETPOINTS REQUIRED FOR SPACE VENTILATION. IF VAV BOX FURNISHED CANNOT BE CONTROLLED TO SCHEDULED MINIMUM, SET MINIMUM TO MANUFACTURER'S RECOMMENDED MINIMUM CONTROLLED AIRFLOW RATE.

EXHAUST FAN SCHEDULE														
TAG	FAN TYPE	SERVICE	DRIVE	AIRFLOW (CFM)	E.S.P. (IN. WG)	FAN RPM	VOLUME CONTROL	MOTOR				BASIS OF DESIGN		REMARKS
								HP	RPM	VOLT	PH	MANUFACTURER	MODEL	
EF-1	INLINE CENTRIFUGAL	LOWER LEVEL RESTROOMS	DIRECT	550	0.25	1300	CONSTANT	1/12	1,300	208	1	PENN BARRY	SX095S	SEE NOTES
EF-2	CENTRIFUGAL ROOF EXHAUSTER	UPPER LEVEL RESTROOMS	DIRECT	125	0.25	1300	CONSTANT	1/12	1,300	208	1	PENN BARRY	DX8S	SEE NOTES

NOTES:
1. FAN SHALL OPERATE DURING THE BUILDING'S OCCUPIED PERIOD VIA ELECTRONIC TIMECLOCK.
2. PROVIDE NON-FUSED MOTOR RATED DISCONNECT SWITCH WITH EACH FAN, WIRED BY ELECTRICAL CONTRACTOR.

VENTILATION CALCULATIONS-AHU-3																								
SPACE	FLOOR AREA (SF)	CODE USE GROUP	NUMBER OF OCC/1000 SF	NUMB OF OCC	NUMB OF PLUMB FIXT	OA CFM PER OCC	OCC OA REQD (CFM)	OA CFM PER SF REQD	AREA OA REQD (CFM)	TOT. OA (CFM)	ZONE EFFECTIVENESS (Ez)	TOT. OA REQD (CFM)	TOT. SA (CFM)	TOT. OA (CFM)	OA PER OCC.	OA %	EA CFM PER SF REQD	SF EA CFM REQD	EA CFM PER FIXT REQD	FIXT EA CFM REQD	TOT. EA REQD (CFM)	TOT. EA (CFM)		
021 LANDING	120	CORRIDOR	0	0	0	0.0	0.0	0.06	7.2	7.2	0.8	9.0	200	40	N/A	0.2	0	0	0	0	0	0	0	
103 WAITING	359	LOBBY	30	11	0	7.5	80.8	0.06	21.5	102.3	0.8	127.9	1300	260	24	0.2	0	0	0	0	0	0	0	
201 RECEPTION	285	LOBBY	30	9	0	5.0	42.8	0.06	17.1	59.9	0.8	74.8	385	77	9	0.2	0	0	0	0	0	0	0	
208 COMPUTER ROOM	300	COMPUTER LAB	N/A	6	0	10.0	60.0	0.12	36.0	96.0	0.8	120.0	600	120	20	0.2	0	0	0	0	0	0	0	
209 OFFICE	220	OFFICE	N/A	3	0	5.0	15.0	0.06	13.2	28.2	0.8	35.3	270	54	18	0.2	0	0	0	0	0	0	0	
210 CORRIDOR	185	CORRIDOR	0	0	0	0.0	0.0	0.06	11.1	11.1	0.8	13.9	175	35	N/A	0.2	0	0	0	0	0	0	0	
211 OFFICE	110	OFFICE	5	1	0	5.0	2.8	0.06	6.6	9.3	0.8	11.7	120	24	44	0.2	0	0	0	0	0	0	0	
212 OFFICE	110	OFFICE	5	1	0	5.0	2.8	0.06	6.6	9.3	0.8	11.7	120	24	44	0.2	0	0	0	0	0	0	0	
213 OFFICE	135	OFFICE	5	1	0	5.0	3.4	0.06	8.1	11.5	0.8	14.3	240	48	71	0.2	0	0	0	0	0	0	0	
214 OFFICE	125	OFFICE	5	1	0	5.0	3.1	0.06	7.5	10.6	0.8	13.3	180	36	58	0.2	0	0	0	0	0	0	0	
215 CLASSROOM/CONFERENCE	930	CLASSROOM	40	37	0	7.5	279.0	0.06	55.8	334.8	0.8	418.5	2100	420	11	0.2	0	0	0	0	0	0	0	
216 LAUNDRY	90	LAUNDRY	10	1	0	25.0	25.0	0.00	0.0	22.5	0.8	28.1	150	30	33	0.2	0	0	0	0	0	0	0	
TOTAL	2969			69	0					703		878	5840	1168									0	0

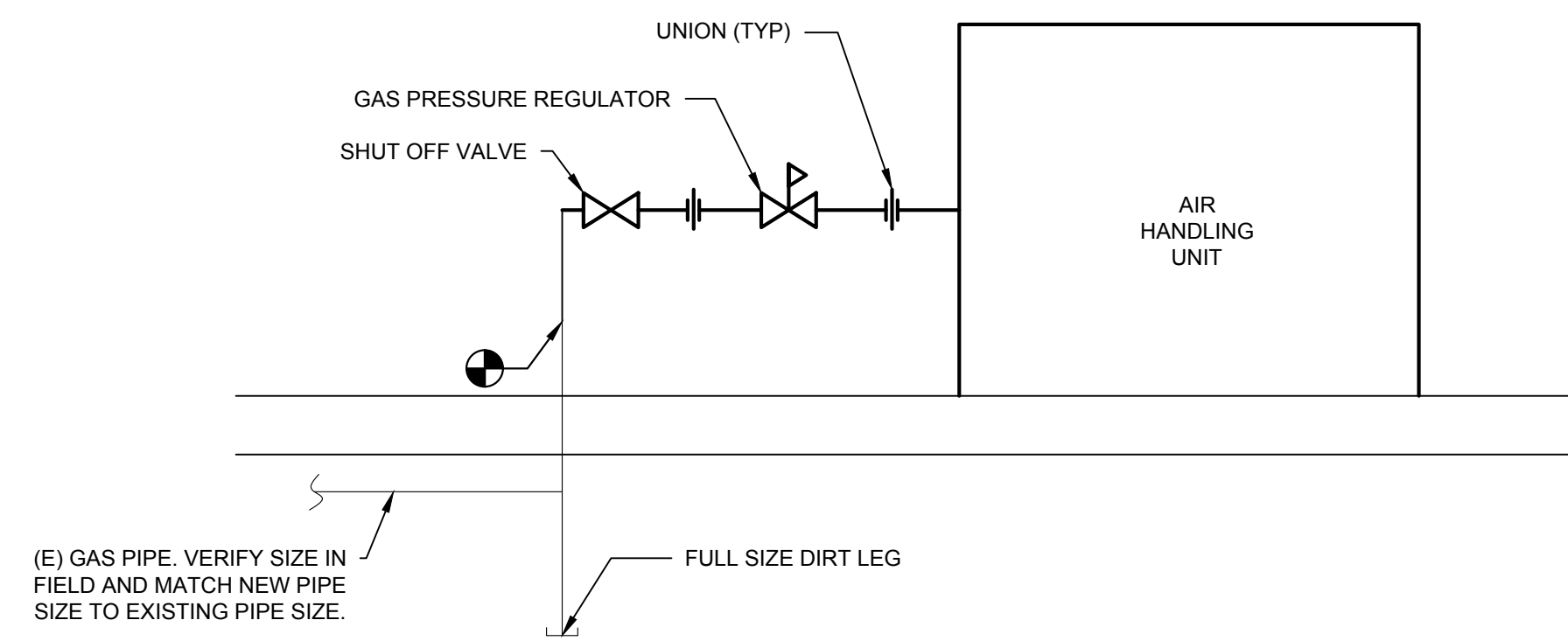
VENTILATION CALCULATIONS-AHU-4																								
SPACE	FLOOR AREA (SF)	CODE USE GROUP	NUMBER OF OCC/1000 SF	NUMB OF OCC	NUMB OF PLUMB FIXT	OA CFM PER OCC	OCC OA REQD (CFM)	OA CFM PER SF REQD	AREA OA REQD (CFM)	TOT. OA (CFM)	ZONE EFFECTIVENESS (Ez)	TOT. OA REQD (CFM)	TOT. SA (CFM)	TOT. OA (CFM)	OA PER OCC.	OA %	EA CFM PER SF REQD	SF EA CFM REQD	EA CFM PER FIXT REQD	FIXT EA CFM REQD	TOT. EA REQD (CFM)	TOT. EA (CFM)		
202 MEN	45	RESTROOM	0	0	1	0.0	0.0	0.00	0.0	0.0	0.8	0.0	40	8	N/A	0.25	0	0	50	0	50	50	50	
204 WOMEN	45	RESTROOM	0	0	1	0.0	0.0	0.00	0.0	0.0	0.8	0.0	40	8	N/A	0.25	0	0	50	0	50	50	50	
205 ACTIVITIES	1460	CLASSROOM	40	58	0	7.5	438.0	0.06	87.6	525.6	0.8	657.0	3000	750	13	0.25	0	0	0	0	0	0	0	
206 SUPPLY	125	UNOCCUPIED STORAGE											150	30	N/A	0.25	0	0	0	0	0	0	0	
TOTAL	1675			58	2					526		657	3230	796									100	100

VENTILATION CALCULATIONS-AHU-5																							
SPACE	FLOOR AREA (SF)	CODE USE GROUP	NUMBER OF OCC/1000 SF	NUMB OF OCC	NUMB OF PLUMB FIXT	OA CFM PER OCC	OCC OA REQD (CFM)	OA CFM PER SF REQD	AREA OA REQD (CFM)	TOT. OA (CFM)	ZONE EFFECTIVENESS (Ez)	TOT. OA REQD (CFM)	TOT. SA (CFM)	TOT. OA (CFM)	OA PER OCC.	OA %	EA CFM PER SF REQD	SF EA CFM REQD	EA CFM PER FIXT REQD	FIXT EA CFM REQD	TOT. EA REQD (CFM)	TOT. EA (CFM)	
002 VENDING/TABLES	475	DINING ROOM	N/A	20	0	7.5	150.0	0.18	85.5	235.5	0.8	294.4	1000	300	15	0.3	0	0	0	0	0	0	0
003 CLOSET	15	UNOCCUPIED STORAGE											0	0	N/A	0.3	0	0	0	0	0	0	0
004 WOMEN	220	RESTROOM	0	0	6	0.0	0.0	0.00	0.0	0.0	0.8	0.0	200	60	N/A	0.3	0	0	50	300	300	300	300
005 CLOSET	10	UNOCCUPIED STORAGE											0	0	N/A	0.3	0	0	0	0	#	#	#
006 CLOSET	15	UNOCCUPIED STORAGE											0	0	N/A	0.3	0	0	0	0	#	#	#
007 MEN	180	RESTROOM	0	0	5	0.0	0.0	0.00	0.0	0.0	0.8	0.0	200	60	N/A	0.3	0	0	50	250	250	250	250
008 STORAGE	420	STORAGE	0	0	0	0.0	0.0	0.12	50.4	50.4	0.8	63.0	250	75	N/A	0.3	0	0	0	0	0	0	0
009 CORRIDOR	1020	CORRIDOR	0	0	0	0.0	0.0	0.06	61.2	61.2	0.8	76.5	2										

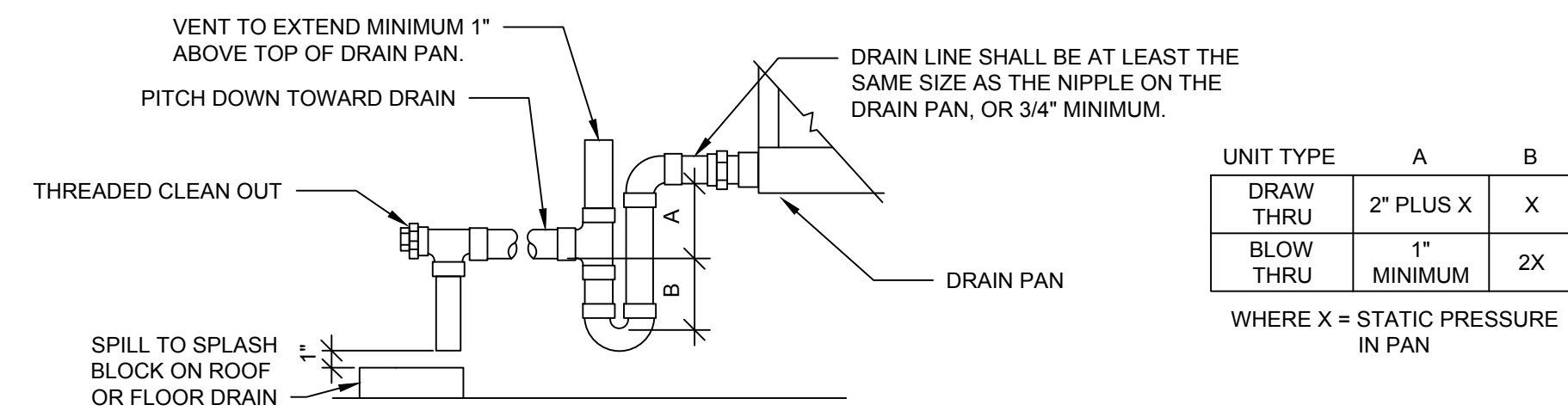
Architect

 Civil Engineer

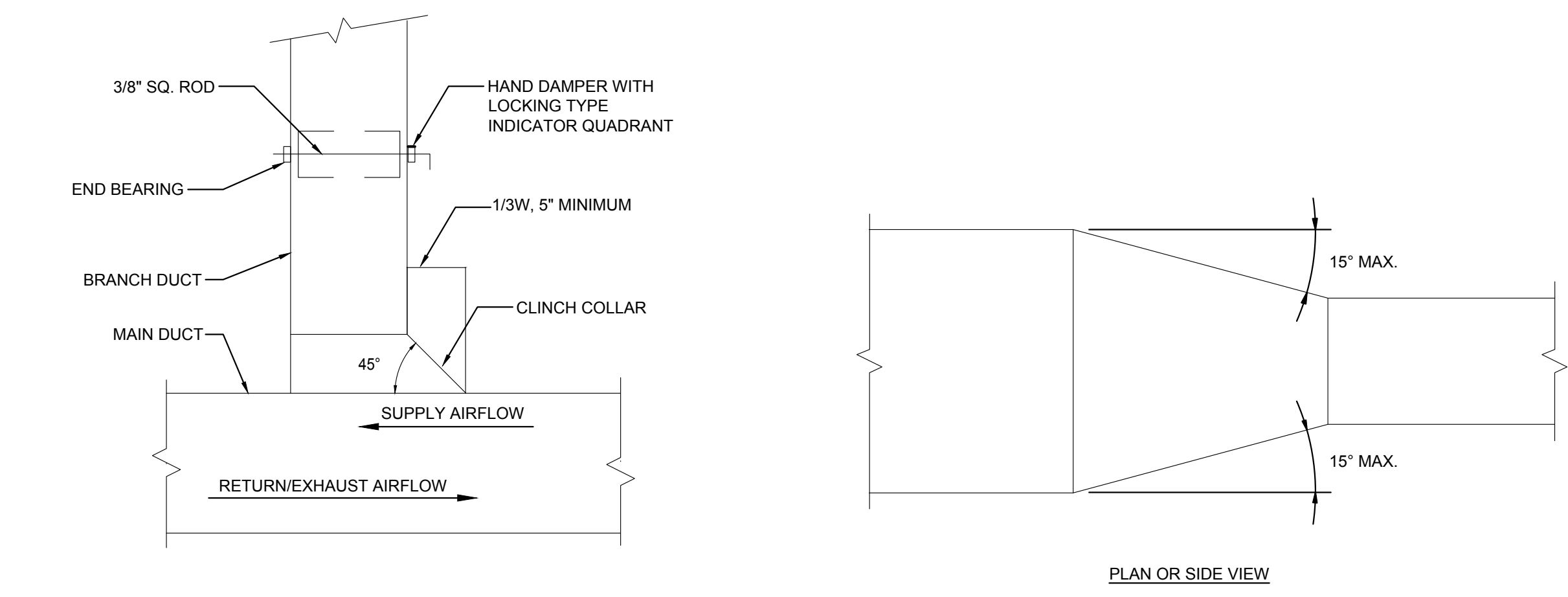
 Structural Engineer



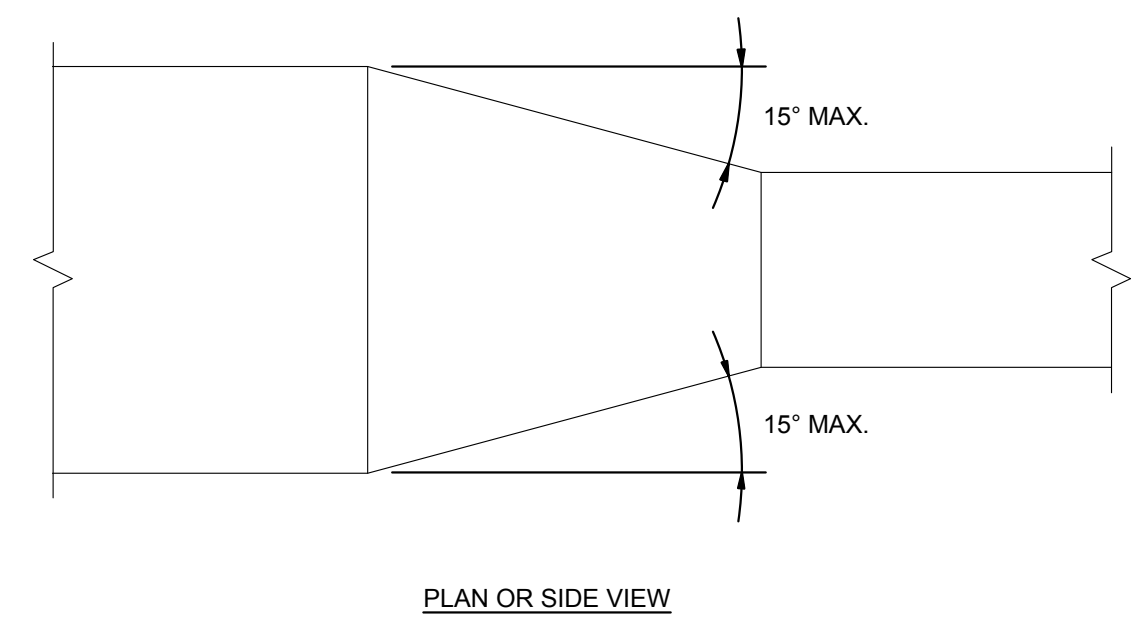
1 AIR HANDLING UNIT GAS CONNECTION DETAIL
 Scale: NOT TO SCALE



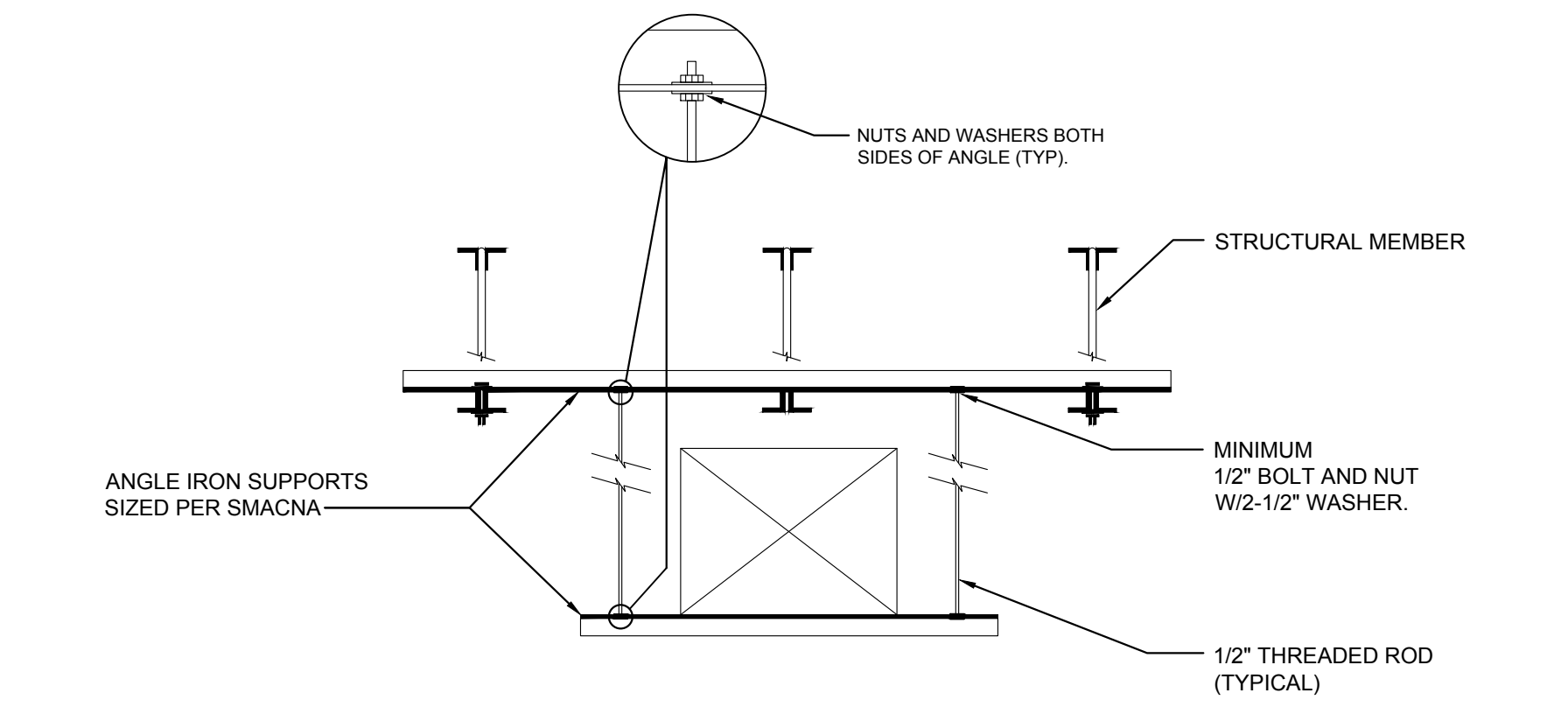
2 AHU CONDENSATE DRAIN AND TRAP DETAIL
 Scale: NOT TO SCALE



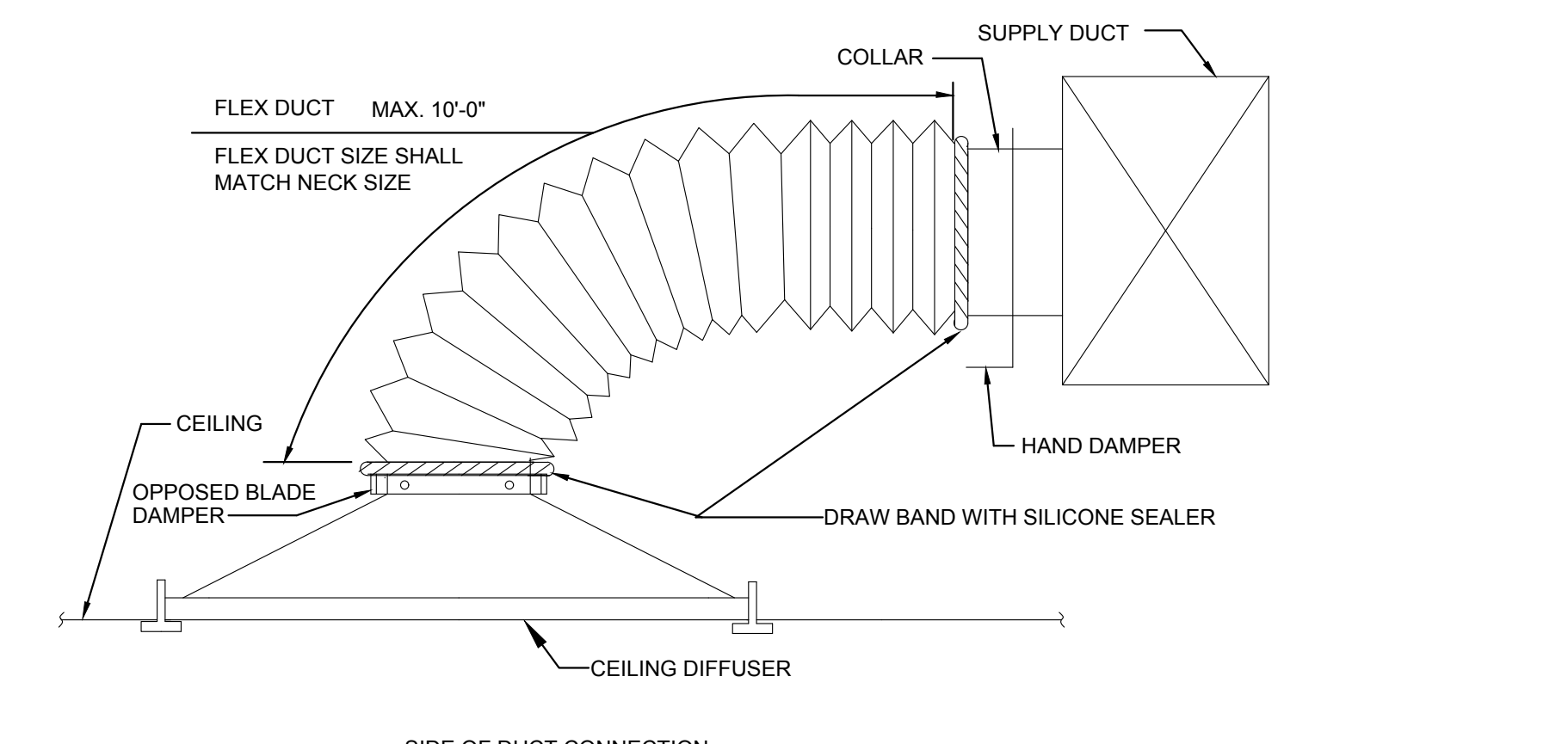
3 BRANCH DUCT CONNECT DETAIL
 Scale: NTS



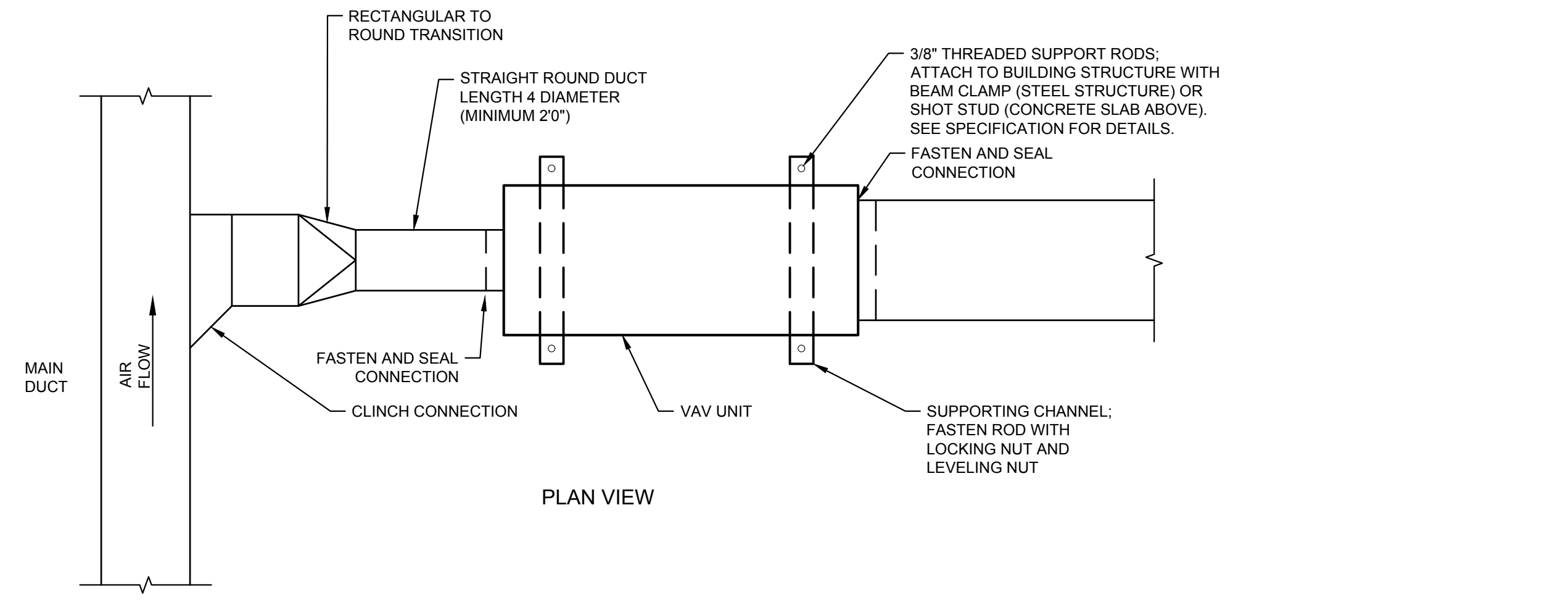
4 DUCT TRANSITION DETAIL
 Scale: NTS



5 DUCT HANGER DETAIL
 Scale: NTS

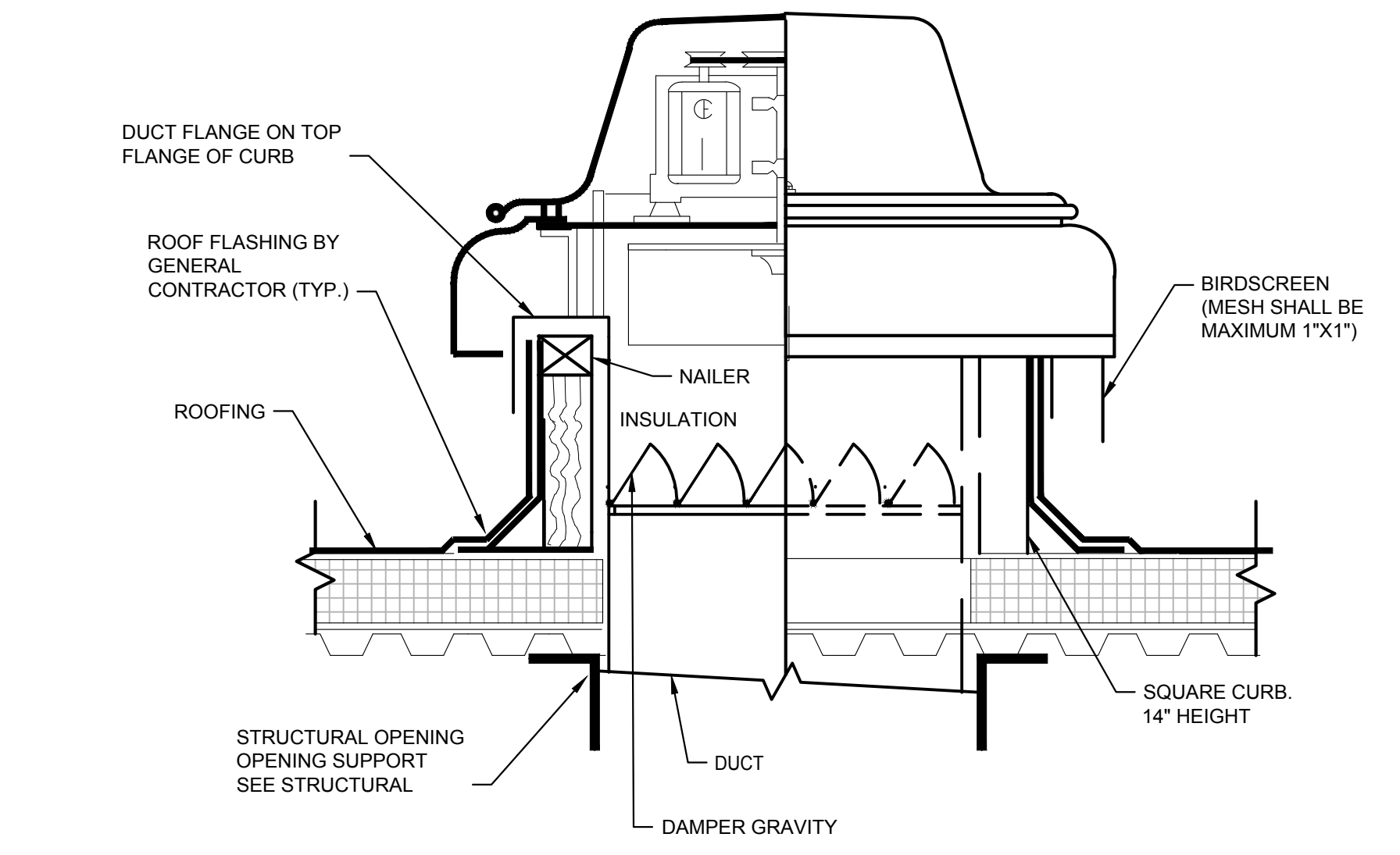


6 TYPICAL DIFFUSER CONNECTION DETAIL
 Scale: NTS



- NOTES:
1. THE OPERATION OF VARIABLE VOLUME TERMINAL UNITS ARE AFFECTED BY EXCESSIVE TURBULENCE ON THE ENTERING SIDE OF EACH TERMINAL UNIT THEREFORE, TERMINAL UNITS MUST NOT BE INSTALLED TOO CLOSE TO MAIN DUCTS, ELBOWS AND FITTINGS.
 2. WHEN MINIMUM UPSTREAM STRAIGHT DUCT CONNECTION TO TERMINALS AS INDICATED ABOVE CANNOT BE MAINTAINED, PROVIDE ORIFICE PLATE, STRAIGHTENING VANES OR OTHER DEVICE AS RECOMMENDED BY TERMINAL UNIT MANUFACTURER AND SUBMIT TO ENGINEER FOR REVIEW PRIOR TO INSTALLATION.
 3. MANUFACTURER OF TERMINAL UNIT SHALL COORDINATE LOCATION OF UNIT MOUNTED CONTROLS ON LEFT OR RIGHT SIDE AS REQUIRED BY MANUFACTURER CLEARANCE REQUIREMENTS AND FIELD CONDITIONS.
 4. ARRANGE ACCESS TO PERMIT EASY FIELD BALANCE AND MAINTENANCE OF TERMINAL UNIT.

7 TYPICAL VAV TERMINAL INSTALLATION DETAIL
 Scale: NTS



8 ROOF MOUNTED EXHAUST FAN SCHEDULE
 Scale: NTS

Seal

Revisions:

NO.	DESCRIPTION	DATE

3RD AND SPRUCE RECREATION CENTER
 320 S 3RD ST,
 READING PA 19602
 CITY OF READING DEPARTMENT OF PUBLIC WORKS

MECHANICAL DETAILS

Project Number	131021.001
Date	05/13/2022
Drawn By	AM
Checked By	DM

M301
 Scale: As Noted

J:\ACTIVE\131021.001 - HVAC D&C 3rd & Spruce Rec.Center\DWG\CAD\1\PHASE 2

THIS DRAWING IS FORMATTED TO BE PRINTED AT 30" X 42"