

1. GENERAL PROVISIONS

- A. INSTALLATION SHALL BE IN STRICT ACCORDANCE WITH THE 2021 VIRGINIA STATE BUILDING CODE INCLUDING REFERENCED CODES AND STANDARDS AND IN ACCORDANCE WITH MANDATES OF THE LOCAL BUILDING OFFICIALS.
- B. THE GENERAL ARRANGEMENT AND LOCATIONS OF DUCTWORK, PIPING, FIXTURES, ETC. ARE INDICATED BY THE DRAWINGS AND SHALL BE INSTALLED IN ACCORDANCE THEREWITH; WITH THE EXCEPTION OF SUCH CHANGES AS MAY BE REQUIRED ON ACCOUNT OF OTHER TRADES. CONTRACTOR SHALL COORDINATE WORK WITH INSTALLATION OF OTHER SUBCONTRACTORS.
- C. MECHANICAL WORK SHALL BE COORDINATED WITH THE CONTRACTOR AS TO SCHEDULING, DIMENSIONING AND LOCATION OF EQUIPMENT.
- D. MAJOR ITEMS ARE SHOWN ON THE PROJECT PLANS. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL INCIDENTAL ITEMS REQUIRED TO PROVIDE A COMPLETE AND FUNCTIONAL SYSTEM.
- E. TRADE NAMES AND CATALOG NUMBERS SHALL BE INTERPRETED AS ESTABLISHING A GENERAL DESIGN AND STANDARD OF QUALITY AND SHALL NOT BE CONSTRUED AS LIMITING COMPETITION. UNLESS STATED OTHERWISE, THE CONTRACTOR MAY USE ANY ARTICLE WHICH, IN HIS JUDGMENT, AND WITH WRITTEN COMMENT FROM THE ARCHITECT/ENGINEER INDICATING NO OBJECTION, IS EQUAL OR SUPERIOR TO THAT SPECIFIED. DRAWINGS SHOWING CHANGES OR REVISIONS REQUIRED BY THE SUBSTITUTION FOR SPECIFIED ITEMS SHALL BE SUBMITTED WITH THE SHOP DRAWING DATA, AND THE COSTS OF ALL SUCH CHANGES SHALL BE BORNE BY THE CONTRACTOR.
- F. SIMILAR ITEMS SHALL BE PROVIDED BY A SINGLE MANUFACTURER.
- G. ALL REQUIRED WALL OR FLOOR OPENINGS SHALL BE COORDINATED WITH THE CONTRACTOR.
- H. ALL PIPING SHALL BE ABOVE CEILING UNLESS INDICATED OTHERWISE.
- I. DO NOT INSTALL PVC PIPING OR ANY COMBUSTIBLE MATERIAL IN ANY AIR PLENUM.
- J. ALL EQUIPMENT SHALL BE WIPED CLEAN, REMOVING ALL TRACES OF OIL, DIRT, OR PAINT SPOTS.
- K. PROVIDE SUPPORTS TO RIGIDLY ATTACH ALL EQUIPMENT, APPURTENANCES AND PIPE AS REQUIRED FOR SUPPORT. PRIOR TO INSTALLATION OF HANGERS AND INSERTS, THE CONTRACTOR SHALL COORDINATE LOCATIONS AND REQUIREMENTS TO MINIMIZE CONFLICTS WITH OTHER BUILDING SYSTEMS. INSTALLATION OF PIPE HANGERS AND SUPPORTS SHALL BE IN STRICT ACCORDANCE WITH MSS SP-58, 68 AND 89.
- L. CONTRACTOR SHALL MAKE FINAL CONNECTIONS TO ALL EQUIPMENT INDICATED TO BE FURNISHED BY OTHERS.
- M. ALL MATERIALS AND WORKMANSHIP SHALL BE WARRANTED TO BE FREE FROM DEFECTS FOR A PERIOD OF ONE YEAR FROM DATE OF ACCEPTANCE AND CONTRACTOR SHALL MAKE GOOD, WITHOUT ADDITIONAL COST TO THE OWNER, ANY DEFECT WHICH MAY APPEAR WITHIN THAT PERIOD. MANUFACTURER'S WARRANTIES EXTENDING BEYOND ONE YEAR SHALL BE PROCESSED AND TURNED OVER TO THE OWNER.

2. SUBMISSION OF SHOP DRAWINGS, PRODUCT DATA, SAMPLES AND PROJECT INFORMATION

- A. SHOP DRAWINGS SHALL BE SUBMITTED FOR THE FOLLOWING ITEMS:
- (1) MECHANICAL SLEEVE SEALS
 - (2) FIRE BARRIER PENETRATION SEALS
 - (3) INSULATION
 - (4) ALL MECHANICAL EQUIPMENT
- B. IDENTIFY ALL MECHANICAL SHOP DRAWINGS, PRODUCT DATA AND SAMPLES WITH THE NAME OF THE PROJECT. CLEARLY MARK THE SPECIFIC ITEMS INTENDED FOR USE. SUBMIT ALL RELATED ITEMS AT ONE TIME.
- C. PRIOR TO SUBSTANTIAL COMPLETION OF THE PROJECT, SUBMIT THE FOLLOWING INFORMATION FOR REVIEW AND APPROVAL:
- (1) OPERATING AND MAINTENANCE INSTRUCTIONS.
 - (2) "AS BUILT" DRAWINGS.
3. "AS BUILT" DRAWINGS: CONTRACTOR SHALL KEEP AN ACCURATE RECORD OF THE LOCATION OF ALL CONCEALED DUCTWORK, PIPING, VALVES, CONTROLS, ETC., BOTH INTERIOR AND EXTERIOR, ON COMPLETION OF THE WORK. ONE PRINT EACH OF THE CONTRACT DRAWINGS WHICH ARE APPLICABLE SHALL BE NEATLY AND CLEARLY MARKED IN COLOR TO SHOW ALL VARIATIONS BETWEEN THE WORK ACTUALLY PROVIDED AND THAT INDICATED ON THE CONTRACT DRAWINGS.

4. OPERATING AND MAINTENANCE MANUALS

- A. GENERAL: PRIOR TO COMPLETION OF THE PROJECT, THE CONTRACTOR SHALL PROVIDE TWO HARDBACKED LOOSELEAF RING TYPE BINDERS, IDENTIFIED WITH THE NAME OF THE PROJECT. CONTRACTOR SHALL DELIVER THESE BINDERS TO THE ENGINEER FOR REVIEW AND TRANSMITTAL TO THE OWNER. ALTERNATIVELY, ELECTRONIC DOCUMENTS MAY BE PROVIDED WITH OWNER'S AGREEMENT.
- B. THE FOLLOWING ITEMS AND OTHER ADDITIONAL PERTINENT DATA FOR EACH ITEM OF EQUIPMENT SHALL BE INCLUDED:
- (1) NAME OF MANUFACTURER.
 - (2) NAME, ADDRESS AND TELEPHONE NUMBER OF NEAREST MANUFACTURER'S REPRESENTATIVE.
 - (3) COPY OF LATEST APPROVED SHOP DRAWING.
 - (4) MANUFACTURER'S OPERATING AND MAINTENANCE MANUAL INCLUDING LUBRICATION DATA.
 - (5) PARTS NUMBERS FOR ALL REPLACEABLE ITEMS.
 - (6) SERIAL NUMBERS OF ALL PRINCIPAL ITEMS OF EQUIPMENT.
 - (7) CONTROL DIAGRAMS AND SEQUENCE OF OPERATION.
 - (8) MANUFACTURER'S WRITTEN GUARANTEES THAT EXTEND BEYOND THE CONTRACTOR'S ONE YEAR GUARANTEE.
- C. THE OPERATING AND MAINTENANCE MANUALS SHALL BE CONSIDERED A PART OF THE FINAL INSPECTION AND THEY SHALL BE SUBMITTED FOR APPROVAL AT LEAST THIRTY (30) DAYS PRIOR TO REQUEST FOR FINAL INSPECTION.
5. ACCESS DOORS: ACCESS DOORS SHALL BE PROVIDED FOR ALL CONCEALED VALVES, CONTROLS, AND ANY OTHER EQUIPMENT OR MATERIALS REQUIRING INSPECTION OR MAINTENANCE. ACCESS DOORS SHALL BE FURNISHED FOR FLOORS, WALLS AND CEILINGS, OF ADEQUATE SIZE SO THAT CONCEALED ITEMS WILL BE READILY ACCESSIBLE FOR SERVICING OR FOR REMOVAL AND REPLACEMENT IF NECESSARY.

6. PAINTING

- A. SCOPE OF WORK: MECHANICAL EQUIPMENT, MATERIALS, AND RELATED PIPING DO NOT REQUIRE PAINTING EXCEPT AS INDICATED BELOW.
- B. EQUIPMENT WITH A FACTORY APPLIED FINISH WILL NOT REQUIRE ADDITIONAL PAINTING EXCEPT TOUCH-UP WITH MATCHING FINISH WHERE IT IS DAMAGED.
- C. PIPING, FABRICATED SUPPORTS, OR OTHER UNFINISHED AND UNPROTECTED MATERIALS LOCATED OUTDOORS SHALL BE PAINTED WITH A SUITABLE PRIMER AND COMPATIBLE FINISH PAINT. COLOR SHALL BE AS DIRECTED BY ENGINEER.
- D. PAINT INSIDE OF DUCTWORK WITH MATTE BLACK PAINT WHERE VISIBLE BEHIND AIR INLETS AND OUTLETS.
- E. PROTECTION OF WORK: PAINTING SHALL BE DONE WITH ALL POSSIBLE CARE TO PROTECT THIS WORK AND WORK OF OTHER TRADES. ALL DAMAGE TO THIS AND OTHER WORK CAUSED BY THE PAINTING OPERATIONS SHALL BE CORRECTED. CLEANED OR REPAIRED AS REQUIRED. HARDWARE, SPECIAL CONTROL ITEMS, GAUGES, THERMOMETERS, NAMEPLATES, INSTRUMENT GLASS AND OTHER SIMILAR ITEMS SHALL BE REMOVED OR PROPERLY PROTECTED DURING THE PAINTING OPERATIONS TO INSURE THAT THESE ITEMS ARE NOT COVERED OR SPLATTERED WITH PAINT.

7. IDENTIFICATION

- A. SUBMITTALS
- (1) SUBMIT LIST OF WORDING, SYMBOLS, LETTER SIZE, AND COLOR CODING FOR MECHANICAL IDENTIFICATION.
 - (2) SUBMIT VALVE CHART AND SCHEDULE, INCLUDING VALVE TAG NUMBER, LOCATION, FUNCTION, AND VALVE MANUFACTURER'S NAME AND MODEL NUMBER.
 - (3) PRODUCT DATA: PROVIDE MANUFACTURER'S CATALOG LITERATURE FOR EACH PRODUCT REQUIRED.
- B. NAMEPLATES
- (1) DESCRIPTION: LAMINATED THREE-LAYER PLASTIC WITH ENGRAVED LETTERS ON LIGHT CONTRASTING BACKGROUND COLOR.
- C. TAGS
- (1) METAL TAGS: BRASS WITH STAMPED LETTERS; TAG SIZE MINIMUM 1-1/2 INCHES (40 MM) DIAMETER.
 - (2) CHART: TYPEWRITTEN LETTER SIZE LIST IN ANODIZED ALUMINUM FRAME.
- D. STENCILS
- (1) STENCILS: WITH CLEAN CUT SYMBOLS AND LETTERS OF FOLLOWING SIZE:
 - (A) 3/4 TO 1-1/4 INCHES (20-30 MM) OUTSIDE DIAMETER OF INSULATION OR PIPE: 8 INCHES (200 MM) LONG COLOR FIELD, 1/2 INCHES (15 MM) HIGH LETTERS.
 - (B) 1-1/2 TO 2 INCHES (40-50 MM) OUTSIDE DIAMETER OF INSULATION OR PIPE: 8 INCHES (200 MM) LONG COLOR FIELD, 3/4 INCH (20 MM) HIGH LETTERS.
 - (C) 2-1/2 TO 6 INCHES (65-150 MM) OUTSIDE DIAMETER OF INSULATION OR PIPE: 12 INCHES (300 MM) LONG COLOR FIELD, 1-1/4 INCHES (30 MM) HIGH LETTERS.

(D) DUCTWORK AND EQUIPMENT: 2-1/2 INCHES (65 MM) HIGH LETTERS.

- (2) STENCIL PAINT: SEMI-GLOSS ENAMEL, COLORS CONFORMING TO ASME A13.1.

E. PIPE MARKERS

- (1) COLOR: CONFORM TO ASME A13.1.
- (2) PLASTIC PIPE MARKERS: FACTORY FABRICATED, FLEXIBLE, SEMI-RIGID PLASTIC, PREFORMED TO FIT AROUND PIPE OR PIPE COVERING. MINIMUM INFORMATION INDICATING FLOW DIRECTION ARROW AND IDENTIFICATION OF FLUID BEING CONVEYED.

F. CEILING TACKS

- (1) DESCRIPTION: STEEL WITH 3/4 INCH (20 MM) DIAMETER COLOR CODED HEAD.
- (2) COLOR CODE AS FOLLOWS:
 - (A) YELLOW - HVAC EQUIPMENT
 - (B) RED - FIRE DAMPERS/SMOKE DAMPERS
 - (C) GREEN - PLUMBING VALVES
 - (D) BLUE - HEATING/COOLING VALVES

G. INSTALLATION

- (1) DEGREASE AND CLEAN SURFACES TO RECEIVE ADHESIVE FOR IDENTIFICATION MATERIALS.
- (2) INSTALL PLASTIC NAMEPLATES WITH CORROSIVE-RESISTANT MECHANICAL FASTENERS, OR ADHESIVE. APPLY WITH SUFFICIENT ADHESIVE TO ENSURE PERMANENT ADHESION AND SEAL WITH CLEAR LAQUER.
- (3) INSTALL TAGS WITH CORROSION RESISTANT CHAIN.
- (4) INSTALL PLASTIC PIPE MARKERS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
- (5) IDENTIFY AIR CONDITIONING UNITS AND FANS WITH PLASTIC NAMEPLATES OR STENCIL PAINTING.
- (6) IDENTIFY CONTROL PANELS AND MAJOR CONTROL COMPONENTS OUTSIDE PANELS WITH PLASTIC NAMEPLATES.
- (7) IDENTIFY DUCTWORK WITH PLASTIC NAMEPLATES OR STENCILLED PAINTING. IDENTIFY WITH AIR HANDLING UNIT OR FAN AND AREA BEING SERVED.
- (8) TAG AUTOMATIC CONTROLS, INSTRUMENTS, AND RELAYS. KEY TO CONTROL SCHEMATIC.
- (9) IDENTIFY PIPING, CONCEALED OR EXPOSED, WITH PLASTIC PIPE MARKERS OR STENCILLED PAINTING. IDENTIFY SERVICE, FLOW DIRECTION, AND PRESSURE. INSTALL IN CLEAR VIEW AND ALIGN WITH AXIS OF PIPING. LOCATE IDENTIFICATION NOT TO EXCEED 20 FEET (6 M) ON STRAIGHT RUNS INCLUDING RISERS AND DROPS, ADJACENT TO EACH VALVE AND TEE, AT EACH SIDE OF PENETRATION OF STRUCTURE OR ENCLOSURE, AND AT EACH OBSTRUCTION.
- (10) PROVIDE CEILING TACKS TO LOCATE VALVES ABOVE T-BAR TYPE PANEL CEILINGS. LOCATE IN CORNER OF PANEL CLOSEST TO EQUIPMENT.

8. INSULATION

- A. FLAME/SMOKE RATINGS: PROVIDE COMPOSITE PLUMBING INSULATION (INSULATION, JACKETS, COVERINGS, SEALERS, MASTICS AND ADHESIVES) WITH FLAME-SPREAD RATING OF 25 OR LESS, AND SMOKE-DEVELOPED RATING OF 50 OR LESS, AS TESTED BY ANSI/ASTM E84 (NFPA 255 METHOD). INSULATION SHALL BE LABELED BY THE MANUFACTURER. THE LABEL SHALL INDICATE THE INSULATING VALUE, FLAME SPREAD AND SMOKE-DEVELOPED RATING.
- B. SUBMITTALS: SUBMIT MANUFACTURER'S SPECIFICATIONS AND INSTALLATION INSTRUCTIONS FOR EACH TYPE OF INSULATION. SUBMIT SCHEDULE SHOWING MANUFACTURER'S PRODUCT NUMBER THICKNESS, AND FURNISHED ACCESSORIES FOR EACH SYSTEM REQUIRING INSULATION.
- C. INSTALLATION: INSULATION SHALL BE APPLIED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS USING ONLY ADHESIVES, MASTICS AND PLUMBING FASTENERS APPROVED BY THE INSULATION MANUFACTURER. INSULATION SHALL NOT BE APPLIED UNTIL AFTER THE EQUIPMENT HAS BEEN TESTED WITH RESULTS ACCEPTABLE TO THE ARCHITECT/ENGINEER. INSULATION WITH A VAPOR BARRIER JACKET SHALL BE APPLIED WITH A CONTINUOUS, UNBROKEN VAPOR SEAL AND ALL JOINTS SHALL BE SEALED WITH A VAPOR BARRIER ADHESIVE UNLESS OTHERWISE INDICATED. STAPLES, STICK CLIPS AND HANGERS SHALL BE VAPOR SEALED WHERE THEY PUNCTURE VAPOR BARRIER JACKETS.

D. MATERIALS:

- (1) FLEXIBLE DUCT INSULATION: ASTM C1290, MINERAL FIBER BLANKET, WITH OPERATING TEMPERATURE OF 2500°F. THERMAL CONDUCTIVITY "K"=0.30 AT 75°F, DENSITY=0.75 LB/CU. FT. F AT 75 DEGREES F. FACTORY APPLIED JACKET (ASJ) SHALL CONSIST OF WHITE KRAFT PAPER BONDED TO ALUMINUM FOIL AND REINFORCED WITH GLASS FIBER YARN. EQUAL TO OWENS-CORNING ASJ.
- (2) ELASTOMERIC CELLULAR FOAM PIPE INSULATION: ASTM C534, TYPE 1 TUBULAR FORM, UNSLIT TUBING OR PRE-SLIT TUBULAR WITH FACTORY APPLIED PRESSURE SENSITIVE ADHESIVE. "K"=0.27 AT 75 DEGREES F. SERVICE TEMPERATURE 0°F TO 200°F. NO JACKET REQUIRED.

E. DUCT INSULATION

- (1) DUCT INSULATION: INSULATE ALL SUPPLY AIR, OUTDOOR AIR DUCTS AND RETURN DUCTS.
 - (2) PROVIDE INSULATION WITH VAPOR RETARDER JACKETS. PIPING SYSTEM WITH EQUIVALENT THICKNESS AND COMPOSITION OF INSULATION AS APPLIED TO ADJOINING PIPE RUN.
 - (3) EXTEND DUCT INSULATION WITHOUT INTERRUPTION THROUGH WALLS, FLOORS AND SIMILAR PIPING PENETRATIONS, EXCEPT WHERE OTHERWISE INDICATED.
 - (4) INSTALL PROTECTIVE METAL SHIELDS AND INSULATED INSERTS WHEREVER NEEDED TO PREVENT COMPRESSION OF INSULATION.
 - (5) SUPPLY, RETURN AND OUTSIDE AIR DUCTS: INSULATE WITH 2" THICK FLEXIBLE DUCTWORK INSULATION.
- F. PIPE INSULATION
- (1) REFRIGERANT SUCTION AND HOT GAS PIPING: INSULATE 1-1/2" AND SMALLER PIPES WITH 1-1/2" THICK ELASTOMERIC CELLULAR FOAM INSULATION. INSULATE LARGER THAN 1-1/2" PIPES WITH 2" THICK ELASTOMERIC CELLULAR FOAM.
 - (2) CONDENSATE DRAIN PIPING: INSULATE ALL PIPING WITH 1/2" THICK ELASTOMERIC CELLULAR FOAM INSULATION.

9. DUCTWORK

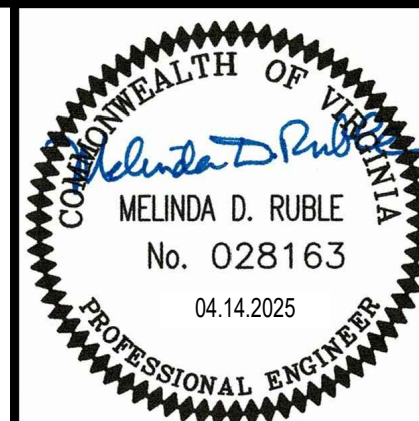
- A. GALVANIZED STEEL DUCTS: ASTM A653/A653M GALVANIZED STEEL SHEET, LOCK-FORMING QUALITY, HAVING G60 ZINC COATING IN CONFORMANCE WITH ASTM A90/90M.
- B. FABRICATE AND SUPPORT IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE.
- C. WHERE RECTANGULAR ELBOWS ARE USED, FURNISH TURNING VANES.
- D. INCREASE DUCT SIZES GRADUALLY, NOT EXCEEDING 15° DIVERGENCE WHEREVER POSSIBLE. MAXIMUM 30° DIVERGENCE UPSTREAM OF EQUIPMENT AND 45° CONVERGENCE DOWNSTREAM.
- E. FLEXIBLE DUCT CONNECTIONS SHALL BE FABRICATED IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE.
- F. VOLUME CONTROL DAMPERS SHALL BE RUSKIN MODEL MD-35 AND SHALL BE FABRICATED IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE.
- I. FIRE DAMPERS SHALL BE DYNAMIC UNITS OF TYPES AND SIZES SUITABLE FOR THE MOUNTING POSITION AND PRESSURE CLASSIFICATION OF THE DUCTWORK IN WHICH INSTALLED. PROVIDE FIRE DAMPERS BEARING A 1-1/2 HOUR UL LABEL AND IN CONFORMANCE WITH NFPA 90A AND UL555.

10. DIFFUSERS, REGISTERS AND GRILLES

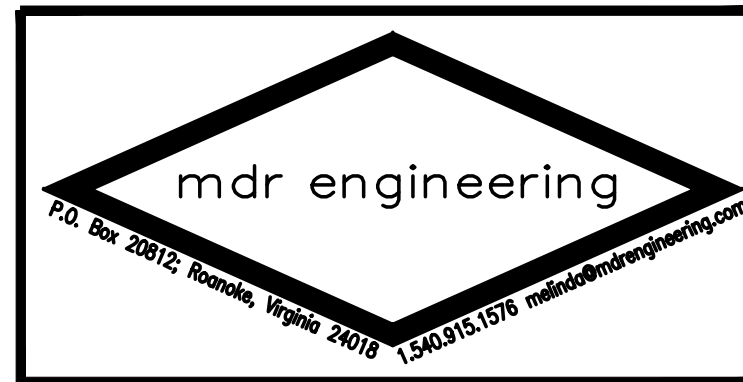
- A. DIFFUSERS, REGISTERS AND GRILLES SHALL BE THE TYPE, MATERIAL, AIR PATTERN AND FINISH INDICATED ON THE DRAWINGS. ALL CEILING AIR DEVICES SHALL INCLUDE A CEILING RADIATION DAMPER.
- B. INSTALL AIR OUTLETS AND INLETS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. INSTALL DIFFUSERS, REGISTERS AND GRILLES TO DUCTWORK WITH AIRTIGHT CONNECTION.

11. CLEANING AND TESTING

- A. CLEAN EQUIPMENT AND FIXTURES TO A SANITARY CONDITION WITH CLEANING MATERIALS APPROPRIATE TO THE SURFACE AND MATERIAL BEING CLEANED. CLEAN DUCT SYSTEMS AND FORCE AIR AT HIGH VELOCITY THROUGH DUCT TO REMOVE ACCUMULATED DUST.
- B. REPLACE FILTERS OF OPERATING EQUIPMENT.
- C. HEATING AND COOLING SYSTEMS AND EXHAUST SYSTEMS SHALL BE TESTED, ADJUSTED AND BALANCED (TAB). AIR HANDLING SYSTEMS SHALL BE ADJUSTED TO WITHIN +/- 10% OF DESIGN. THE TOTAL OF AIR OUTLETS AND INLETS SHALL BE ADJUSTED TO WITHIN PLUS 10% AND MINUS 5% OF DESIGN TO SPACE. ADJUST OUTLETS AND INLETS IN SPACE TO WITHIN +/- 10% OF DESIGN.
- D. THE TAB CONTRACTOR SHALL NOT BE AFFILIATED IN ANY WAY BE WITH THE INSTALLING CONTRACTOR OR EQUIPMENT SUPPLIERS. PROVIDE TAB REPORT.



MECHANICAL SPECIFICATIONS
DISMAS CHARITIES, INC.
NEW FACILITY - ROANOKE
2921 HOLINS ROAD NE
ROANOKE, VIRGINIA 24012
75% ARCHITECTURAL REVIEW - NOT FOR CONSTRUCTION
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M1.1 SHEET: 11
DATE: 04-14-25
REV. NO.:
DESIGNED BY: MDR
DRAWN BY: MDR
CHECKED BY: MDR
PROJECT NO.:
COMMISSION NO.:

ROOFTOP UNIT SCHEDULE

MARK	MANUFACTURER & MODEL NO.	SA CFM	OA CFM	EVAP. FAN HP	VOLTS #	S.P. IN WG EXT.	COOLING SECTION			HEATING SECTION			MCA	MOOP	WEIGHT (LBS)
							TOTAL CAP, MBH	SENS CAP, MBH	EAT	CAP, MBH INPUT	CAP, MBH OUTPUT	EAT			
RTU-1	TRANE 4YCC4024A1	800	80	1/3	208/1	0.5	22.6	17.6	76.7/64.2	60	48	64.7	19.1	30	360
RTU-2	TRANE 4YCC4030A1	1000	120	1/2	208/1	0.5	27.4	21.	77.0/64.5	70	56	63.6	22.6	35	380
RTU-3	TRANE YSK048G3	1600	145	1.0	208/3	0.75	46.1	37.8	76.5/64.1	100	81	65.2	27.0	40	770
RTU-4	TRANE 4YCC4030A1	1000	145	1/2	208/1	0.5	27.6	21.7	77.6/64.8	70	56	62.1	22.6	35	380
RTU-5	TRANE YSK036G3	1200	405	3/4	208/3	0.75	37.0	29.8	80.8/67.0	80	64.8	52.0	23.0	30	750
RTU-6	TRANE YSK036G3	1200	185	3/4	208/3	0.75	35.3	29.5	77.6/64.8	80	64.8	62.1	23.0	30	750
RTU-7	TRANE 4YCC4030A1	1000	240	1/2	208/1	0.5	28.1	22.1	79.1/65.9	70	56	57.3	22.6	35	380
RTU-8	TRANE YSK060G3	1960	285	1.0	208/3	0.75	57.3	48.4	77.6/64.8	100	81	62.1	29.0	45	800
RTU-9	TRANE 4YCC4030A1	1000	240	1/2	208/1	0.5	28.1	22.1	79.1/65.9	70	56	57.3	22.6	35	380
RTU-10	TRANE YSK036G3	1200	235	3/4	208/3	0.75	35.8	29.8	78.4/65.4	80	64.8	59.4	23.0	30	750

- NOTES:
- UNITS TO HAVE ONE YEAR MANUFACTURER'S WARRANTY INCLUDING PARTS, LABOR AND REFRIGERANT, FIVE YEAR MANUFACTURER'S WARRANTY FOR COMPRESSORS.
 - UNIT TO HAVE HINGED ACCESS DOORS, NON-FUSED DISCONNECT SWITCH, CONDENSER COIL GUARDS, LOW AMBIENT CONTROL, LOW LEAKAGE OUTDOOR AIR DAMPERS, BAROMETRIC RELIEF, ECONOMIZER AND ECONOMIZER CONTROLS. THERMOSTAT TO BE HONEYWELL VISION PRO 8000, HARDWIRED.

FAN SCHEDULE

UNIT	CFM	S.P.	RPM	MOTOR			SELECTION BASED ON GREENHECK	CONTROL	WEIGHT, LBS	NOTES
				HP	VOLTS	PH				
EF-1	985	0.969	1428	1/4	120	1	CUE-120-VG	INTERLOCKED WITH HOOD	100	1
EF-2	290	0.25	831	1/4	120	1	GB-100	DURING OCCUPIED TIMES	80	2
EF-3	75	0.25	815	1/6	120	1	GB-097	WALL SWITCH	80	2
EF-4	NOT USED									
EF-5	75	0.25	815	1/6	120	1	GB-097	WALL SWITCH	80	2
EF-6	75	0.25	815	1/6	120	1	GB-097	WALL SWITCH	80	2
EF-7	350	0.25	819	1/4	120	1	GB-100	DURING OCCUPIED TIMES	80	2
EF-8	350	0.25	819	1/4	120	1	GB-100	DURING OCCUPIED TIMES	80	2
EF-9	75	0.25	815	1/6	120	1	GB-097	DURING OCCUPIED TIMES	80	2

- SCHEDULE NOTES:
- PROVIDE WITH DISCONNECT, HIGH TEMPERATURE ROOF CURB, GREASE TRAP, CLEAN OUT PORT, VARIGREEN MOTOR & CONTROLS BACKDRAFT DAMPER. CONTROL AS INDICATED.
 - BELT DRIVE FAN WITH ROOF CURB, BACKDRAFT DAMPER, DISCONNECT. CONTROL AS INDICATED.

ELECTRIC WALL HEATER SCHEDULE

MARK	MANUFACTURER & MODEL NO.	MBH	CFM	KW	VOLT/PH
WH-1	QMARK CMH120BDSAF	6.8	65	2.0	208/1

- NOTES:
- PROVIDE WITH DISCONNECT SWITCH & WALL MOUNTED LINE VOLTAGE THERMOSTAT

MAKE-UP AIR UNIT SCHEDULE

MARK	CFM	S.P.	RPM	MOTOR			HEAT			SELECTION BASED ON GREENHECK	CONTROL	WEIGHT, LBS	NOTES
				HP	VOLTS	PH	MCA/MOOP	MBH IN	MBH OUT	TEMP RISE	EAT/LAT		
MUA-1	1215	0.85	2752	3/4	208	3	5.1/15	128.4	118.1	90	-20/70	DCX-P109-H12-MF	INTERLOCKED WITH HOOD

- NOTES:
- PROVIDE WITH DISCONNECT SWITCH, WEATHERHOOD WITH BRDSCREEN, 2" THICK ALUMINUM FILTERS, DOUBLE WALL INSULATION, SUPPLY FAN VFD, HINGED ACCESS, DISCHARGE TEMPERATURE CONTROL.

DUCTLESS SPLIT SYSTEM

- DSS-1: INDOOR WALL MOUNTED UNIT - MITSUBISHI MSZ-GS12NA.
A. OUTDOOR HEAT PUMP UNIT - MITSUBISHI MUZ-GS12NA.
B. 12,000 BTU/HR COOLING, 14,400 BTU/HR HEATING, 381 CFM, 25.6 SEER, R-410A.
C. 208 VOLTS, SINGLE PHASE, 15A MOOP, FEED TO OUTDOOR UNIT.
D. DC INVERTER COMPRESSOR.
E. WALL MOUNTED, HARD WIRED CONTROLLER.
F. PROVIDE CONDENSATE PUMP AS REQUIRED, CONDENSATE TO FOLLOW ROUTE OF REFRIGERANT PIPING AND TERMINATE ON ROOF.
G. AUTO RESTART ON POWER FAILURE.
H. COORDINATE INDOOR UNIT LOCATION WITH EQUIPMENT.

GRILLES, REGISTERS AND DIFFUSERS SCHEDULE

MARK	MANUFACTURER & MODEL NO.	DESCRIPTION	MATERIAL	FINISH	ACCESSORIES & FEATURES
SUPPLY DIFFUSERS					
CD-1	METALARE 5750-6	24"x24" LOUVER FACE DIFFUSER WITH 6" NECK FOR LAY-IN CLG	STEEL	WHITE	MODEL BDS DAMPER
CD-2	METALARE 5750-6	24"x24" LOUVER FACE DIFFUSER WITH 8" NECK FOR LAY-IN CLG	STEEL	WHITE	MODEL BDS DAMPER
CD-3	METALARE 5750-6	24"x24" LOUVER FACE DIFFUSER WITH 10" NECK FOR LAY-IN CLG	STEEL	WHITE	MODEL BDS DAMPER
CD-4	METALARE 5000-1	6"x6" LOUVER FACE CEILING DIFFUSER	ALUMINUM	WHITE	MODEL DSA DAMPER
CD-5	METALARE 5000-1	9"x9" LOUVER FACE CEILING DIFFUSER	ALUMINUM	WHITE	MODEL DSA DAMPER
GRILLES & REGISTERS					
CG-1	METALARE 7550R-6	24"x24" CEILING RET REG WITH 8" NECK FOR LAY-IN CEILING	STEEL	WHITE	---
CG-2	METALARE 7550R-6	24"x24" CEILING RET REG WITH 12" NECK FOR LAY-IN CEILING	STEEL	WHITE	---
CG-3	METALARE 7550R-6	24"x24" CEILING RET REG WITH 16" NECK FOR LAY-IN CEILING	STEEL	WHITE	---
CG-4	METALARE 7550R-6	24"x24" CEILING RET REG WITH 18" NECK FOR LAY-IN CEILING	STEEL	WHITE	---
CR-1	METALARE SRH-1	10"x10" CEILING EXHAUST REGISTER	STEEL	WHITE	OPPOSED BLADE DAMPER
CR-2	METALARE SRH-1	6"x6" CEILING EXHAUST REGISTER	STEEL	WHITE	OPPOSED BLADE DAMPER
CR-3	METALARE SRH-1	8"x8" CEILING EXHAUST REGISTER	STEEL	WHITE	OPPOSED BLADE DAMPER
TR-1	METALARE V4004-1	6"x4" DOUBLE DEFLECTION SIDEWALL SUPPLY REGISTER	STEEL	WHITE	OPPOSED BLADE DAMPER

KITCHEN HOOD

- KH-1: GREENHECK OXWH-72-S, 72" X 48" X 30", 1350 CFM EXHAUST, 1215 CFM MAKE-UP AIR, 430 STAINLESS STEEL STANDING SEAM CONSTRUCTION, UL 710 WITH LED LIGHTS, X-TRACTOR STAINLESS STEEL FILTERS, AMEREX KP MODEL GKC UTILITY CABINET, BACKSPASH, AIR SUPPLY PLENUMS WITH MUA AND AC CONNECTIONS, ZERO CLEARANCE TO COMBUSTIBLES AT TOP, 3" BACK INTEGRAL AIR SPACE, FACTORY MOUNTED EXHAUST COLLARS

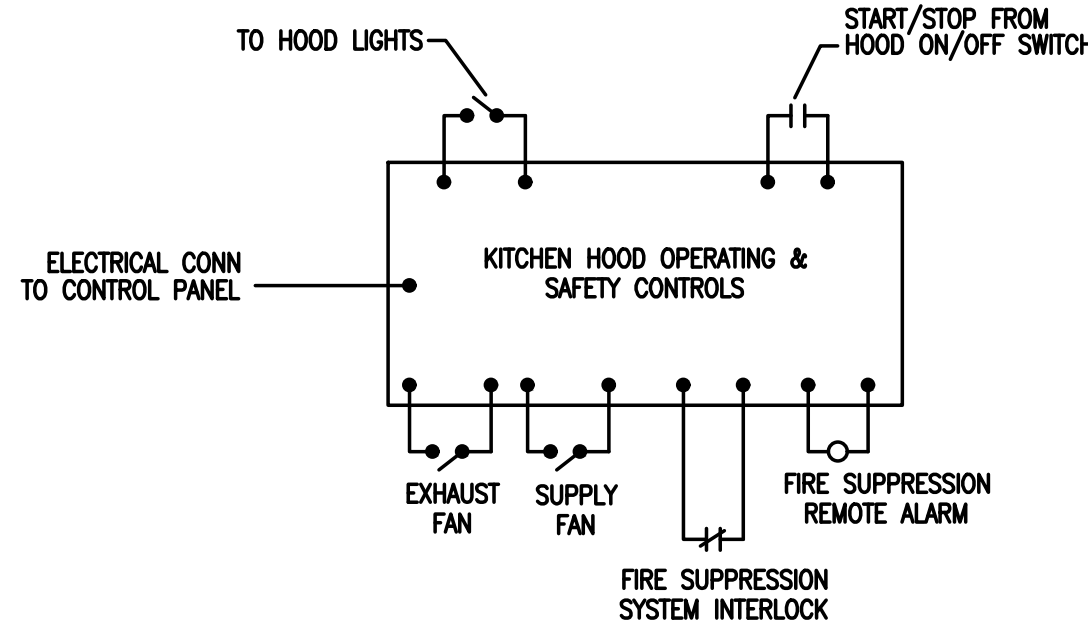
KITCHEN EXHAUST SYSTEM

EQUIPMENT SHALL INCLUDE TYPE I KITCHEN HOOD'S, SUPPRESSION SYSTEM, CONTROLS AND ASSOCIATED DEVICES FOR A COMPLETE KITCHEN EXHAUST SYSTEM.

CONTRACTOR TO PROVIDE FULLY WELDED, LIQUID TIGHT, KITCHEN EXHAUST GREASE DUCT FOR TYPE 1 HOOD PER LOCAL AND NFPA CODES. PROVIDE ASTM E 2336 GREASE DUCT FIRE WRAP BY 3M OR FIREWRAP TO REDUCE CLEARANCES TO COMBUSTIBLES TO ZERO INCHES.

FANS, CONTROLS AND ACCESSORIES SHALL BE A COORDINATED SYSTEM PROVIDED BY A SINGLE SUPPLIER. OBTAIN SHOP DRAWINGS OF OWNER FURNISHED EQUIPMENT AND PROVIDE STEEL, NONCOMBUSTIBLE SUPPORTS, ACCESSORIES, DUCTWORK, WIRING AND CONNECTIONS AS REQUIRED FOR A COMPLETE SYSTEM INSTALLATION. COORDINATE SUPPRESSION SYSTEM WITH GAS SHUT-OFF VALVE AND SHUNT TRIP BREAKERS.

PERFORM GREASE DUCT LIGHT TEST AND AIRFLOW TESTING.



KITCHEN HOOD CONTROL SYSTEM

- NOTES:
- COORDINATE HOOD CONTROL SYSTEM WITH FIRE ALARM INTERFACE, MANUAL SHUT-DOWN BUTTON, GAS VALVE INTERFACE, AND SHUNT TRIP BREAKERS.

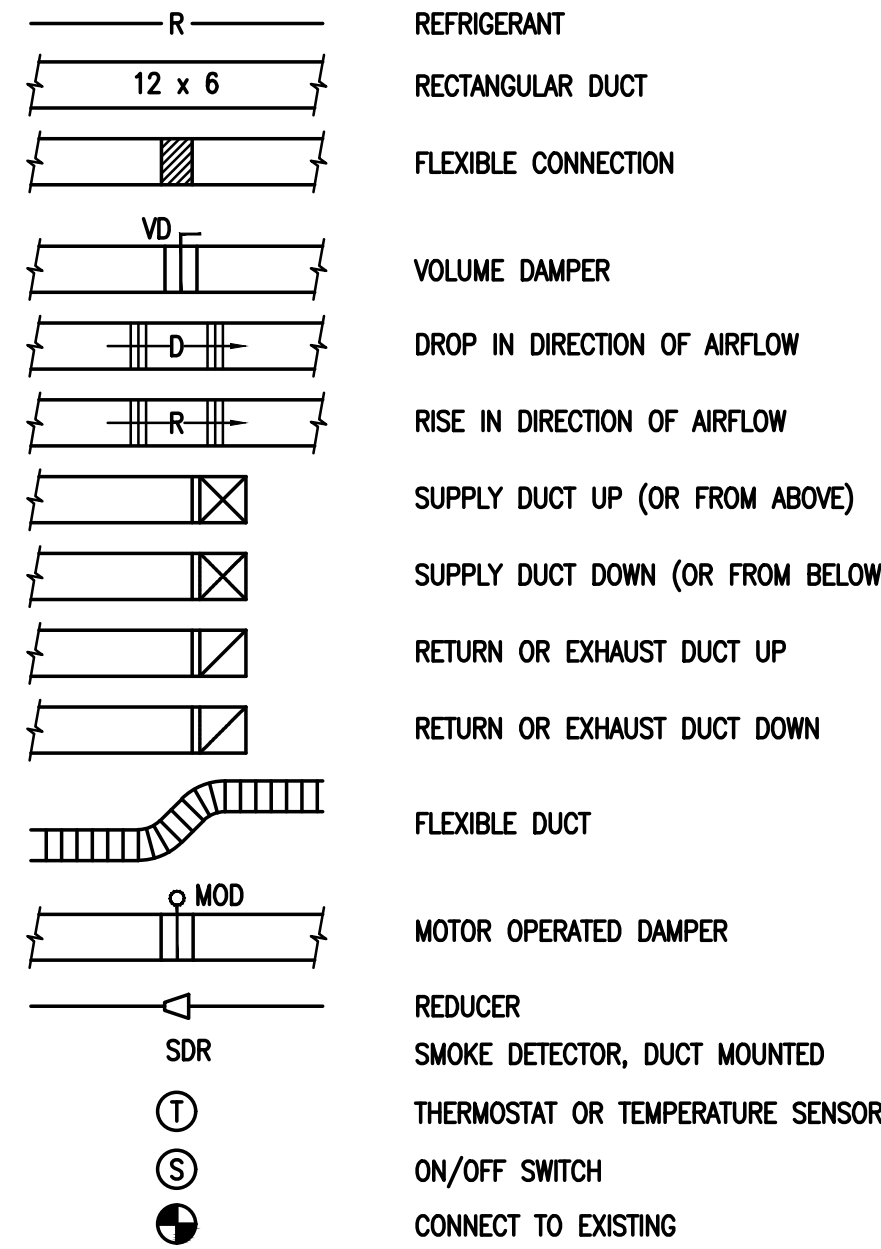
GENERAL MECHANICAL NOTES

- ALL PIPING AND DUCTWORK SHALL BE ABOVE CEILING UNLESS OTHERWISE INDICATED.
- INSTALL THERMOSTATS, HUMIDISTATS AND TEMPERATURE AND HUMIDITY SENSORS WITH CENTER AT 48" ABOVE FLOOR. WHERE THERMOSTATS AND SNAP SWITCHES (SEE ELECTRICAL DRAWINGS) ARE INDICATED IN CLOSE PROXIMITY ON THE SAME WALL, THE LOCATIONS SHALL BE COORDINATED SO THAT THE THERMOSTAT IS CENTERED DIRECTLY OVER THE SNAP SWITCH OR GROUP OF SNAP SWITCHES.
- DUCT DIMENSIONS INDICATED ARE SHEET METAL DIMENSIONS.
- COORDINATE LOCATIONS OF CEILING MOUNTED DIFFUSERS, REGISTERS AND GRILLES WITH LIGHT FIXTURES AND CEILING GRID. REFER TO ELECTRICAL DRAWINGS.
- FIRST FIGURE OF DUCT SIZE INDICATES DIMENSION OF SIDE SHOWN OR INDICATED.
- ACCESS SHALL BE MAINTAINED TO ALL CONTROL DEVICES. ACCESS PANEL SIZES AND LOCATIONS SHALL BE DETERMINED PRIOR TO BIDDING AND SHALL BE INCLUDED IN THE BID PRICE FOR CONTRACT WORK. ACCESS PANELS SHALL BE INSTALLED WHERE REQUIRED AND SHALL BE FIRE RATED WHEN USED IN FIRE RESISTIVE CONSTRUCTION.
- PIPING AND DUCTWORK SHALL BE SUPPORTED FROM, OR ANCHORED TO, THE BUILDING STRUCTURE; CEILING CONSTRUCTION SHALL NOT BE USED FOR SUPPORT OR ANCHORING OF WORK.
- TEMPERATURE CONTROL WIRING WIRING LESS THAN 100 VOLTS SHALL BE PROVIDED IN MECHANICAL SCOPE. WIRING 100 VOLTS AND GREATER SHALL BE PROVIDED IN ELECTRICAL SCOPE.
- MAINTAIN ACCESS BELOW EQUIPMENT INSTALLED ABOVE CEILINGS. DO NOT OBSTRUCT ACCESS WITH PIPING OR DUCTWORK.
- DO NOT INSTALL PVC PIPING OR ANY COMBUSTIBLE MATERIAL IN ANY AIR PLENUM.
- PROVIDE MANUAL VOLUME DAMPERS AS REQUIRED TO PROPERLY BALANCE THE SYSTEM.
- CONTRACTOR SHALL CLOSELY COORDINATE LOCATIONS OF ALL PANELBOARDS WITH LOCATIONS OF ALL DUCTWORK AND PLUMBING PIPING. DUCTWORK AND PLUMBING PIPING SHALL NOT BE INSTALLED OVER TOP OF ANY PANELBOARD. DUCTWORK AND PLUMBING PIPING SHALL NOT BE INSTALLED OVER ANY OF THE CODE REQUIRED CLEAR SPACES AT ANY PANELBOARD LOCATION.

HVAC CONTROLS

- PROVIDE DOCUMENTATION AND TRAINING TO OWNER ALONG WITH ONE YEAR WARRANTY. LABEL ALL CONTROLS AND EQUIPMENT THE SAME AS IDENTIFIED ON THE DRAWINGS AND SUBMITTALS. SUBMIT SHOP DRAWINGS AND DETAILED SEQUENCE OF OPERATION OF CONTROL SYSTEM PRIOR TO INSTALLATION.
- CONTROLS SHALL INCLUDE ALL THERMOSTATS, SENSORS, VALVES, DAMPERS, TRANSFORMERS, STARTERS, RELAYS, INTERLOCKS AND OTHER DEVICES TO ENABLE THE SEQUENCE OF OPERATION. CONTROLS SHALL BE COORDINATED WITH THE EQUIPMENT PROVIDED.
- PROVIDE START-UP AND VERIFICATION OF CONTROL SYSTEM & SEQUENCE OF OPERATION. COORDINATE WITH TEST & BALANCE CONTRACTOR TO OPERATE EQUIPMENT IN ALL MODES AND DEVICE POSITIONS.
- ROOM SENSOR SHALL HAVE DIGITAL DISPLAY AND TIMED OVERRIDE BUTTON. ALL SENSORS SHALL HAVE THE CAPABILITY TO ADJUST ROOM TEMPERATURE SETPOINT OR TO HAVE THIS FUNCTION LOCKED OUT.
- ROOFTOP UNITS: IN OCCUPIED MODE, THE SUPPLY FAN SHALL RUN CONTINUOUSLY, THE OUTSIDE AIR DAMPER SHALL OPEN AND THE UNIT CONTROLLER WILL MAINTAIN ROOM SETPOINT BY CYCLING THE COOLING/HEATING. IN UNOCCUPIED MODE, THE UNITS SHALL BE DE-ENERGIZED UNTIL A CALL FOR SETBACK HEATING OR COOLING BY THE UNIT CONTROLLER. THE OUTSIDE AIR DAMPER SHALL REMAIN CLOSED AT ALL TIMES DURING UNOCCUPIED MODE. PROVIDE HARDWIRED REMOTE TEMPERATURE SENSOR WIRED TO CORRESPONDING HARDWIRED THERMOSTAT IN IT ROOM. OVERRIDE BUTTON ON WALL SENSOR SHALL PLACE THE UNIT IN OCCUPIED MODE FOR TWO HOURS (ADJUSTABLE). CONTROLS SHALL INCLUDE CONTROLLER AND START/STOP.

LEGEND



ABBREVIATIONS

BTU
CD
CFD
CFM
CG
COOP
CR
DB
EAT
EER
EFF
EXT
F
FPM
FT
HP
IN
LAT
MAX
MBH
VD
MH
MIN
MOD
NC
NIC
NO
OA
PD
PS
PSI
PSIG
RA
SP
TEMP
TEMP
TG
TR
TYP
WB
WG
WG
AFF
ABV
AD
BEL
BET
CLG
CONN
CONT
DN
EA
FL
FLEX
FR
GALV
REQD
SH

BRITISH THERMAL UNIT
CEILING DIFFUSER
CEILING FIRE DAMPER
CUBIC FEET PER MINUTE
CEILING GRILLE
COEFFICIENT OF PERFORMANCE
CEILING REGISTER
DRY BULB TEMPERATURE
ENTERING AIR TEMPERATURE
ENERGY EFFICIENCY RATIO
EFFICIENCY
EXTERNAL
DEGREES FAHRENHEIT
FEET PER MINUTE
FEET
HORSEPOWER
INCH, INCHES
LEAVING AIR TEMPERATURE
MAXIMUM
THOUSAND BTU PER HOUR
VOLUME DAMPER
MOUNTING HEIGHT
MINIMUM
MOTOR OPERATED DAMPER
NORMALLY CLOSED
NOT IN CONTRACT
NORMALLY OPEN
OUTSIDE AIR
PRESSURE DROP
PRESSURE SENSOR
POUNDS PER SQUARE INCH
POUNDS PER SQUARE INCH GAGE
RETURN AIR
STATIC PRESSURE
TEMPERATURE
TOP GRILLE
TOP REGISTER
TYPICAL
WET BULB TEMPERATURE
WATER COLUMN
ABOVE FINISHED FLOOR
ABOVE
ACCESS DOOR
BELOW
BETWEEN
CEILING
CONNECT, CONNECTION
CONTINUED
DOWN
EACH
FLOOR
FLEXIBLE
FROM
GALVANIZED
REQUIRED
SHEET

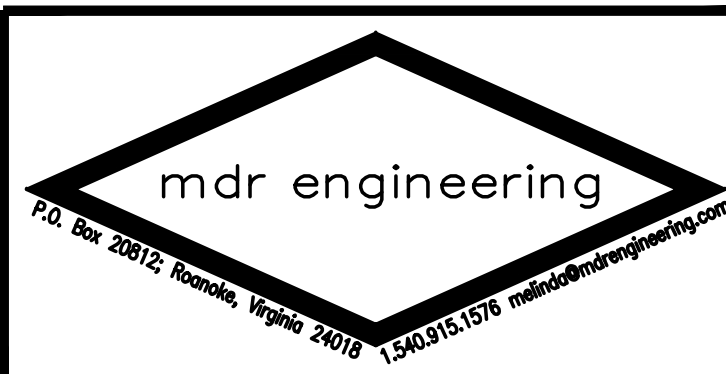


MECHICAL LEGEND, SCHEDULES, NOTES, CONTROLS

DISMAS CHARITIES, INC.
NEW FACILITY - ROANOKE
2921 HOLINS ROAD NE
ROANOKE, VIRGINIA 24012

75% ARCHITECTURAL REVIEW - NOT FOR CONSTRUCTION

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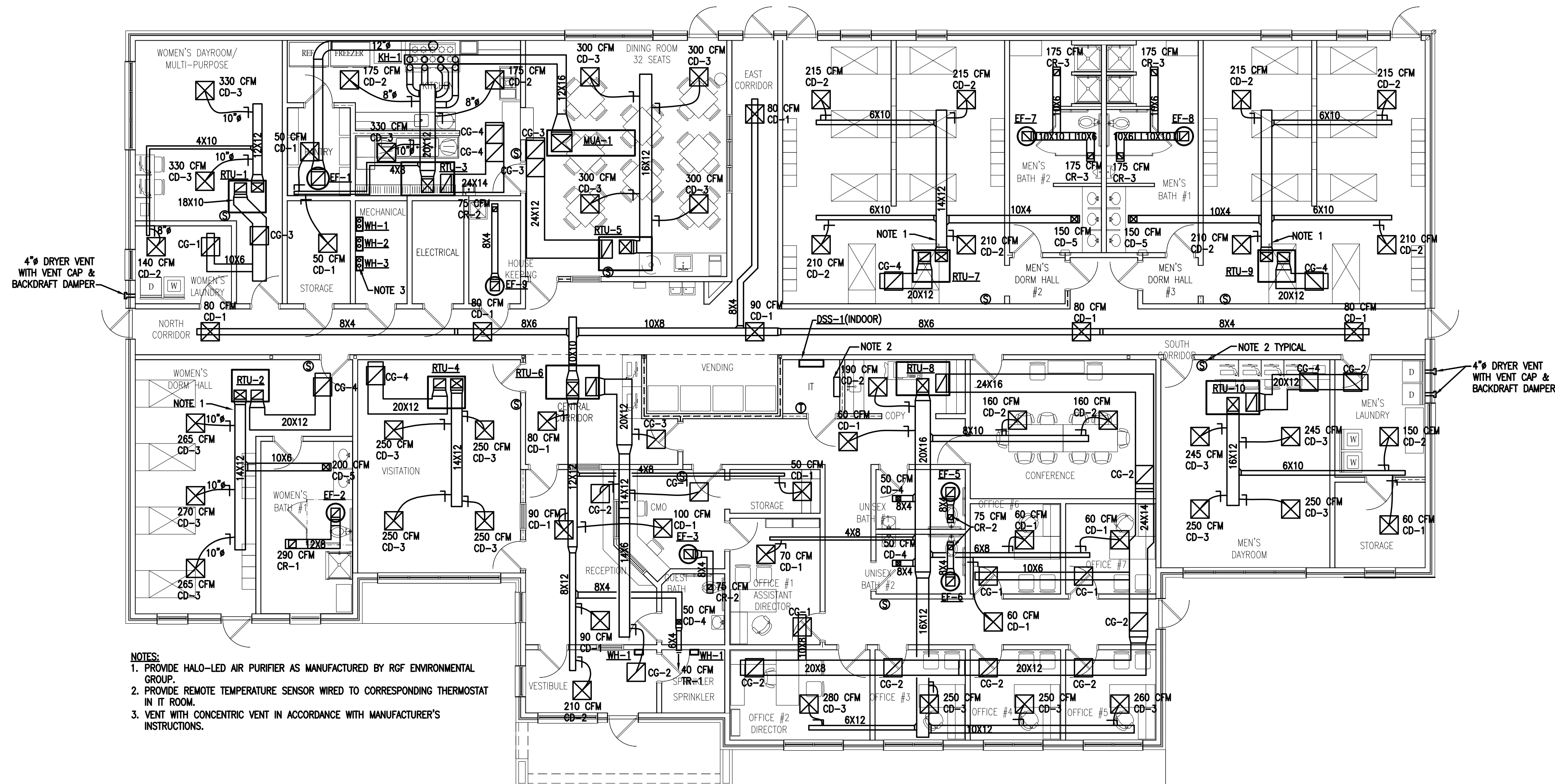
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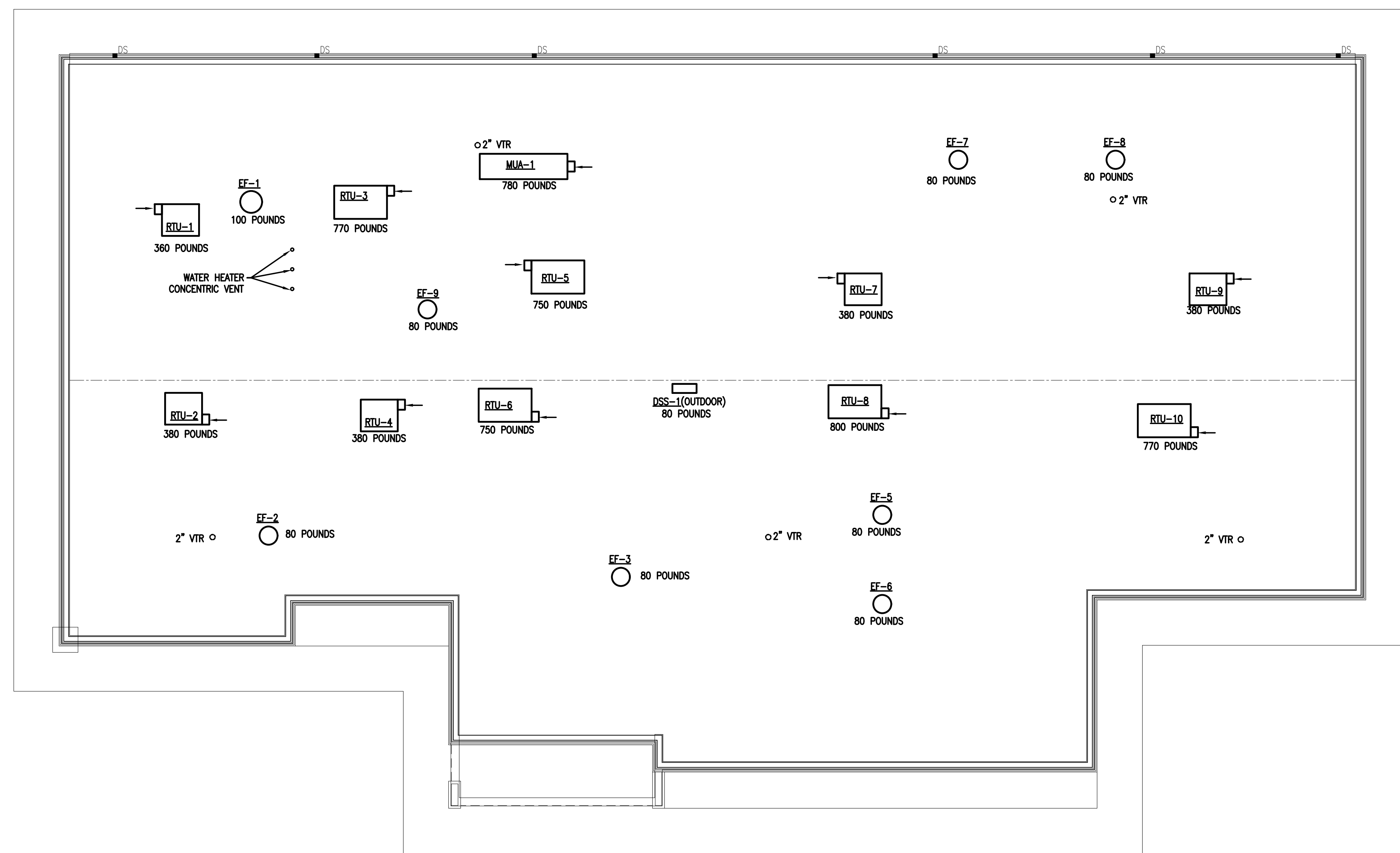
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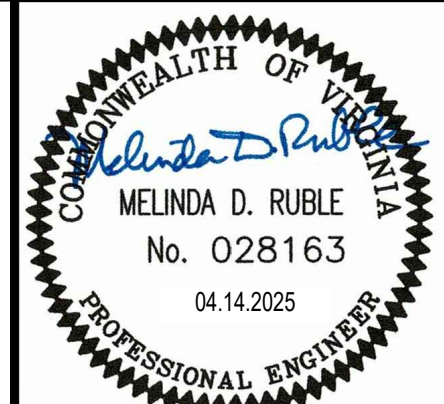
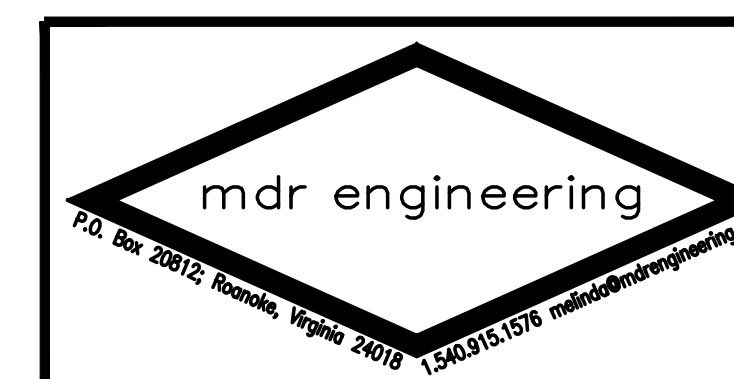
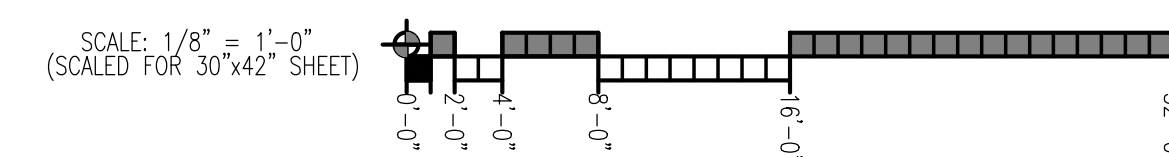
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CONNECTION NO.: 0000000000



FLOOR PLAN - MECHANICAL
SCALE: 1/8" = 1'-0"

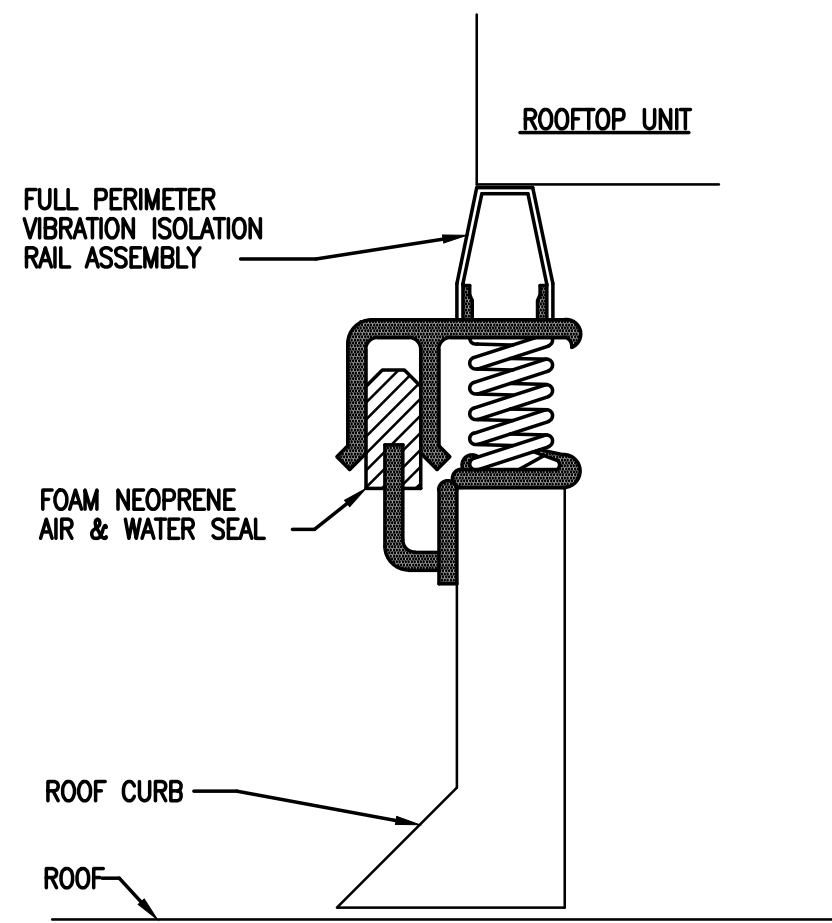


ROOF PLAN - MECHANICAL
SCALE: 1/8" = 1'-0"

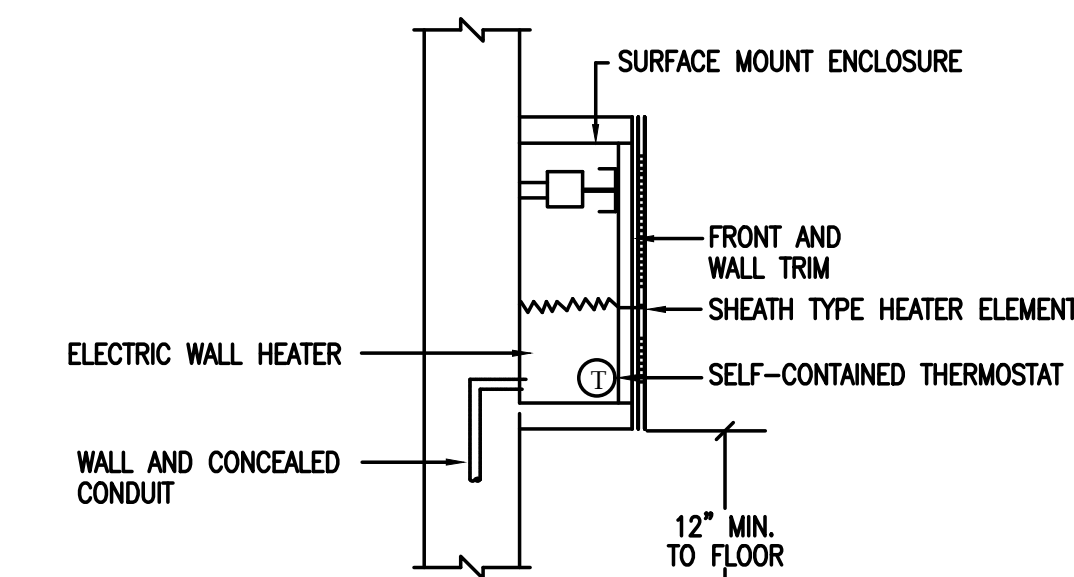


MECHANICAL FLOOR AND ROOF PLAN
DISMAS CHARITIES, INC.
NEW FACILITY - ROANOKE
2921 HOLINS ROAD NE
ROANOKE, VIRGINIA 24012
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ROOFTOP VIBRATION ISOLATION DETAIL
NO SCALE



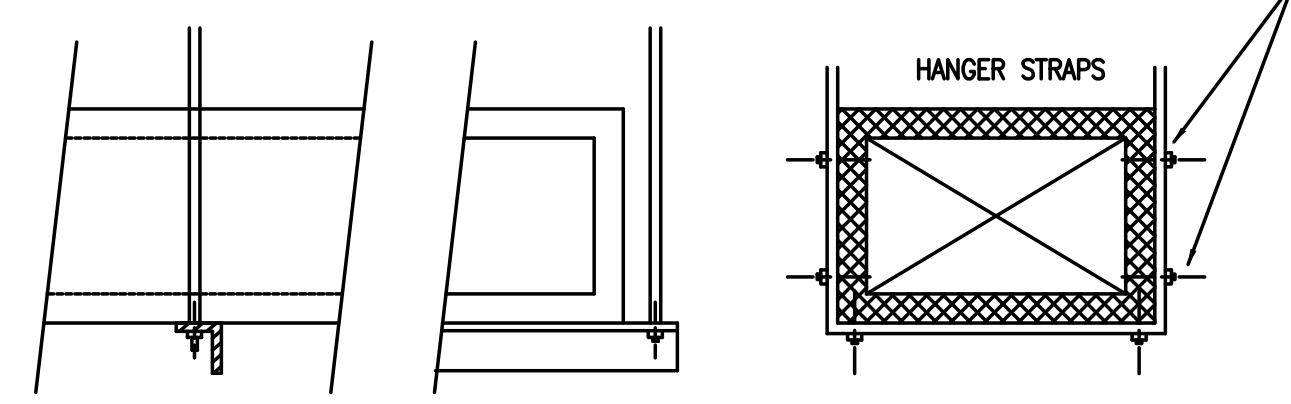
ELECTRIC WALL HEATER DETAIL
NO SCALE

HANGER SIZES FOR RECTANGULAR DUCT			
MAX. SIDE	HANGER	HORIZONTAL SUPPORT ANGLE	MAXIMUM SPACING
30"	1"x18" GAGE STRAP	NONE REQUIRED	10'-0"

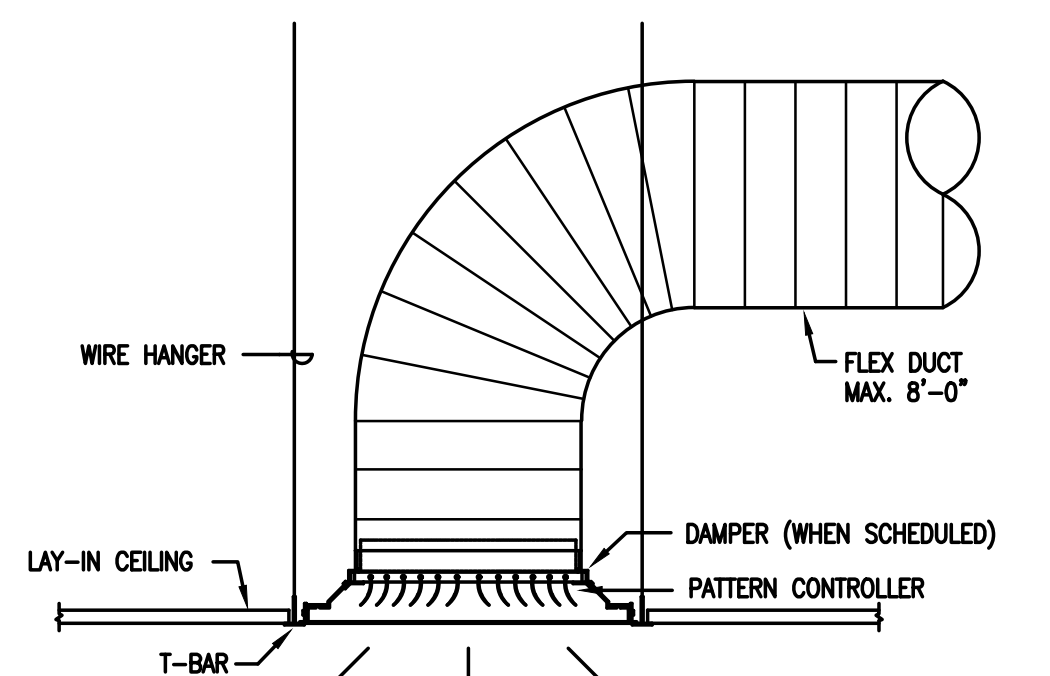
NOTE:
ALL SUPPLY AIR DUCT SHALL BE WRAPPED EXTERNALLY AS PER SPECIFICATIONS

NO POP RIVETS ALLOWED

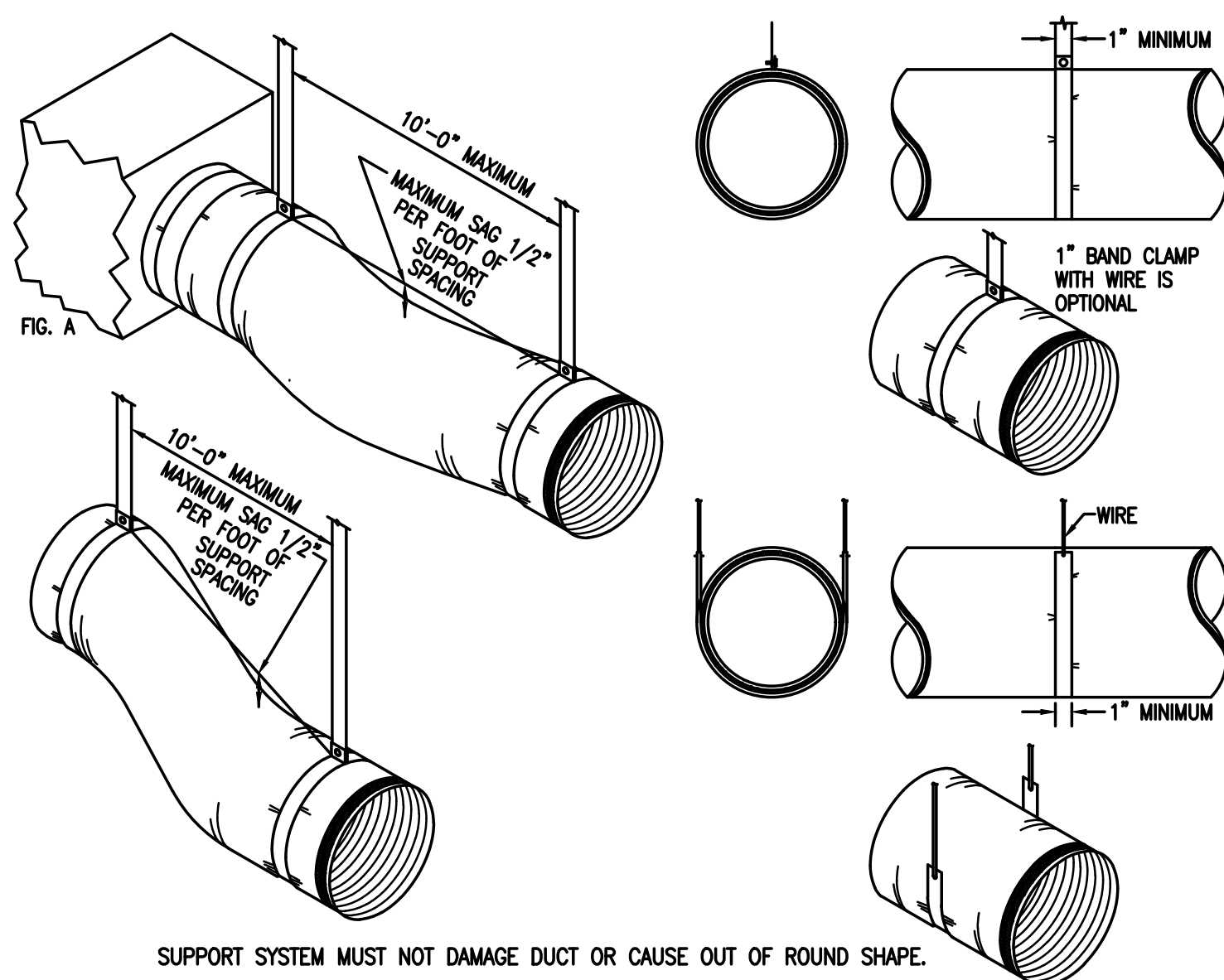
SELF TAPPING CADMIUM PLATED HEX HEAD SHEET METAL SCREW STRAPS TO BE TIGHT AGAINST DUCT.



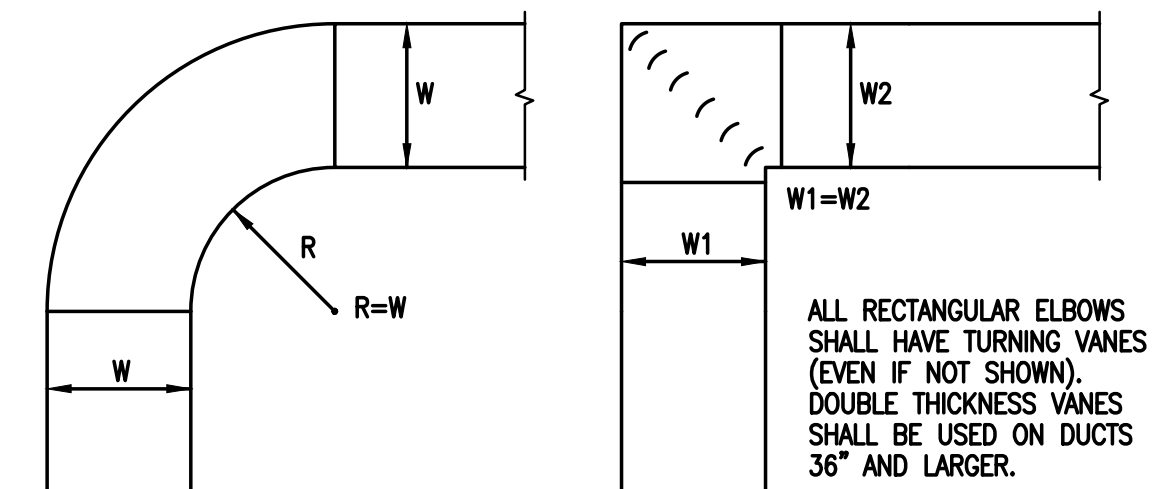
DUCT STRAP HANGER DETAIL
NOT TO SCALE



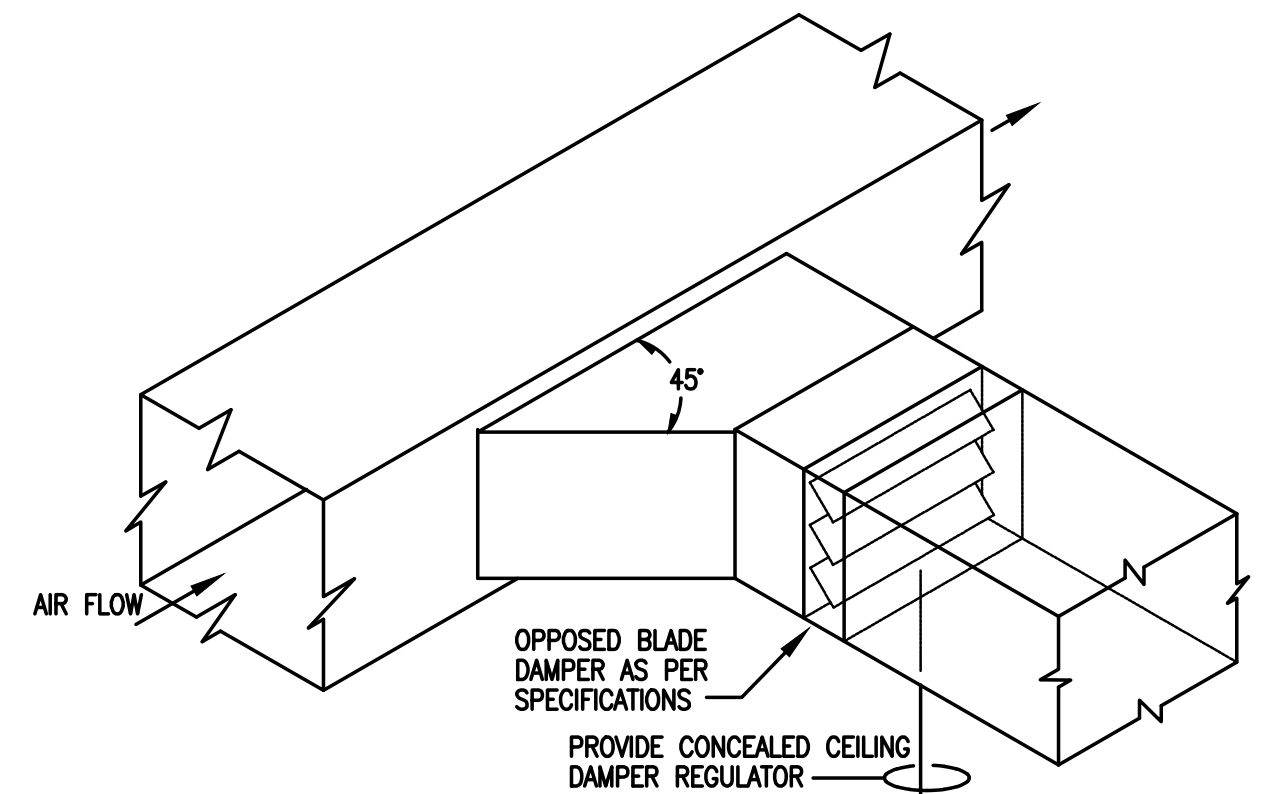
LAY-IN CEILING DIFFUSER DETAIL
NOT TO SCALE



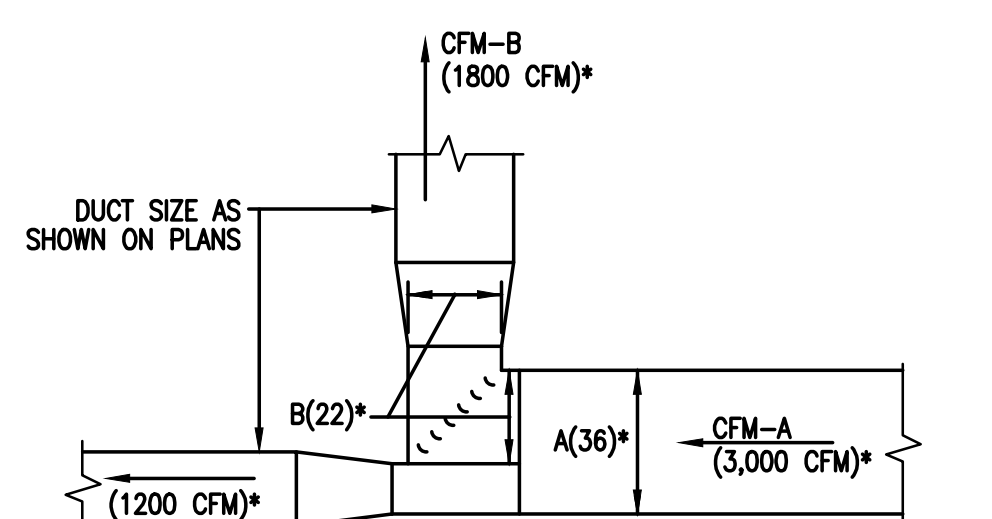
DETAIL - FLEXIBLE DUCT SUPPORTS
NO SCALE



DETAIL - DUCT ELBOWS
NO SCALE



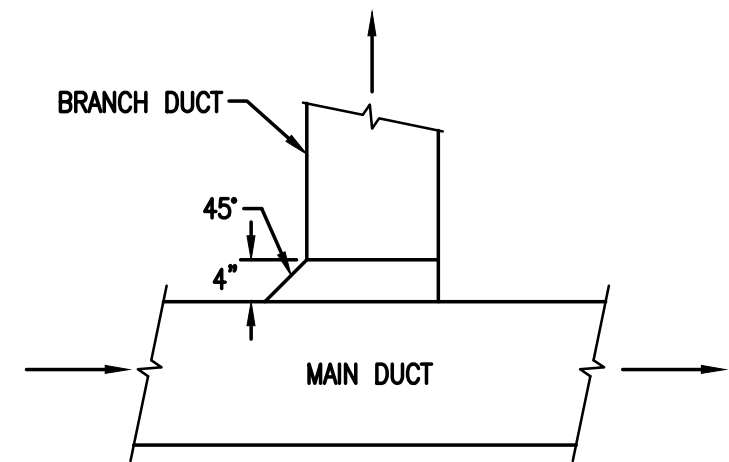
BRANCH DUCT TAKE-OFF @ SUPPLY MAIN
NOT TO SCALE



A = WIDTH OF DUCT MAIN BEFORE TAKEOFF.
B = WIDTH OF TAKEOFF CONNECTION.
CFM-A = TOTAL AIR QUANTITY PASSING THRU DUCT AT A INCLUDING QUANTITY REMOVED AT TAKEOFF B.
CFM-B = AIR QUANTITY REMOVED THRU TAKEOFF B.
$$B = \frac{CFM-B}{CFM-A} \times A$$

* EXAMPLE: CFM-A = 3000 CFM B = 1800 CFM A = 36" $B = \frac{1800}{3000} \times 36" = 21.6"$
SAY B = 22" (ROUND OFF TO NEAREST INCH)

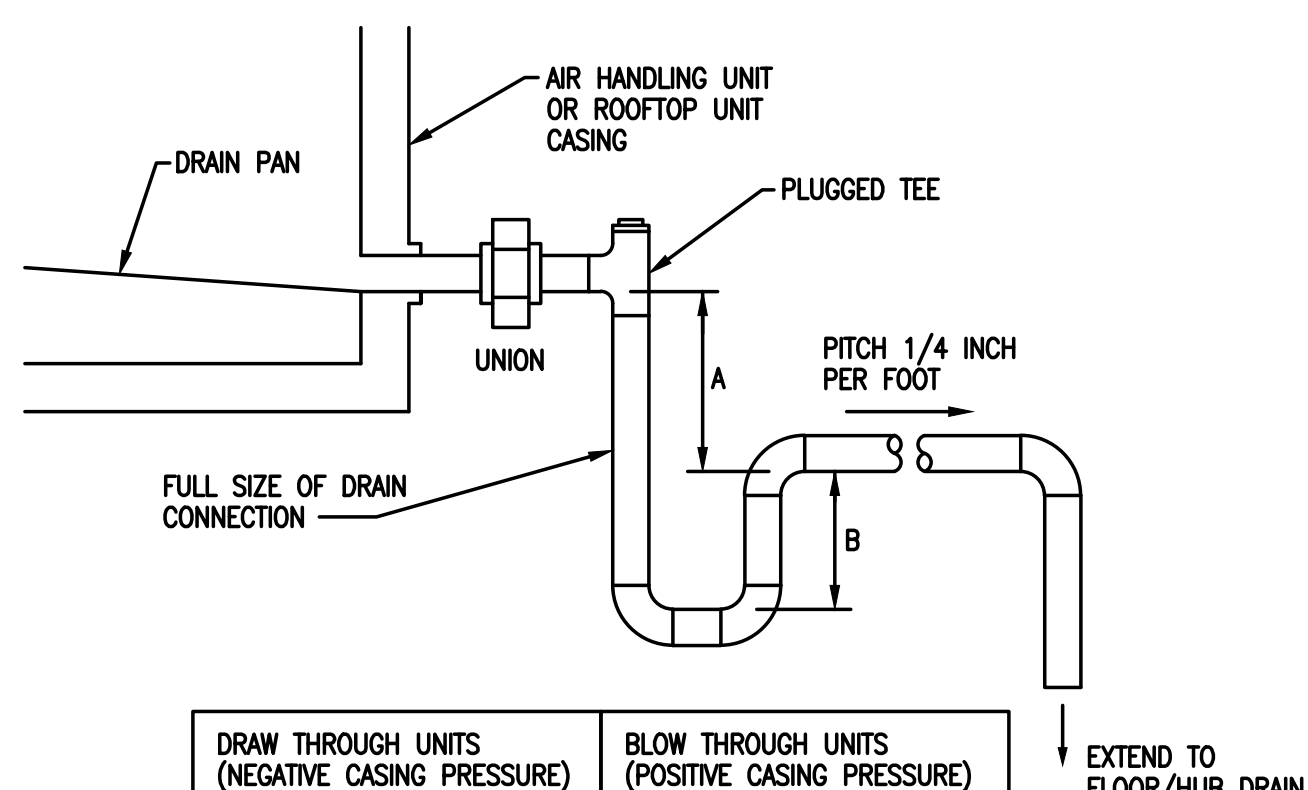
DETAIL - BRANCH DUCT CONNECTION
NO SCALE



DETAIL - BRANCH DUCT CONNECTION
NO SCALE

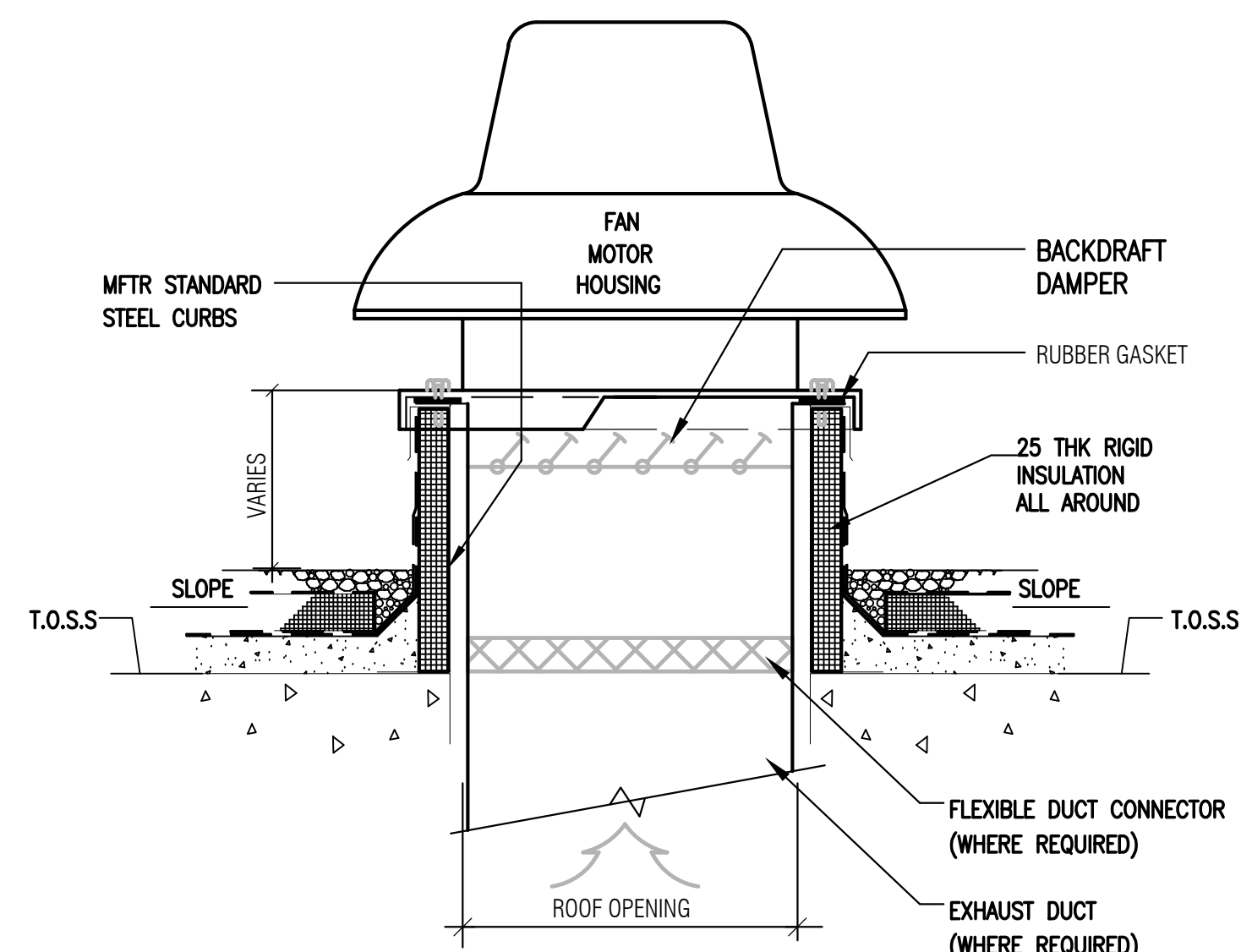
- NOTES:
1. PROVIDE 1/4" NEOPRENE GASKET BETWEEN RTU AND CURB.
 2. MECHANICAL CONTRACTOR SHALL COORDINATE ROOF OPENINGS FOR ACTUAL EQUIPMENT PURCHASED AND FOR REQUIREMENTS OF INSTALLATION METHODS USED.
 3. PROVIDE 6" MINIMUM FLEXIBLE DUCT CONNECTION.
 4. TRANSITION DUCTS IN VERTICAL TO FULL SIZE OF UNIT CONNECTIONS. COORDINATE TRANSITIONS TO HORIZONTAL RUNS WITH PLAN LAYOUT, ARCH. PLANS, AND ALL OTHER TRADES IN ORDER TO ACCOMMODATE CEILING PLENUM RESTRICTIONS.
 5. POWER SUPPLY WITHIN CURB.
 6. PROVIDE 3" MINIMUM 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.
 7. PACK ALL OPENINGS THROUGH ROOF WITH ACOUSTIC/FIREPROOF MATERIAL. PROVIDE NON-HARDENING SEALER ABOVE AND BELOW.
 8. OUTSIDE AIR INTAKE. MAINTAIN 10 FT CLEARANCE TO EXHAUST & PLUMBING VENTS.
 9. PROVIDE CONDENSATE DRAIN AND TRAP PER MANUFACTURER'S RECOMMENDATIONS. ROUTE PIPE TOWARDS THE NEAREST ROOF DRAIN - TERMINATE A MINIMUM OF 2' FROM THE RTU.

CONSTANT VOLUME ROOFTOP UNIT DETAIL
NO SCALE



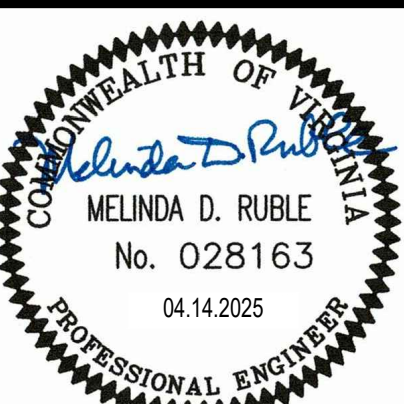
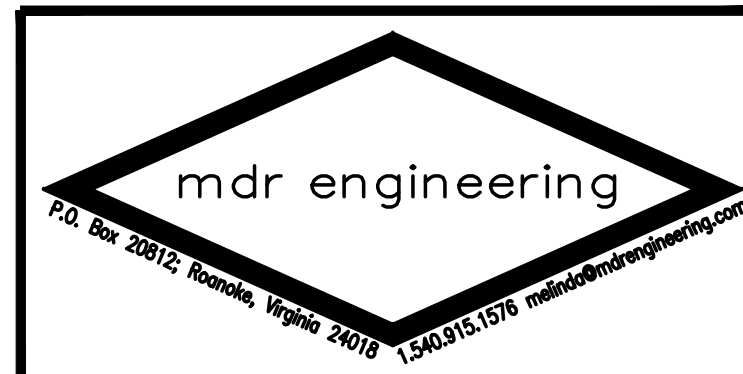
DRAW THROUGH UNITS (NEGATIVE CASING PRESSURE)	BLOW THROUGH UNITS (POSITIVE CASING PRESSURE)
A = 1 INCH PLUS MAXIMUM CASING STATIC PRESSURE B = A/2	A = 1 INCH MINIMUM B = 1 INCH PLUS MAXIMUM CASING STATIC PRESSURE

DETAIL - CONDENSATE DRAIN
NO SCALE



- NOTES
1. FOR FAN DETAILS AND OTHER ACCESSORIES REQUIRED SEE EQUIPMENT SCHEDULES AND SPECIFICATIONS.
 2. FOR REQUIRED ROOF OPENING REFER TO EQUIPMENT MANUFACTURER'S CATALOG.
 3. PROVIDE SAFETY DISCONNECT SWITCH INSTALLED ON MOTOR MOUNTING PLATE UNDER MOTOR DOME.

DETAIL - ROOFTOP EXHAUST FAN
NO SCALE



MECHANICAL DETAILS
DISMAS CHARITIES, INC.
NEW FACILITY - ROANOKE
2921 HOLINS ROAD NE
ROANOKE, VIRGINIA 24012
100% WORKING DRAWINGS - CODE REVIEW

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