



PROJECT NO.: 573-007
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6201 WEST PLANO PARKWAY
BLUEWATER LEARNING

6201 WEST PLANO PKWY.
SUITE #125
PLANO, TX 75093

NO.	ISSUED FOR:	DATE:

LANDLORD/CLIENT REVIEW ISSUE DATE: 01/07/21
BID ISSUE DATE: 01/13/21
CONSTRUCTION ISSUE DATE: 01/13/21

DRAWING TITLE:
**MECHANICAL
NOTES & SYMBOLS**

DRAWING NUMBER:

M0.01

GENERAL NOTES:

- ALL WORK SHALL COMPLY WITH APPLICABLE NATIONAL, STATE AND LOCAL CODES, RULES, REGULATIONS AND REQUIREMENTS.
- ALL WORK SHALL COMPLY WITH THE BUILDING TENANT CONSTRUCTION GUIDE. COORDINATE WITH BUILDING MANAGEMENT/OWNER FOR ACCESS TO ANY TENANT LEASE SPACES THAT MIGHT BE REQUIRED FOR THE INSTALLATION. UNLESS DIRECTED BY LANDLORD ALL EQUIPMENT AND WORKMANSHIP SHALL BE GUARANTEED FOR 1 YEAR.
- EXISTING CONDITIONS ARE BASED ON INFORMATION PROVIDED BY SITE SURVEY AND PREVIOUS RECORD DRAWINGS. HOWEVER, IT IS NOT INTENDED TO BE A TRUE REPRESENTATION OF ACTUAL CONDITIONS. CONTRACTOR SHALL VISIT JOB SITE PRIOR TO BIDDING TO ASCERTAIN EXISTING CONDITIONS AND SHALL NOTIFY ARCHITECT OF ANY DISCREPANCIES PRIOR TO BID.
- CONTRACTOR SHALL ENGAGE AN INDEPENDENT AIR BALANCING COMPANY TO OBTAIN AIR QUANTITIES SHOWN ON DRAWING. AT COMPLETION OF AIR BALANCE, BALANCING DAMPER SHALL BE TIGHTENED AND PROPERLY SEALED WITH FOIL TAPE.
- ALL MEDIUM AND LOW PRESSURE DUCTWORK SHALL BE GALVANIZED SHEET METAL, FABRICATED, INSTALL AND SEAL MEDIUM PRESSURE DUCTWORK FOR 3"W.G. AND LOW PRESSURE DUCTWORK FOR 1"W.G. IN ACCORDANCE WITH SMACNA STANDARD. DUCTWORK SHALL BE INSULATED WITH FIBERGLASS BLANKET WITH FOIL FACED VAPOR BARRIER TO MEET IECC REQUIREMENT (MIN R5 VALUE).
- ALL SUPPLY AND RETURN DUCT SIZES ARE FREE AREAS.
- INDIVIDUAL DUCT RUN-OUTS TO EACH DIFFUSER SHALL BE SIZED IN ACCORDANCE TO THE DIFFUSER NECK SIZE FOUND IN THE GRILLES-REGISTERS-DIFFUSERS SCHEDULE UNLESS NOTED OTHERWISE.
- OFFSET DUCTS INTO JOIST SPACE FOR CLEARANCE WHERE SPACE ABOVE CEILING IS NOT SUFFICIENT FOR DUCTS TO CROSS OTHER DUCTS OR WORK OF OTHER TRADES.
- INSULATED FLEX DUCT IN THE MEDIUM PRESSURE SYSTEM SHALL BE UTILIZED AT INLET TO VAV BOX OR FAN POWERED BOX ONLY. LENGTH SHALL BE LIMITED TO AN OVERALL LENGTH OF TWO (2) FEET AND BE STRAIGHT RUN. INSULATED FLEX DUCT IN THE LOW PRESSURE SYSTEM SHALL BE LIMITED TO AN OVERALL LENGTH OF SIX (6) FEET WITH A MAXIMUM OF A 90 DEGREE CHANGE IN DIRECTION. SUPPORTS SHALL BE SADDLE Banded TO STRUCTURE SUPPORTING FROM FIRE PROTECTION PIPING, ELECTRICAL CONDUIT OR CEILING SUPPORT WIRES IS NOT ACCEPTABLE.
- VAV BOXES AND FAN POWERED BOXES SHALL HAVE 24" MINIMUM CLEARANCE ON ALL SIDES OF BOX. ENSURE NEC CLEARANCES ARE MAINTAINED INCLUDING 36" IN FRONT OF 0-208V POWER AND 42" IN FRONT OF 277/480V POWER.
- CONTRACTOR SHALL VERIFY ALL EXISTING SLOT DIFFUSERS AS LOCATED PER DRAWINGS OR ENSURE RELOCATION TO MATCH PLANS. CONTRACTOR SHALL ALSO VERIFY THAT EXISTING SLOT INDICATED SHALL BE ABLE TO DELIVER CFM AS NOTED. IF NOT, CONTRACTOR SHALL REMOVE EXISTING SLOT AND REPLACE WITH NEW OR RELOCATED SLOT THAT CAN DELIVER CFM AS INDICATED.
- ALL ENCLOSED ROOMS (INTERIOR AND PERIMETER) SHALL HAVE RETURN AIR PATH. ROOMS WITH ALL WALLS TO DECK SHALL HAVE LINED SHEET METAL RETURN AIR BOOTS PLACED IN WALL ABOVE CEILING SIZED FOR 500 FPM MAXIMUM. FIRE RATED WALLS SHALL HAVE FIRE DAMPERS WITHIN THE DUCT PER LOCAL CODE REQUIREMENTS. FIRE DAMPERS AND FIRE-SMOKE DAMPERS SHALL BE FREE AREA/OUT OF AIRSTREAM TYPE. ALL MOTORIZED DAMPERS SHALL BE FREE AREA/OUT OF AIRSTREAM TYPE.
- PIPES AND DUCTS TO BE COORDINATED ON JOB WITH BUILDING STRUCTURE AND WORK OF OTHER CONTRACTORS. ROUTE AS HIGH AS PHYSICALLY POSSIBLE.
- COORDINATE CEILING DIFFUSERS AND GRILLES WITH LIGHTING FIXTURES. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN.
- THERMOSTATS TO BE MOUNTED 48" ABOVE FINISHED FLOOR LEVEL UNLESS NOTED OTHERWISE ON THE PLANS. CONTRACTOR SHALL COORDINATE LOCATION OF THERMOSTATS WITH ARCHITECT IN FIELD.
- REPAIR AND PATCH CONSTRUCTION DAMAGED DUE TO THE DEMOLITION OF THIS PROJECT, USING SAME METHODS AND MATERIALS TO MATCH EXISTING.
- PROVIDE TEMPORARY HIGH EFFICIENCY FILTER MEDIA ON MAIN RETURN AIR AND EXHAUST FROM FLOOR AT BEGINNING OF PROJECT AND REPLACED AT TWO (2) WEEK INTERVALS UNTIL PROJECT COMPLETION AT WHICH TIME THE FILTER MEDIA SHALL BE REMOVED.
- FLEXIBLE DUCTS SHALL BE SIMILAR AND EQUAL TO THERMOFLEX: TYPE M-KE. FLEXIBLE DUCTS SHALL COMPLY WITH APPLICABLE REQUIREMENTS OF UL-181, NFPA 90-A AND OTHER GOVERNING AUTHORITIES.
- AIR CONDITIONING COOLING CONDENSATE PIPING TO BE ONE-HALF INCH THICK ARMAFLEX. FITTINGS SHALL BE PRE-MOLDED OF THE SAME MATERIAL. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
- DUCTLINER SHALL BE 1-INCH ACOUSTICAL DUCT LINING IN ACCORDANCE WITH SMACNA STANDARDS. DUCT LINING SHALL BE OWENS-CORNING FIBERGLAS "AEROFLEX" NO. 200 OR EQUAL.
- ALL EXISTING DUCTWORK SHALL BE FIELD VERIFIED TO BE INSULATED AND IN GOOD CONDITION, ANY TORN, DAMAGED OR MISSING INSULATION WILL BE REPLACED. EXISTING CONTROLS SHALL BE CONFIRMED TO BE IN WORKING CONDITION.
- CONTROL CONTRACTOR SHALL PROVIDE 24V TRANSFORMER FOR UP TO 5 VAV BOXES SERVED FROM 120V J-BOX. PROVIDE CONTROL WIRE TO EACH VAV BOX.

HVAC SYMBOLS

SYMBOL	DESCRIPTION
	ARROW INDICATES EXISTING TO BE RELOCATED AS INDICATED ON PLAN
	REDISTRIBUTE AIR TO EXISTING DIFFUSER AS INDICATED ON PLAN
	INDICATES SIZE, CFM, AND DIFFUSER TYPE
	NEW CEILING SUPPLY DIFFUSER
	NEW RETURN AIR/EXHAUST GRILLE
	EXISTING RETURN AIR/EXHAUST GRILLE
	EXISTING SLOT DIFFUSER
	POINT OF CONNECTION BETWEEN NEW AND EXISTING WORK
	EXISTING TO REMAIN
	REMOVE EXISTING AS INDICATED
	CAP EXISTING DUCT
	MANUAL VOLUME CONTROL DAMPER
	DUCT TRANSITION
	NEW OR RELOCATED THERMOSTAT
	EXISTING THERMOSTAT
	FLEXIBLE DUCT CONNECTION
	INDICATES A WALL TO DECK (FOR COORDINATION PURPOSE ONLY-REFER TO ARCHITECTS PLANS FOR REQUIREMENTS)

VAV BOXES WITH ELECTRIC HEAT

DESIG	SERVES	DESIGN COOLING CFM	MIN COOLING CFM	ELECTRIC HEATING COIL				INLET SIZE (IN.)	EQUAL TO MANUF & MODEL NO.
				HEATING CFM	HEATING STAGES	ELEC KW	VOLT/PH		
VAVEH-N1-22	CONFERENCE 104	480	100	250	1	3.5	277/1	8	METALAIRES TH500 SERIES
VAVEH-N1-23	OFFICES 105-106	1380	280	690	2	9.0	277/1	12	METALAIRES TH500 SERIES
VAVEH-N1-24	CONFERENCE 103	300	60	150	1	2.0	277/1	8	METALAIRES TH500 SERIES
VAVEH-N1-25	OPEN OFFICE 110/ENTRY 100	825	165	415	2	5.5	277/1	10	METALAIRES TH500 SERIES
VAVEH-N1-26	OPEN OFFICE 110	700	140	350	2	4.5	277/1	10	METALAIRES TH500 SERIES
VAVEH-N1-27	OFFICES 107-109/LOUNGE 110	930	190	465	2	6.0	277/1	10	METALAIRES TH500 SERIES
VAVEH-N1-28	OFFICES 111-115	960	195	480	2	6.5	277/1	10	METALAIRES TH500 SERIES
VAVEH-N1-29	STUDIO 119	300	60	150	2	2.0	277/1	8	METALAIRES TH500 SERIES
VAVEH-N1-30	BREAK 116/STORAGE 118	855	175	430	2	5.5	277/1	10	METALAIRES TH500 SERIES
VAVEH-N1-31	BREAK 116	360	75	180	2	2.5	277/1	8	METALAIRES TH500 SERIES
			0	0	0	0.0		6	

NOTES: (APPLICABLE TO ALL BOXES)
 1) REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
 2) PROVIDE FIBER FREE LINER EQUAL TO CELL/POLYMER FOAM INSULATION INSULATION.
 3) PROVIDE 2 WIRE + GROUND CONNECTION FOR ELECTRICAL REHEAT FOR ALL BOXES.
 4) REFER TO SCHEDULE FOR MINIMUM SETPOINTS.
 5) BOXES SHALL BE COMPLETE WITH BUILDING STANDARD DDC CONTROLS AND CONNECTED TO BMS VIA BUILDING STANDARD SEQUENCE OF OPERATION.
 6) APPROVED MANUFACTURERS: JCI, ENVIRO-TEC, PRICE, NAILOR, METALAIRES, TITUS, & TRANE.
 7) ALL SUBSTITUTIONS SHALL BE APPROVED, IN WRITING, PRIOR TO BID.
 8) PROVIDE FACTORY MOUNTED NON-FUSED DISCONNECT.

GRILLES - REGISTERS - DIFFUSERS

DESIG	DUTY	TYPE	MOUNTING LOCATION	MATERIAL	VOLUME CONTROL	FINISH	AIR PATTERN CONTROL	METHOD OF SUPPORT	EQUAL TO MANUFACTURER AND MODEL NO.	REMARKS
A	SUPPLY	SQUARE PLAQUE	LAY-IN CLG	STEEL	NO	OFF WHITE	YES	T-BAR	PRICE SPD	SEE NOTE 1,2
B	RETURN	PERFORATED	LAY-IN CLG	STEEL	NO	OFF WHITE	NO	T-BAR	PRICE PDDR 24X24 FACE	SEE NOTE 2
C	SUPPLY	SLOT	LAY-IN CLG	STEEL	NO	BLACK	YES	T-BAR	PRICE TBD4 (1)1-1/2" SLOT	SEE NOTE 1,2,3,5
C1	SUPPLY	SLOT	GYP BD CLG	STEEL	NO	BLACK	YES	SURFACE	PRICE TBD4 (1)1-1/2" SLOT	SEE NOTES 1,2,3,5
D	RETURN	DOOR LOUVER	DOOR	STEEL	NO	OFFWHITE	NO	SURFACE	PRICE STG-1	SEE NOTE 4

NOTES:
 1) NECK SIZES AS FOLLOWS:

DESIGNATION "A" CFM RANGE	NECK SIZE	DESIGNATION "C" CFM RANGE	NECK SIZE	LENGTH
300-300	8"RD	000-130	8"RD	2'-0"
305-435	10"RD	135-260	10"RD	4'-0"
440-600	12"RD			
600-745	14"RD			

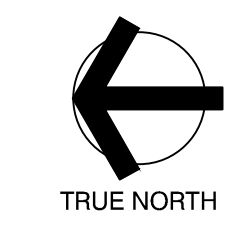
2) NOTIFY ENGINEER OF ANY DISCREPANCIES BETWEEN NEW MODEL NUMBER AND EXISTING NUMBER PRIOR TO PURCHASE.
 3) COORDINATE NEW INACTIVE SECTIONS NEXT TO SLOT DIFFUSER WITH ARCHITECT PRIOR TO BIDDING.
 4) INACTIVE SECTIONS OF SLOT DIFFUSERS SHALL HAVE SHEET METAL LIGHTPROOF SIGHT GUARDS AND SHALL BE USED FOR RETURN AIR.
 5) PROVIDE PLASTER FRAME, PRIME AND PAINT AS REQUIRED. COORDINATE PAINT COLOR WITH ARCHITECT.
 6) APPROVED MANUFACTURERS: PRICE, TITUS, NAILOR, & KRUEGER.

EXHAUST FANS

DESIG	SERVICE	LOCATION	TYPE	CONTROL	CFM	MECHANICAL				ELECTRICAL			
						ESP (IN W.G.)	DRIVE	ACCESSORIES (SEE BELOW)	WEIGHT (LBS)	EQUAL TO BASIS OF DESIGN MFR & MODEL #	WATTS	RPM	VOLT/PH
EF-N1-1	IT 117	CEILING GRID	CABINET	T-STAT	800	0.3	DIRECT	A,C,F	56	GREENHECK SP-1050	438	1250	120/1

ACCESSORIES:
 (A) - BACKDRAFT DAMPER (D) - ROOFCURB (G) - INTERLOCK WITH APPLICABLE AHU SUPPLY FAN
 (B) - BIRDSCREEN (E) - SPEED CONTROL (H) - VFD CONTROLLED
 (C) - PRE-WIRED NON-FUSED SERVICE DISCONNECT (F) - SPRING ISOLATION

NOTES:
 1) REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
 2) CONTROL DESCRIPTION (WHERE PROVIDED, REFER TO SEQUENCE OF OPERATION FOR ADDITIONAL INFORMATION).
 T-STAT - LINE VOLTAGE THERMOSTAT PROVIDED BY DIV 23.
 3) APPROVED MANUFACTURERS - GREENHECK, COOK
 4) ALL SUBSTITUTIONS SHALL BE APPROVED, IN WRITING, PRIOR TO BID.



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DIVISION 23 - HEATING VENTILATING AND AIR CONDITIONING

SECTION 230500 - COMMON WORK RESULTS

PART 1 - GENERAL

- 1.1 GENERAL NOTES AND SCOPE OF WORK
 - A. REFER TO SECTION 220500 FOR INFORMATION RELATED TO HVAC GENERAL CONDITIONS, MISCELLANEOUS EQUIPMENT AND MATERIALS, AND CONSTRUCTION REQUIREMENTS.
- 1.2 RELATED SECTIONS
 - A. SECTIONS 230523, 230529, 230553 AND 230700 ARE APPLICABLE BUT THEY DO NOT APPEAR IN THESE DIVISION 23 SPECIFICATIONS. REFER TO GENERAL NOTES.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 230548 - VIBRATION CONTROLS

PART 1 - GENERAL

- 1.1 SCOPE OF WORK
 - A. REFER TO SECTION 230500.

PART 2 - PRODUCTS

- 2.1 EQUIPMENT PADS
 - A. PADS SHALL BE 3/4 INCH WATER RESISTANT NEOPRENE WITH WAFFLE PATTERN, MASON TYPE WSW, OR EQUAL.
- 2.2 ELASTOMERIC HANGERS
 - A. HANGER SHALL CONSIST OF RODS WITH STEEL BOX HOUSING NEOPRENE ISOLATION ELEMENT AND SPRING, MASON SERIES 30N, OR EQUAL.
- 2.3 RESTRAINED SPRING ISOLATORS
 - A. ISOLATORS SHALL UTILIZE A STEEL BASE WITH WAFFLED NEOPRENE PAD, WELDED STEEL ENCLOSURE WITH SPRING AND RESTRAINING BOLTS, MASON TYPE SLR, OR EQUAL.
- 2.4 ROOF CURB ISOLATORS
 - A. AS PART OF THE ROOF CURB, PROVIDE SPRING ISOLATORS WITH WATER-TIGHT DESIGN, RETRAINED SPRINGS AND NEOPRENE PADS, MASON TYPE RSC, OR EQUAL.
- 2.5 INERTIA BASES
 - A. PROVIDE STEEL POURING FORM FOR REINFORCED CONCRETE BLOCKS WITH FLOOR MOUNTED SPRINGS, MASON KSL, OR EQUAL.

PART 3 - EXECUTION

- 3.1 SCHEDULE
 - A. EQUIPMENT PADS - SMALL FLOOR MOUNTED EQUIPMENT OR PACKAGED EQUIPMENT WITH INTERNAL ISOLATION.
 - B. ELASTOMERIC HANGERS - SUSPENDED AIR HANDLING UNITS, EXHAUST FANS, TERMINAL UNITS, HEAT PUMPS, PUMPS, ETC.
 - C. RESTRAINED SPRING ISOLATORS - FLOOR MOUNTED FANS GREATER THAN 1/4 HP.
 - D. ROOF CURB ISOLATORS - FACTORY FABRICATED ROOFTOP UNITS.
 - E. INERTIA BASES - FLOOR MOUNTED PUMPS GREATER THAN 1/4 HP.
- 3.2 INSTALLATION
 - A. INSTALL VIBRATION CONTROLS PER THE MANUFACTURER'S INSTRUCTIONS.

END OF SECTION

SECTION 230553 - IDENTIFICATION

PART 1 - GENERAL

- 1.1 SCOPE OF WORK
 - A. REFER TO SECTION 230500.
 - B. LABEL ALL NEW EQUIPMENT AND PIPING SYSTEMS.

PART 2 - PRODUCTS

- 2.1 PIPE LABELS
 - A. PRETENSION PIPE LABELS OF SEMI-RIGID PLASTIC FORMED TO COVER THE FULL CIRCUMFERENCE OF PIPE.
 - B. IDENTIFY THE SERVICE AND DIRECTION OF FLOW. LABELS SHALL CONTAIN AT LEAST 1/2 INCH HIGH LETTERING AND BE PLACED SO THEY ARE EASY TO READ.
- 2.2 EQUIPMENT LABELS
 - A. MULTILAYER, MULTICOLOR PLASTIC LABELS WITH MECHANICAL ENGRAVING AND HOLES FOR ATTACHMENT TO EQUIPMENT.

PART 3 - EXECUTION

- 3.1 PIPE LABELS
 - A. INSTALL PIPE LABELS WHERE PIPING IS EXPOSED OR ABOVE AN ACCESSIBLE CEILING AT MAXIMUM 20 FT. CENTERS.
- 3.2 VALVE TAGS
 - A. ATTACH TAGS TO VALVES USING CHAIN. PROVIDE A VALVE SCHEDULE FOR MOUNTING IN THE MECHANICAL ROOM.
- 3.3 EQUIPMENT LABELS
 - A. PERMANENTLY ATTACH LABELS TO EQUIPMENT. LOCATE WHERE LABEL CAN BE EASILY SEEN AND READ.

END OF SECTION

SECTION 230593 - TESTING ADJUSTING AND BALANCING

PART 1 - GENERAL

- 1.1 SCOPE OF WORK
 - A. THE WORK INCLUDED IN THIS SECTION CONSISTS OF FURNISHING ALL LABOR, MATERIALS, INSTRUMENTS, TOOLS, AND SERVICES REQUIRED IN CONNECTION WITH THE TESTING, ADJUSTING AND BALANCING (TAB) OF THE HEATING, VENTILATING AND AIR CONDITIONING (HVAC) SYSTEMS AS DESCRIBED IN THE MECHANICAL SPECIFICATIONS AND/OR SHOWN ON THE MECHANICAL PLANS, OR REASONABLY IMPLIED THEREFROM.
 - B. THE TAB FIRM SHALL HAVE A LICENSED PROFESSIONAL ENGINEER SUPERVISING ALL WORK AND THE FIRM SHALL HOLD A CURRENT AABC OR NEHB CERTIFICATION.
 - C. REFER TO SECTION 230500.
- 1.2 START-UP, TEST AND ADJUST
 - A. PROVIDE ALL TESTS OF EQUIPMENT AND SYSTEMS REQUIRED TO PROVE COMPLIANCE WITH THE DRAWINGS AND SPECIFICATIONS. OWNER SHALL BE MADE COMPLETELY FAMILIAR WITH THE COMPLETE WORKING OF ALL THE MECHANICAL SYSTEMS.
 - B. THE TESTS SHALL DEMONSTRATE THE SPECIFIED CAPACITIES AND OPERATION OF ALL EQUIPMENT AND MATERIALS COMPRISING THE SYSTEMS. ALL DATA REQUIRED BY THESE SPECIFICATIONS SHALL BE PREPARED ON TYPED FORMS AND SUBMITTED TO THE ENGINEER FOR APPROVAL. COMPLETE APPROVAL WILL BE NECESSARY BEFORE FINAL PAYMENT CAN BE MADE. THE CONTRACTOR SHALL THEN MAKE AVAILABLE SUCH INSTRUMENTS NECESSARY FOR SPOT CHECKS ON THE SYSTEM.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

- 3.1 HVAC SYSTEM
 - A. THE HVAC CONTRACTOR SHALL WORK IN CONJUNCTION WITH THE TAB CONTRACTOR TO START-UP AND OPERATE ALL EQUIPMENT NECESSARY TO PROVIDE A COMPLETE AIR AND WATER TEST AND BALANCE REPORT.
 - B. TAB CONTRACTOR SHALL MEASURE CFM AT ALL DIFFUSERS, REGISTERS AND GRILLES, AND HVAC UNITS, AS WELL AS WATER FLOWS AT COILS AND PUMPS, TO ASSURE THAT THEY MATCH THE QUANTITIES SHOWN ON THE PLANS (PLUS OR MINUS 5 PERCENT). CONFIRM ALL SEQUENCES OF OPERATION ARE PERFORMING CORRECTLY.
 - C. TAB CONTRACTOR SHALL CALIBRATE ALL EQUIPMENT AND SENSORS TO WORK PROPERLY AND GIVE CORRECT INFORMATION TO THE BMS SYSTEM.

END OF SECTION

SECTION 230900 - CONTROLS

PART 1 - GENERAL

- 1.1 SCOPE OF WORK
 - A. REFER TO SECTION 230500.

PART 2 - PRODUCTS

- 2.1 CONTROLS SYSTEM
 - A. PROVIDE NEW, MODIFY OR EXTEND AUTOMATIC TEMPERATURE CONTROLS TO ALL NEW EQUIPMENT SHOWN ON THE DRAWINGS.
 - B. REFER TO THE DRAWINGS FOR ANY SPECIAL SEQUENCES OF CONTROL AND LOCATION OF EQUIPMENT.
 - C. REMODEL PROJECTS SHALL UTILIZE EQUIPMENT BY THE SAME MANUFACTURER AS CURRENTLY EXISTS.

PART - EXECUTION

- 3.1 DESIGN AND LAYOUT
 - A. THE CONTROL SYSTEM DESIGN AND LAYOUT SHALL BE PERFORMED BY A FACTORY AUTHORIZED AGENT OF THE MANUFACTURER USED.
- 3.2 SYSTEM OPERATION
 - A. AT THE CONCLUSION OF WORK, ALL EQUIPMENT AND SYSTEMS SHALL BE PROVEN TO THE ENGINEER TO OPERATE IN ACCORDANCE WITH THE NEW OR EXISTING MAIN CONTROL PANEL AND NEW/EXISTING SEQUENCES OF OPERATION ON THE DRAWINGS.
 - B. PROVIDE ALL WIRING REQUIRED TO CONNECT INPUT/OUTPUT DEVICES TO CONTROL PANELS.
 - C. TEST AND ADJUST ALL DEVICES AND DOCUMENT CALIBRATION.
 - D. PROVIDE NECESSARY INSTRUCTION TO THE OWNER'S PERSONNEL.

END OF SECTION

SECTION 233113 - DUCTWORK

PART 1 - GENERAL

- 1.1 SCOPE OF WORK
 - A. REFER TO SECTION 230500.

PART 2 - PRODUCTS

- 2.1 GENERAL
 - A. CONCEALED DUCTWORK SHALL BE CONSTRUCTED OF NEW, PRIME GRADE, CONTINUOUS HOT-DIP MILL GALVANIZED, LOCK-FORMING, QUALITY STEEL. REFER TO SMACNA HVAC DUCT CONSTRUCTION STANDARDS.
 - B. WHERE DUCTS EXPOSED TO VIEW PASS THROUGH WALLS, FLOORS OR CEILINGS, PROVIDE SHEET METAL COLLARS TO COVER VOIDS AROUND THE DUCTS.
 - C. SQUARE AND ROUND ELBOWS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE SMACNA STANDARDS. ELBOWS NOT CONSTRUCTED WITH A CENTERLINE RADIUS OF AT LEAST 50 PERCENT OF THE DUCT WIDTH OR DIAMETER SHALL BE PROVIDED WITH TURNING VANES IN ACCORDANCE WITH SMACNA STANDARDS.
 - D. "FIBERBOARD" DUCTWORK WILL NOT BE ACCEPTED ON THIS PROJECT.
- 2.2 MEDIUM PRESSURE DUCT CONSTRUCTION
 - A. UNLESS NOTED OTHERWISE, MEDIUM PRESSURE DUCTS SHALL BE CONSTRUCTED TO A PRESSURIZATION CLASSIFICATION OF THREE (3) INCHES WG POSITIVE.
 - B. ALL ROUND MEDIUM PRESSURE DUCTS SHALL BE SPIRAL TYPE.
- 2.3 LOW PRESSURE DUCT CONSTRUCTION
 - A. LOW PRESSURE DUCTS CONNECTING SMALL AIR HANDLING EQUIPMENT, SHALL BE CONSTRUCTED TO A PRESSURIZATION CLASSIFICATION OF TWO (2) INCHES WG, POSITIVE OR NEGATIVE AS APPROPRIATE. THESE LOW PRESSURE ROUND DUCTS SHALL BE SPIRAL TYPE.
 - B. DUCTWORK DOWN STREAM OF AIR TERMINAL UNITS SHALL BE CONSTRUCTED TO A PRESSURE CLASSIFICATION OF ONE (1) INCHES WG POSITIVE. THESE LOW PRESSURE ROUND DUCTS MAY BE SPIRAL OR SNAP-LOCK TYPE.
 - C. SHOP FABRICATED DUCTS SHALL BE CONSTRUCTED, BRACED AND REINFORCED IN ACCORDANCE WITH SMACNA STANDARDS.
- 2.4 DUCT SEALING
 - A. SEAL ALL DUCTWORK ON THE PROJECT TO SMACNA CLASSIFICATION A.
- 2.5 FLEXIBLE DUCTS
 - A. FLEXIBLE DUCTS SHALL BE SIMILAR AND EQUAL TO THERMOFLEX TYPE M-KE AND SHALL COMPLY WITH APPLICABLE REQUIREMENTS OF UL-181, NFPA 90-A AND OTHER GOVERNING AUTHORITIES.
 - B. FLEXIBLE DUCTS SHALL BE FACTORY INSULATED WITH A NOMINAL 1 INCH THICKNESS OF FIBERGLASS INSULATION, PRODUCING A THERMAL CONDUCTANCE ("C") OF 0.23. DUCTS SHALL HAVE A POSITIVE INTERIOR AIR SEAL PERMANENTLY BONDED TO A COATED HIGH CARBON SPRING STEEL HELIX, ALL SHEATHED IN AN OUTER VAPOR BARRIER OF FIBERGLASS REINFORCED FILM LAMINATE.
 - C. FLEXIBLE DUCTS SHALL BE RATED FOR OPERATING PRESSURE OF PLUS 6 INCHES WG THROUGH 10 INCH DIAMETER, PLUS 4 INCHES WG THROUGH 16 INCH DIAMETER AND - 2 INCHES WG FOR ALL SIZES.
 - A. FLEXIBLE DUCTS TO DIFFUSERS AND GRILLES SHALL BE LIMITED TO 6 FOOT LENGTHS AND A MAXIMUM OF ONE (1) 90 DEGREE CHANGE IN DIRECTION. MEDIUM PRESSURE DUCTS SERVING TERMINAL UNITS SHALL BE LIMITED TO 2 FOOT LENGTHS WITH NO ELBOWS.
- 2.6 FLEXIBLE DUCT FABRIC
 - A. PROVIDE VENT FABRICS - "VENTGLAS", OR EQUAL, 30 OZ PER SQ YD, BETWEEN SHEET METAL DUCTS AND AIR HANDLING EQUIPMENT, INCLUDING ALL FANS, AND POWER TYPE VENTILATORS.
- 2.7 DAMPERS
 - A. DAMPER AND SPLITTER HARDWARE FOR LOW PRESSURE DUCTS SHALL BE: END BEARINGS - VENTLOK #607
REGULATOR FINISHED AREAS - VENTLOK #666, PLAIN COVER
REGULATOR UNFINISHED AREAS - VENTLOK #660, 3/8 INCH.
 - B. VOLUME DAMPERS SHALL BE LOCATED AT BRANCH TAKE-OFFS AT MAIN TRUNK DUCT. NO DAMPERS (SPLITTER DAMPERS) SHALL BE LOCATED IN THE CENTER OF DUCTS.

PART 3 - EXECUTION

- 3.1 FABRICATION
 - A. DUCTWORK SHOWN ON THE DRAWINGS, SPECIFIED, OR REQUIRED FOR HEATING, VENTILATING AND AIR CONDITIONING SYSTEMS SHALL BE CONSTRUCTED AND ERECTED IN A FIRST CLASS MANNER.
 - B. DUCTS SHALL BE REINFORCED IN ACCORDANCE WITH THE APPROPRIATE SMACNA STANDARDS TO PREVENT BUCKLING, BREATHING, VIBRATION AND UNNECESSARY NOISE.
 - C. PROVIDE MANUALLY OPERATED VOLUME CONTROL DAMPERS IN DUCT BRANCHES, FOR PROPER BALANCING OF AIR DISTRIBUTION. DAMPERS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE APPROPRIATE SMACNA STANDARDS.
 - D. PROVIDE HINGED ACCESS DOORS IN DUCTWORK FOR ACCESS TO ALL SMOKE DETECTORS, SENSORS, AND OTHER CONTROL DEVICES, MANUAL DAMPERS, AND FOR CLEANING OPERATIONS. FACTORY FABRICATED DOORS SIMILAR AND EQUAL TO MILCOR AND MEETING THESE SPECIFICATIONS SHALL BE ACCEPTABLE.
 - E. WHERE DUCTS CONNECT TO FANS, INCLUDING ROOF EXHAUSTERS PROVIDE FLEXIBLE DUCT FABRIC CONNECTIONS. PROVIDE A MINIMUM OF 1/2 INCH SLACK IN THE CONNECTIONS, AND A MINIMUM OF 2-1/2 INCH DISTANCE BETWEEN THE EDGES OF THE DUCTS, PLUS AN ADDITIONAL MINIMUM OF 1 INCH OF SLACK FOR EACH INCH OF STATIC PRESSURE ON THE FAN SYSTEM.
 - F. PROVIDE SCREENS ON DUCTS, FANS AND OPENINGS WHICH LEAD TO, OR ARE OUTDOORS. SCREENS SHALL BE 16 GAUGE, 1/2 INCH MESH IN REMOVABLE GALVANIZED STEEL FRAMES.
 - G. FURNISH TEST OPENINGS WITH COVERS IN EACH DUCT FOR TAKING READINGS OF AIR VELOCITIES AND PRESSURES IN DUCTS. REFER TO THE APPROPRIATE SMACNA STANDARD FOR COVER CONSTRUCTION.
- 3.2 DUCT SUPPORTS
 - A. HORIZONTAL AND VERTICAL SHEET METAL DUCTWORK SHALL BE SUPPORTED IN ACCORDANCE WITH THE APPROPRIATE SMACNA STANDARDS.
 - B. HANGER DESIGN AND METHODS OF HANGING AND SUPPORTING SHALL BE COMPATIBLE WITH THE STRUCTURE.

END OF SECTION

SECTION 233713 - DIFFUSERS, REGISTERS AND GRILLES

PART 1 - GENERAL

- 1.1 GENERAL NOTES
 - A. REFER TO SECTION 230500

PART 2 - PRODUCTS

- 2.1 AIR INLETS AND OUTLETS
 - A. GRILLES, REGISTERS, CEILING OUTLETS, AND CEILING INLETS SHALL BE AS INDICATED ON THE DRAWING, AND SHALL BE PROVIDED WITH HEAVY DUTY SPONGE, OR SOFT FELT GASKETS. THE THROW SHALL BE SUCH THAT THE VELOCITY AT THE END OF THE THROW IN THE FIVE (5) FOOT OCCUPANCY ZONE WILL NOT BE MORE THAN 50 FPM NOT LESS THAN 25 FPM. NOISE LEVELS (NC CURVE) SHALL NOT EXCEED 40.
 - B. IF PRODUCTS OF A MANUFACTURER OTHER THAN THE ONES INDICATED ON THE DRAWINGS ARE USED, THE SIZES SHOWN ON THE DRAWING SHALL BE CHECKED FOR PERFORMANCE, NOISE LEVEL, FACE VELOCITY, THROW AND PRESSURE DROP BEFORE THE SUBMITTAL IS MADE. SELECTIONS SHALL MEET THE MANUFACTURER'S OWN PUBLISHED DATA FOR THE ABOVE PERFORMANCE CRITERIA. SHOULD DEVICES OTHER THAN THOSE SCHEDULED BY NAME BE FURNISHED, THE MANUFACTURER SHALL DEMONSTRATE COMPLIANCE WITH NOISE CRITERIA, ON REQUEST, TO THE ARCHITECT'S SATISFACTION.
 - C. WHERE CALLED FOR IN SCHEDULES, THE GRILLES, REGISTERS, CEILING OUTLETS, AND CEILING INLETS SHALL BE PROVIDED WITH DEFLECTING DEVICES AND MANUAL DAMPERS. THESE SHALL BE STANDARD PRODUCTS OF THE MANUFACTURER, SUBJECT TO REVIEW BY THE ARCHITECT, AND SHALL BE SIMILAR AND EQUAL TO THOSE SCHEDULED.

PART 3 - EXECUTION

- 3.1 INSTALLATION
 - A. LOCATIONS OF OUTLETS SHOWN ON THE DRAWINGS ARE APPROXIMATE. COORDINATE THE EXACT LOCATION WITH REFLECTED CEILING PLAN AND OTHER TRADES.
 - B. VERIFY THE TYPE OF CEILING SYSTEM AND MATERIAL INTO EACH OF THE AIR INLETS AND OUTLETS IS TO BE INSTALLED, AND PROVIDE EQUIPMENT, WHICH PROPERLY "FITS" WHETHER SPECIFICALLY, SO INDICATED OR NOT ON THE DRAWINGS.

END OF SECTION

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PROJECT NO.: 573-007
DRAWN BY: KC/RH
CHECKED BY: KS
R.S.F.: 8.941



6201 WEST PLANO PARKWAY
BLUEWATER LEARNING

6201 WEST PLANO PKWY.
SUITE #125
PLANO, TX 75093

NO.	ISSUED FOR:	DATE:

LANDLORD/CLIENT REVIEW ISSUE DATE: 01/07/21
BID ISSUE DATE: 01/13/21
CONSTRUCTION ISSUE DATE: 01/13/21

DRAWING TITLE:
MECHANICAL SPECIFICATIONS

DRAWING NUMBER:

M1.01



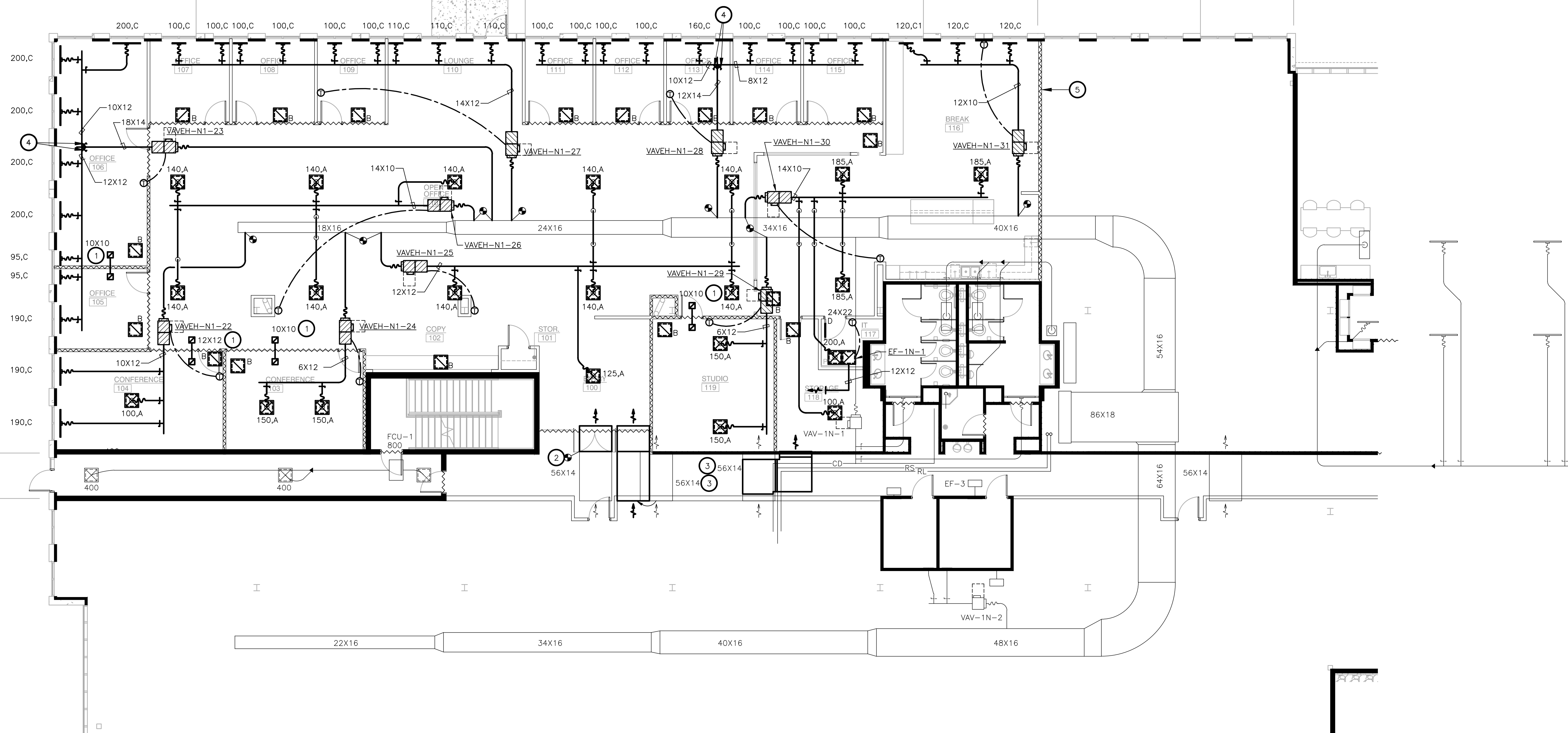
NOTES BY SYMBOL (X) :

1. PROVIDE ACOUSTICALLY LINED RETURN AIR BOOT THRU WALL TO DECK AS HIGH AS POSSIBLE ABOVE CEILING WITH INLET ELBOW AND OUTLET 90° ELBOW FACING UPWARD. SIZE IN ACCORDANCE WITH TRANSFER DUCT SIZING CHART ON PLANS. REFER TO DETAIL 01/M3.01 FOR MORE INFORMATION.
2. EXTEND NEW FULL SIZE DUCT SAME SIZE AND MATERIALS TO MATCH EXISTING DUCT. VERIFY SIZE AT JOB SITE PRIOR TO BIDDING.
3. RELOCATE RETURN/MODIFY AIR DUCT ACROSS CORRIDOR TO ENSURE RETURN AIR PATH BACK TO RTU.
4. PROVIDE EXPANDED TAP AT LOCATION SHOWN ON DRAWINGS. REFER TO DETAIL LOCATED ON SHEET M3.01.
5. WALL TO DECK SHALL STOP 6" BELOW ROOF DECK TO ENSURE CLEAR PATH FOR RETURN AIR.

REFER TO SHEET M0.01 FOR GENERAL NOTES, SCHEDULES AND SYMBOLS.

BLUEWATER LEARNING

AVAILABLE



1 LEVEL 01 MECHANICAL PLAN
SCALE: 1/8"=1'-0"



PROJECT NO.: 573-007
DRAWN BY: KC/RH
CHECKED BY: KS
R.S.F.: 8.941



6201 WEST PLANO PARKWAY
BLUEWATER LEARNING

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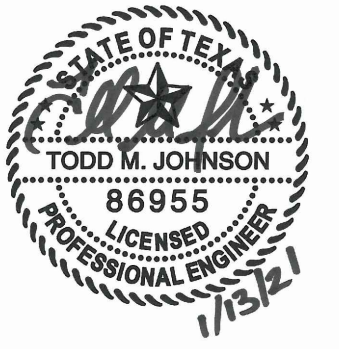
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DRAWING TITLE:
LEVEL 01 MECHANICAL PLAN

DRAWING NUMBER:

M2.01



PROJECT NO.: 573-007
DRAWN BY: KC/RH
CHECKED BY: KS
R.S.F.: 8.941

BILLINGSLEY
COMPANY

6201 WEST PLANO PARKWAY
BLUEWATER LEARNING

6201 WEST PLANO PKWY.
SUITE #125
PLANO, TX 75093

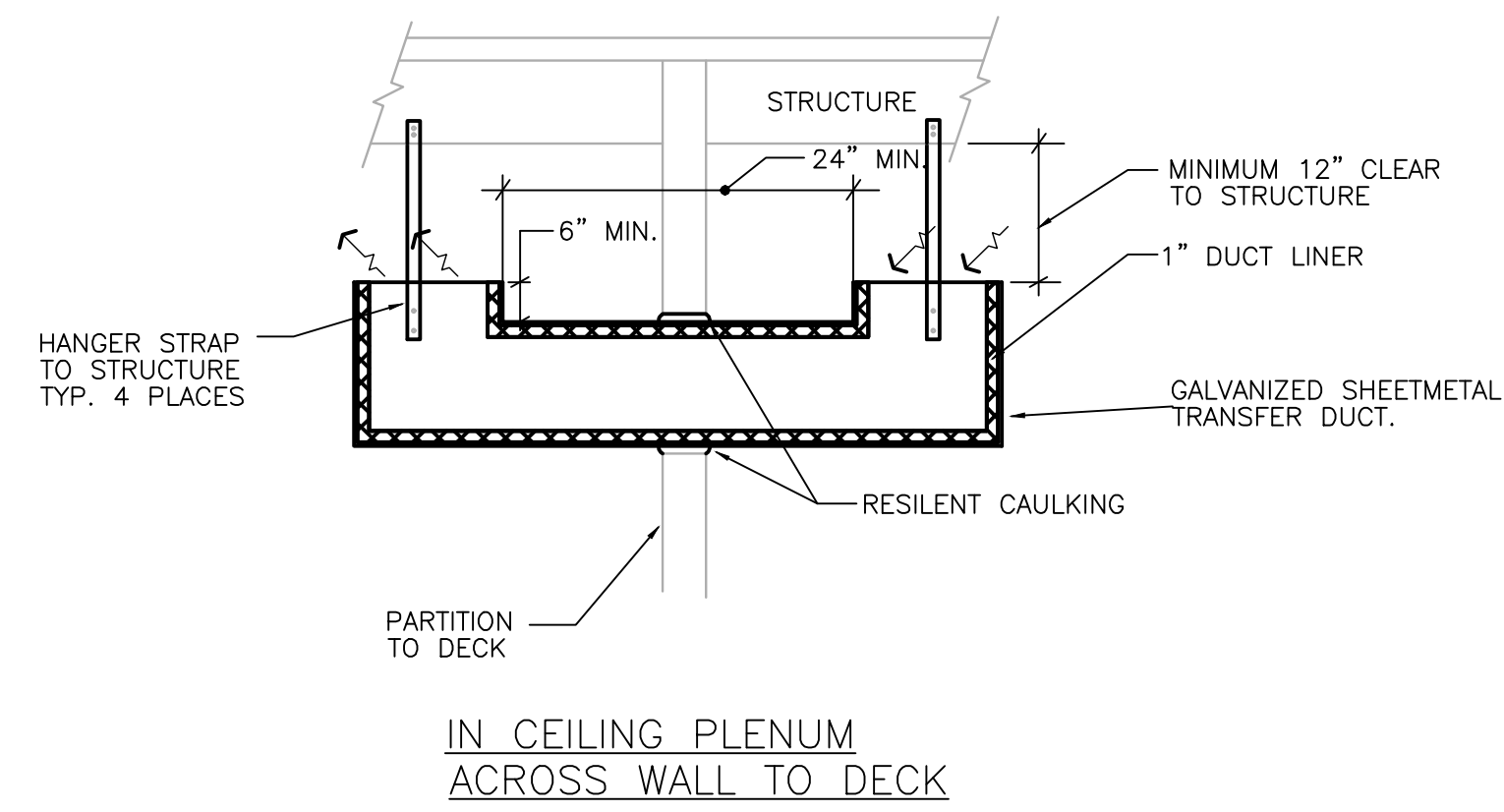
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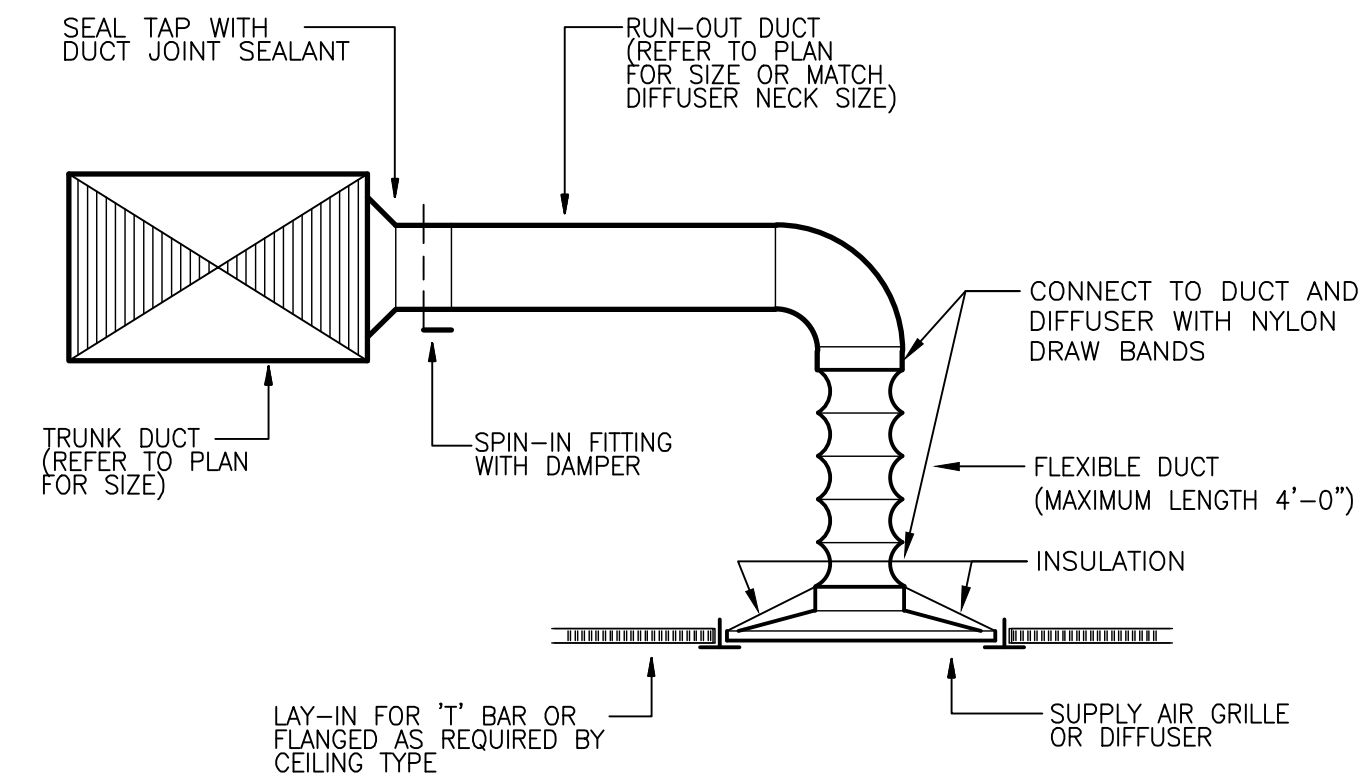
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**MECHANICAL
DETAILS**

DRAWING NUMBER:

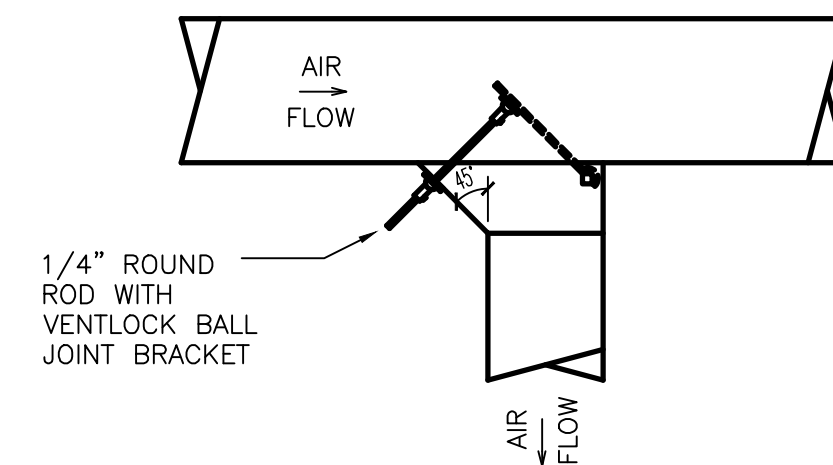
M3.01



1 RETURN AIR BOOT DETAIL
SCALE: NO SCALE



2 DIFFUSER CONNECTION DETAIL
SCALE: NOT TO SCALE



3 TYPICAL EXPANDED TAP DETAIL
SCALE: 3

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