

GENERAL NEW NOTES:

- PRIOR TO SUBMITTING BID, VISIT THE JOB SITE AND BECOME FULLY ACQUAINTED WITH THE EXISTING CONDITIONS OF THE PROJECT. REVIEW THE GENERAL NOTES, SPECIFICATIONS AND OTHER DRAWINGS FOR ADDITIONAL REQUIREMENTS WHICH MAY NOT BE SPECIFICALLY CALLED OUT IN THIS PORTION OF THE CONSTRUCTION DOCUMENTS. NOTIFY ARCHITECT, ENGINEER AND/OR OWNER OF CONFLICTS OR DISCREPANCIES PRIOR TO SUBMISSION OF BID.
- PROVIDE SEISMIC RESTRAINTS AS NEEDED FOR THE MECHANICAL SYSTEMS IN THE PROJECT BASED ON THE SEISMIC ANALYSIS REQUIRED BY THE SPECIFICATIONS.
- COORDINATE THE INSTALLATION OF THE MECHANICAL SYSTEMS WITH OTHER TRADES TO ENSURE A NEAT AND ORDERLY INSTALLATION. INSTALL DUCTWORK AND PIPING AS TIGHT TO STRUCTURE AS POSSIBLE. COORDINATE WITH OTHER TRADES TO AVOID CONFLICTS. COORDINATE INSTALLATION OF DUCTWORK AND PIPING TO AVOID CONFLICTS WITH ELECTRICAL PANELS, LIGHTING FIXTURES, ETC. ANY MODIFICATIONS REQUIRED DUE TO LACK OF COORDINATION WILL BE THE RESPONSIBILITY OF THE CONTRACTOR AT NO EXTRA COST TO THE OWNER.
- PROVIDE TEMPORARY BARRIERS TO CONTAIN DUST AND DEBRIS RESULTING FROM THE PERFORMANCE OF THE WORK TO THE AREA WHERE WORK IS BEING PERFORMED.
- ALL MECHANICAL EQUIPMENT SHOWN ON THE MECHANICAL PLANS SHALL BE PROVIDED BY DIVISION 23 UNLESS OTHERWISE NOTED.
- NEW MECHANICAL EQUIPMENT, DUCTWORK AND PIPING ARE SHOWN AT APPROXIMATE LOCATIONS. FIELD MEASURE FINAL DUCTWORK AND PIPING LOCATIONS PRIOR TO FABRICATION AND MAKE ADJUSTMENTS AS REQUIRED TO FIT THE DUCTWORK AND PIPING WITHIN THE AVAILABLE SPACE. VERIFY THAT FINAL EQUIPMENT LOCATIONS MEET MANUFACTURER'S RECOMMENDATIONS REGARDING SERVICE CLEARANCE AND PROPER AIRFLOW CLEARANCE AROUND EQUIPMENT.
- REFER TO ARCHITECTURAL DRAWINGS FOR RELATED CONSTRUCTION DETAILS AS APPLICABLE TO THE HVAC SYSTEM. VERIFY CHASES AND PENETRATIONS SHOWN ON ARCHITECTURAL DRAWINGS THAT ARE INTENDED FOR DUCTWORK AND PIPING MEET REQUIREMENTS.
- COORDINATE LOCATION OF ROOF MOUNTED HVAC EQUIPMENT AND ROOF PENETRATIONS WITH THE ARCHITECTURAL AND STRUCTURAL DRAWINGS.
- INDOOR AIR QUALITY MEASURES: PROTECT INSIDE OF (INSTALLED AND DELIVERED) DUCTWORK AND HVAC UNITS FROM EXPOSURE TO DUST, DIRT, PAINT AND MOISTURE. REPLACE INSULATION THAT HAS BECOME WET AT ANY TIME DURING CONSTRUCTION. DRYING THE INSULATION IS NOT ACCEPTABLE. SEAL ANY TEARS OR JOINTS OF INTERNAL FIBERGLASS INSULATION. REMOVE DEBRIS FROM CEILING/RETURN AIR PLENUM INCLUDING DUST, AN INDEPENDENT PROFESSIONAL DUCT CLEANING COMPANY SHALL VACUUM CLEAN ANY DUCTWORK CONNECTED TO HVAC UNITS THAT WERE OPERATED DURING THE CONSTRUCTION PERIOD AFTER NEW FILTERS ARE INSTALLED AND PRIOR TO TURNING SYSTEM OVER TO THE OWNER. THE INTERNAL SURFACES AND ASSOCIATED COILS OF ANY HVAC UNITS THAT WERE OPERATED SHALL ALSO BE CLEANED.
- INSTALL DUCTWORK AND PIPING PARALLEL TO BUILDING COLUMN LINES UNLESS OTHERWISE SHOWN OR NOTED.
- OVERHEAD HANGERS AND SUPPORTS FOR EQUIPMENT, DUCTWORK AND PIPING SHALL BE FASTENED TO BUILDING JOISTS OR BEAMS. DO NOT ATTACH HANGERS AND SUPPORTS TO THE ABOVE FLOOR SLAB OR ROOF EXCEPT WHERE CONCRETE INSERTS IN CONCRETE SLABS ARE ALLOWED BY THE SPECIFICATIONS.
- COORDINATE LOCATION OF EQUIPMENT SUPPORTS WITH LOCATION OF EQUIPMENT ACCESS PANELS/DOORS TO ENABLE SERVICE OF EQUIPMENT AND/OR FILTER REPLACEMENT.
- SEAL PENETRATIONS THROUGH THE BUILDING COMPONENTS IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS. FIREPROOF PENETRATIONS THROUGH FIRE RATED COMPONENTS IN ACCORDANCE WITH U.L. REQUIREMENTS.
- COORDINATE THE EXACT MOUNTING SIZE AND FRAME TYPE OF DIFFUSERS, REGISTERS AND GRILLES WITH THE SUPPLIER TO MEET THE CEILING, WALL AND DUCT INSTALLATION REQUIREMENTS.
- ADJUST LOCATION OF CEILING DIFFUSERS, REGISTERS AND GRILLES AS REQUIRED TO ACCOMMODATE FINAL CEILING GRID AND LIGHTING LOCATIONS.
- PAINT PORTIONS OF DUCTWORK AND INSULATION THAT ARE EXPOSED TO VIEW BY THE INSTALLATION OF DIFFUSERS, REGISTERS, AND GRILLES IN CEILINGS OR WALLS FLAT BLACK. PORTIONS INCLUDE BOTH THE INTERIOR OF UNLINED DUCTWORK AND THE EXTERIOR OF DUCTWORK AND INSULATION.
- DUCTWORK CROSSING FIRE RATED WALLS OR OTHER FIRE RATED ASSEMBLIES SHALL BE MINIMUM 26 GAUGE SHEET METAL.
- PROVIDE FIRE OR FIRE/SMOKE DAMPERS, AS APPLICABLE, IN DUCTWORK AT CEILINGS AND WALLS AT LOCATIONS SHOWN ON THE PLANS. FIRE AND FIRE/SMOKE DAMPERS SHALL CONFORM TO NFPA AS APPLICABLE. COORDINATE SLEEVE LENGTH WITH REQUIREMENTS OF INSTALLED LOCATION.
- PROVIDE WALL OR DUCT ACCESS PANELS OR DOORS FOR ACCESS TO FIRE AND FIRE/SMOKE DAMPERS. ACCESS PANEL OR DOOR SHALL BE MINIMUM SIZE OF 10" BY 10" AND SHALL BE INSTALLED WITHIN 12" OF DAMPER. PROVIDE A REMOVABLE DUCT SECTION WHERE DUCT SIZE IS TOO SMALL FOR A 10" BY 10" ACCESS DOOR.
- LOCATE AND SET THERMOSTATS AND HUMIDISTATS AT LOCATIONS SHOWN ON PLANS. VERIFY EXACT LOCATIONS WITH ARCHITECT PRIOR TO INSTALLATION. DEVICE MOUNTING HEIGHT SHALL MEET ADA REQUIREMENTS UNLESS OTHERWISE NOTED ON PLANS. PROVIDE INSULATED BACKING FOR THERMOSTATS MOUNTED ON EXTERIOR BUILDING WALLS. INSTALL WIRING IN CONDUIT PROVIDED BY DIVISION 26. AT A MINIMUM, PROVIDE CONDUIT IN THE WALL FROM THE JUNCTION BOX TO 6" ABOVE THE CEILING.
- COORDINATE THE LOCATION AND ELEVATION OF WALL-MOUNTED DEVICES WITH PRESENTATION BOARDS, DISPLAY CABINETS, SHELVES OR OTHER COMPONENTS SHOWN ON THE ARCHITECTURAL DRAWINGS THAT ARE TO BE INSTALLED UNDER OTHER DIVISIONS. CONTRACTOR WILL NOT BE REIMBURSED FOR RELOCATION OF WALL-MOUNTED DEVICES CAUSED BY A LACK OF COORDINATION.
- PROVIDE A MANUAL BALANCING DAMPER IN EACH DUCT TAKEOFF FROM SUPPLY, RETURN, OUTDOOR AND EXHAUST AIR DUCTS.
- PROVIDE A PREFABRICATED 45 DEGREE, HIGH EFFICIENCY, RECTANGULAR/ROUND BRANCH DUCT TAKEOFF FITTING FOR BRANCH DUCT CONNECTIONS AND TAKE-OFFS TO INDIVIDUAL DIFFUSERS, REGISTERS AND GRILLES. PROVIDE WITH INTEGRAL MANUAL BALANCING DAMPER AND LOCKING QUADRANT WHERE INDICATED ON PLANS.
- BRANCH DUCTWORK TO AIR OUTLETS SHALL BE SAME SIZE AS OUTLET NECK SIZE UNLESS OTHERWISE NOTED.
- REFER TO SPECIFICATIONS FOR DUCTWORK AND PIPING INSULATION REQUIREMENTS. DUCT SIZES ON MECHANICAL PLANS INDICATE CLEAR INSIDE AIRFLOW DIMENSIONS. INCREASE SHEET METAL SIZES ACCORDINGLY TO ACCOUNT FOR THICKNESS OF DUCT LINER.
- FLEXIBLE DUCTWORK SHALL NOT EXCEED 5'-0" IN LENGTH AND SHALL BE INSTALLED AND SUPPORTED TO AVOID SHARP BENDS AND SAGGING. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- RIGIDLY SUSPEND UNIT HEATER FROM STRUCTURE WITH SUPPORTING ANGLES AND ALL-THREAD HANGING RODS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- PROVIDE EQUIPMENT VENTS AND FLUES PER EQUIPMENT MANUFACTURER'S RECOMMENDATIONS AND EQUIPMENT SPECIFICATIONS. KEEP PENETRATIONS THROUGH ROOF A MINIMUM OF 10'-0" FROM HVAC EQUIPMENT FRESH AIR INLETS AND 2'-0" FROM ROOF PARAPETS.
- PROVIDE WALL MOUNTED LOUVERS AND DAMPERS WITH SUITABLE MOUNTING FRAME TO MATCH WALL CONSTRUCTION. COORDINATE WITH ARCHITECTURAL DRAWINGS.
- PROVIDE A NEW SET OF AIR FILTERS IN UNITS PRIOR TO TESTING, ADJUSTING AND BALANCING AND BEFORE TURNING SYSTEM(S) OVER TO OWNER.

MECHANICAL SYMBOLS

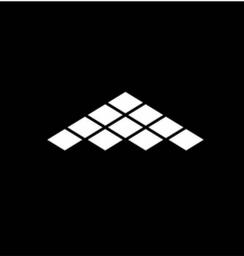
THIS IS A MASTER LEGEND AND NOT ALL SYMBOLS OR ABBREVIATIONS ARE USED.

STANDARD MOUNTING HEIGHT		HVAC DUCTWORK AND ACCESSORIES	
<p>THERMOSTATS (USER ADJUSTABLE) (TOP OF DEVICE) 46"</p> <p>CONTROLS (TOP OF DEVICE) 46"</p>	<p>INSTALL DEVICES AT THE MOUNTING HEIGHTS SHOWN ABOVE UNO IN THE CONSTRUCTION DOCUMENTS. MOUNTING HEIGHTS LISTED ABOVE OR ELSEWHERE IN THE CONSTRUCTION DOCUMENTS ARE AFF OR AFG TO TOP OF THE DEVICE UNO. ALL DEVICES SHALL BE INSTALLED IN COMPLIANCE WITH CURRENT ADA AND LOCAL REQUIREMENTS.</p>	<p>DUCTWORK/EQUIPMENT TO BE REMOVED OR RELOCATED</p> <p>EXISTING DUCTWORK/EQUIPMENT TO REMAIN</p> <p>LINEAR SLOT DIFFUSER</p> <p>INSULATED FLEXIBLE DUCT (MAX. 5'-0" LONG)</p> <p>BRANCH DUCT WITH 45° RECTANGLE-ROUND BRANCH FITTING AND MANUAL VOLUME DAMPER</p> <p>ELBOW WITH TURNING VANES</p> <p>DUCT UP</p> <p>DUCT DOWN</p> <p>COMBUSTION AIR</p> <p>EXHAUST AIR - GENERAL</p> <p>EXHAUST AIR - DRYER</p> <p>EXHAUST AIR - GREASE</p> <p>EXHAUST AIR - DISHWASHER</p> <p>EXHAUST AIR - SMOKE</p> <p>EXHAUST AIR - FLUE</p> <p>OUTSIDE AIR</p> <p>RELIEF AIR</p> <p>RETURN AIR</p> <p>SPECIAL EXHAUST</p> <p>SUPPLY AIR</p> <p>PRESSURIZATION SUPPLY AIR</p> <p>10" (NECK SIZE) CSD-1 (TYPE) 300 CFM (CFM OF SUPPLY DIFFUSER OR REGISTER) FILLED REGION INDICATES DEFLECTOR</p> <p>24x24 (NECK SIZE) CRG-1 (TYPE) 800 CFM (CFM OF RETURN GRILLE) (RETURN/EXHAUST GRILLE SHOWN BELOW)</p> <p>ACCESS PANEL (IN GYPSUM)</p> <p>MANUAL VOLUME DAMPER</p> <p>SQUARE TO ROUND TRANSITION</p> <p>DUCT MOUNTED SMOKE DETECTOR (SD=SUPPLY/RD=RETURN)</p> <p>ROUND DUCT TAG INDICATING DIAMETER</p> <p>RECTANGULAR DUCT TAG INDICATING INTERNAL DUCT DIMENSIONS</p> <p>FLAT OVAL DUCT TAG INDICATING INTERNAL DUCT DIMENSIONS</p>	<p>MECHANICAL PLAN NOTE CALLOUT</p> <p>MECHANICAL EQUIPMENT DESIGNATION (CONTRACTOR FURNISHED AND INSTALLED UNLESS NOTED OTHERWISE)</p> <p>CONNECTION POINT OF NEW WORK TO EXISTING</p> <p>EXTENTS OF DEMOLITION</p> <p>DETAIL REFERENCE. UPPER NUMBER INDICATES DETAIL NUMBER LOWER NUMBER INDICATES SHEET NUMBER</p> <p>SECTION CUT DESIGNATION</p>
ABBREVIATIONS		HVAC DAMPERS	
<p>A/C AIR CONDITIONING</p> <p>ACC AIR COOLED CHILLER</p> <p>ACCU AIR COOLED CONDENSING UNIT</p> <p>AFC ABOVE FINISHED CEILING</p> <p>AFF ABOVE FINISHED FLOOR</p> <p>AFG ABOVE FINISHED GRADE</p> <p>AHJ AUTHORITY HAVING JURISDICTION</p> <p>AHU AIR HANDLING UNIT</p> <p>AI ANALOG INPUT</p> <p>AO ANALOG OUTPUT</p> <p>AP ACCESS PANEL</p> <p>APD AIR PRESSURE DROP</p> <p>AWG AMERICAN WIRE GAUGE</p> <p>B BOILER</p> <p>BAS BUILDING AUTOMATION SYSTEM</p> <p>BB BACKBONE</p> <p>BD BACKDRAFT DAMPER</p> <p>BD BLOWDOWN</p> <p>BFC BELOW FINISHED CEILING</p> <p>BFF BELOW FINISHED FLOOR</p> <p>BFG BELOW FINISHED GRADE</p> <p>BFP BOILER FEED PUMP</p> <p>BHP BRAKE HORSEPOWER</p> <p>BI BINARY INPUT</p> <p>BO BINARY OUTPUT</p> <p>BOD BOTTOM OF DUCT</p> <p>BOS BOTTOM OF STRUCTURE</p> <p>BTU BRITISH THERMAL UNIT</p> <p>CFM CUBIC FEET PER MINUTE</p> <p>CH CHILLER</p> <p>CLG COOLING</p> <p>CP CONDENSATE PUMP</p> <p>CPT CONTROL POWER TRANSFORMER</p> <p>CRAC COMPUTER ROOM AIR CONDITIONING UNIT</p> <p>CRU COMPUTER ROOM UNIT</p> <p>CT COOLING TOWER</p> <p>CV CONTROL VALVE</p> <p>CWP CONDENSER WATER PUMP</p> <p>DI DIGITAL INPUT</p> <p>CHWP CHILLED WATER PUMP</p> <p>DB DECIBELS</p> <p>DBA DECIBEL AVERAGE</p> <p>DDC DIRECT DIGITAL CONTROL</p> <p>DI DISCONNECT</p> <p>DN DOWN</p> <p>DS DUCT SILENCER</p> <p>DX DIRECT EXPANSION</p> <p>(E) EXISTING</p> <p>EA EXHAUST AIR</p> <p>EAT ENTERING AIR TEMPERATURE</p> <p>ED EXHAUST DUCT</p> <p>EDB ENTERING DRY BULB</p> <p>EF EXHAUST FAN</p> <p>EFF EFFICIENCY</p> <p>EMS ENERGY MANAGEMENT SYSTEM</p> <p>ESP EXTERNAL STATIC PRESSURE</p> <p>ETR EXISTING TO REMAIN</p> <p>EWB ENTERING WET BULB</p> <p>EWT ENTERING WATER TEMPERATURE</p> <p>FCU FAN COIL UNIT</p> <p>FFA FROM FLOOR ABOVE</p> <p>FFB FROM FLOOR BELOW</p> <p>FF FINISHED FLOOR</p> <p>FFP FINISH PER FOOT</p> <p>FFM FEET PER MINUTE</p> <p>GC GENERAL CONTRACTOR</p> <p>GPM GALLONS PER MINUTE</p> <p>HOA HAND-OFF-AUTOMATIC</p> <p>HP HORSEPOWER</p> <p>HTG HEATING</p> <p>HWP HEATING WATER PUMP</p> <p>IN WC INCHES OF WATER</p> <p>L LOUVER</p> <p>LAT LEAVING AIR TEMPERATURE</p> <p>LDB LEAVING DRY BULB</p> <p>LP LOW PRESSURE</p> <p>LWB LEAVING WET BULB</p> <p>LWT LEAVING WATER TEMPERATURE</p> <p>MAU MAKE-UP AIR UNIT</p> <p>MAX MAXIMUM</p> <p>MBH 1000 BTU PER HOUR</p> <p>MD MOTORIZED DAMPER</p> <p>MFR MANUFACTURER</p> <p>MIN MINIMUM</p> <p>N/A NOT APPLICABLE</p> <p>N/C NORMALLY CLOSED</p> <p>N/O NORMALLY OPEN</p> <p>NOM NOMINAL</p> <p>NC NOISE CRITERIA</p> <p>NF NON-FUSED</p> <p>NIA NOT IN CONTRACT</p> <p>OA OUTSIDE AIR</p> <p>PICV PRESSURE INDEP. CONTROL VALVE</p> <p>PFI PROVIDE, FURNISH AND INSTALL</p> <p>QTY QUANTITY</p> <p>RA RETURN AIR</p> <p>RC ROOM CRITERIA</p> <p>RD RETURN DUCT</p> <p>REL RELIEF AIR</p> <p>RF RETURN FAN</p> <p>RFR REFRIGERANT</p> <p>RH RELATIVE HUMIDITY</p> <p>RH ROOF HOOD</p> <p>RPM REVOLUTIONS PER MINUTE</p> <p>RTU ROOFTOP UNIT</p> <p>SA SUPPLY AIR</p> <p>SCP STEAM CONDENSATE PUMP</p> <p>SD SUPPLY DUCT</p> <p>STM STEAM</p> <p>SF SENSIBLE HEAT CAPACITY</p> <p>SOW SCOPE OF WORK</p> <p>SP STATIC PRESSURE</p> <p>ST STEAM TRAP</p> <p>TBD TO BE DETERMINED</p> <p>TC/C TEMPERATURE CONTROLS CONTRACTOR</p> <p>TCP TEMPERATURE CONTROL PANEL</p> <p>TF TRANSFER FAN</p> <p>TFA TO FLOOR ABOVE</p> <p>TFB TO FLOOR BELOW</p> <p>TH TOTAL HEAT CAPACITY</p> <p>TSP TOTAL STATIC PRESSURE</p> <p>TT TRANSMITTAL</p> <p>TYP TYPICAL</p> <p>U/F UNDERFLOOR</p> <p>U/G UNDERGROUND</p> <p>U/S UNDERSLAB</p> <p>UH UNIT HEATER</p> <p>UNO UNLESS NOTED OTHERWISE</p> <p>VAV VARIABLE AIR VOLUME</p> <p>VEL VELOCITY</p> <p>VFD VARIABLE FREQUENCY DRIVE</p> <p>VRF VARIABLE REFRIGERANT FLOW</p> <p>VRV VARIABLE REFRIGERANT VOLUME</p> <p>W/ WITH</p> <p>W/O WITHOUT</p> <p>WB WET BULB</p> <p>WC WATER COLUMN</p> <p>WPD WATER PRESSURE DROP</p> <p>XP EXPLOSION PROOF</p>	<p>FD FIRE DAMPER</p> <p>FSD FIRE SMOKE DAMPER</p> <p>SCD SMOKE CONTROL DAMPER</p> <p>SD SMOKE DAMPER</p> <p>VD VOLUME DAMPER</p> <p>MD MOTORIZED DAMPER</p> <p>BD BACKDRAFT DAMPER</p>		

PIPING SYMBOLS	
<p>DIRECTION OF FLOW</p> <p>CONTROL VALVE</p> <p>THREE-WAY CONTROL VALVE</p> <p>SHUTOFF VALVE</p> <p>CHECK VALVE</p> <p>BALANCING VALVE WITH PRESSURE PORTS</p> <p>TRIPLE DUTY VALVE WITH PRESSURE PORTS</p> <p>STRAINER</p> <p>STRAINER WITH BLOWOFF</p> <p>RELIEF / SAFETY VALVE</p> <p>SOLENOID VALVE</p> <p>PRESSURE REDUCING VALVE</p> <p>GAS PRESSURE REGULATOR</p> <p>THERMOSTATIC MIXING VALVE</p> <p>PIPE ANCHOR</p> <p>EXPANSION JOINT</p> <p>PIPE GUIDE</p> <p>PIPING SUPPORT</p> <p>F & T TRAP</p> <p>BUCKET TRAP</p> <p>THERMOSTATIC TRAP</p> <p>BACKFLOW PREVENTER</p> <p>PRESSURE GAUGE</p> <p>THERMOMETER</p> <p>PRESSURE AND TEMPERATURE TEST PLUG</p> <p>UNION</p> <p>FLANGE CONNECTION</p> <p>VACUUM RELIEF VALVE</p> <p>AUTOMATIC AIR VENT</p> <p>MANUAL AIR VENT</p> <p>PRESSURE / VACUUM SWITCH</p> <p>CLEANOUT</p> <p>CAP</p> <p>ELBOW UP</p> <p>ELBOW DOWN</p> <p>TEE UP</p> <p>TEE DOWN</p> <p>ELBOW UP WITH SHUT-OFF VALVE (SOV)</p> <p>ELBOW DOWN WITH SHUT-OFF VALVE (SOV)</p> <p>TEE UP WITH SHUT-OFF VALVE (SOV)</p> <p>TEE DOWN WITH SHUT-OFF VALVE (SOV)</p> <p>REDUCER</p> <p>RECIRCULATION PUMP</p> <p>P-TRAP</p> <p>GAS COCK</p> <p>TOP BEAM CLAMP</p> <p>TRAPEZE HANGER</p> <p>FLEXIBLE CONNECTION</p>	<p>EXISTING PIPING TO BE REMOVED OR RELOCATED</p> <p>EXISTING PIPING TO REMAIN</p> <p>CONDENSATE DRAIN (CD)</p> <p>AUXILIARY CONDENSATE DRAIN (ACD)</p> <p>NON-POTABLE WATER (NPW)</p> <p>NATURAL GAS (G)</p> <p>NATURAL GAS ON ROOF (G)</p> <p>MEDIUM PRESSURE NATURAL GAS (MPG)</p> <p>HIGH PRESSURE STEAM SUPPLY (MGP)</p> <p>FUEL OIL SUPPLY (FOS)</p> <p>FUEL OIL RETURN (FOR)</p> <p>FUEL OIL VENT (FOV)</p> <p>LIQUEFIED PETROLEUM GAS (LPG)</p> <p>BOILER FEED WATER (BFW)</p> <p>HIGH PRESSURE STEAM SUPPLY (HPS)</p> <p>HIGH PRESSURE STEAM CONDENSATE (HPC)</p> <p>MEDIUM PRESSURE STEAM SUPPLY (MPS)</p> <p>MEDIUM PRESSURE STEAM CONDENSATE (MPC)</p> <p>LOW PRESSURE STEAM SUPPLY (LPS)</p> <p>LOW PRESSURE STEAM CONDENSATE (LPC)</p> <p>CONDENSATE PUMP DISCHARGE (CPD)</p> <p>STEAM VENT (SV)</p> <p>HEATING HOT WATER SUPPLY (HWS)</p> <p>HEATING HOT WATER RETURN (HWR)</p> <p>CHILLED WATER SUPPLY (CHWS)</p> <p>CHILLED WATER RETURN (CHWR)</p> <p>HOT / CHILLED WATER SUPPLY (HCS)</p> <p>HOT / CHILLED WATER RETURN (HCR)</p> <p>CONDENSER WATER SUPPLY (CWS)</p> <p>CONDENSER WATER RETURN (CWR)</p> <p>REFRIGERANT LIQUID/SUCTION (RL/RS)</p> <p>VRF REFRIGERANT LIQUID/SUCTION (VRF RL/RS)</p> <p>SPLIT SYSTEM REFRIGERANT LIQUID/SUCTION (SS RL/RS)</p> <p>REFRIGERANT LIQUID (RL)</p> <p>REFRIGERANT DISCHARGE (HOT GAS) (RD)</p> <p>REFRIGERANT SUCTION (RS)</p> <p>REFRIGERANT DISCHARGE BYPASS (RDB)</p> <p>REFRIGERANT VENT (RV)</p>

PIPING LINETYPES	
<p>EXISTING PIPING TO BE REMOVED OR RELOCATED</p> <p>EXISTING PIPING TO REMAIN</p> <p>CONDENSATE DRAIN (CD)</p> <p>AUXILIARY CONDENSATE DRAIN (ACD)</p> <p>NON-POTABLE WATER (NPW)</p> <p>NATURAL GAS (G)</p> <p>NATURAL GAS ON ROOF (G)</p> <p>MEDIUM PRESSURE NATURAL GAS (MPG)</p> <p>HIGH PRESSURE STEAM SUPPLY (MGP)</p> <p>FUEL OIL SUPPLY (FOS)</p> <p>FUEL OIL RETURN (FOR)</p> <p>FUEL OIL VENT (FOV)</p> <p>LIQUEFIED PETROLEUM GAS (LPG)</p> <p>BOILER FEED WATER (BFW)</p> <p>HIGH PRESSURE STEAM SUPPLY (HPS)</p> <p>HIGH PRESSURE STEAM CONDENSATE (HPC)</p> <p>MEDIUM PRESSURE STEAM SUPPLY (MPS)</p> <p>MEDIUM PRESSURE STEAM CONDENSATE (MPC)</p> <p>LOW PRESSURE STEAM SUPPLY (LPS)</p> <p>LOW PRESSURE STEAM CONDENSATE (LPC)</p> <p>CONDENSATE PUMP DISCHARGE (CPD)</p> <p>STEAM VENT (SV)</p> <p>HEATING HOT WATER SUPPLY (HWS)</p> <p>HEATING HOT WATER RETURN (HWR)</p> <p>CHILLED WATER SUPPLY (CHWS)</p> <p>CHILLED WATER RETURN (CHWR)</p> <p>HOT / CHILLED WATER SUPPLY (HCS)</p> <p>HOT / CHILLED WATER RETURN (HCR)</p> <p>CONDENSER WATER SUPPLY (CWS)</p> <p>CONDENSER WATER RETURN (CWR)</p> <p>REFRIGERANT LIQUID/SUCTION (RL/RS)</p> <p>VRF REFRIGERANT LIQUID/SUCTION (VRF RL/RS)</p> <p>SPLIT SYSTEM REFRIGERANT LIQUID/SUCTION (SS RL/RS)</p> <p>REFRIGERANT LIQUID (RL)</p> <p>REFRIGERANT DISCHARGE (HOT GAS) (RD)</p> <p>REFRIGERANT SUCTION (RS)</p> <p>REFRIGERANT DISCHARGE BYPASS (RDB)</p> <p>REFRIGERANT VENT (RV)</p>	<p>HATCHING LEGEND</p> <p>ENLARGED PLAN</p> <p>NOT IN SCOPE (NIS)</p> <p>LINETYPE LEGEND</p> <p>THROUGHOUT THE DRAWINGS DIFFERENT LINETYPES ARE USED IN COMBINATION WITH THE SYMBOLS TO INDICATE THE STATUS OF ITEMS AS EXISTING, TO BE DEMOLISHED, TO BE INCLUDED AS PART OF NEW WORK AND/OR ITEMS WHICH ARE ANTICIPATED TO BE PROVIDED IN THE FUTURE. THE STATUS OF ITEMS USING THESE LINETYPES ARE RELATIVE TO THE VIEW IN WHICH THEY APPEAR. PHASING SHOWN IN DRAWINGS IS NOT INTENDED TO FULLY DESCRIBE ALL NECESSARY CONSTRUCTION PHASING, WHICH IS DETERMINED BY THE CONTRACTOR AS PART OF THEIR RESPONSIBILITIES. ANY SUCH PHASING DESCRIBED IN THE CONSTRUCTION DOCUMENTS ARE GENERAL AND ONLY INTENDED TO INDICATE A BROAD ORDER FOR THE SAKE OF DESCRIBING THE PROJECT. THE FOLLOWING LINETYPES MAY BE USED ON ANY DEVICE, EQUIPMENT, NOTE, LINE, SHAPE, ETC.</p> <p>EXISTING _____</p> <p>DEMOLISH - - - - -</p> <p>NEW _____</p> <p>FUTURE - - - - -</p>

HVAC CONTROL DEVICES	
<p>HUMIDISTAT</p> <p>THERMOSTAT</p> <p>CARBON DIOXIDE SENSOR</p> <p>DIFFERENTIAL PRESSURE SENSOR</p> <p>FLOW SWITCH</p> <p>CARBON MONOXIDE SENSOR</p> <p>NITROGEN DIOXIDE SENSOR</p> <p>HUMIDITY SENSOR</p> <p>TEMPERATURE SENSOR</p> <p>REMOTE TESTING STATION WITH INDICATING LIGHT</p> <p>STATIC PRESSURE</p> <p>PULL STATION</p> <p>ZONE SENSOR (TS, HS, CO2 AND/OR OCC)</p>	<p>KEY PLAN (N/S)</p> <p>PROJECT NUMBER: 24531</p> <p>LOG NUMBER: 5950</p> <p>SCALE: 1/2" = 1'-0"</p> <p>FORMAT: ARCH D</p>



BENTONVILLE BALLROOM
 86 E STREET & 8TH STREET
 BENTONVILLE, AR 72715

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LIGHTING DESIGN: **VISUAL TERRAIN** BANDIT LITES
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FOOD SERVICE: **TRIMARK** METROPOLITAN ACOUSTICS
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KEY PLAN (N/S)

PROJECT NUMBER: 24531

LOG NUMBER: 5950

SCALE: 1/2" = 1'-0"

FORMAT: ARCH D

M000

HVAC PRICING NOTES:

- EXTERIOR WALL LOUVERS WILL BE SCHEDULED BY THE ARCHITECT AND PROVIDED BY THE GC.
- MOTORIZED DAMPERS IN DUCTS UTILIZED FOR THE INTAKE OF OUTDOOR AIR AND EXHAUST/RELIEF TO OUTDOORS SHALL BE GASKETED-LOW LEAKAGE TYPE. PROVIDE MOTORIZED ISOLATION DAMPERS IN ALL DUCT TERMINATIONS TO OUTDOORS. BACKDRAFT DAMPERS ALONE ARE NOT ACCEPTABLE.
- WHERE SIZING OR DUCT ROUTING IS NOT SHOWN ON PLANS, LOW PRESSURE SUPPLY AIR DUCTWORK, OUTSIDE AIR DUCTWORK, AND GENERAL EXHAUST DUCTWORK SHALL BE SIZED FOR A MAXIMUM PRESSURE DROP OF 0.08 INCHES WATER GAUGE PER 100 FEET LENGTH AND MAXIMUM VELOCITY OF 1500 FPM, WHICHEVER IS MORE STRINGENT.
- WHERE SIZING OR DUCT ROUTING IS NOT SHOWN ON PLANS, RETURN DUCTWORK SHALL BE SIZED FOR A MAXIMUM PRESSURE DROP OF 0.05 INCHES WATER GAUGE PER 100 FEET LENGTH AND MAXIMUM VELOCITY OF 1200 FPM, WHICHEVER IS MORE STRINGENT.
- PROVIDE CEILING RETURN AIR DEVICES AND OPENINGS IN WALL ABOVE CEILINGS SIZED FOR 300 FPM FOR OPERATION OF RETURN AIR PLENUM. PROVIDE SUBSEQUENT TRANSFER AIR OPENINGS THROUGH WALLS SIZED AT 350 FPM TO ALLOW AIR PATH BACK TO UNIT RETURN INLET.
- FLEXIBLE DUCTWORK FOR SUPPLY SHALL BE LIMITED TO MAXIMUM LENGTH OF FIVE (5) FEET. EXHAUST AND RETURN FLEXIBLE DUCTWORK SHALL BE LIMITED TO TWO (2) FEET.
- DUCTWORK DOWNSTREAM OF VAV BOXES AND ALL AHU/RTU SUPPLY AND RETURN DUCTWORK SHALL BE LINED WITH INSULATION 15 FEET FROM UNIT CONNECTION FOR NOISE CONTROL.
- PROVIDE FIRE DAMPERS IN DUCTS AND AIR TRANSFER OPENINGS PENETRATING FIRE RATED WALLS AND FLOORS. MAXIMUM SIZE OF FIRE DAMPERS SHALL BE 20"x36". MULTIPLE DUCTS AND DAMPERS WILL BE REQUIRED WHERE DUCT SIZE SHOWN EXCEEDS.
- PROVIDE SMOKE DAMPERS IN DUCTS AND AIR TRANSFER OPENINGS PENETRATING SMOKE BARRIER WALLS AND FLOORS. MAXIMUM SIZE OF SMOKE DAMPERS SHALL BE 20"x36". MULTIPLE DUCTS AND DAMPERS WILL BE REQUIRED WHERE DUCT SIZE SHOWN EXCEEDS. THIS INCLUDES, BUT IS NOT LIMITED TO, WATER HEATER, BOILER, REFRIGERANT MACHINERY, AND LAUNDRY ROOMS.
- DUCTWORK WHERE ROUTED IN EXPOSED AREAS SHALL BE ROUND UNLESS SHOWN OTHERWISE ON PLANS. WHERE DUCTWORK IS REQUIRED TO BE INSULATED, DUCT WILL BE PROVIDED WITH DUCT LINER INSULATION AND PAINTED PER ARCHITECT.
- ALL EXHAUST, RETURN AND RELIEF AIR DUCTWORK SHALL BE WRAPPED (OR LINED IF EXPOSED), WITHIN 10 FEET OF EXTERIOR TERMINATION.
- PROVIDE ALLOWANCE FOR 5 FOOT SUPPLY AND RETURN AIR DUCT SILENCER SIZED AT 1000 FPM FOR EACH AHU/RTU SERVING AN OCCUPIED SPACE. SOUND ATTENUATOR SHALL BE SIZED FOR A MAXIMUM PRESSURE DROP OF 0.1".
- PROVIDE ALLOWANCE FOR DUCT LAGGING ABOVE SPACES WITH NOISE CRITERIA OF NC-30 OR LOWER. LAGGING CAN BE DRYWALL OR VINYL WRAP. HEAVY DENSITY TYPE LAGGING. ALL DUCTWORK ROUTED WITHIN OR ABOVE THESE AREAS TO BE EXTERNALLY LAGGED TO MITIGATE DUCT NOISE BREAKOUT.
- ALL RTUs SHALL BE PROVIDED WITH 2" VIBRATION ISOLATION

CONTROLS PRICING NOTES:

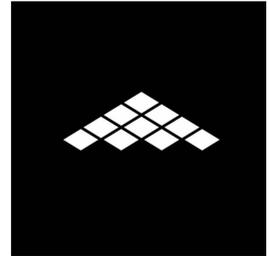
- ALL AHUs/RTUs, FCUs, VAV BOXES, ETC. TO BE PROVIDED WITH NETWORKED SPACE TEMPERATURE SENSOR FOR UNIT CONTROL.
- PROVIDE A BAS CONTROL PANEL WHERE SHOWN ON PLAN. CONTROLS CONTRACTOR TO DETERMINE IF ADDITIONAL PANELS ARE REQUIRED. DIVISION 26 CONTRACTOR SHALL PROVIDE DEDICATED 120V / 20 AMP CIRCUIT AT EACH PANEL LOCATION. PROVIDE (2) DEDICATED DATA CONNECTIONS AT EACH PANEL LOCATION. COORDINATE ALL PANEL LOCATIONS AND SERVICE REQUIREMENTS WITH GC AND OTHER TRADES. PROVIDE STANDBY POWER FOR PANELS SERVING EQUIPMENT ON STANDBY POWER. REFER TO ELECTRICAL DRAWINGS FOR EQUIPMENT BEING SERVED WITH STANDBY POWER. REFER TO CONTROL DRAWINGS FOR ADDITIONAL INFORMATION.

- COORDINATE 120V POWER REQUIRED FOR ANY CONTROL DEVICES (DAMPER AND VALVE ACTUATORS, APPLICATION SPECIFIC CONTROLLERS, FOOD SERVICE CO2 MONITORING, DRYER EXHAUST CONTROL SYSTEMS, ETC.) THAT MAY BE ABOVE AND BEYOND THE REQUIREMENTS LISTED ABOVE WITH DIVISION 26 CONTRACTOR. IF ADDITIONAL BUILDING LEVEL CONTROLLERS ARE REQUIRED, OR POWER NEEDS TO BE PROVIDED IN LOCATIONS OTHER THAN THOSE NOTED ABOVE, COORDINATE REQUIREMENTS WITH DIVISION 26 CONTRACTOR.
- OCCUPIED SPACES (OFFICES, MEETING ROOMS, CONFERENCE ROOMS, ETC.): PROVIDE COMBINATION TEMPERATURE, CO2, AND HUMIDITY SENSOR WITH DISPLAY AND SET POINT ADJUSTMENT. OMIT HUMIDITY SENSOR FOR OFFICES.
- UNOCCUPIED/TRANSIENT SPACES (ELECTRICAL ROOMS, MECHANICAL ROOM, STAIRWAYS, VESTIBULES, ETC.): PROVIDE BLANK TEMPERATURE SENSOR. NO SETPOINT ADJUST.
- ID/FIT ROOMS, PROVIDE COMBINATION TEMPERATURE AND HUMIDITY SENSOR. NO SET POINT ADJUST.
- PROVIDE LOCAL CO2 MONITORING SYSTEM FOR ALL FOOD SERVICE WALK-IN COOLERS WHERE CO2 IS TERMINATED (BEER COOLERS, SODA COOLERS, ETC.). REFER TO FOODSERVICE AND PLUMBING DRAWINGS FOR CO2 TERMINATION LOCATIONS IN WALK-INS. PROVIDE LOCAL AUDIBLE/VISIBLE ALARM AND INTERFACE WITH BAS FOR ALARM. REFER TO CONTROLS DRAWINGS FOR MORE INFORMATION.
- ALL CONTROL WIRING IN INACCESSIBLE LOCATIONS SHALL BE RUN IN CONDUIT. ALL CONTROL WIRING RELATED TO LIFE SAFETY SYSTEMS SHALL ALSO BE RUN IN CONDUIT. ALL CONTROL WIRING NOT RUN IN CONDUIT SHALL BE UL RATED FOR PLENUM INSTALLATION.

PRICING NOTES FOR AIR DISTRIBUTION DEVICES - GRILLES, REGISTERS, AND DIFFUSERS (GRD):

- REFER TO TYPICAL ROOM LAYOUTS THROUGHOUT THE HVAC PLANS AND GRILLES, REGISTERS, AND DIFFUSERS SCHEDULE. UNLESS OTHERWISE INDICATED ON DRAWINGS, THE INFORMATION BELOW SHALL BE USED FOR PRICING PURPOSES.

- DEVICES TO BE SELECTED FOR A MAXIMUM PRESSURE DROP OF 0.1" AND MAXIMUM NC OF 25.
- AIR DEVICES MOUNTED IN HARD CEILINGS OR OTHER SIMILAR ASSEMBLIES WITHOUT PERMANENT ACCESS WILL BE PROVIDED WITH CABLE OPERATED DAMPERS IN THE BRANCH DUCT. CABLE OPERATED DAMPERS WILL BE PROVIDED WITH ADJUSTMENT FROM FACE OF DEVICE VIA CABLE OPERATOR MOUNTED TO DEVICE.
- DEVICES IN WET AREAS (I.E. SHOWERS, ETC.) SHALL BE ALL ALUMINUM CONSTRUCTION.
- TITUS FLOWBAR SLOT DIFFUSERS. 1" SINGLE SLOT (FL-10) FOR OVERHEAD SUPPLY, RETURN, AND EXHAUST WHERE SHOWN ON PLANS.
 - PROVIDE FACTORY OR FIELD FABRICATED AIR PLENUMS ON SUPPLY AND EXHAUST SLOT DEVICES. SUPPLY PLENUMS TO BE INTERNALLY LINED WITH 1/4" THICK CLOSED CELL LINER INSULATION. INDIVIDUAL PLENUMS TO BE A MAXIMUM OF 4 FEET LONG.
 - MAXIMUM 30 CFM PER LINEAR FOOT OF SLOT FOR SUPPLY AND EXHAUST.
 - MAXIMUM 30 CFM PER LINEAR FOOT FOR RETURN.
- TITUS 24"x24" OMNI ARCHITECTURAL PLAQUE AIR DEVICES FOR SUPPLY, RETURN, AND EXHAUST AIR IN SMALL OFFICES, WORK ROOMS, LOCKERS/RESTROOMS, AND OTHER NON-HIGH END AREAS WITH CEILINGS.
 - ALUMINUM CONSTRUCTION.
 - MAXIMUM 400 CFM PER OMNI SUPPLY DIFFUSER, APPROXIMATELY ONE DIFFUSER PER 250-300 SQUARE FEET.
 - MAXIMUM 600 CFM PER OMNI RETURN DEVICE, APPROXIMATELY ONE DEVICE PER 400 SQUARE FEET.
 - MAXIMUM 500 CFM PER OMNI EXHAUST DEVICE, APPROXIMATELY ONE DEVICE PER 500 SQUARE FEET IN EXHAUSTED AREAS.
- TITUS 300 SERIES GRILLES AND REGISTERS FOR WALL MOUNTED OR DUCT-MOUNTED SUPPLY, RETURN, AND EXHAUST.



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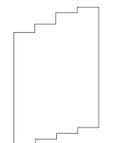
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SHEET NAME

MECHANICAL PRICING NOTES

PROJECT NUMBER SHEET NUMBER

24531

5950

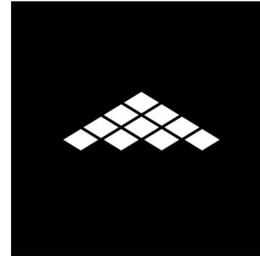
SCALE

12" = 1'-0"

FORMAT

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BENTONVILLE BALLROOM

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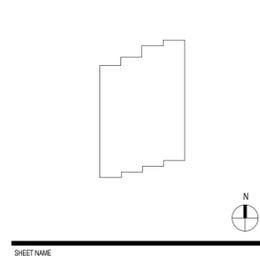
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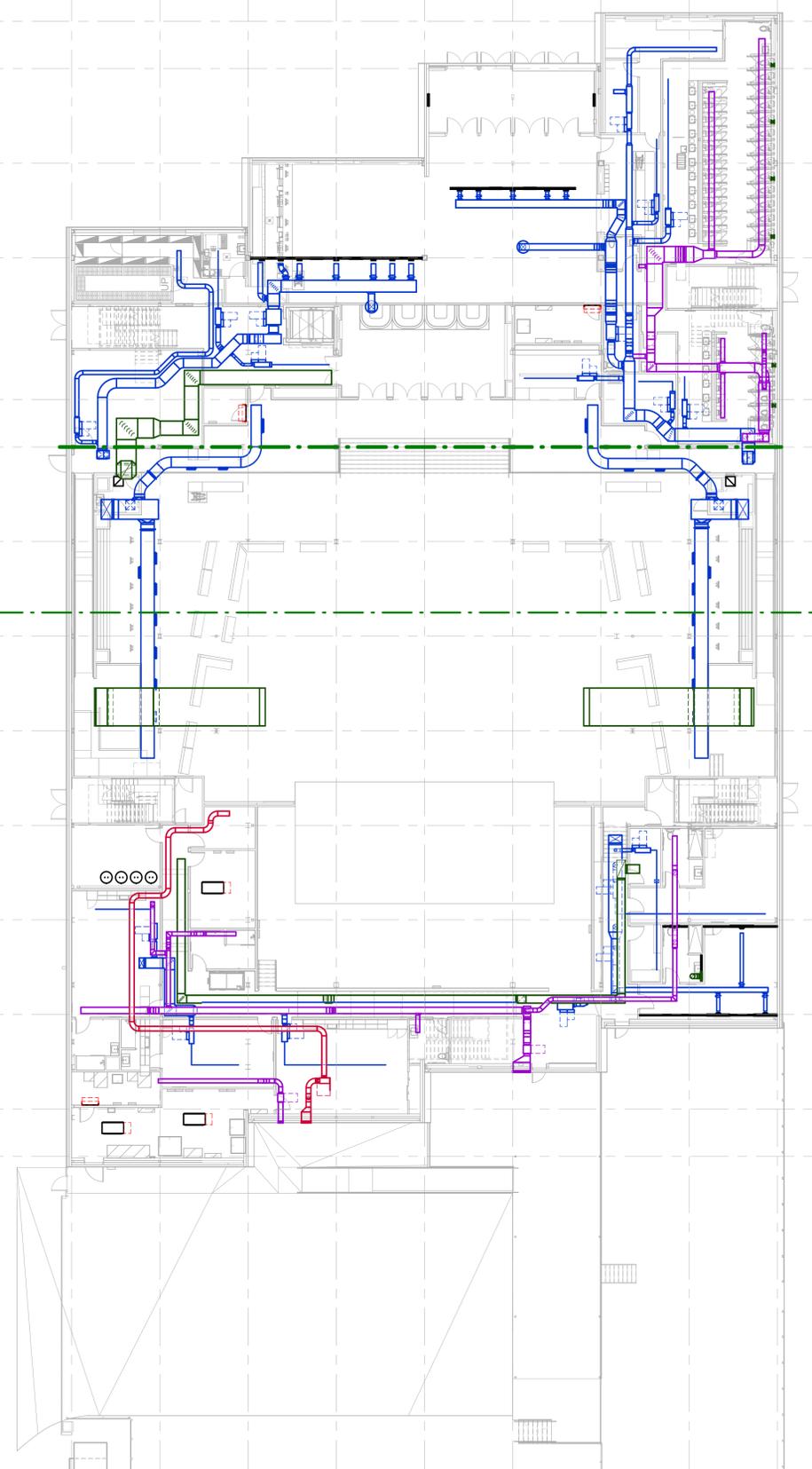


MECHANICAL OVERALL PLANS

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JOB NUMBER: 5050
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FORMAT: ARCH D

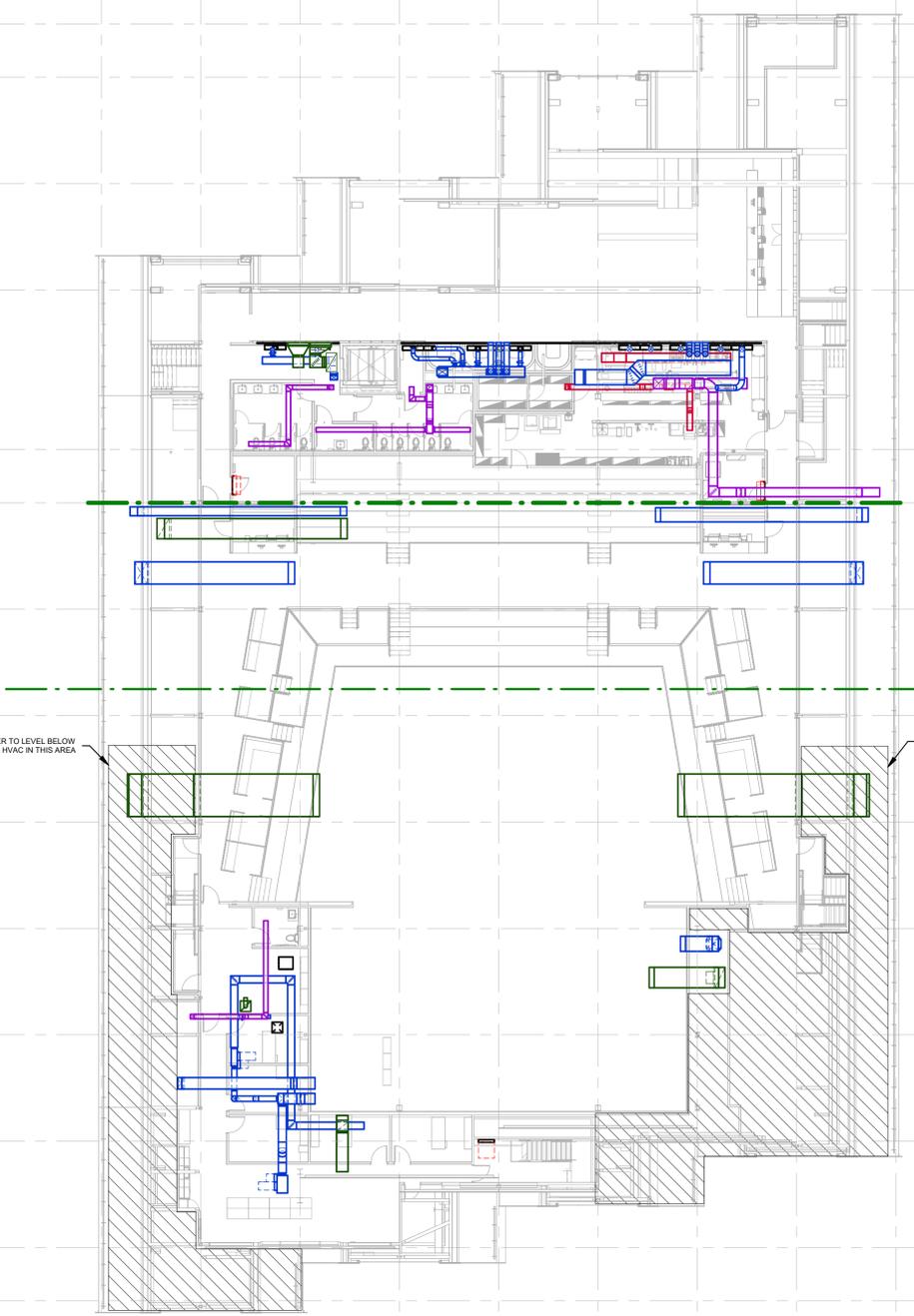
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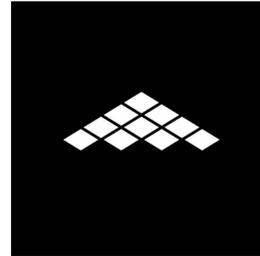


① MECHANICAL LEVEL 1 PLAN - OVERALL
1/16" = 1'-0"

9 8 7 6 5 4 3 2 1



② MECHANICAL LEVEL 2 PLAN - OVERALL
1/16" = 1'-0"



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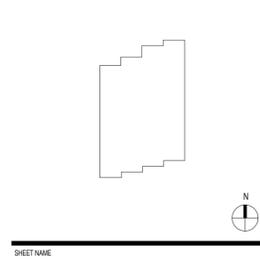
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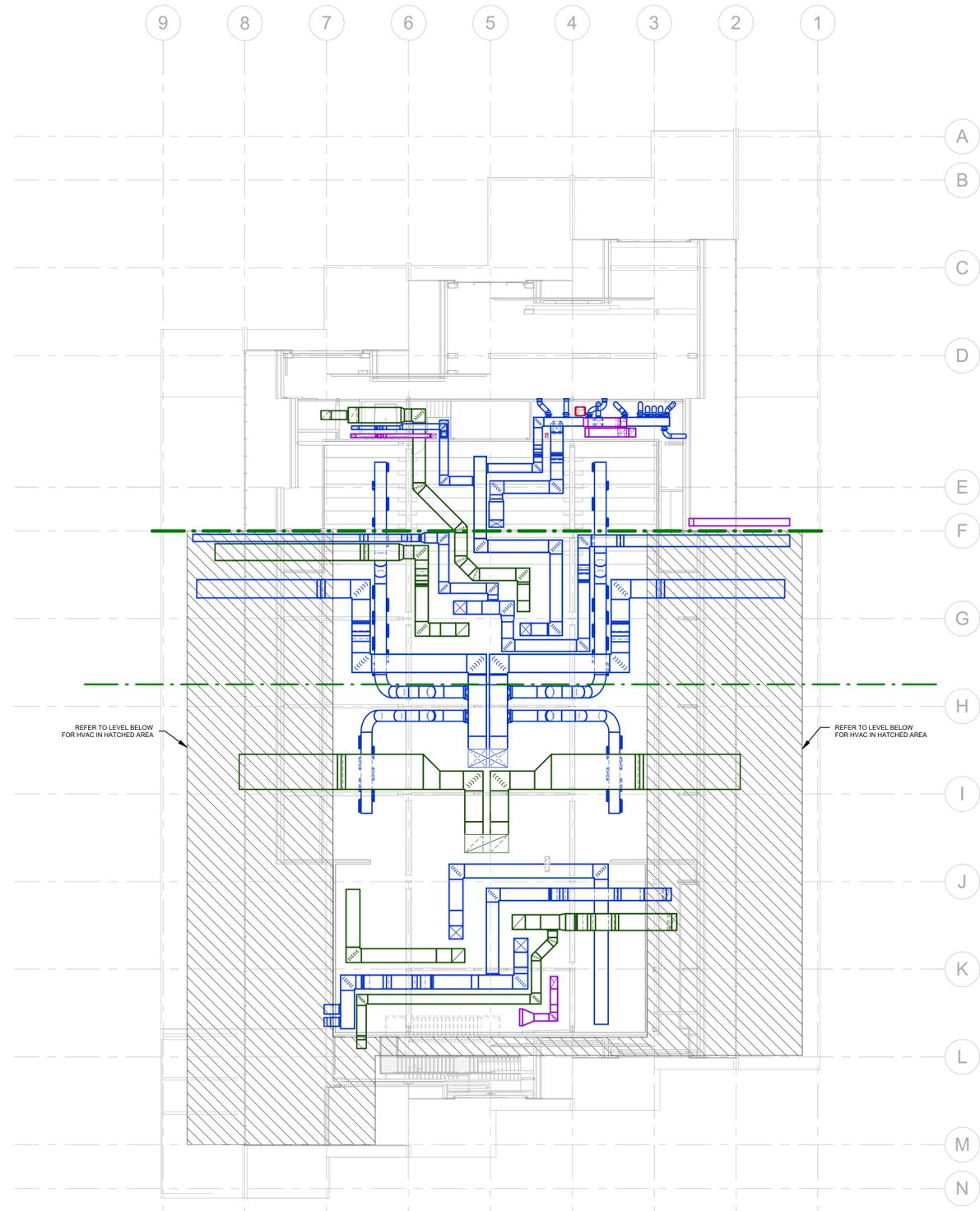
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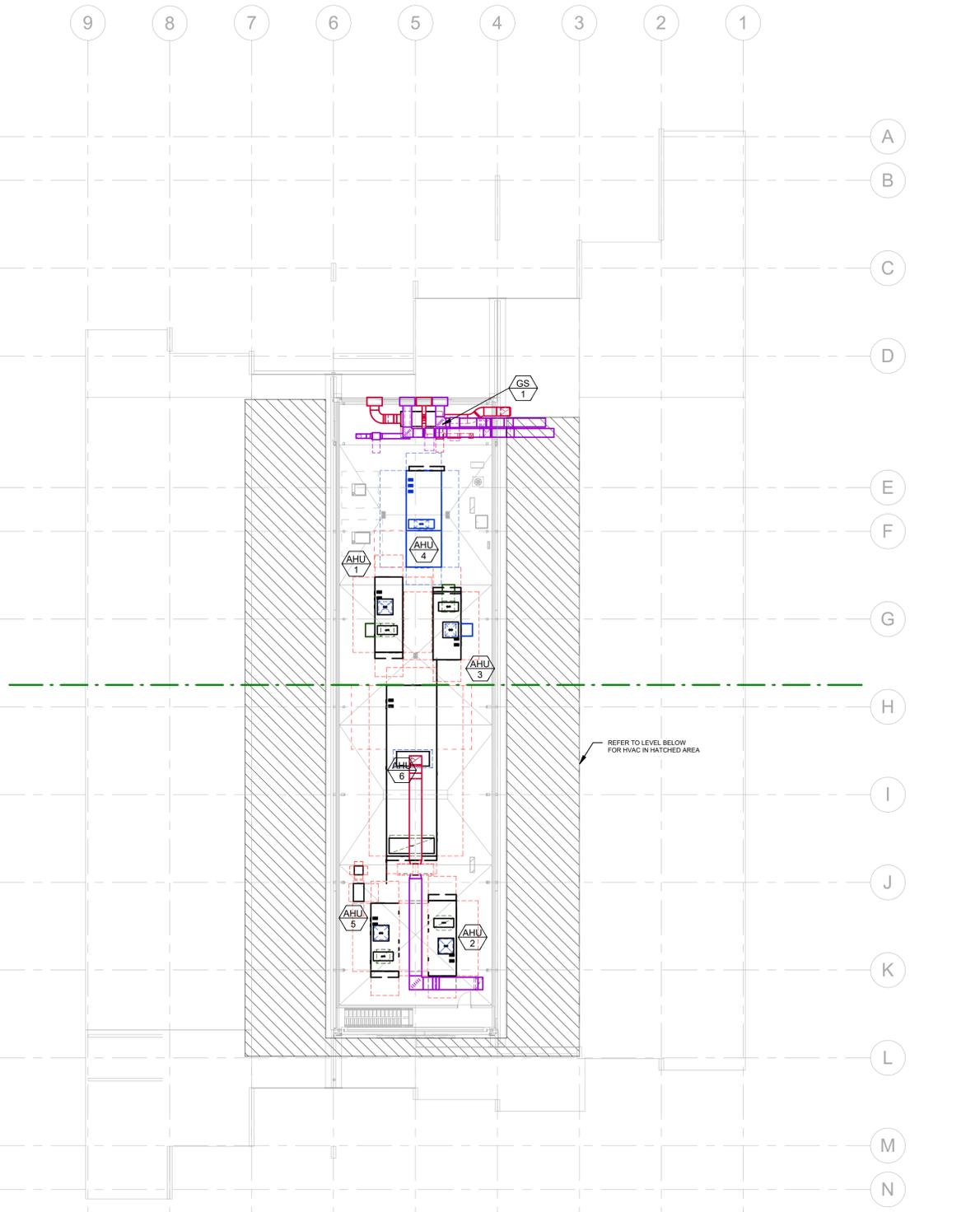
MECHANICAL OVERALL PLANS

PROJECT NUMBER: 24531
SHEET NUMBER: 5050
SCALE: 1/16" = 1'-0"
FORMAT: ARCH D

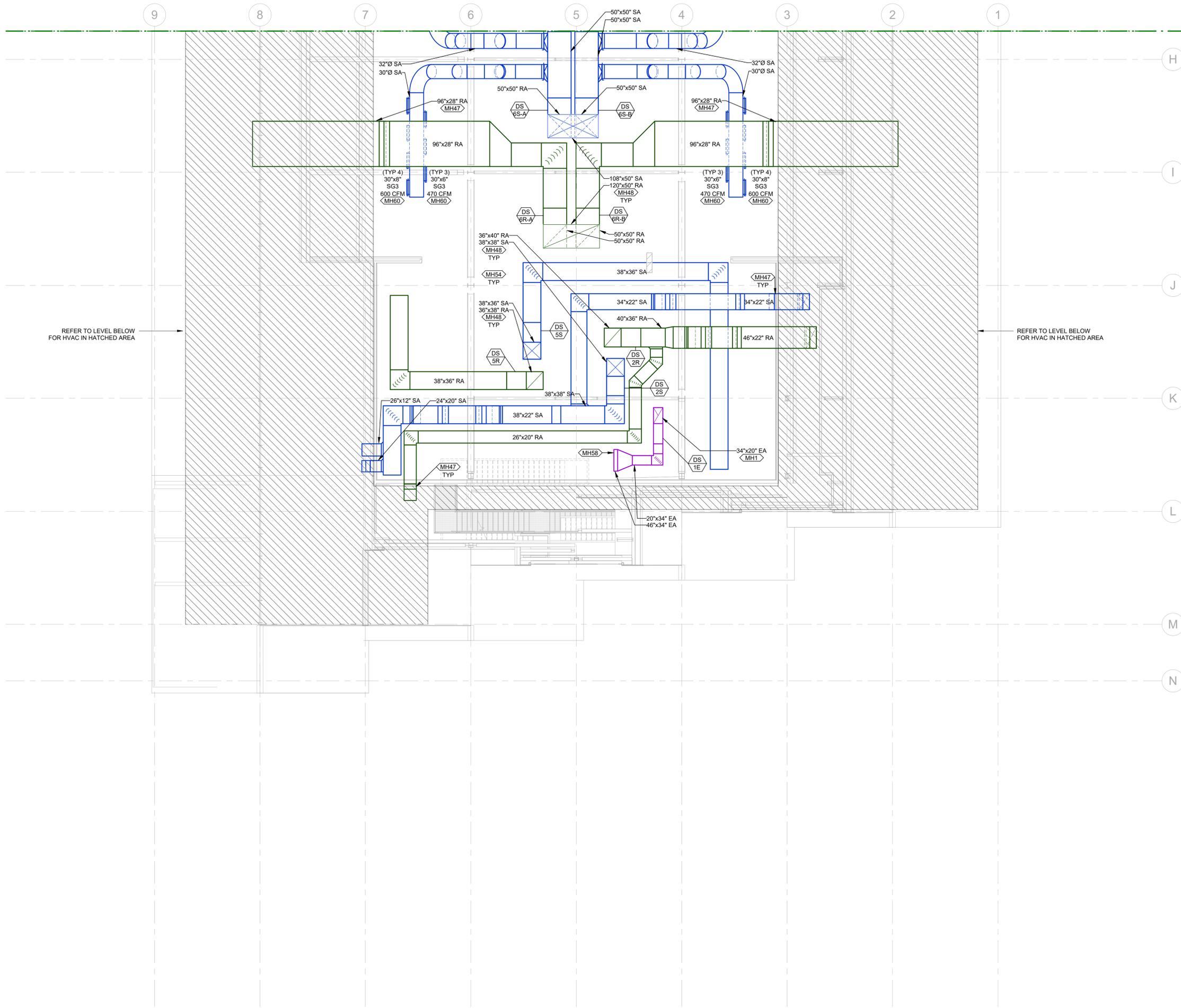
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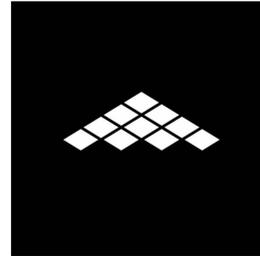
① MECHANICAL LEVEL 2 MEZZANINE PLAN - OVERALL
1/16" = 1'-0"



② MECHANICAL MECH PENTHOUSE PLAN - OVERALL
1/16" = 1'-0"



- MECHANICAL PLAN NOTES**
- MH1 DUCT UP TO LEVEL ABOVE.
 - MH47 REFER TO LEVEL BELOW FOR CONTINUATION.
 - MH48 DUCT UP TO EQUIPMENT ON LEVEL ABOVE. TRANSITION FROM DUCT SIZE ON PLANS TO FULL SIZE OF CONNECTION WITH CURB.
 - MH54 WHERE POSSIBLE BOTTOM OF ALL RECTANGULAR DUCTWORK LOCATED BETWEEN PENTHOUSE TRUSSES SHALL BE MOUNTED AT THE SAME BOTTOM OF DUCT ELEVATION. BOTTOM OF RECTANGULAR DUCTWORK BETWEEN PENTHOUSE TRUSSES SHALL BE LOCATED ABOVE THE TOP OF THE BOTTOM TRUSS CHORD.
 - MH58 FLARE RETURN DUCT TO OPENING SIZE SHOWN. PROTECT OPENING WITH 1" HARDWARE FABRIC AND PAINT EXPOSED INTERIOR AND EXTERIOR OF DUCT BLACK.
 - MH60 MOUNT DIFFUSER 45 DEGREES BELOW HORIZONTAL.



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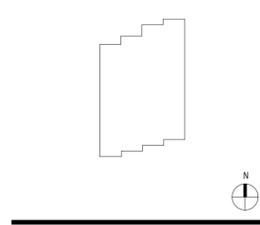
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KEY PLAN (N/S)



SHEET NAME

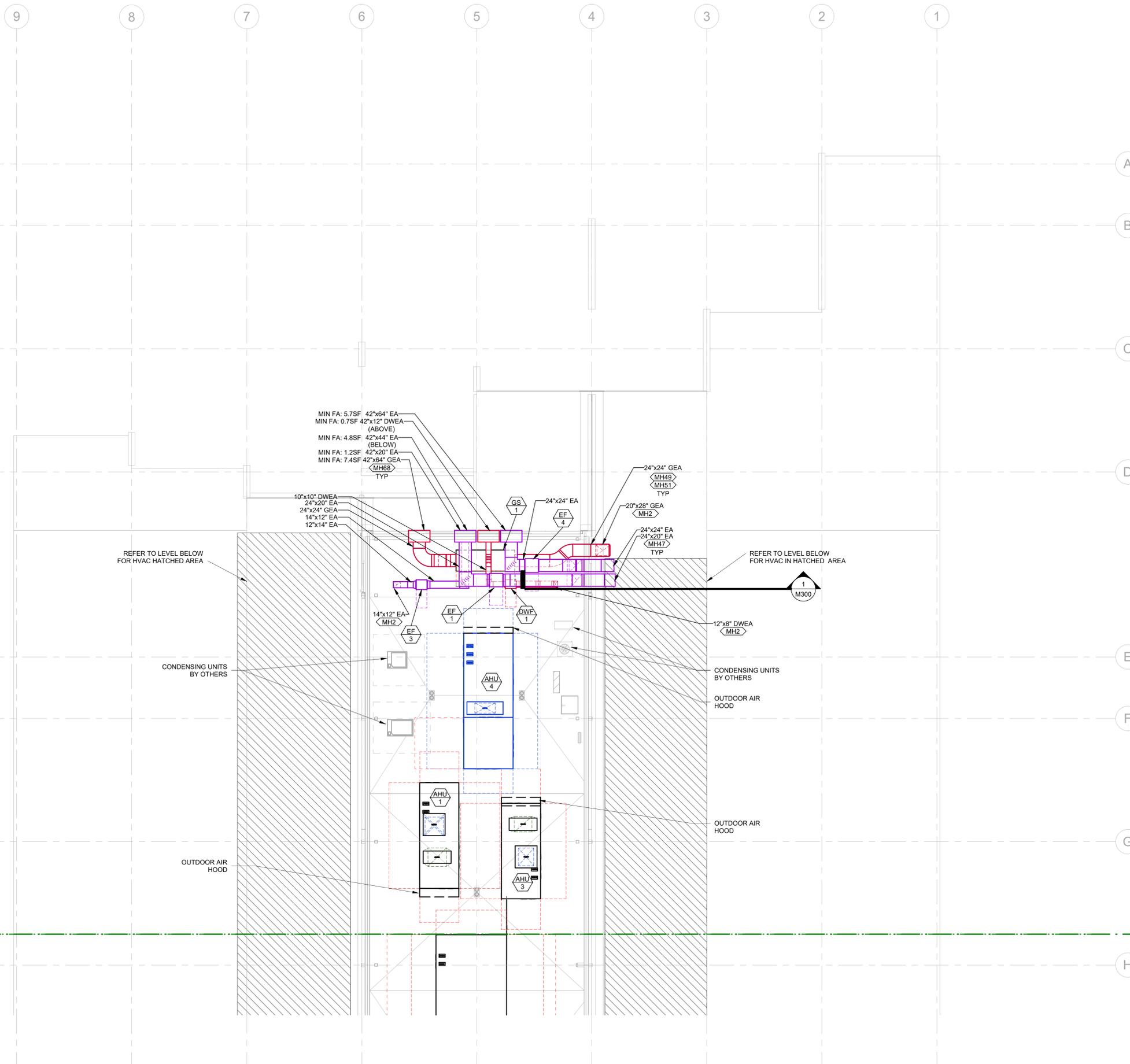
HVAC LEVEL 2M - MEZZANINE PLAN - AREA B

PROJECT NUMBER: 24531
 LID: NUMBER: 5050
 SCALE: 1/8" = 1'-0"
 FORMAT: ARCH D

M103B

DAVID S. WOLFORD
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① HVAC LEVEL 2 MEZZANINE PLAN - AREA B
 1/8" = 1'-0"



MECHANICAL PLAN NOTES

- MH2 DUCT DOWN TO LEVEL BELOW.
- MH47 REFER TO LEVEL BELOW FOR CONTINUATION.
- MH49 PROVIDE RADIUS ELBOWS WITHOUT TURNING VANES FOR TYPE 1 GREASE HOOD EXHAUST DUCTWORK. SLOPE GREASE DUCT BACK TOWARDS HOOD AT MINIMUM OF 1/4" PER LINEAL FOOT. PROVIDE TRANSITIONS AS REQUIRED TO HOOD AND EXHAUST FAN CONNECTIONS. GREASE DUCTS SHALL BE CONTAINED IN A UL APPROVED GREASE WRAP SYSTEM.
- MH51 PROVIDE GREASE EXHAUST DUCT CLEANOUTS ON SIDE OF DUCT. PROVIDE ADDITIONAL CLEANOUTS AS NEEDED PER CODE REQUIREMENTS, LOCAL AUTHORITY HAVING JURISDICTION REQUIREMENTS, OR AS REQUIRED TO FACILITATE CLEANING. COORDINATE WITH ALL TRADES TO AVOID BLOCKING ACCESS POINTS.
- MH68 TERMINATE EXHAUST DUCTWORK AT METAL MESH WALL PANEL PROVIDED BY ARCHITECT. REFER TO ARCHITECTURAL PLANS FOR MESH INFORMATION. EXHAUST DUCT SHALL BE SIZED TO MAINTAIN MINIMUM FREE AREA NOTED ON PLANS WITH FREE AREA PERCENTAGE OF THE METAL MESH PANEL.

MIN FA: 5.75F 42"x64" EA
 MIN FA: 0.75F 42"x12" DWEA (ABOVE)
 MIN FA: 4.85F 42"x44" EA (BELOW)
 MIN FA: 1.25F 42"x20" EA
 MIN FA: 7.45F 42"x64" GEA
 <MH68> TYP

10"x10" DWEA
 24"x20" EA
 24"x24" GEA
 14"x12" EA
 12"x14" EA

24"x24" GEA
 <MH49>
 <MH51> TYP

20"x28" GEA
 <MH2>

24"x24" EA
 24"x20" EA
 <MH47> TYP

REFER TO LEVEL BELOW FOR HVAC IN HATCHED AREA

REFER TO LEVEL BELOW FOR HVAC HATCHED AREA

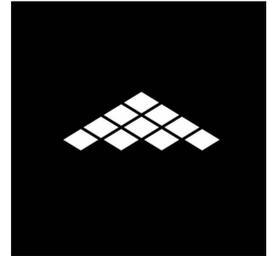
CONDENSING UNITS BY OTHERS

CONDENSING UNITS BY OTHERS

OUTDOOR AIR HOOD

OUTDOOR AIR HOOD

OUTDOOR AIR HOOD



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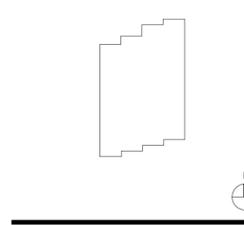
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NOT FOR CONSTRUCTION

KEY PLAN (NTS)



SHEET NAME

HVAC ROOF PLAN - AREA A

PROJECT NUMBER: 24531
 SHEET NUMBER: 5050
 SCALE: 1/8" = 1'-0"
 FORMAT: ARCH D

M104A

VARIABLE AIR VOLUME TERMINAL SCHEDULE (ELECTRIC HEAT)

MARK	SERVED FROM	ZONE SERVED	MANUFACTURER	MODEL	INLET SIZE (IN)	PRIMARY CFM	MIN CFM	MAX HEAT CFM	HEATING COIL					SOUND POWER				SENSOR				NOTES							
									EAT	LAT	MBH	NOMINAL KW	STEPS	V/PH	RADIATED	DISCHARGE	CONTROL TYPE	TYPE	H	CO2	OCC		RADIATED	DISCHARGE	CONTROL TYPE	TYPE	H	CO2	OCC
VAV 1.01	AHU 1	BEER & LIQUOR / CHAIR STORAGE	TITUS	DESV	6"	375	135	190	55	90	7.2	2.5	SCR	208/1			DUAL MAX, SINGLE MIN	T1	---	---	---	ALL							
VAV 1.02	AHU 1	BAR SUPP	TITUS	DESV	9"	825	165	165	55	85	5.4	2.0	SCR	208/1			SINGLE MAX, SINGLE MIN	T1	---	---	---	ALL							
VAV 1.03	AHU 1	ELEVATOR VESTIBULE	TITUS	DESV	5"	100	35	35	55	85	1.2	0.5	SCR	120/1			SINGLE MAX, SINGLE MIN	T2	---	---	---	ALL							
VAV 1.04A	AHU 1	LOBBY / BAR	TITUS	DESV	24"x16"	3050	2290	2290	55	85	74.5	22.0	SCR	480/3			SINGLE MAX, SINGLE MIN	T2	H	CO2	---	ALL							
VAV 1.04B	AHU 1	LOBBY	TITUS	DESV	16"	2200	1650	1650	55	85	53.8	16.0	SCR	480/3			SINGLE MAX, SINGLE MIN	T2	H	CO2	---	ALL							
VAV 1.05	AHU 1	BOX OFFICE	TITUS	DESV	8"	650	130	260	55	85	8.5	2.5	SCR	208/1			DUAL MAX, SINGLE MIN	T1	---	---	---	ALL							
VAV 1.06	AHU 1	COAT ROOM	TITUS	DESV	6"	300	60	60	55	85	2.0	1.0	SCR	120/1			SINGLE MAX, SINGLE MIN	T1	---	---	---	ALL							
VAV 1.07	AHU 1	WOMENS RESTROOM	TITUS	DESV	10"	1025	205	360	55	85	11.7	3.5	SCR	208/1			DUAL MAX, SINGLE MIN	T2	---	---	---	ALL							
VAV 1.08	AHU 1	MERCH	TITUS	DESV	7"	450	90	90	55	85	3.0	1.0	SCR	120/1			SINGLE MAX, SINGLE MIN	T1	---	---	---	ALL							
VAV 1.09	AHU 1	MENS RESTROOM	TITUS	DESV	8"	600	120	180	55	85	5.9	2.0	SCR	208/1			DUAL MAX, SINGLE MIN	T2	---	---	---	ALL							
VAV 1.10	AHU 1	MEDIC	TITUS	DESV	5"	225	45	45	55	85	1.5	0.5	SCR	120/1			SINGLE MAX, SINGLE MIN	T1	---	---	---	ALL							
VAV 2.01	AHU 2	DRESSING ROOM	TITUS	DESV	9"	725	145	185	55	85	6.0	2.0	SCR	208/1			DUAL MAX, SINGLE MIN	T1	H	---	---	ALL							
VAV 2.02	AHU 2	DRESSING ROOM	TITUS	DESV	6"	400	100	100	55	85	3.3	1.0	SCR	120/1			SINGLE MAX, SINGLE MIN	T1	H	---	---	ALL							
VAV 2.03	AHU 2	CREW LOUNGE	TITUS	DESV	9"	850	300	300	55	85	9.7	3.0	SCR	208/1			SINGLE MAX, SINGLE MIN	T1	---	CO2	---	ALL							
VAV 2.04	AHU 2	CORRIDOR	TITUS	DESV	24"x16"	4275	855	1150	55	85	37.5	11.0	SCR	480/3			DUAL MAX, SINGLE MIN	T1	---	---	---	ALL							
VAV 2.05	AHU 2	PR OFFICES	TITUS	DESV	5"	200	40	40	55	85	1.4	0.5	SCR	120/1			SINGLE MAX, SINGLE MIN	T1	---	---	---	ALL							
VAV 2.06	AHU 2	DRESSING ROOM	TITUS	DESV	8"	625	125	190	55	85	6.2	2.0	SCR	208/1			DUAL MAX, SINGLE MIN	T1	H	---	---	ALL							
VAV 2.07	AHU 2	DRESSING ROOM	TITUS	DESV	8"	600	120	120	55	85	4.0	1.5	SCR	120/1			SINGLE MAX, SINGLE MIN	T1	H	---	---	ALL							
VAV 2.08	AHU 2	STAFF CHECK IN / OFFICES	TITUS	DESV	10"	1000	300	300	55	85	9.8	3.0	SCR	208/1			SINGLE MAX, SINGLE MIN	T1	---	---	---	ALL							
VAV 2.09	AHU 2	OFFICE SUITES	TITUS	DESV	16"	2675	535	535	55	85	17.5	5.5	SCR	208/3			SINGLE MAX, SINGLE MIN	T1	H	---	---	ALL							

ZONE CONTROL SENSOR ABBREVIATIONS AND NOTES:
T1 - TEMPERATURE SENSOR WITH ADJUSTABILITY AND OCCUPANCY OVERRIDE, AND OVERRIDES AT BAS.
T2 - TEMPERATURE SENSOR WITH BLANK FACE.
H - SPACE HUMIDITY SENSOR.
CO2 - CARBON DIOXIDE SENSOR.
OCC - OCCUPANCY SENSOR.

IF MULTIPLE SENSOR TYPES ARE SHOWN, A SINGLE COMBINED SENSOR SHALL BE PROVIDED FOR THE PIECE OF EQUIPMENT. UNLESS OTHERWISE NOTED ON PLAN, SENSORS TO BE LOCATED ADJACENT TO LIGHTING CONTROLS.

MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND MODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

NOTES:

- INSTALL FLEXIBLE DUCT CONNECTOR AT INLET CONNECTION.
- PROVIDE INTEGRAL DISCONNECT SWITCH.
- PROVIDE SINGLE POINT POWER WITH CONTROL POWER (CP) TRANSFORMER FACTORY INSTALLED. COORDINATE PRIMARY POWER WITH ELECTRICAL DRAWINGS.
- BOX NOT TO EXCEED SCHEDULED DISCHARGE OR RADIATED SOUND DB USING 0.5 INCH W.G. INLET PRESSURE IN THE 3RD OCTAVE BAND.
- PROVIDE FACTORY-INSTALLED, PRESSURE INDEPENDENT, DDC CONTROL PACKAGE.
- PROVIDE BOX WITH EITHER RIGHT HAND OR LEFT HAND CONFIGURATION AS SHOWN ON DRAWINGS.
- INLET SIZE SHOWN IS THE MINIMUM ALLOWABLE INLET SIZE. NO SMALLER SIZES SHALL BE ACCEPTED.
- PROVIDE HEATER TO MEET OR EXCEED SCHEDULED MINIMUM MBH OUTPUT. NOMINAL KW IS BASED ON LISTED MANUFACTURER'S STANDARD PRODUCT. COORDINATE EQUIPMENT POWER SUPPLY WITH ELECTRICAL CONTRACTOR IF DIFFERENT FROM THAT SCHEDULED.
- VAV BOXES SHALL BE SIZED TO MEET THE SCHEDULED VALUES BASED ON THE FOLLOWING PRIORITIES: 1 - HEATING COIL CAPACITY, 2 - LEAVING AIR TEMPERATURE, 3 - BOX SELECTED AT 1296 FEET ABOVE SEA LEVEL.

GRILLE, REGISTER AND DIFFUSER SCHEDULE

MARK	MANUFACTURER	SERVICE	MODEL	CONSTRUCTION	FACE TYPE	MOUNTING	FACE SIZE (IN)	MAX NC	MAX PRESS DROP (IN W.G.)	NOTES
EPB1	TITUS	EXHAUST	FBP	STEEL	PLENUM BOX	LINEAR SLOT	2' NOMINAL	25	0.10	ALL
ERG1	TITUS	REFER TO PLANS	350FL	ALUMINUM	LOUVERED	DUCT/WALL	REFER TO PLANS	25	0.10	ALL
ERG3	TITUS	REFER TO PLANS	30RL	STEEL	LOUVERED	DUCT/WALL	REFER TO PLANS	25	0.10	ALL
LS1-HT	TITUS	REFER TO PLANS	FL-10-HT	ALUMINUM	LINEAR SLOT	CEILING/WALL	1" LINEAR SLOT	25	0.10	ALL
LS1-JT	TITUS	REFER TO PLANS	FL-10-JT	ALUMINUM	LINEAR SLOT	CEILING/WALL	1" LINEAR SLOT	25	0.10	ALL
LS2-HT	TITUS	REFER TO PLANS	FL-20-HT	ALUMINUM	LINEAR SLOT	CEILING/WALL	2" LINEAR SLOT	25	0.10	ALL
LS2-JT	TITUS	REFER TO PLANS	FL-20-JT	ALUMINUM	LINEAR SLOT	CEILING/WALL	2" LINEAR SLOT	25	0.10	ALL
CRG1	TITUS	RETURN	PAR-AA	ALUMINUM	PERFORATED	CEILING	12"x12"	25	0.10	ALL
CRG5	TITUS	RETURN	PAR-AA	ALUMINUM	PERFORATED	CEILING	24"x12"	25	0.10	ALL
RPB1	TITUS	RETURN	FBP	STEEL	PLENUM BOX	LINEAR SLOT	2' NOMINAL	25	0.10	ALL
CSD1	TITUS	SUPPLY	PAR-AA	ALUMINUM	PERFORATED	CEILING	12"x12"	25	0.10	ALL
CSD5	TITUS	SUPPLY	PAR	STEEL	PERFORATED	CEILING	24"x24"	25	0.10	ALL
CSD9	TITUS	SUPPLY	R-OMNI	STEEL	PLAQUE	CEILING/WALL	31 1/8" DIAMETER	25	0.10	ALL
SG1	TITUS	SUPPLY	DL	ALUMINUM	LOUVERED	DUCT	REFER TO PLANS	25	0.10	ALL
SG3	TITUS	SUPPLY	DL	ALUMINUM	LOUVERED	DUCT	REFER TO PLANS	25	0.10	ALL
SG 4	TITUS	SUPPLY	TND-AA	ALUMINUM	NOZZLE	WALL	REFER TO PLANS	25	0.15	ALL
SPB2	TITUS	SUPPLY	FBP	STEEL	PLENUM BOX	LINEAR SLOT	4' NOMINAL	25	0.10	ALL
SPB3	TITUS	SUPPLY	FBP	STEEL	PLENUM BOX	LINEAR SLOT	5' NOMINAL	25	0.10	ALL

MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND MODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

LEGEND:

- CEG - CEILING EXHAUST GRILLE ERG - DUCT/WALL EXHAUST/RETURN
CRG - CEILING RETURN/TRANSFER GRILLE /TRANSFER GRILLE
CSD - CEILING SUPPLY DIFFUSER SG - DUCT/WALL SUPPLY GRILLE LS - LINEAR SLOT (S/R/E)PB - PLENUM BOX (SUPPLY/RETURN/EXHAUST)

GENERAL NOTES:

- NECK SIZE SHOWN ON DRAWINGS. PROVIDE BRANCH DUCT TO MATCH NECK SIZE UNLESS OTHERWISE SHOWN ON DRAWINGS.
- FRAME TYPE TO MATCH CEILING/WALL CONSTRUCTION.
- PROVIDE DIFFUSERS, LINEAR SLOTS, AND GRILLES WITH NO EXPOSED MOUNTING SCREWS.
- PAINT ALL INTERIOR SURFACES OF SLOTS, GRILLES AND PLENUMS FLAT BLACK.
- COORDINATE INSTALLATION AND DIFFUSER TYPE WITH ARCHITECTURAL REFLECTED CEILING PLAN. PROVIDE REMOTE CABLE OPERATED DAMPER FOR DIFFUSERS INSTALLED IN INACCESSIBLE CEILINGS. REFER TO SPECIFICATIONS.

NOTES SPECIFIC TO CEILING MOUNT DEVICES:

- SUPPLY DIFFUSERS SHALL HAVE 4-WAY THROW PATTERN UNLESS OTHERWISE INDICATED BY FLOW ARROWS ON DRAWINGS.
- BAKED ENAMEL FINISH TO MATCH CEILING COLOR. DIFFUSER COLOR SHALL BE A STANDARD CATALOG COLOR UNLESS OTHERWISE NOTED ON PLAN. COORDINATE AIR DEVICE COLOR WITH ARCHITECTURAL PLANS AND SUBMIT PROPOSED COLORS FOR REVIEW BY ENGINEER AND ARCHITECT.
- PROVIDE WITH RAPID MOUNT FRAMING OPTION FOR LAY-IN TYPE DIFFUSERS INSTALLED IN A SHEETROCK OR OTHERWISE INACCESSIBLE CEILING.

NOTES SPECIFIC TO WALL/DUCT MOUNT DEVICES:

- FRONT BLADES PARALLEL TO LONG DIMENSION.
- SUPPLY GRILLES SHALL HAVE ADJUSTABLE DOUBLE DEFLECTION BARS.
- PROVIDE OPPOSED BLADE DAMPER ADJUSTABLE FROM FACE OF DEVICE WHERE INDICATED ON PLAN. DAMPERS SHOWN OUTSIDE OF DEVICES ARE INTENDED TO BE INSTALLED NOT INTEGRAL TO DEVICE.

NOTES SPECIFIC TO LINEAR SLOT & PLENUM DIFFUSERS:

- LINEAR SLOTS DEVICES SHALL BE PROVIDED WITH LIGHT SHIELDS ON UNUSED PORTION OF SLOT, NOT PROVIDED WITH A PLENUM BOX, PER DETAILS UNLESS OTHERWISE NOTED. PROVIDE MANUFACTURER'S BLANK-OFF PLATES WHERE NOTED ON PLAN.
- SUPPLY PLENUM MAY BE FIELD FABRICATED BASED ON PROVIDED DETAILS, OR PURCHASED FROM THE SLOT DIFFUSER MANUFACTURER. PROVIDE 1/4" CLOSED CELL INSULATION ON THE INTERIOR OF THE SUPPLY PLENUM.
- HIGH THROW LINEAR SLOTS MOUNTED IN VERTICAL DIMENSION TO HAVE DEFLECTORS POINTED DOWN UNLESS NOTED OTHERWISE.
- BORDER TYPE EQUAL TO TITUS 11 FOR ALL LAY-IN CEILINGS UNLESS NOTED ON PLANS. PROVIDE SUPPORT DEVICES AS NECESSARY TO SUPPORT SLOT FROM STRUCTURE AND INSTALL WITHOUT OVERLAPING T-BAR GRID.
 - BORDER TYPE EQUAL TO TITUS 11 FOR ALL SHEETROCK CEILINGS AND WALLS UNLESS NOTED ON PLANS.
 - BORDER TYPE EQUAL TO TITUS 66 FOR ALL SHEETROCK CEILINGS AND WALLS UNLESS NOTED ON PLANS.
 - BORDER TYPE EQUAL TO TITUS 22 FOR SHEETROCK CEILINGS AND WALLS WHERE NOTED ON PLANS.
- COORDINATE PLENUM BOX WIDTH WITH SLOT WIDTH.

FAN SCHEDULE

MARK	SERVICE DESCRIPTION	AREA SERVED	LOCATION	MANUFACTURER	MODEL	MOUNTING	AIRFLOW (CFM)				DRIVE (BELT/DIRECT)	VFD (Y/N)	ELECTRICAL				STANDBY POWER	CONTROL METHOD	WEIGHT (LBS)	NOTES	
							MAX	ESP (IN)	BHP	NOM HP			RPM	DISCONNECT	NON-FUSED	MCA					MOCF
DWF 1	DISHWASHER EXHAUST	KITCHEN	MECH PENTHOUSE	GREENHECK	BSQ-90	INLINE	500	0.50	0.15	0.25	1373	DIRECT	No	115/1	7.8	15	NON-FUSED	No	DISHWASHER INTERLOCK	85	ALL
DEF 1	DRYER EXHAUST	W.D.	CREW LOUNGE	ENERVEX	BEF225X	BOX VENTILATOR	500	0.50	0.50	1.10	2600	DIRECT	No	115/1	7.8	15	NON-FUSED	No	DRYER CONTROLLER	60	ALL
EF 1	EXHAUST	LVL1 RESTROOMS	MECH PENTHOUSE	GREENHECK	SQ-160-VG	INLINE	3375	1.00	1.16	2.00	1483	DIRECT	No	208/1	15.6	25	NON-FUSED	No	BAS SCHEDULE	160	ALL
EF 2	EXHAUST	BOH	MECH PENTHOUSE	GREENHECK	SQ-120-VG	INLINE	1100	0.50	0.19	0.50	1297	DIRECT	No	115/1	8.2	15	NON-FUSED	No	BAS SCHEDULE	65	ALL
EF 3	EXHAUST	LVL2 RESTROOMS	MECH PENTHOUSE	GREENHECK	SQ-120-VG	INLINE	825	0.50	0.13	0.50	1129	DIRECT	No	208/1	5	15	NON-FUSED	No	BAS SCHEDULE	65	ALL
EF 4	EXHAUST	KITCHEN	CORRIDOR	GREENHECK	SQ-16-M2-VG	INLINE	4000	0.50	0.65	2.00	1351	DIRECT	No	208/1	15.6	25	NON-FUSED	No	PRESSURE CONTROL	155	ALL
EF 6	EXHAUST	UPS	CREW LOUNGE	GREENHECK	SQ-97-VG	INLINE	150	0.50	0.09	0.25	1419	DIRECT	No	115/1	4.8	15	NON-FUSED	No	CONTINUOUS	50	ALL
EF 5	STAGE EXHAUST	STAGE	MECH PENTHOUSE	GREENHECK	AX-54-160	INLINE	5000	1.00	1.31	1.50	2042	DIRECT	Yes	208/3	8.2	15	NON-FUSED	No	BAS SCHEDULE	165	ALL

MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND MODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

LEGEND:

- EF - GENERAL EXHAUST FAN DEF - DRYER EXHAUST FAN DWF - DISHWASHER EXHAUST FAN
SF - GENERAL SUPPLY FAN TF - TRANSFER FAN
CF - CIRCULATION FAN RF - RETURN FAN
REF - RELIEF FAN GEF - GREASE EXHAUST FAN

GENERAL NOTES:

- MOUNT ALL FANS AS FOLLOWS. REFER TO VIBRATION ISOLATION SPECIFICATIONS AS NEEDED.
 - INLINE/CEILING: PROVIDE ALL-THREAD HANGING RODS.
 - SIDEWALL: PROVIDE MOUNTING BRACKETS AND ACCESSORIES REQUIRED FOR WALL MOUNTING.
- COORDINATE WITH CONTROLS CONTRACTOR TO ACHIEVE SPECIFIED CONTROL METHOD. REFER TO CONTROLS DRAWINGS FOR ADDITIONAL INFORMATION.
- NOMINAL MOTOR HP SHALL BE NO LARGER THAN THE FIRST AVAILABLE NOMINAL MOTOR SIZE GREATER THAN THE BHP.
- PROVIDE THE FOLLOWING ACCESSORIES MATCHING FANS DESIGNATION FOR VFD:
 - FOR FANS WITH VFD: FURNISH VFD WITH INTEGRAL DISCONNECTING MEANS, DIVISION 26 TO INSTALL AND FIELD WIRE. PROVIDE SHAFT GROUNDING SYSTEM ON MOTOR. REFER TO MOTOR SPECIFICATION FOR MORE INFORMATION.
 - FOR FANS WITH NO VFD: WITH MANUFACTURER'S ELECTRONICALLY COMMUTATED (EC) MOTOR WITH FACTORY INTEGRAL DISCONNECT. DISCONNECTS FOR FANS MOUNTED OUTDOORS SHALL BE NEMA 3R. PROVIDE EITHER SPEED CONTROLLER OR MANUFACTURER'S ADVANCED EC MOTOR CONTROLLER WITH BAS INTERFACE TO ACHIEVE CONTROL INTENT. IN ALL OTHER INSTANCES COORDINATE WITH DIVISION 26.
- PROVIDE BIRDSCREEN AND MOTORIZED DAMPER INTERLOCKED WITH FAN OPERATION UNLESS OTHERWISE NOTED. MOTORIZED DAMPER PRESSURE DROP SHALL NOT EXCEED 0.15 IN W.G. COORDINATE DAMPER POWER WITH DIVISION 26 CONTRACTOR. MOTORIZED DAMPER TO BE MOUNTED WITHIN CURBS FOR CURB MOUNTED FANS. FOR ALL OTHER FANS, MOTORIZED DAMPER TO BE LOCATED AT EXTERIOR PENETRATION (ROOF/WALL) IN ACCESSIBLE LOCATION UNLESS OTHERWISE INDICATED ON DRAWINGS.

NOTES SPECIFIC TO DRYER SUPPLY/EXHAUST:

- MECHANICAL CONTRACTOR SHALL COORDINATE WITH GENERAL CONTRACTOR AND OWNER TO ENSURE PROVIDED LAUNDRY DRYERS ARE CAPABLE OF DRYER EXHAUST SYSTEM CONTROL PANEL INTERLOCK PRIOR TO PURCHASE OF DRYERS. DRYER WITHOUT INTERLOCK CAPABILITY TO BE PROVIDED WITH DRY CONTACTS NECESSARY TO ACHIEVE STATUS INPUT TO FAN CONTROLLER AND TO ALLOW FOR FAN CONTROLLER SHUTDOWN OF DRYER OPERATION.
- PROVIDE ALL NECESSARY COMPONENTS INCLUDING SYSTEM CONTROL PANEL, DRYER INTERLOCKS, BI-DIRECTIONAL PRESSURE TRANSDUCER, AND MANUFACTURER'S VARIABLE SPEED DRIVE. REFER TO CONTROL DIAGRAMS FOR COMPLETE SYSTEM OPERATION.
- PROVIDE MANUFACTURER'S CONTROLLER EQUAL TO ENERVEX EBC 31 FOR SYSTEM OPERATION. LOCATE CONTROLLER ADJACENT TO EQUIPMENT.
- FAN SHALL BE OF ALUMINUM OR STAINLESS STEEL CONSTRUCTION AND UL LISTED FOR DRYER SERVICE.
- DO NOT PROVIDE BIRDSCREEN OR INTEGRAL DAMPER.
- VERIFY AIRFLOW RATE WITH ACTUAL REQUIRED AIRFLOW RATES OF PROCURED EQUIPMENT SERVED PRIOR TO ORDERING.
- PROVIDE SYSTEM SELECTION BASED ON FIELD COORDINATED INSTALLATION AND PROPOSED ROUTING OF DUCTWORK.

NOTES SPECIFIC TO DISHWASHER EXHAUST:

- FAN SHALL BE ALL ALUMINUM CONSTRUCTION WITH MOTOR LOCATED OUT OF AIRSTREAM.
- INTERLOCK FAN OPERATION WITH ASSOCIATED DISHWASHER.
- PROVIDE WITH ALUMINUM MOTORIZED DAMPER AT EXTERIOR PENETRATION.

VRF FAN COIL UNIT SCHEDULE

MARK	SERVICE	LOCATION	MANUFACTURER	MODEL	TYPE	MOUNTING	COOLING COIL						TOTAL HTG CAP (MBH)	HEAT PUMP HEATING COIL				ELECTRICAL				CONTROL METHOD 1-4	NOTES					
							TH (MBH)	SH (MBH)	EAT			REFR TYPE		MIN EFF (SEER)	MIN OUT (MBH)	EAT ("F DB)	LAT ("F DB)	MIN EFF (COP)	MIN OA (CFM)	V/PH	MCA			MOCP	DISC TYPE	WEIGHT (LBS)		
									("F DB)	("F WB)	("F DB)																("F WB)	
VFCU 1.1	CU 1	ELEC 109			HEAT RECOVERY	WALL	24.0	24.0	80.0	66.6	55	54	R32		24.0		65	90		0	0 V / 1PH	0	0	0		0		
VFCU 1.2	CU 2	IDF 144			HEAT PUMP	WALL	24.0	24.0	75.0	62.5	55	54	R32							0	0 V / 1PH	0	0	0		0		
VFCU 1.3	CU 2	MDF 137			HEAT PUMP	SUSPENDED	48.0	48.0	75.0	62.5	55	54	R32							0	0 V / 1PH	0	0	0		0		
VFCU 1.4	CU 1	UPS 130			HEAT RECOVERY	WALL	24.0	24.0	80.0	66.6	55	54	R32		24.0		65	90		0	0 V / 1PH	0	0	0		0		
VFCU 1.5A	CU 1	MAIN ELEC 129			HEAT RECOVERY	SUSPENDED	48.0	48.0	80.0	66.6	55	54	R32		48.0		65	90		0	0 V / 1PH	0	0	0		0		
VFCU 1.5B	CU 1	MAIN ELEC 129			HEAT RECOVERY	SUSPENDED	48.0	48.0	80.0	66.6	55	54	R32		48.0		65	90		0	0 V / 1PH	0	0	0		0		
VFCU 1.6	CU 2	IDF 218			HEAT PUMP	WALL	24.0	24.0	75.0	62.5	55	54	R32							0	0 V / 1PH	0	0	0		0		
VFCU 1.7	CU 1	ELEC 204			HEAT RECOVERY	WALL	24.0	24.0	80.0	66.6	55	54	R32		24.0		65	90		0	0 V / 1PH	0	0	0		0		

VRF CONDENSING UNIT SCHEDULE

MARK	SERVICE	MANUFACTURER	MODEL	CONFIGURATION	REFR TYPE	COOLING CAPACITY			HEATING CAPACITY				OUTDOOR MODULE 1			DISC TYPE	WEIGHT (LBS)	NOTES
						TOTAL (MBH)	MIN EFF		HEAT PUMP (MBH)	AMBIENT ("F DB)	MIN EFF COP 47°F	HSPF	MCA	MOCP	V/PH			
							EER	SEER										
CU 1	VFCU 1.1, 1.4, 1.5A/B, 1.7			HEAT RECOVERY	R32	168.0								0	0	0 V / 1PH	0	
CU 2	VFCU 1.2, 1.3, 1.6			HEAT PUMP	R32	96.0								0	0	0 V / 1PH	0	

VRF BRANCH SELECTOR BOX SCHEDULE

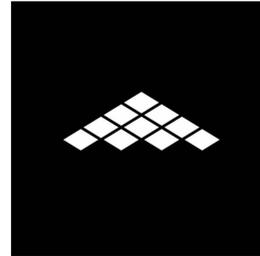
MARK	# PORTS	MANUFACTURER	MODEL	SERVICE	ELECTRICAL			NOTES
					V/PH	MCA	MOCP	
BS 1				CU 1	208 V / 1PH	0.0	0	

NOTES:

- A. EQUIPMENT COMPONENTS SHALL BE BY THE SAME MANUFACTURER.
- B. DISCONNECT SWITCH PROVIDED BY DIVISION 26 CONTRACTOR.
- C. PROVIDE WITH ALL-THREAD HANGING RODS.
- D. MODEL NUMBER IS REPRESENTATIVE ONLY. FINAL BRANCH SELECTOR SIZE SHALL BE DETERMINED BY VRF MANUFACTURER'S CALCULATIONS.
- E. PROVIDE SHUTOFF VALVES ON EACH OUTLET PORT OF BRANCH SELECTOR BOX

LOUVER SCHEDULE

MARK	AREA SERVED	SERVICE	MANUFACTURER	MODEL	SIZE (W" x H")	CFM	MIN FREE AREA (SF)	MAX VEL (FPM)	MAX APD (IN W.C.)	NOTES
LV 1	UPS	EXHAUST			12" x 12"	150	0.20	750	0.05	
LV 2	DRYER	EXHAUST			24" x 12"	500	0.70	710	0.05	
LV 3	BOH	EXHAUST			44" x 20"	1100	1.60	690	0.05	



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SEAL

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NOT FOR CONSTRUCTION

KEY PLAN (N/T)

SHEET NAME

MECHANICAL SCHEDULES

PROJECT NUMBER SHEET NUMBER

24531

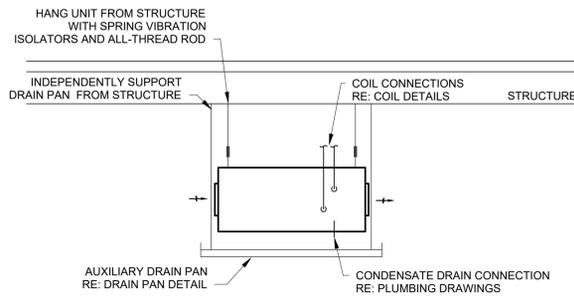
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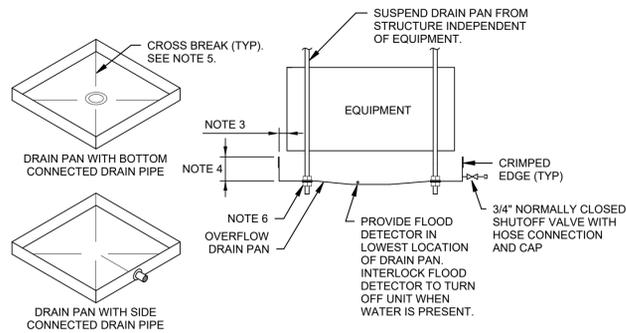
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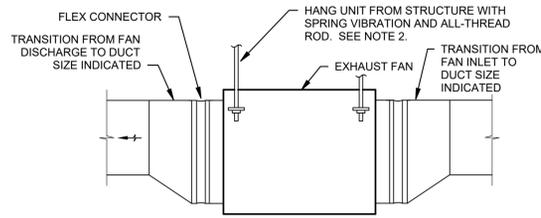
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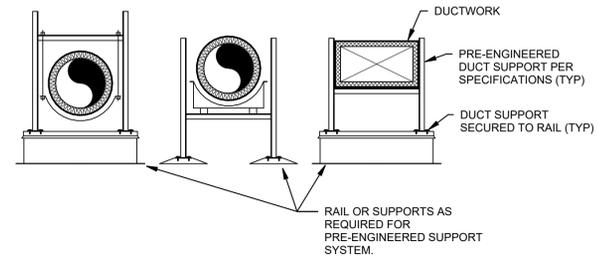
NOTES:
1. ARRANGEMENT SHOWN IS SCHEMATIC, ADJUST TO SUIT FIELD CONDITIONS AND MEET LOCAL CODE REQUIREMENTS.



NOTES:
1. SOLDER ALL JOINTS TO MAKE DRAIN PAN LEAK TIGHT.
2. FABRICATE DRAIN PAN FROM 20 GAUGE GALVANIZED SHEET METAL.
3. DRAIN PAN SHALL EXTEND MINIMUM 3\"/>



NOTES:
1. ARRANGEMENT SHOWN IS SCHEMATIC, ADJUST TO SUIT FIELD CONDITIONS AND MEET LOCAL CODE REQUIREMENTS.
2. FOR FANS 1 HP AND LESS, PROVIDE NEOPRENE RUBBER MOUNT HANGER (NR). FOR FANS LARGER THAN 1 HP, PROVIDE SPRING VIBRATION ISOLATION HANGER (SPNH).



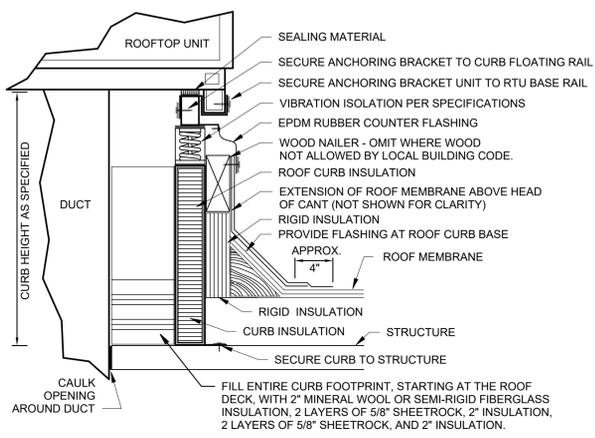
NOTES:
1. DUCT SUPPORTS SHALL BE PRE-ENGINEERED SUPPORT PRODUCT BY APPROVED MANUFACTURER. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS FOR DUCT SUPPORTS, ANCHORING, AND SEISMIC/WIND RESISTANCE.
2. DUCTWORK SHALL REST ON OR BE ATTACHED TO SUPPORTS AS REQUIRED BY INSTALLATION REQUIREMENTS PER MANUFACTURER.

1 HORIZONTAL HVAC UNIT DETAIL
NTS

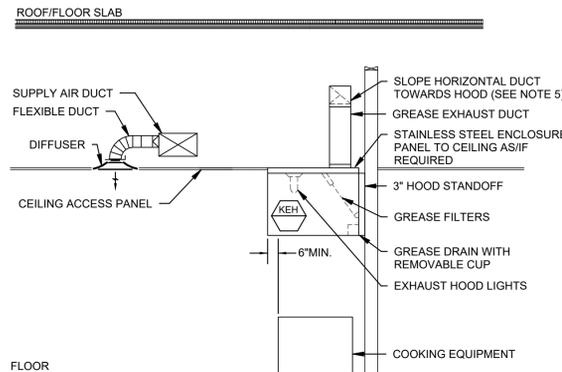
2 CONDENSATE OVERFLOW DRAIN PAN DETAIL
NTS

3 IN-LINE FAN DETAIL
NTS

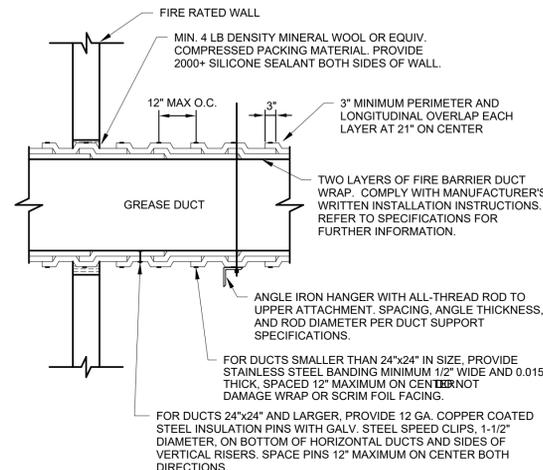
4 ROOF MOUNTED DUCT SUPPORT DETAIL
NTS



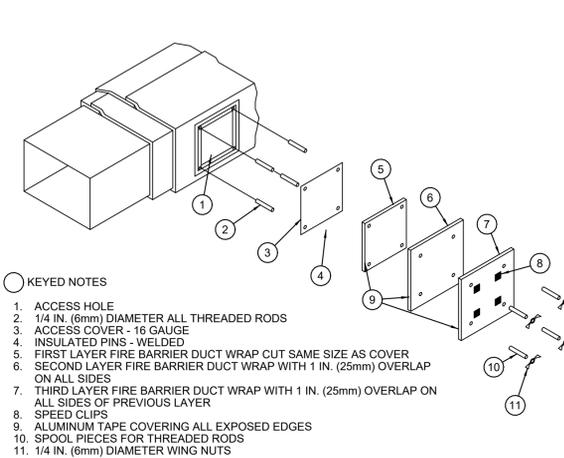
NOTES:
1. CUT METAL DECKING TO ALLOW CURB INSTALLATION ON STEEL FRAMING. AFTER CURB IS SET IN PLACE, TRIM REMAINING METAL DECKING AND INSTALL WITHIN CURB. TACK WELD DECKING TO SUPPORT STEEL. DO NOT WELD INTERIOR DECKING TO ROOF CURB. PROVIDE ADDITIONAL CROSS FRAMING TO SUPPORT INTERIOR DECKING AND FILL MATERIAL AS REQUIRED.
2. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS FOR ROOF CURBS, ANCHORING AND SEISMIC/WIND RESISTANCE.



NOTES:
1. SUBMIT SHOP DRAWINGS OF ALL HOOD SYSTEMS TO CITY FOR APPROVAL PRIOR TO INSTALLATION.
2. TOTAL HOOD SYSTEM TO BE IN COMPLETE CONFORMANCE WITH NFPA, AND ALL LOCAL CODES AND REGULATIONS.
3. COORDINATE ALL FIRE PROTECTION SYSTEMS WITH FIRE PROTECTION CONTRACTOR WHO SHALL ALSO BE RESPONSIBLE FOR ALL PERMITS AND TESTING REQUIRED.
4. PROVIDE WRAP SYSTEM WHERE APPROVED BY LOCAL CODES IN LIEU OF RATED ENCLOSURE
5. PROVIDE ACCESS PANELS AS REQUIRED BY LOCAL CODE AND PER PLAN.
6. HOODS SHALL EXTEND MINIMUM 6\"/>



NOTES:
1. INSTALL GREASE EXHAUST AND FIRE RATED DUCT WRAP IN ACCORDANCE WITH THE MANUFACTURER'S APPROVED INSTRUCTIONS AND UL LISTED INSTALLATION DETAILS. TECHNIQUES THAT DIFFER FROM THE ABOVE METHOD ARE ACCEPTABLE IF THEY ARE UL TESTED AND APPROVED.



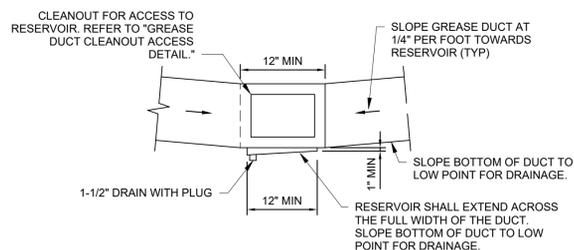
NOTES:
1. FOR REFERENCE ONLY. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
2. AT CONTRACTOR'S OPTION, A LISTED UL 1978 GREASE ACCESS DOOR PRODUCT MAY BE SUBSTITUTED FOR THE ACCESS DOOR PICTURED IN THIS DETAIL. DOOR SHALL BE RATED FOR UP TO 2,300°F AND MEET NFPA98 STANDARDS. BOLTS SHALL BE LONG ENOUGH FOR DUCT WRAP SYSTEM (WHEN USED). INSTALL IN ACCORDANCE WITH MANUFACTURER'S LITERATURE.

5 VIBRATION ISOLATION ROOF CURB DETAIL
NTS

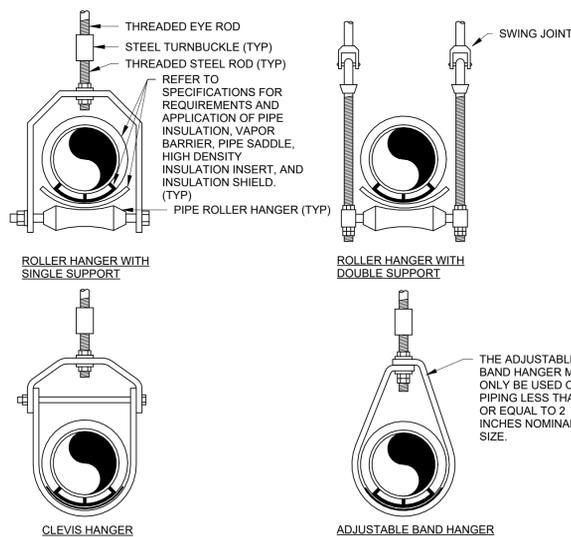
6 KITCHEN EXHAUST HOOD ELEVATION DETAIL
NTS

7 GREASE DUCT FIRE WRAP INSULATION INSTALLATION DETAIL
NTS

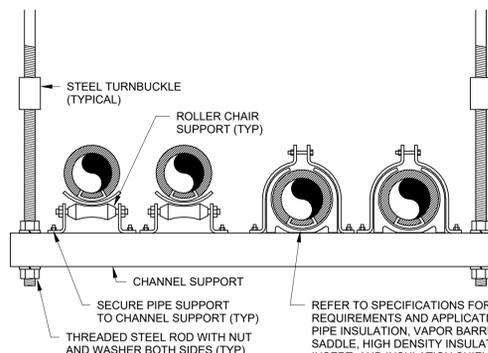
8 GREASE DUCT CLEANOUT ACCESS DOOR DETAIL
NTS



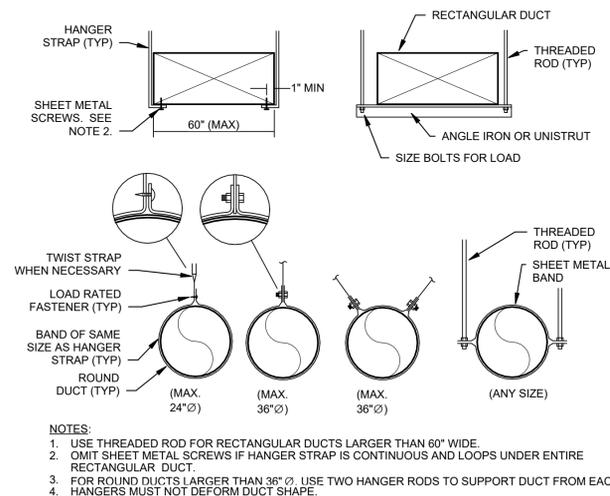
NOTES:
1. INSTALL GREASE DUCT RESERVOIR IN AN ACCESSIBLE LOCATION.



10 PIPE HANGER DETAILS
NTS



11 MULTIPLE PIPE TRAPEZE HANGER DETAIL
NTS



NOTES:
1. USE THREADED ROD FOR RECTANGULAR DUCTS LARGER THAN 60\"/>

12 DUCT HANGER LOWER ATTACHMENT DETAILS
NTS

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ACOUSTICS

DATE

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PROJECT DESIGN CONDITIONS

CLIMATE CONDITIONS				WEATHER STATION				REFERENCE			
WEATHER STATION:				BENTONVILLE, AR				2021 ASHRAE			
CLIMATE ZONE:				4A				MONDAY - FRIDAY			
ASHRAE HEATING:				99.6%				TBD BY OWNER			
DESIGN HEATING CONDITIONS:				10.1 °F DB				SATURDAY			
HUMIDIFICATION:				0.3 °F DP				TBD BY OWNER			
ASHRAE COOLING:				99.6%				SUNDAY			
DESIGN COOLING CONDITIONS:				0.5 °F DP				TBD BY OWNER			
DEHUMIDIFICATION:				5.9 gr/lb				HOLIDAY			
				13.6 °F DB							
				95.3 °F DB							
				80.1 °F WB							
				73.5 °F DP							
				130.7 gr/lb							
				84.0 °F DB							

BUILDING OPERATING HOURS:

MONDAY - FRIDAY	TBD BY OWNER
SATURDAY	TBD BY OWNER
SUNDAY	TBD BY OWNER
HOLIDAY	TBD BY OWNER

BAS CONTRACTOR SHALL PROVIDE CAPABILITY FOR 20 DISTINCT BUILDING SCHEDULES/EVENT TYPES TO BE DETERMINED BY THE OWNER. SCHEDULES SHALL BE CONVEYED BY THE BAS TO OTHER CONTROL SYSTEMS IN THE BUILDING (INCLUDING BUT NOT LIMITED TO THE LIGHTING CONTROL AND POWER MONITORING SYSTEMS) VIA SYSTEM INTEGRATION.

SPACE / UNIT DESCRIPTION	SET POINTS								ZONE VENTILATION RESET			SPACE OPERATING HOURS OCCUPIED / UNOCCUPIED			NOTES
	COOLING / DE-HUMIDIFICATION				HEATING				HUMIDIFICATION			DAYS OF THE WEEK			
	OCC °F	UNOCC °F	MAX RH %	MIN RH %	OCC °F	UNOCC °F	MIN RH %	MAX RH %	CONTROL	BASE	MAXIMUM	M-F	SAT	SUN	
AV / DAS / IDF / IT / MDF	75	75	50%	NA	65	65	NA	NA	NA	NA	NA	TBD	TBD	TBD	B-E
AUDIENCE / STANDING / SEATED	72	80	50%	NA	68	60	NA	NA	CO2	400	900	TBD	TBD	TBD	A-D
CLUB / LOUNGE	72	80	50%	NA	70	60	NA	NA	NA	NA	NA	TBD	TBD	TBD	B-D
CONCESSION / KITCHEN	78	85	50%	NA	68	58	NA	NA	NA	NA	NA	TBD	TBD	TBD	B-D
CONFERENCE / MEETING	72	80	50%	NA	70	60	NA	NA	CO2	400	900	TBD	TBD	TBD	A-D
DEFAULT / OFFICE / RETAIL	72	80	50%	NA	70	60	NA	NA	NA	NA	NA	TBD	TBD	TBD	B-D
LAUNDRY	75	80	50%	NA	68	65	NA	NA	NA	NA	NA	TBD	TBD	TBD	B-D
STORAGE / MEP / CORRIDOR	80	80	50%	NA	65	65	NA	NA	NA	NA	NA	TBD	TBD	TBD	B-D

NOTES:

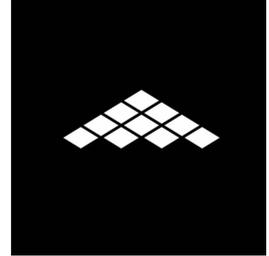
- ZONE LEVEL VENTILATION RESET / DEMAND CONTROL VENTILATION (DCV) CONTROL METHOD: CARBON DIOXIDE SENSOR (CO2).
- ZONE LEVEL SET POINT CONDITIONS SHALL BE AS SCHEDULED UNLESS OTHERWISE SCHEDULED OR NOTED ON THE DRAWINGS FOR ROOM SPECIFIC SPACE CONDITIONS.
- ZONE LEVEL OCCUPANCY HOUR SCHEDULE SHALL BE PER BUILDING OPERATING HOURS UNLESS OTHERWISE SCHEDULED.
- ZONE LEVEL CONTROLS SHALL BE CAPABLE OF OPERATING WITH INDEPENDENT OCCUPANCY SCHEDULES.
- ZONE RELATIVE HUMIDITY FOR AREAS PROVIDED WITH HUMIDIFIERS ONLY. REFER TO PLANS AND OTHER CONTROL DIAGRAMS FOR ADDITIONAL INFORMATION.

POINTS LIST - GLOBAL BUILDING MONITORING

POINT ID	DESCRIPTION	POINT TYPE	UNITS	ACCURACY	TRENDING INTERVAL	ENERGY DASHBOARD DISPLAY	STATUS ALARM	ALARM RANGE	NOTES
GENERAL									
DATE	DATE	AV	MM/DD/YYYY			X			
TIME	TIME	AV	HH:MM			X			
BUILDING SENSORS									
BDP	BUILDING DIFFERENTIAL PRESSURE	AI	IN. W.G.	SPEC	15 MIN.	X	X	-0.15 > BDP > +0.20	A, B
OACO2	OUTSIDE AIR CARBON DIOXIDE LEVEL	AI	PPM	SPEC	15 MIN.				
OAT	OUTSIDE AIR DRY BULB TEMPERATURE	AI	°F	SPEC	15 MIN.	X			
OAWB	OUTSIDE AIR WET BULB TEMPERATURE	AV	°F		15 MIN.				C
OAH	OUTSIDE AIR RELATIVE HUMIDITY	AI	%	SPEC	15 MIN.	X			
LIFE SAFETY									
FA-ST	FIRE ALARM SYSTEM STATUS MONITORING	BI					X	ON ACTIVATION	M
ELECTRICITY METERING									
E-KW	ELECTRIC DEMAND	AI	KW	±1.0%	15 MIN.	X			D
E-KW-P	ELECTRIC PEAK HISTORICAL DEMAND	AV	KW		15 MIN.				F
E-KWH	ELECTRIC CONSUMPTION	AI	KWH	±1.0%	15 MIN.	X			D
E-KWH-P	ELECTRIC KWH PER RATE PERIOD	AV	KWH		15 MIN.	X			G
NATURAL GAS FUEL METERING									
G-FM-T	GAS METER TOTAL	AI	KWH		15 MIN.				D
DOMESTIC COLD WATER									
DCW-WM-GAL-T	DOMESTIC COLD WATER METER VOLUME TOTAL	AI	GAL		15 MIN.				D
DCW-WM-GPM-T	DOMESTIC COLD WATER METER FLOW RATE AGGREGATE	AI	GPM		15 MIN.				D
NOTES:									
A. INITIAL SETPOINT SHALL BE 0.05 IN. W.G. COORDINATE FINAL SETPOINT AT BUILDING STARTUP.									
B. APPLY A MOVING TIME AVERAGE TO BUILDING DIFFERENTIAL PRESSURE USING A SLIDING 5-MINUTE WINDOW TO REDUCE DAMPER AND FAN CONTROL FLUCTUATIONS.									
C. PERFORM PSYCHROMETRIC CALCULATION TO OBTAIN VALUE BASED ON OUTSIDE AIR DRY BULB TEMPERATURE (OAT) AND OUTSIDE AIR RELATIVE HUMIDITY (OAH).									
D. CALCULATE TOTAL UTILITY USE FROM THE SUM OF ALL METERS AND SUBMETERS SERVING END USE. EXCLUDE SUBMETERS ALREADY INCLUDED IN AN UPSTREAM METER.									
F. TREND HISTORICAL PEAK FOR A MINIMUM PERIOD OF 12 MONTHS.									
G. COORDINATE WITH THE OWNER REGARDING THE TIME PERIOD USED TO CALCULATE THE CONSUMPTION PER PERIOD.									
M. RELAY FROM FIRE ALARM SYSTEM PROVIDED BY DIVISION 28. CONTROL WIRING FROM BAS TO RELAY BY DIVISION 23. DISPLAY FIRE ALARM SYSTEM STATUS (NORMAL/ALARM) AT BAS FRONT END.									

POINTS LIST - ANCILLARY SYSTEMS

POINT ID	DESCRIPTION	POINT TYPE	DEFAULT SETPOINT	SETPOINT RESET RANGE	FAIL POSITION	STATUS ALARM	ALARM RANGE	NOTES
DOMESTIC HOT WATER HEATING SYSTEM								
DHWH-COM-X	DOMESTIC HOT WATER HEATER COMMUNICATION	COM				X	UPON ACTIVATION	B, G, F
DHWH-EMSTP	DOMESTIC HOT WATER HEATER EMERGENCY STOP BUTTON	BI				X	UPON ACTIVATION	B, F
DHWT-T	DOMESTIC HOT WATER TANK TEMPERATURE	AI		140		X	T>145F	B, C, F
DHWS-T	DOMESTIC HOT WATER SUPPLY TEMPERATURE	AI		140		X	T>145F	B, C, F
DHWR-T	DOMESTIC HOT WATER RETURN TEMPERATURE	AI						B, C, F
DHWM-T	DOMESTIC HOT WATER MIXED TEMPERATURE	AI						B, C, F
DHWS-P	DOMESTIC HOT WATER SUPPLY PRESSURE	AI						
DCW-T	DOMESTIC WATER TEMPERATURE	AI						B, C, F
DOMESTIC BOOSTER PUMP								
DWP-C-X	PUMP COMMAND	BI						B
DWP-FLT-X	PUMP FAULT	BI				X	ALARM	B, F
DWP-ST-X	PUMP STATUS	BI				X	ALARM	B, F
DWP-P	DOMESTIC BOOSTER SYSTEM PRESSURE	AI	TBD	TBD				B, C, F
DWP-LP-X	LOW SUCTION PRESSURE	AI	TBD	TBD		X	TBD	B, F
DWP-HP-X	DISCHARGE PRESSURE	AI	TBD	TBD		X	35 PSI <DWP-HP< 75 PSI	
DWP-F-HI-X	HIGH FLOW ALARM	BI				X	ALARM	B, C, F
DWP-TS	DOMESTIC WATER SUPPLY TEMPERATURE	AI						B, C, F
DOMESTIC WATER RECIRCULATION PUMP (TYPICAL ALL)								
RCP-C	RECIRCULATION PUMP COMMAND	BO						B, F
RCP-ST	RECIRCULATION PUMP STATUS	BI				X	RCP-ST <> RCP-C	B, F
LEAK DETECTION								
LD-X	CONDENSATE LEAK DETECTION	BI				X	ON ACTIVATION	R
PL-DHWR-X	DOMESTIC HOT WATER RECIRCULATION LEAK DETECTION	BI				X	ON ACTIVATION	R
ELEVATOR SUMP PUMPS								
ELSP-FLT-X	SUMP PUMP FAULT	BI				X	ALARM	B
ELSP-ST-X	SUMP PUMP STATUS	BI				X	ALARM	B
ELSP-HL-X	SUMP PUMP HIGH LIMIT ALARM	BI				X	ALARM	B
AUTOMATIC TRANSFER SWITCH								
ATS-ST	ATS STATUS	BI				X		G, H
ATS-FLT	ATS FAULT	BI				X	ALARM	
NOTES:								
A. BAS CONTRACTOR SHALL PROVIDE DEVICE.								
B. DISPLAY VALUE ON GRAPHIC AT BAS FRONT END.								
C. POINT SHALL BE ADJUSTABLE.								
D. PROVIDE IN ALL SPACES SERVED BY STAND-ALONE ELECTRIC CABINET UNIT HEATERS OR SPLIT SYSTEM FAN COIL UNITS FOR MONITORING AND ALARM. INSTALL BAS SENSOR ADJACENT TO UNIT FACTORY PROVIDED SENSOR...								
E. COORDINATE POINTS WITH GENERATOR / ATS FACTORY CONTROLS AND DIVISION 26.								
F. REFER TO PLUMBING PLANS FOR QUANTITY AND LOCATIONS.								
G. PROVIDE ALL GATEWAYS REQUIRED FOR COMMUNICATION BETWEEN CONTROLLER AND BAS.								
H. PROVIDE INPUTS TO MONITOR DRY CONTACTS FOR TROUBLE AND SUPERVISORY ALONG WITH ALARM.								
J. PROVIDE STATUS VIA CURRENT TRANSDUCER ON THE POWER LEAD TO THE PUMP MOTOR.								
K. BAS CONTRACTOR SHALL FURNISH DEVICE. DIVISION 21 CONTRACTOR SHALL INSTALL IN PIPING DOWNSTREAM OF THE FIRE PUMP DISCHARGE.								
M. ALARM ON COMMON ALARM OR WHEN STATUS IS OFF AND OAT < 36F, OR WHEN STATUS IS ON AND OAT > 40F.								



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DATE ISSUE

SCALE

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KEY PLAN (NTS)

SHEET NAME

MECHANICAL CONTROLS

PROJECT NUMBER SHEET NUMBER

24531

LOG NUMBER

5050

SCALE

FORMAT

ARCH D

M600