MECHANICAL SCOPE OF WORK SUMMARY

1. PROVIDE DEMOLITION AND INSTALLATION OF HVAC, PIPING, AND MECHANICAL SYSTEMS AS SHOWN ON THESE PLANS AND AS SPECIFIED IN THE PROJECT MANUAL.
2. THE WORK WILL BE PHASED BY THE CONSTRUCTION MANAGER AND THE OWNER.
3. PROVIDE AND INSTALL HVAC EQUIPMENT AND APPURTENANCES AS SCHEDULED OR INDICATED INCLUDING DUCTWORK, VAV TERMINALS, HYDRONIC PIPING, SUPPLY AND RETURN GRILLES, INSULATION, SUPPORTS, SEALING PENETRATIONS, ETC. TO MAKE THE JOB COMPLETE AND FULLY FUNCTIONAL IN ACCORDANCE WITH THE DESIGN INTENT.

   NOTE: THE CHILLERS WERE PURCHASED BY LEON COUNTY SCHOOLS AND WILL BE DELIVERED TO THE SITE. CONTRACTOR WILL OFFLOAD AND INSTALL THE CHILLERS.
4. CONTROLS WILL BE PROVIDED UNDER A SEPARATE CONTRACT BY LEON COUNTY SCHOOLS. THE MECHANICAL CONTRACTOR SHALL COORDINATE WITH THE CONTROLS CONTRACTOR AND INSTALL DAMPERS AND CONTROLS INTO THE MECHANICAL EQUIPMENT.
5. TEST & BALANCE WILL BE PERFORMED UNDER A SEPARATE CONTRACT BY LEON COUNTY SCHOOLS.
6. WORK INCLUDES OBTAINING PERMITS, PROCUREMENT OF EQUIPMENT, MATERIALS, ETC. ; COORDINATING BETWEEN TRADES; DEMOLITION, INSTALLATION, STARTUP, REPORTING, SYSTEMS CHECKOUT; ASSISTING THE TEST, ADJUST AND BALANCE CONTRACTOR, AND RESOLVING DISCREPANCIES; PERFORMING SUBSTANTIAL AND FINAL COMPLETION ACTIVITIES, TRAINING, DEVELOPING AND SUBMITTING THE OPERATION AND MAINTENANCE MANUALS, AND PERFORMING PROJECT CLOSEOUT.
7. A COMMISSIONING AUTHORITY, HIRED UNDER SEPARATE CONTRACT, WILL COMMISSION THE EQUIPMENT PER THE SPEC AND PLAN. THE MECHANICAL CONTRACTOR, CONTROLS CONTRACTOR, AND T&B CONTRACTOR WILL SUPPORT THESE EFFORTS.

GENERAL NOTES:

FURNISH ALL LABOR, MATERIALS, EQUIPMENT AND INCIDENTALS REQUIRED TO COMPLETE ALL WORK SHOWN ON THE CONTRACT DRAWINGS.

ALL CONSTRUCTION SHALL CONFORM TO APPLICABLE CODE STANDARDS INCLUDING:

NATIONAL FIRE PROTECTION ASSOCIATION - NFPA
- NFPA 70 - 2020; NATIONAL ELECTRICAL CODE
- NFPA 72 - 2019; NATIONAL FIRE ALARM AND SIGNALING CODE

FLORIDA BUILDING CODE
- STATE REQUIREMENTS FOR EDUCATIONAL FACILITIES - 2014 EDITION
- FBC-B 2023; THE FLORIDA BUILDING CODE (8th EDITION)
- FPC 2023; THE FLORIDA FIRE PREVENTION CODE (8th EDITION)
  INCLUDING NFPA 101 - 2021; THE LIFE SAFETY CODE
- FBC-M 2023; THE FLORIDA MECHANICAL CODE (8th EDITION)
- FBC-A 2023; THE FLORIDA BUILDING CODE, ACCESSIBILITY (8th EDITION)
- FBC-EC 2023; THE FLORIDA BUILDING CODE, ENERGY CONSERVATION (8th EDITION)
- FBC-FG 2023; THE FLORIDA BUILDING CODE, FUEL GAS (8th EDITION)
- FBC-P 2023; THE FLORIDA BUILDING CODE, PLUMBING (8th EDITION)
- FBC-EB 2023; THE FLORIDA BUILDING CODE, EXISTING BUILDING (8th EDITION)

SHOULD CONFLICT OCCUR BETWEEN PROJECT SPECIFICATIONS & DRAWING NOTES, THE DRAWING NOTES WILL TAKE PRECEDENCE.

THE CONTRACTOR IS EXPECTED TO PROVIDE PROFESSIONAL WORK PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND BEST PRACTICES.

THE WORK SHALL BE COMPLETE, FULLY OPERATIONAL, AND SUITABLE IN EVERY WAY FOR THE SERVICE REQUIRED.

DRAWINGS INDICATE SCOPE AND DO NOT SHOW ALL DETAILS, DEVICES AND INCIDENTAL MATERIALS NECESSARY TO ACCOMPLISH THE WORK. THEREFORE, IT SHALL BE UNDERSTOOD THAT SUCH DEVICES AND INCIDENTAL MATERIALS REQUIRED SHALL BE FURNISHED AT NO COST TO THE OWNER.

CONTRACTOR SHALL TAKE INTO ACCOUNT FIELD CONDITIONS AND COORDINATE IN ORDER TO AVOID CONFLICTS WITH EXISTING CONDITIONS AND INTERFERENCE BETWEEN TRADES.

EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS FOR PROPER OPERATION, MAINTENANCE, AND SERVICE. IF CHANGES TO THE CONTRACT DOCUMENTS ARE NECESSARY TO AVOID CONFLICTS, THE CONTRACTOR IS RESPONSIBLE FOR REQUESTING CLARIFICATION IN A TIMELY FASHION.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DEFICIENCIES ASSOCIATED WITH WORK PERFORMED BEFORE OBTAINING WRITTEN CLARIFICATION.

CONTRACTOR SHALL VERIFY SIZE, FLOW DIRECTION, AND LOCATION OF EXISTING DUCTS/PIPING TO REMAIN, RELATED BUILDING INFRASTRUCTURE/SERVICES, PRIOR TO COMMENCING WORK. ADVISE THE ENGINEER IN WRITING IF MATERIALLY DIFFERENT THAN SHOWN.

THE CONTRACTOR SHALL TAKE DUE CARE DURING ALL PHASES OF WORK TO PROTECT BUILDING FINISHES, FURNISHINGS, EQUIPMENT, ETC. THE CONTRACTOR SHALL BEAR ALL COSTS TO REPAIR ANY DAMAGED ITEMS, FINISHES, ETC. RESULTING FROM HIS OR HIS SUBCONTRACTORS' WORK.

THE CONTRACTOR SHALL PROVIDE DAILY CLEANUP OF HIS WORK AREAS. UPON COMPLETION OF THE WORK THE CONTRACTOR SHALL THOROUGHLY CLEAN SPACES THAT WERE OCCUPIED BY TEMPORARY WORK AND TEMPORARY FACILITIES. REMOVE ALL DEBRIS, RUBBISH, AND EXCESS MATERIAL FROM THE SITES.

REPAIR DAMAGE CAUSED BY INSTALLATION OR USE OF TEMPORARY FACILITIES. THIS INCLUDES HARDSCAPING, LANDSCAPING, FINISHES, ETC.

THE CONTRACTOR SHALL DELIVER TO THE OWNER, UPON SUBSTANTIAL COMPLETION OF THE WORK, TWO COPIES OF DESCRIPTIVE LITERATURE RELATED TO THE EQUIPMENT INSTALLED UNDER THIS CONTRACT, INCLUDING PARTS LISTS, WIRING DIAGRAMS, MAINTENANCE AND OPERATION MANUALS AND WARRANTIES CUSTOMARILY SUPPLIED BY MANUFACTURERS FOR EQUIPMENT INCORPORATED IN THIS WORK.

THE LITERATURE SHALL BE NEATLY BOUND IN A 3-RING BINDER, IN ADDITION TO ELECTRONIC FORMAT ON A USB THUMB DRIVE, AND DELIVERED PRIOR TO FINAL ACCEPTANCE

THE CONTRACTOR SHALL LABEL NEW EQUIPMENT AND ANCILLARY SYSTEMS INCLUDED IN THE SCOPE OF THIS PROJECT .

THE CONTRACTOR SHALL GIVE PHYSICAL DEMONSTRATION AND VERBAL INSTRUCTIONS FOR PROPER OPERATION AND MAINTENANCE OF EQUIPMENT TO THE OWNER OR HIS DESIGNATED REPRESENTATIVE. SCHEDULE THESE DEMONSTRATIONS AND INSTRUCTIONS AT THE OWNER'S CONVENIENCE.

HAZARDOUS MATERIALS

CONTRACTORS ARE EXPECTED TO NOTIFY THE OWNER WHEN EVER THEY DISCOVER THAT THEIR WORK WILL EXPOSE THEM TO ANY MATERIALS THAT ARE THE LEAST BIT SUSPICIOUS. REMOVAL OF CONTAMINATED MATERIALS WILL BE THE RESPONSIBILITY OF THE OWNER. HOWEVER THE CONTRACTOR IS RESPONSIBLE TO INSPECT FUTURE WORK AREAS IN A TIMELY FASHION SO AS NOT TO BE HELD UP WAITING FOR ABATEMENT.

TEST, ADJUST AND BALANCE (TAB) SCOPE OF WORK AND COORDINATION

1. THE OWNER WILL CONTRACT WITH A PROFESSIONAL/AABB CERTIFIED TAB COMPANY TO TEST, ADJUST AND BALANCE THE NEW HVAC SYSTEMS UNDER A SEPARATE CONTRACT. CONSTRUCTION MANAGER WILL ASSIST IN COORDINATING THIS WORK.
2. THE MECHANICAL CONTRACTOR SHALL FULLY TEST THE OPERATION OF THE HVAC SYSTEM AND RESOLVE ALL KNOWN DISCREPANCIES PRIOR TO REQUESTING TAB SERVICES VIA THE CONSTRUCTION MANAGER.
3. THE MECHANICAL CONTRACTOR SHALL PARTICIPATE AND ASSIST THE TAB WORK , INCLUDING RESOLUTION OF TAB DISCREPANCIES.
4. TEST AND BALANCE CONTRACTOR SHALL PERFORM THE FOLLOWING TASKS:
   - A. MARK EQUIPMENT/DAMPER POSITIONS TO SHOW FINAL SETTINGS. MARK WITH PAINT OR OTHER SUITABLE/PERMANENT IDENTIFICATION MATERIALS.
   - B. COMPLETE TESTING, ADJUSTING, AND BALANCING OF NEW/EXISTING HVAC SYSTEMS, INCLUDING HYDRONIC PIPING AND RELATED SYSTEMS INCLUDED IN THE SCOPE OF WORK.
   - C. MEASURE PRESSURE DROP ACROSS EACH AHU SECTION. REPORT SHALL INCLUDE AN AHU DIAGRAM AND PRESSURE MEASUREMENTS FOR EACH AHU.
   - D. MEASURE RETURN AIR, OUTSIDE AIR, MIXED AIR, COIL LEAVING AND UNIT LEAVING AIR CONDITIONS OF EACH AHU.
   - E. BALANCE OUTSIDE AIR FANS WITH 0.15" ADDITIONAL PRESSURE DROP (I.E. ABOVE CLEAN PRESSURE DROP) TO ACCOUNT FOR AVERAGE/DIRTY FILTER PRESSURE DROP. SET POTENTIOMETER TO PROVIDE THE DESIGN FLOWRATE AT THE HIGHER PRESSURE DROP.
5. TEST AND BALANCE CONTRACTOR SHALL PROVIDE ONE (1) PAPER AND ELECTRONIC COPY OF THE PRELIMINARY REPORT TO THE ENGINEER FOR REVIEW/COMMENTS. DISCREPANCIES SHALL BE RESOLVED, THE TAB CONTRACTOR SHALL RETEST SYSTEMS AS NEEDED AND ISSUE THREE (3) FINAL SIGNED AND SEALED REPORTS PLUS ONE ELECTRONIC COPY AFTER ALL ISSUES ARE RESOLVED TO THE SATISFACTION OF THE ENGINEER. ITERATIVE PRELIMINARY COPIES MAY BE REQUIRED.

SPECIFICATIONS:

PIPING:

ALL NEW MECHANICAL SYSTEMS PIPING SERVING AIR HANDLERS SHALL BE SCHEDULE 40, ASTM A53B CARBON STEEL PIPE. PIPING 2-1/2" & LARGER WILL BE WELDED CONSTRUCTION; PIPING 2" & SMALLER WILL BE THREADED CONSTRUCTION.

ALL WELDED PIPE SHALL HAVE BEVELED ENDS. SMALL-BORE PIPE WILL HAVE THREADED ENDS.

BUTT-WELD FITTINGS SHALL CONFORM TO ASTM A234 WPB AND THREADED FITTINGS TO BE MALLEABLE IRON, A197, ANSI B16.3, CLASS 150.

STEEL FLANGES SHALL CONFORM TO ANSI B16.5 150# RAISED FACE. ALL FLANGES LARGER THAN 2" SHALL BE A105 SLIP-ON, UNLESS ATTACHING DIRECTLY TO A FITTING. FLANGES THAT ARE 2" AND SMALLER SHALL BE THREADED.

PROVIDE DIELECTRIC COUPLINGS/NIPPLES TO ISOLATE DISSIMILAR MATERIALS.

CHILLED WATER FLEXIBLE PIPING CONNECTIONS SHALL BE CORRUGATED RUBBER.

HEATING HOT WATER FLEXIBLE PIPING CONNECTIONS SHALL BE RUBBER WITH STAINLESS STEEL BRAID.

HIGH POINT AIR ELIMINATORS SHALL BE SPIRAX SARCO 13WS.

AIR VENT WASTE PIPING SHALL BE 1/4" SOFT COPPER.

GENERAL PIPING INSTALLATION:

SUPPORT PIPING: 1" & SMALLER - 8' MAX SPACING; 11/2" & 2" - 12' MAX SPACING; 3" & LARGER - 20' SPACING

INSTALL VALVES, INSTRUMENTATION AND DEVICES AS INDICATED ON THE SCHEMATIC DIAGRAMS.

PIPE DISCHARGE FROM AUTOMATIC AIR VENTS TO THE NEAREST FLOOR OR HUB DRAIN.

PROVIDE VALVE AND WELL EXTENSIONS TO ACCOMMODATE INSULATION THICKNESS.

INSTALL DEVICES SHIPPED LOOSE WITH EQUIPMENT. LOCATE AND ORIENT VALVES FOR EASY ACCESS AND MAINTENANCE. INSTALL ALL GAUGES AND THERMOMETERS AS NEAR TO EYE LEVEL AS PRACTICAL. INSTALL MISCELLANEOUS DEVICES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND THE SCHEMATIC DIAGRAMS.

PROTECT OPEN PIPING WITH TEMPORARY COVERS/CAPS. CLEAN NEW PIPING OF LOOSE SCALE, RUST AND WELD SPATTER.

PROTECT SYSTEM CONTROL VALVES AND CIRCULATE SYSTEM FLUID AT THE GREATEST FLOW POSSIBLE. CLEAN SYSTEM STRAINERS. COORDINATE CHEMICAL TREATMENT WITH THE OWNER'S CHEMICAL TREATMENT VENDOR.

CAPS SHALL BE PERMANENT AND OF THE SAME MATERIAL AS THE BASE PIPE. USE WELD CAPS FOR WELDED PIPING.

WELDING STEEL PIPE/FITTINGS:

WELDING SHALL BE PERFORMED IN ACCORDANCE WITH ANSI B31.1. BEVEL PIPE THAT IS FIELD CUT IN ACCORDANCE WITH RECOGNIZED STANDARDS.

WELDERS SHALL BE CERTIFIED WITHIN THE LAST 12 MONTHS FOR THE PIPE SIZE REQUIRED BY THIS PROJECT. AT LEAST TWO WEEKS PRIOR TO COMMENCING WELDING, THE CONSTRUCTION MANAGER SHALL OBTAIN CERTIFICATIONS AND PHOTO ID COPIES FOR EACH WELDER PROPOSED FOR THE PROJECT. THE CONSTRUCTION MANAGER SHALL VERIFY THE INFORMATION TO ENSURE WELDER IS AS NAMED ON THE CERTIFICATION AND THAT THE CERTIFICATION IS ACCEPTABLE.

BEFORE PERFORMING WELDING OPERATIONS, REMOVE DIRT, SCALE AND OTHER FOREIGN MATTER FROM PIPING. SET JOINTS TRUE AND SQUARE WITH PROPER ROOT PASS GAP FOR SIZE PIPE. ROOT BEAD WILL PROVIDE FOR COMPLETE PENETRATION INTO THE ROOT OF THE JOINT, PROVIDE ROOT BEAD AND MULTIPLE FILLER LAYERS AND A FINAL COVER PASS. WELDERS SHALL PROVIDE IDENTIFYING MARK AT EACH WELD.

CONTRACTOR SHALL REMOVE SUSPECT WELDS AND SUBMIT FOR DESTRUCTIVE TESTS AS REQUESTED BY THE ENGINEER. CONTRACTOR SHALL PAY FOR DESTRUCTIVE TESTS THAT FAIL.

ALL WELDING SHALL BE PERFORMED BY WELDERS ADEQUATELY FAMILIAR WITH WELDING SAFETY PRACTICES INCLUDING NFPA 51B.

INSTALL PIPING PARALLEL TO WALLS. SLOPE PIPING AT 1 INCH PER 40 FEET BACK TOWARDS PUMPS OR TO DRAINAGE POINTS. INSTALL DRAINS AT ANY LOW POINT THAT WILL TRAP OVER 5 GALLONS OF WATER. INSTALL BLOWDOWN PIPING WITH VALVE FOR ALL STRAINERS.

LEAK TEST ALL PIPING IN ACCORDANCE WITH NORMAL PRACTICE BUT NO LESS THAN 1.5 TIMES OPERATING PRESSURE AND NOT LESS THAN 100 PSI.

PROTECT BUILDING FINISHES FROM WELD SPATTER WITH FIRE RETARDANT SHIELDS. MAINTAIN A FIRE EXTINGUISHER AT HAND AT ALL TIMES WHEN WELDING. PROVIDE ADEQUATE VENTILATION FOR WELDING OPERATIONS.

CONDENSATE & PIPING

CONDENSATE DRAIN SHALL INCLUDE A P-TRAP, SEE DETAIL.

PIPING SHALL BE SAME SIZE AS DISCHARGE CONNECTION, D-W-V COPPER AND FITTINGS. MINIMUM SIZE IS 3/4". SUPPORT PIPING AT P-TRAP AND ON 4' CENTERS AND SLOPE 1/4" PER FOOT TOWARD DRAIN.

PROVIDE CLEANOUTS WITH SCREW CAPS/PLUGS AT TRAPS, ON VERTICAL DROPS, AND IN HORIZONTAL DIRECTION CHANGES.

MISCELLANEOUS METALS:

INTERIOR EQUIPMENT/PIPING SUPPORTS, HARDWARE, BRACKETS, FRAMING CHANNEL, ETC. SHALL BE GALVANIZED STEEL AND EQUAL TO B-LINE.

METAL/ELECTRICAL FRAMING/CHANNEL, SUPPORTS, ETC. IN CONTACT WITH CONCRETE OR INSTALLED OUTDOORS SHALL BE HOT-DIPPED GALVANIZED.

MISCELLANEOUS INTERIOR SUPPORTS SHALL BE 12 GA, 1-5/8" SQ. ELECTRO-GALVANIZED FRAMING CHANNEL. (MINIMUM).

PIPE/EQUIPMENT INSULATION:

AFTER INSULATION, ALL PIPING SHALL BE LABELED WITH CONTENTS AND FLOW DIRECTION.

INTERIOR COLD PIPING: INSULATE CHILLED WATER PIPING WITH 2" THICKNESS OF CELLULAR GLASS PIPE INSULATION AND FINISH WITH ALL-SERVICE JACKETING. USE 1-1/2" THICKNESS FOR PIPES 2" AND SMALLER. USE BEDDING MASTIC ON PIPING AND JOINTS AND FINISH ELBOWS WITH GLASS FABRIC AND MASTIC.

INTERIOR HOT PIPING: INSULATE HEATING HOT WATER PIPING WITH 1" PREFORMED FIBERGLASS INSULATION WITH ALL-SERVICE JACKET. PROVIDE PVC COVERS AT ELBOWS.

INTERIOR WATER PIPING: INSULATE INTERIOR DOMESTIC WATER PIPING WITH 1" CLOSED CELL FOAM INSULATION. SEAL ALL JOINTS & SEAMS AIR TIGHT. PIPING IN EXPOSED AREAS SHALL HAVE AN ALL-SERVICE JACKET FOR PAINTING.

EXTERIOR COLD PIPING: INSULATE CHILLED WATER PIPING WITH FOAM GLASS PER SPECIFICATION. ABOVE GROUND PIPE TO HAVE ALUMINUM JACKETING; BELOW GROUND PIPE TO HAVE POLYGUARD JACKETING.

EXTERIOR HOT PIPING: INSULATE ABOVE GROUND HEATING HOT WATER PIPING WITH FIBERGLASS OR MINERAL WOOL PER SPECIFICATION; PIPE TO HAVE ALUMINUM JACKETING. INSULATE BELOW GROUND HEATING HOT WATER PIPING WITH CELLULAR GLASS PER SPECIFICATION; PIPE TO HAVE ALUMINUM JACKETING; BELOW GROUND PIPE TO HAVE POLYGUARD JACKETING.

EXTERIOR WATER PIPING: INSULATE EXTERIOR DOMESTIC WATER, FIRE WATER, ETC. WITH 1" PREFORMED FIBERGLASS WITH ASJ. COVER WITH ALUMINUM CLADDING. INSULATION SHALL EXTEND A MINIMUM OF 2 FEET INTO BUILDING. COORDINATE WITH ELECTRICAL DRAWINGS FOR HEAT TRACE REQUIREMENTS.

VALVES/EQUIPMENT/HYDRONIC DEVICES: INSULATE VALVES, FLEXIBLE CONNECTORS, PORTS, ITEMS REQUIRING MAINTENANCE ACCESS, ETC. WITH 1" THICKNESS OF FLEXIBLE CLOSED CELL ELASTOMERIC INSULATION AND INSTALL TO FACILITATE REMOVAL/ACCESS. PROVIDE ACCESS TO ALL PORTS, VALVE SHAFTS, PETE'S PLUGS, ETC.

CONDENSATE PIPING: INSULATE CONDENSATE PIPING WITH 3/4" CLOSED CELL FOAM INSULATION WITHIN BUILDING. SEAL ALL JOINTS, SEAMS, ETC. AIR TIGHT. PROVIDE ACCESS PLUGS/CAPS TO FITTINGS THAT REQUIRE MAINTENANCE. EXTERIOR PIPING SHALL BE CLAD WITH ALUMINUM JACKETING.

DUCTWORK:

ALL WORK SHALL COMPLY WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE. CONSTRUCT SUPPLY DUCTWORK FOR VAV SYSTEMS TO WITHSTAND 3" (MIN) AND RETURN DUCT -2" STATIC PRESSURES.

USE EITHER ROUND OR RECTANGULAR DUCT WITH EQUAL OR GREATER EQUIVALENT FREE AREA TO ACCOMMODATE EXISTING STRUCTURE.

CROSS BREAK DUCTS AND OTHER SHEET METAL OVER 24" WIDE.

INTERIOR - USE GALVANIZED SHEET METAL FOR RECTANGULAR WITH EXTERIOR INSULATION, UOS. USE GALVANIZED SPIRAL SEAM ROUND DUCT WITH EXTERIOR INSULATION.

PROVIDE SHEET METAL CLOSURE ANGLES, ESCUTCHEONS, OR FLASHING ON BOTH SIDES OF WALL PENETRATIONS (NON RATED) AND SEAL AIR TIGHT. MINIMUM WIDTH IS 1" OR AS REQUIRED TO COVER OPENING.

PROVIDE SMOKE TIGHT SEAL WHEN PENETRATING SMOKE COMPARTMENT WALLS.

PROVIDE DOUBLE-THICKNESS TURNING VANES IN ALL RECTANGULAR ELBOWS AND OFFSETS.

DUCT SIZES MAY BE CHANGED TO ACCOMMODATE CONDITION AS LONG AS THE INTERNAL FREE AREA IS NOT DIMINISHED.

ALL FABRICATED DUCTWORK LONGITUDINAL AND TRANSVERSE JOINTS, TAPS, AND CONNECTIONS SHALL BE SEALED WITH DUCT MASTIC REGARDLESS OF PRESSURE CLASS.

TAG ALL DAMPER LOCATIONS WITH ORANGE FLAG TAPE.

PERMANENTLY MARK ALL DAMPER SHAFTS TO INDICATE DAMPER POSITION.

DUCTWORK INSULATION:

INSULATION IN CONCEALED/ACCESSIBLE INTERIOR SPACES SHALL BE BLANKET TYPE. SECURE INSULATION WITH IMPALE PINS WHEN DUCT IS OVER 24" WIDE.

BLANKET INSULATION SHALL BE 2.2" THICK (OUT OF PACKAGE) FOIL BACKED R-6 (INSTALLED) INSULATION. SEAL ALL JOINTS, SEAMS, ETC. PER THE MANUFACTURER'S RECOMMENDATIONS. SEALING TAPE SHALL BE UL 181 LISTED PRESSURE-SENSITIVE TYPE.

INSULATION IN MECHANICAL ROOMS AND ON DUCTS PENETRATING WALLS (WITHOUT FIRE DAMPERS) SHALL BE RIGID FIBERGLASS TO 7 FEET ABOVE FINISHED FLOOR. EXTEND INSULATION 6" BEYOND WALL THEN TRANSITION TO DUCT WRAP (WHEN CONCEALED). USE CLIP ANGLES AT WALL TO SEAL OPENING (BOTH SIDES) UOS. SEAL PENETRATION TO COMPLY WITH THE WALL RATING, SEE ARCHITECTURAL SHEETS.

RIGID INSULATION ON SUPPLY DUCTWORK SHALL BE 1.5" THICK TO PROVIDE AN R-VALUE EQUAL TO 6 (MINIMUM).

RIGID INSULATION ON RETURN AND OUTSIDE AIR DUCTWORK SHALL BE 1" THICK.

INSULATE OUTSIDE AIR PLENUMS, LOUVER COVERS, OA DUCTS, ETC. WITH 1" RIGID INSULATION. SECURE INSULATION WITH MECHANICAL FASTENERS (IMPALE PINS) ON DUCTS OVER 24" WIDE. SEAL ALL RIGID EDGES WITH ALUMINUM TAPE AND MASTIC AT TAPE EDGES.

MECHANICAL FASTENERS (IMPALE PINS) SHALL BE ADHERED WITH MASTIC SPACED ON 18" CENTERS. NOTE: SELF-ADHESIVE TYPE IMPALE PINS ARE PROHIBITED.

ALL DUCTWORK CONVEYING CONDITIONED OR OUTSIDE AIR AIR SHALL BE EXTERNALLY INSULATED UNLESS SPECIFIED OTHERWISE.

PROVIDE INCOMPRESSIBLE INSULATION/INSERTS AT ALL TRAPEZE-TYPE SUPPORTS TO PREVENT INSULATION COMPRESSION.

INSTALL INSULATION PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS AND IN ACCORDANCE WITH RECOGNIZED INDUSTRY BEST PRACTICES FOR THE INTENDED PURPOSE.

PROVIDE COMPOSITE MECHANICAL INSULATION (INSULATION, JACKETS, COVERINGS, SEALERS, MASTICS AND ADHESIVES) HAVING FLAME SPREAD INDEX OF 25 OR LESS, AND SMOKE DEVELOPED INDEX OF 50 OR LESS, AS TESTED BY ASTM E 84 (NFPA 255) METHODS.

VAPOR BARRIERS SHALL BE MAINTAINED COMPLETE AND CONTINUOUS. SEAL ALL GAPS, JOINTS, SEAMS, ETC.

INSTALL INSULATION AFTER THE DUCT SYSTEMS HAVE BEEN SEALED WITH MASTIC, PRESSURE TESTED AND FOUND FREE OF ALL LEAKS.

SURFACES SHALL BE CLEAN AND DRY BEFORE APPLYING INSULATION MASTICS OR INSULATION.

RATED PARTITIONS & WALLS SHALL BE PENETRATED ONLY WITH INSULATION MATERIALS AND TECHNIQUES THAT ARE UL LISTED TO MAINTAIN FIRE RATING. ANY QUESTIONS SHALL BE REFERRED TO THE ARCHITECT/ENGINEER.

DAMPERS:

ELECTRIC/MOTOR OPERATED CONTROL DAMPERS SHALL BE OPPOSED-BLADE TYPE WITH NEOPRENE BLADE EDGE SEALS EQUAL TO RUSKIN.

ELECTRIC MOTOR OPERATED DAMPERS SHALL HAVE 120VAC, 18 IN-LB TORQUE (MINIMUM) ACTUATORS EQUAL TO BELIMO "TF" SERIES WITH SPRING RETURN. OPERATORS SHALL BE SIZED ACCORDING TO DAMPER SIZE AND TORQUE REQUIREMENTS PER THE DAMPER/OPERATOR REQUIREMENTS (WHICHEVER IS HIGHER).

DURING DAMPER INSTALLATION, PERMANENTLY MARK OR ENGRAVE EACH DAMPER SHAFT TO INDICATE DAMPER POSITION.

DUCT SMOKE/FIRE DAMPERS, COMMON DAMPERS, AND DETECTORS:

- SMOKE AND FIRE DAMPERS, WHERE INDICATED, SHALL BE INSTALLED IN STRICT CONFORMANCE WITH THE MANUFACTURER'S INSTRUCTIONS. PROVIDE SLEEVES AND ANGLES WHERE REQUIRED. PROVIDE DUCT ACCESS PANELS FOR INSPECTION AND RESETTING OF FIRE DAMPERS.

- COMBINATION FIRE AND SMOKE DAMPERS SHALL BE 1-1/2 HR UL LABELED FOR FIRE WALLS RATED LESS THAN 3 HR, AND UL 555 + UL 555S LABELED. DAMPER OPERATORS SHALL BE FACTORY INSTALLED EXTERNAL ACTUATORS, 2-POSITION, 120VAC, FAIL CLOSED, HELD OPEN. FACTORY SUPPLIED SLEEVE (MAX 6" EXTENSION BEYOND WALL, BOTH SIDES.) INCLUDE A REUSABLE RESETTABLE LINK. UNIT SHALL BE AUTOMATICALLY RESETTABLE AFTER TEST, SMOKE DETECTION, OR POWER FAILURE. SEE DIVISION 16 FOR WIRING AND FIRE ALARM INFORMATION.

- • HOURLY FIRE RATING: 1.5 HOURS
- • LEAKAGE RATING: CLASS I
- • ELEVATED TEMPERATURE RATING: 350°F
- • VELOCITY & PRESSURE: 4" W.G., 2000 FPM

- SMOKE DAMPER OPERATORS SHALL BE FACTORY INSTALLED, 120V, NORMALLY CLOSED, HELD OPEN. UNIT SHALL BE AUTOMATICALLY RESETTABLE AFTER TEST, SMOKE DETECTION, OR POWER FAILURE. SEE DIVISION 16 FOR SMOKE DAMPER WIRING & FIRE ALARM.
- DUCT SMOKE DETECTORS ARE PROVIDED AND WIRED TO THE FIRE ALARM BY DIVISION 16.
- THE MECHANICAL SUBCONTRACTOR WILL BE RESPONSIBLE FOR MOUNTING DUCT FIRE/SMOKE DAMPERS/ DETECTORS AND WIRING TO THE AHU FOR SYSTEM SHUTDOWN ON ANY GENERAL FIRE ALARM.
- ELECTRIC OPERATED CONTROL AND MANUAL VOLUME DAMPERS SHALL BE OPPOSED-BLADE TYPE WITH NEOPRENE BLADE EDGE SEALS EQUAL TO RUSKIN.
- ELECTRIC OPERATING CONTROL DAMPERS SHALL HAVE OPERATORS WITH SPRING RETURN. OPERATORS SHALL BE SIZED ACCORDING TO DAMPER SIZE AND TORQUE REQUIREMENTS PER THE DAMPER/OPERATOR REQUIREMENTS.
- DURING DAMPER INSTALLATION, PERMANENTLY MARK EACH DAMPER SHAFT TO INDICATE DAMPER POSITION.

SMOKE DETECTORS:

-DUCT SMOKE DETECTORS ARE PROVIDED AND WIRED TO THE FIRE ALARM BY DIVISION 16.

- THE MECHANICAL SUBCONTRACTOR WILL BE RESPONSIBLE FOR MOUNTING DUCT FIRE/SMOKE DAMPERS/ DETECTORS AND WIRING TO THE AHU FOR SYSTEM SHUTDOWN ON ANY GENERAL FIRE ALARM.

EQUIPMENT INSTALLATION

GENERAL EQUIPMENT INSTALLATION REQUIREMENTS:

INSTALL UNIT IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. CONTRACTOR IS REQUIRED TO HAVE EQUIPMENT INSTALLATION INSTRUCTIONS ON SITE FOR ALL EQUIPMENT THAT IS ON SITE.

ALL EQUIPMENT SHALL BE SECURED TO PADS OR BUILDING STRUCTURE. INSURE THAT PROPER ACCESS TO THE UNIT IS MAINTAINED. DO NOT RUN PIPING IN FRONT OF ACCESS PANELS.

INSTALL MISCELLANEOUS DEVICES SHIPPED LOOSE.

COORDINATE CONTROLS AND POWER WIRING INSTALLATION.

START-UP ALL EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

CLEAN FACTORY-FINISHED SURFACES. REPAIR ANY MARRED OR SCRATCHED SURFACES WITH MANUFACTURER'S TOUCH-UP PAINT. TURNOVER ANY SPECIAL TOOLS PROVIDED BY THE EQUIPMENT MANUFACTURER.

CONDENSING UNIT INSTALLATION:

INSTALL CONDENSING UNIT ON MANUFACTURER SUPPLIED WALL BRACKET. SECURE UNIT TO BRACKET PER MANUFACTURER'S INSTRUCTIONS.

INSTALL SITE GLASS AND FILTER/DRYER.

START-UP & CHECK-OUT THE SYSTEM IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION. THE MECHANICAL CONTRACTOR SHALL TEST AND CERTIFY THE PROPER OPERATION OF THE SYSTEM AND CONTROLS.

AIR HANDLER UNIT INSTALLATION:

COORDINATE WITH THE SUPPLIER TO UNDERSTAND WHICH FEATURES AND OPTIONS MUST BE FIELD INSTALLED.

COORDINATE CONTROLS AND POWER WIRING INSTALLATION. PROVIDE ALL PENETRATIONS INTO UNIT CABINET FOR ELECTRICAL AND POWER WIRING INSTALLATION.

LOCATE UNIT TO PROVIDE PROPER CLEARANCE TO ACCESS PANELS, PIPING, CONTROLS, ETC. OPTIMIZE AVAILABLE SPACE.

SET UNIT ON 1/2" THICK NEOPRENE VIBRATION-ISOLATION PADS ON 2' CENTERS UNDER MAIN SUPPORTS.

PROVIDE EACH PRIMARY CONDENSATE DRAIN WITH P-TRAP AND DOWN STREAM CLEAN-OUT CAP. DEPTH OF SEAL SHALL EXCEED MAX FAN STATIC, SEE TRAP DETAIL.

PROVIDE HEATING COIL DRAIN PIPING WITH NORMALLY CLOSED BALL VALVE (FOR FUTURE COIL CLEANING) AND ELBOW AND SHORT PIPE FOR HOSE CONNECTION.

INSTALL DUCTWORK.

INSTALL HEATING AND CHILLED WATER PIPING, SEE COIL PIPING DETAILS. PROVIDE PIPING SUPPORTS AT COIL CONNECTIONS WITHIN 12" OF LAST ELBOW WHERE VERTICAL PIPING SERVES COIL.

REMOVE ALL DEBRIS, DUST, METAL SHAVINGS, ETC. FROM INTERIOR OF UNIT PRIOR TO STARTUP.

PERFORM START-UP IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND COMPLETE A STARTUP REPORT.

PROGRAM AND TEST CONTROLS, DAMPERS, AND SAFETIES.

CLEAN FACTORY-FINISHED SURFACES. REPAIR ANY MARRED OR SCRATCHED SURFACES WITH MANUFACTURER'S TOUCH-UP PAINT.

PROVIDE NEW FILTERS AT SUBSTANTIAL COMPLETION.

DUCTLESS SPLIT FAN COIL INSTALLATION

COORDINATE EXACT LOCATION OF THE FAN COIL UNIT WITH THE OWNER.

INSTALL WIRED CONTROLLER AND CONTROL WIRING TO THE CONDENSING UNIT. CONTROL CABLE MUST BE IN CONDUIT EXCEPT: ACCESSIBLE CONCEALED LOCATIONS PLENUM RATED CABLE MAY BE USED.

NO AIR BALANCE TEST IS REQUIRED. SET FAN AIR FLOW ON HIGH SPEED.

PIPE PUMPED CONDENSATE (PUMP PROVIDED WITH EQUIPMENT) TO CONDENSATE DRAIN. INSTALL REFRIGERANT PIPING TO CONDENSING UNIT; SEE SCHEDULE FOR PIPE SIZES.

REFRIGERANT PIPING INSTALLATION:

REFRIGERANT PIPING SHALL BE ACR TYPE L. PROVIDE HARD DRAWN COPPER TUBING WITH BRAZED LONG RADIUS WROUGHT COPPER FITTINGS AT ALL AIR HANDLING UNITS, CONDENSING UNITS, IN MECHANICAL ROOMS AND OTHER EXPOSED LOCATIONS. WHERE CONCEALED, REFRIGERANT PIPING MAY BE SOFT COPPER.

PROVIDE SIGHT GLASS AND FILTER DRYER FOR EACH REFRIGERANT CIRCUIT. TAKE CARE NOT TO DOUBLE UP WHERE FILTER DRYER IS PROVIDED WITH CONDENSING UNIT.

LEAK TEST ALL REFRIGERANT PIPING. EVACUATE, DEHYDRATE AND CHARGE SYSTEM PER MANUFACTURER'S INSTRUCTIONS.

SUPPORT HORIZONTAL REFRIGERANT SUCTION PIPING 4 FEET ON CENTER. LIQUID LINE MAY BE STRAPPED TO THE INSULATED SUCTION LINE WITH DUCT TAPE.

INSURE THAT EXPOSED METAL PIPES DO NOT CONTACT METAL OR CONCRETE SURFACES. PROVIDE INSULATION MATERIALS OR SLEEVES AT ANY SUCH LOCATIONS.

DO NOT CONCEAL ANY REFRIGERANT PIPING INSIDE BUILDING MATERIALS UNTIL IT HAS BEEN INSPECTED BY THE ENGINEER.

CONCRETE HOUSEKEEPING PADS:

WHERE INDICATED EXTEND EXISTING CONCRETE PADS FOR EQUIPMENT SUPPORT.

USE MECHANICAL MEANS TO REMOVE FLOOR EPOXY FINISH, ROUGHEN CONCRETE, AND CLEAN

POUR 4" CONCRETE SLAB W/ WELDED WIRE REINFORCING. CHAMFER EDGES

FANS:

INSTALL FANS WITH REQUISITE LENGTH OF STRAIGHT FULL SIZE DUCTS ON INLET AND DISCHARGE TO MINIMIZE SYSTEM EFFECT. MINIMUM LENGTH IS 3 TIMES THE WHEEL DIAMETER UOS. LOCATE TAPS/BRANCHES BEYOND MINIMUM LENGTHS.

PROVIDE FLEXIBLE DUCT CONNECTIONS AT FAN.

SUPPORT FAN FROM STRUCTURE OR WALL.

HVAC SYMBOLS/LEGEND

DESIGNATION	DESCRIPTION
	LAY-IN SUPPLY AIR DIFFUSER
	LAY-IN RETURN AIR DIFFUSER WITH OUT DUCT CONNECTION
	SURFACE MOUNT SUPPLY GRILLE
	SURFACE MOUNT RETURN GRILLE
8"Ø	ROUND DUCT WITH SIZE INDICATED
T	THERMOSTAT/TEMPERATURE SENSOR & WIREWAY
T/H	TEMP/RELATIVE HUMIDITY SENSOR AND WIREWAY
12X12	RECTANGULAR DUCTWORK & INTERNAL SIZE (FREE AREA)
10X10	RECTANGULAR DUCTWORK W/LINER & INTERNAL SIZE (FREE AREA)
	FLEXIBLE DUCT CONNECTION
	MITERED ELBOW FITTING WITH DOUBLE THICKNESS TURNING VANES
	MITERED TAKEOFF WITH MVD (PROVIDE INSULATION STANDOFF)
	MITERED TAKEOFF WITHOUT MVD (USE AT TAKEOFFS FOR VAV TERMINALS)
	EXTENT OF DEMOLITION
D	DUCT SMOKE DETECTOR
	POINT OF CONNECTION TO EXISTING
M	MANUAL VOLUME DAMPER WITH LOCKING QUADRANT
E	ELECTRIC OPERATED CONTROL DAMPER
FD	FIRE DAMPER
FSD	COMBINATION FIRE/SMOKE DAMPER
SD	SMOKE DAMPER
1" UC	AIR FLOW VIA DOOR UNDERCUT
	AIR FLOW DIRECTION
D 375 CFM	GRILLE AND FLOWRATE (CFM) DESIGNATION
EF-	CEILING MOUNTED EXHAUST FAN
R (R)	RELOCATE AND RELOCATED
	SERVICE AREA - MAINTAIN CLEAR
12" AD	ACCESS DOOR WITH LATCH, DIMENSION INDICATES SIZE
	FLEXIBLE DUCT
SCR	ELECTRIC HEATER WITH SCR CONTROLLER

ABBREVIATIONS

AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
AHAP	AS HIGH AS POSSIBLE
BAS	BLDG AUTOMATION SYSTEM
BD	BACKDRAFT DAMPER
BFF	BELOW FINISHED FLOOR
BHP	BRAKE HORSE POWER
BOD	BOTTOM OF DUCT
BTUH	BRITISH THERMAL UNIT/HOUR
CFM	CUBIC FEET PER MINUTE
CLG	CEILING
CONC	CONCRETE
CHWS	CHILLED WATER SUPPLY
CHWR	CHILLED WATER RETURN
COND	CONDENSATE
D	DUCT DETECTOR
DB	DRY BULB
DIA OR Ø	DIAMETER
DG	DOOR GRILLE
DN	DOWN
DTL	DETAIL
DW	DOMESTIC WATER
EF	EXHAUST FAN
ETR	EXISTING TO REMAIN
(EX)	EXISTING
EXT	EXTERNAL OR EXTERIOR
FD	FLOOR DRAIN
FL	FLOOR
GPM	GALLONS PER MINUTE
H	HIGH
HD	HUB DRAIN
HHWS	HEATING HOT WATER SUPPLY
HHWR	HEATING HOT WATER RETURN
L	LONG
LAT	LEAVING AIR TEMPERATURE
MAX	MAXIMUM
MBH	1000 BTU/HOUR
MIN	MINIMUM
N	NEW
NIC	NOT IN CONTRACT
NPS	NOMINAL PIPE SIZE
N.O.	NORMALLY OPEN
N.C.	NORMALLY CLOSED
N/A	NOT APPLICABLE
OA	OUTSIDE AIR
OC	ON CENTER
PL	PLACES
PNL	PANEL
RA	RETURN AIR
RAG	RETURN AIR GRILLE
R	REFRIGERANT
RV	ROOF VENT
SA	SUPPLY AIR
SAG	SUPPLY AIR GRILLE
SP	STATIC PRESSURE
SQ	SQUARE
T	TEMPERATURE
XFR	TRANSFER
THK	THICK
TOD	TOP OF DUCT
TYP	TYPICAL
UG	UNDERGROUND
UOS	UNLESS OTHERWISE SPECIFIED
VAV	VARIABLE AIR VOLUME
V	VOLTS
WB	WET BULB
W	WIDE
WG	WATER GAUGE

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JON M. BARBER LICENSE No. 55427 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed byJon Barber, PE on 7/27/26 Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

REVISION		
NO.	DESCRIPTION	DATE

PERMIT DOCUMENTS

CLIENT

LEON COUNTY SCHOOLS

PROJECT TITLE

RAA MIDDLE SCHOOL - PHASE 1 GYM

401 W THARPE STREET, TALLAHASSEE, FL 32303

PROJECT NUMBER

250225

ISSUE DATE

07/28/26

DRAWING TITLE

MECHANICAL NOTES AND LEGEND

SHEET NUMBER

M-100

AHU SCHEDULE - VARIABLE AIR VOLUME (VAV)

DESIGNATION		AHU-1	AHU-2	AHU-3	AHU-4
AREA SERVED		LOBBY / STEEL	BAND / CHORUS	LOCKER ROOM	GYM
MANUFACTURER		TRANE	TRANE	TRANE	TRANE
UNIT MODEL		CSAA012	CSAA017	CSAA010	CSAA040
CONFIGURATION (SEE BELOW)		HORIZONTAL VAV	HORIZONTAL VAV	HORIZONTAL VAV	HORIZONTAL VAV
ORIENTATION/HANDING		RIGHT	RIGHT	LEFT	RIGHT
MAX SUPPLY AIR	CFM	5600	8000	4500	18000
VENTILATION AIR	CFM	1500	3200	1500	11000
CC ENTERING AIR CONDITIONS	°FDB/°FWB	78.9 / 68.3	77.6 / 67.5	80.5 / 69.1	79.7 / 68.9
CC LEAVING AIR CONDITIONS	°FDB/°FWB	54 / 54	52 / 52	54 / 54	52.1 / 52.1
UNIT TOTAL COOLING CAPACITY	MBH	253	385	210	970
UNIT LATENT COOLING CAPACITY	MBH	98	156	80	408
UNIT SENSIBLE COOLING CAPACITY	MBH	155	229	130	562
CHILLED WATER FLOW RATE	GPM	42	64	35	162
CHILLED WATER TEMP ENT/LEAV	°F / °F	44 / 56	44 / 56	44 / 56	44 / 56
CHILLED WATER COIL ROWS & FINS/INCH		12	12	13.5	7
CHILLED WATER COIL FACE VELOCITY	FPM	474	512	490	451
COOLING COIL FLUID PRESSURE DROP	FT WG	2.1	8.8	2.2	10.7
HEATING COIL CAPACITY	MBH	121	140	120	330
HC ENTERING AIR CONDITIONS	°F DB	58	62	55	57
HC LEAVING AIR CONDITIONS	°F DB	78	78	80	74
HOT WATER FLOW RATE	GPM	12	14	12	33
HOT WATER TEMP ENT/LEAV (MAX/MIN)	°F / °F	160 / 140	160 / 140	160 / 140	160 / 140
HOT WATER COIL ROWS & FINS PER INCH		7	7	8	7
HOT WATER COIL FLUID PRESSURE DROP	FT WG	0.5	0.7	0.5	3.9
MAX HEATING COIL FACE VELOCITY	FPM	498	533	490	480
-					
DP ERV	IN WG	N/A	1.2	N/A	1.5
DP FILTER SECTION	IN WG	1.4	1.4	1.4	1.4
DP COOLING COIL STATIC	IN WG	0.8	0.9	1	0.9
DP HEATING COIL STATIC	IN WG	0.1	0.1	0.1	0.1
DP FAN SECTION	IN WG	0.5	0.5	0.3	0.2
EXTERNAL STATIC	IN WG	2	1.5	1.9	2
TOTAL STATIC PRESS. DROP (CLEAN/DIRTY)	IN WG	4.8	5.6	4.7	6
AHU FAN BRAKE HORSEPOWER (DIRTY)	BHP	**	**	**	**
AHU FAN MOTOR HORSEPOWER	HP	ECM 2 @ 6.03	ECM 4 @ 4.02	ECM 2 @ 4.02	ECM 3 @ 10.7
AHU ELECTRICAL CHARACTERISTICS	V/Ø/HZ	480/3/60	480/3/60	480/3/60	480/3/60
MOTOR F.L.A.	AMPS	14.13	17.5	9	31
BREAKER SIZE (MOCP)	AMPS	20	20	15	40
MAXIMUM CABINET DIMENSIONS (LxWxH)	IN	142 x 66 x 45	152 x 72 x 53	148 x 62 x 41	166 x 112.5 x 71
NOTES		1 - 14, 16, 17	1 - 17	1 - 14, 16, 17	1 - 17

NOTES:
1. OUTSIDE AIR FLOW RATE SHALL VARY BASED ON INDOOR CO2 CONCENTRATION (DCV)
2. NO CONTROLLER. CONTROLS BY OTHERS.
3. COOLING COIL SECTION SHALL HAVE STAINLESS STEEL IAQ DRAIN PAN.
4. INCLUDE STAINLESS STEEL COIL CASING AND COIL SUPPORTS.
5. FILTER SECTION TO ACCOMMODATE 2" THICK PRE-FILTERS (MERV 8) WITH 4" THICK FINAL FILTERS (MERV 11).
6. THE COOLING COIL SHALL NOT HAVE MORE THAN 8 ROWS.
7. G-60 GALVANIZED DOUBLE-WALL UNIT WITH 2" THICK FOAM FILLED INSULATION, MINIMUM R = 13.
8. MOTORS SHALL BE ECM
9. MINIMUM 6" HIGH BASE RAIL INTEGRAL TO UNIT. CONDENSATE CONNECTION SHALL BE HIGH ENOUGH TO ALLOW FOR P-TRAP AND NO STANDING WATER IN PAN.
10. ACCESS DOORS SHALL BE HINGED WITH ROTATING DOOR LOCK AND GASKETS, AND MANUFACTURED OF THE SAME CONSTRUCTION OF THE BASE.
11. MEAN FILTER PRESSURE DROP USED IN TSP AND BHP CALCULATIONS.
12. FC FAN, FACTORY BALANCED ACROSS OPERATING RPM, MOUNTED ON ISOLATION PLATFORM.
13. PROVIDE A 5-YEAR MANUFACTURER'S WARRANTY ON PARTS AND LABOR
14. FAN SHIPPING SECTIONS SHALL FIT THROUGH A 6'-0 x 7'-0 DOUBLE DOOR, OR INCLUDE INSTRUCTIONS TO KNOCK-DOWN SECTIONS.
15. ENTERING AIR TEMPERATURES ARE CALCULATED WITH ERV SYSTEM
16. FAN SECTIONS SHALL INCLUDE PERFORATED PANELS FOR NOISE ATTENUATION IN GYM AND MUSIC ROOMS.
17. AIR HANDLERS SHALL BE INSTALLED IN SECONDARY CONDENSATE PANS, WITH FLOAT SWITCH.

DRAW -THRU CONFIGURATION:

1. MIXING BOX SECTION, TOP INLET WITH NO DAMPER, WITH FILTER FRAMES
2. COOLING COIL
3. HEATING COIL
4. FAN SECTION, TOP OUTLET
5. PROVIDE ACCESS DOORS ON ONE SIDE.

ENERGY RECOVERY VENTILATOR SCHEDULE

DESIGNATION			ERV-2	ERV-4
AREA/ROOM SERVED & BUILDING			AHU-2	AHU-4
SERVICE			ENERGY RECOVERY	ENERGY RECOVERY
MANUFACTURER			RENEWAIRE	RENEWAIRE
MODEL			CA-4XJIN	CA-4XJIN
QTY.			1	3
TYPE			STATIC PLATE	STATIC PLATE
SUPPLY AIR FLOWRATE		CFM	3200	11000
EXHAUST AIR FLOWRATE		CFM	2600	9000
SUMMER/COOLING	OUTDOOR AIR	°FDB/°FWB	96 / 76	96 / 76
	FRESH AIR	°FDB/°FWB	81.5 / 70.3	81.9 / 70.4
	RETURN AIR	°FDB/°FWB	73 / 63	73 / 63
	SENSIBLE EFFECTIVENESS	%	77.8%	75.4%
	TOTAL EFFECTIVENESS	%	60.0%	57.2%
	LOAD SAVINGS RATIO	%	48.5%	46.6%
	SENSIBLE ENERGY RECOVERY	MBTUH	50.2	168.6
	LATENT ENERGY RECOVERY	MBTUH	30.5	82.5
	TOTAL ENERGY RECOVERY	MBTUH	80.7	251
	MOISTURE REMOVED	GR / LB	12.8	10
WINTER/HEATING	OUTDOOR AIR	°FDB/°FWB	25.6 / 21.4	25.6 / 21.4
	FRESH AIR	°FDB/°FWB	53.5 / 41.1	52.8 / 40.6
	RETURN AIR	°FDB/°FWB	70 / 51.5	70 / 51.5
	SENSIBLE EFFECTIVENESS	%	77.8%	75.4%
	TOTAL EFFECTIVENESS	%	74.1%	71.6%
	LOAD SAVINGS RATIO	%	59.9%	58.2%
	SENSIBLE ENERGY RECOVERY	BTUH	96.7	325.5
	LATENT ENERGY RECOVERY	BTUH	18.7	60.4
	TOTAL ENERGY RECOVERY	BTUH	115.5	386
	MOISTURE ADDED	GR / LB	8.2	7.7
INTERNAL STATIC, O/A / E/A		IN WC	1.2 / 0.91	1.46 / 1.1
FILTER QTY / SIZE, EACH		IN	8 / 20x20x2	8 / 20x20x2
FILTER TYPE			MERV 11	MERV 11
UNIT DIMENSIONS, EACH		LXWXH	82" x 35" x 35"	82" x 35" x 35"
APPROX. UNIT WEIGHT, EACH		LBS	400	400

NOTES:
1. INDOOR UNITS
2. DOUBLE WALL INSULATED CABINET
2. MULTIPLE UNITS ARE TO BE STACKED, AND DUCT CONNECTIONS WILL BE PLENUM STYLE.
3. MAINTAIN ACCESS TO BOTH SIDES OF ERV FOR FILTER ACCESS.

VRF SYSTEM SCHEDULE

DESIGNATION		CU-105 & FCU-105	CU-201 & FCU-201
LOCATION		MDU	PLATFORM
TYPE OF UNIT		WALL MOUNT COOLING ONLY	WALL MOUNT COOLING ONLY
MANUFACTURER		MITSUBISHI	MITSUBISHI
FAN COIL UNIT MODEL		PKA-AL12NL	PKA-AL12NL
CONDENSING UNIT MODEL		PUZ-AK12NL	PUZ-AK12NL
SUPPLY AIR (LOW, MED, HIGH)	CFM	265, 290, 385	265, 290, 385
VENTILATION AIR	CFM	N/A	N/A
FAN STATIC (EXTERNAL)	IN	N/A	N/A
AHRI RATED COOLING CAPACITY	MBH	12.0	12.0
SEER	BTUH/WATT	21.3	21.3
RATED HEATING CAPACITY	MBH	N/A	N/A
UNIT ELECTRICAL CHARACT.	V/Ø/HZ	208/230 / 1 / 60	208/230 / 1 / 60
MINIMUM CIRCUIT AMPS	AMPS	16	16
BREAKER SIZE	AMPS	20	20
SUCTION/LIQUID LINE SIZE	IN	1/2" / 1/4"	1/2" / 1/4"
MAX PIPING LENGTH	FT	165	165
FAN COIL DIMENSIONS (LXWXDP)	IN	36X12X10	36X12X10
NOTES		1-3, 5-7	1-3, 5-7

NOTES:
1. VARIABLE INVERTER-DRIVEN COMPRESSOR, HIGH PRESSURE SWITCH, EXTERNAL SERVICES VALVES.
2. INDOOR UNIT POWERED BY OUTDOOR UNIT.
3. PROVIDE SIMPLE WIRED CONTROLLER
4. CASSETTE TO HAVE CAPACITY TO LIFT CONDENSATE TO 33"
5. INCLUDE MFR LINESET OF APPROPRIATE LENGTH.
6. PROVIDE REFCO GOBI II CONDENSATE PUMP W/ RESERVOIR & SENSOR TO OVERRIDE EQUIPMENT OPERATION ON HIGH CONDENSATE LEVEL.
7. INCLUDE CONDENSER WALL BRACKET OR MOUNTING PAD.

DIFFUSER & GRILLE SCHEDULE

TYPE	QTY	DESCRIPTION	MODEL	REMARKS	AIR PATTERN	DAMPER
A	6	ARCHITECTURAL SQUARE PLAQUE SUPPLY AIR GRILLE	TITUS OMNI-AA	LAY-IN TYPE, SQUARE PLAQUE, ALUMINUM, WITH FORMED EDGES, WHITE FINISH, 24x24 MODULE SIZE, WITH OPTIONAL FACTORY MOLDED INSULATION BLANKET. 12" ROUND NECK SIZE.	4-WAY	NO
B	8	ARCHITECTURAL SQUARE PLAQUE SUPPLY AIR GRILLE	TITUS OMNI-AA	LAY-IN TYPE, SQUARE PLAQUE, ALUMINUM, WITH FORMED EDGES, WHITE FINISH, 24x24 MODULE SIZE, WITH OPTIONAL FACTORY MOLDED INSULATION BLANKET. 10" ROUND NECK SIZE.	4-WAY	NO
C	9	ARCHITECTURAL SQUARE PLAQUE SUPPLY AIR GRILLE	TITUS OMNI-AA	LAY-IN TYPE, SQUARE PLAQUE, ALUMINUM, WITH FORMED EDGES, WHITE FINISH, 24x24 MODULE SIZE, WITH OPTIONAL FACTORY MOLDED INSULATION BLANKET. 8" ROUND NECK SIZE.	4-WAY	NO
D	23	ARCHITECTURAL SQUARE PLAQUE SUPPLY AIR GRILLE	TITUS OMNI-AA	LAY-IN TYPE, SQUARE PLAQUE, ALUMINUM, WITH FORMED EDGES, WHITE FINISH, 24x24 MODULE SIZE, WITH OPTIONAL FACTORY MOLDED INSULATION BLANKET. 6" ROUND NECK SIZE.	4-WAY	NO
E	14	LOUVERED SUPPLY AIR GRILLE	TITUS 272FL	SURFACE MOUNT TYPE-1, ALUMINUM CONSTRUCTION, AEROBLADE, 3/4" BLADE SPACING, ADJ. BLADES, DOUBLE DEFLECTION, FRONT BLADES PARALLEL TO LONG DIM, 24"x10", FINISH COLOR TO BE WHITE	NA	NO
F	5	LINEAR 3-SLOT DIFFUSER	TITUS ML-38	TYPE 2B, LAY-IN FOR 6" NOMINAL WIDTH, 3-SLOT, 3/4" SLOT WIDTH, ALUMINUM CONSTRUCTION, 48" NOMINAL LENGTH, FACTORY SUPPLIED INSULATED PLENUM, , 10" ROUND INLET	ADJ.	NO
G	6	ROUND DIFFUSER	TITUS TMR-AA	DUCT MOUNTED, ALUMINUM CONSTRUCTION, 12 INCH DIAMETER	NA	NO
H	16	DRUM LOUVER FOR SPIRAL-WOUND, DOUBLE-WALL DUCT	GREENHECK XG-RL-SP	DRUM LOUVER FOR INSTALLATION INTO DOUBLE-WALL DUCT. ALUMINUM CONSTRUCTION, ADJUSTABLE DIRECTION VANES, AIR SCOOP, COLOR TO BE WHITE (??), 30" x 12"	2-WAY	NO
I	3	PERFORATED RETURN AIR GRILLE	TITUS PAR	LAY-IN TYPE, 3/16" Ø HOLES ON 1/4" CENTERS, ALUMINUM CONSTRUCTION, WHITE FINISH, 24x24 MODULE SIZE, 14" ROUND NECK SIZE	NA	NO
J	2	PERFORATED RETURN AIR GRILLE	TITUS PAR	LAY-IN TYPE, 3/16" Ø HOLES ON 1/4" CENTERS, ALUMINUM CONSTRUCTION, WHITE FINISH, 24x24 MODULE SIZE, 12" ROUND NECK SIZE	NA	NO
K	5	PERFORATED RETURN AIR GRILLE	TITUS PAR	LAY-IN TYPE, 3/16" Ø HOLES ON 1/4" CENTERS, ALUMINUM CONSTRUCTION, WHITE FINISH, 24x24 MODULE SIZE, 10" ROUND NECK SIZE	NA	NO
L	3	PERFORATED RETURN AIR GRILLE	TITUS PAR	LAY-IN TYPE, 3/16" Ø HOLES ON 1/4" CENTERS, ALUMINUM CONSTRUCTION, WHITE FINISH, 24x24 MODULE SIZE, 8" ROUND NECK SIZE	NA	NO
M	17	PERFORATED RETURN AIR GRILLE	TITUS PAR	LAY-IN TYPE, 3/16" Ø HOLES ON 1/4" CENTERS, ALUMINUM CONSTRUCTION, WHITE FINISH, 24x24 MODULE SIZE, 6" ROUND NECK SIZE	NA	NO
N	11	LOUVERED RETURN AIR GRILLE	TITUS 56FL	SURFACE MOUNT TYPE-1, ALUMINUM CONSTRUCTION, AEROBLADE, 3/4" SPACING, ZERO DEGREE, 24"x10" FINISH COLOR TO BE WHITE.	NA	NO
O	5	LINEAR RETURN GRILLE	TITUS MLR-38	TYPE 2B, LAY-IN FOR 6" NOMINAL WIDTH, 3-SLOT, 3/4" SLOT WIDTH, ALUMINUM CONSTRUCTION, 48" NOMINAL LENGTH, FACTORY SUPPLIED INSULATED PLENUM, , 10" ROUND INLET	NA	NO
P	3	LOUVERED SUPPLY GRILLES	TITUS S301FS	SURFACE MOUNT, ALUMINUM CONSTRUCTION, 3/4" BLADE SPACING, SINGLE DEFLECTION, WHITE FINISH, 8X8	NA	YES
Q	2	LOUVERED RETURN GRILLES	TITUS S301FR	SURFACE MOUNT, ALUMINUM CONSTRUCTION, 3/4" BLADE SPACING, SINGLE DEFLECTION, WHITE FINISH, 8X8	NA	NO
R	2	LOUVERED RETURN AIR GRILLE	TITUS 60FL	HEAVY DUTY, SURFACE MOUNT TYPE-1, ALUMINUM CONSTRUCTION, 1/2" BLADE SPACING, 0" FIXED BLADE, SINGLE DEFLECTION, 64" x 40". FOR USE IN A GYM. FINISH COLOR TBD.	NA	NO
S	3	LOUVERED RETURN AIR GRILLE	TITUS 355ZFS	DUCT MOUNTED, ALUMINUM CONSTRUCTION, 1/2" BLADE SPACING, 36X12 R/A GRILLE.	NA	NO
T	4	LOUVERED SUPPLY GRILLES	TITUS S301FS	SURFACE MOUNT, ALUMINUM CONSTRUCTION, 3/4" BLADE SPACING, SINGLE DEFLECTION, WHITE FINISH, 10X10	NA	YES
U	1	LOUVERED RETURN GRILLES	TITUS S301FR	SURFACE MOUNT, ALUMINUM CONSTRUCTION, 3/4" BLADE SPACING, SINGLE DEFLECTION, WHITE FINISH, 18X12	NA	YES
V	2	PERFORATED RETURN AIR GRILLE	TITUS PAR	SURFACE MOUNT, 3/16" Ø HOLES ON 1/4" CENTERS, ALUMINUM CONSTRUCTION, WHITE FINISH, 24x24 MODULE SIZE, 6" ROUND NECK SIZE	NA	NO
W	2	PERFORATED RETURN AIR GRILLE	TITUS PAR	SURFACE MOUNT, 3/16" Ø HOLES ON 1/4" CENTERS, ALUMINUM CONSTRUCTION, WHITE FINISH, 24x24 MODULE SIZE, 10" ROUND NECK SIZE	NA	NO
X	3	PERFORATED RETURN AIR GRILLE	TITUS PAR	SURFACE MOUNT, 3/16" Ø HOLES ON 1/4" CENTERS, ALUMINUM CONSTRUCTION, WHITE FINISH, 24x24 MODULE SIZE, 12" ROUND NECK SIZE	NA	NO
Y	1	PERFORATED RETURN AIR GRILLE	TITUS PAR	SURFACE MOUNT, 3/16" Ø HOLES ON 1/4" CENTERS, ALUMINUM CONSTRUCTION, WHITE FINISH, 24x24 MODULE SIZE, 14" ROUND NECK SIZE	NA	NO
Z	3	PERFORATED RETURN AIR GRILLE	TITUS PAR	LAY IN STYLE, 3/16" Ø HOLES ON 1/4" CENTERS, ALUMINUM CONSTRUCTION, WHITE FINISH, 24x24 MODULE SIZE, 6" ROUND NECK SIZE	NA	NO

NOTES:
1. SUPPLY FLOW RATES SHALL BE ADJUSTABLE AT THE TAKE OFF UOS.
2. COORDINATE FINISHES WITH ARCHITECT. DUCT MOUNT GRILLES IN EXPOSED DUCTWORK TO BE FIELD-PAINTED

LOUVER SCHEDULE

DESIGNATION		L-1	L-2	L-3
SERVICE		BOILER ROOM 115	PLATFORM 201	PLATFORM 202
NOMINAL SIZE (WXH)	IN	72" x 28"	96"x48"	24" x 24"
BLADE ORIENTATION		VERTICAL	VERTICAL	VERTICAL
FREE AREA (DESIGN MINIMUM)	%	51%	58%	43%
FREE AREA	SQ.FT	6.25 SF MIN.	18.5 SF	1.7 SF
CAPACITY			15,700 CFM	1500 CFM
DEPTH	IN	5	5	5
TYPE		EXTERIOR	EXTERIOR	EXTERIOR
MATERIAL/CONSTRUCTION		ALUMINUM	ALUMINUM	ALUMINUM
BASIS OF DESIGN MANUFACTURER		GREENHECK	GREENHECK	GREENHECK
BASIS OF DESIGN MODEL		EVH-501D	EVH-501D	EVH-501
QUANTITY		1	1	1
NOTES		1 to 4, 6, 8	1 to 4, 7, 9	1 to 4, 7, 9

NOTES:
1. CONSTRUCTED OF EXTRUDED ALUMINUM.
2. EXPANDED, FLATTENED ALUMINUM BIRD SCREEN.
3. FLORIDA PRODUCT APPROVED.
4. INCLUDE INSECT SCREEN
5. PROVIDE INSULATED BLANK PANEL
6. TO BE INSTALLED IN A DOOR FRAME
7. TO BE INSTALLED IN A CMU WALL
8. FINISH COLOR TO MILL FINISH ANODIZED ALUMINUM
9. FINISH COLOR TO BE CUSTOM COLOR, OWNER TO ADVISE.

DUCT SILENCER SCHEDULE

DESIGNATION		SA-1	SA-2
SERVICE		GYM SUPPLY AIR	GYM RETURN AIR
NOMINAL SIZE (WxHxL)	IN	42" x 42" x 36"	42" x 42" x 60"
AIR FLOW	CFM	18,000	18,000
VELOCITY	FPM	1469	1469
PRESSURE DROP	IN. W.G.	0.22"	0.20"
MIN. DYNAMIC INSERTION LOSS			
63 Hz	dB	3	5
125 Hz	dB	9	11
250 Hz	dB	15	20
500 Hz	dB	22	31
1 KHz	dB	27	38
2 KHz	dB	24	32
4 KHz	dB	16	21
8 KHz	dB	12	15
MATERIAL/CONSTRUCTION		22 GA. GALV.	22 GA. GALV.
BASIS OF DESIGN MANUFACTURER		RUSKIN	RUSKIN
BASIS OF DESIGN MODEL		AM36	DM60
QUANTITY		1	1
WEIGHT	LBS	775	1045
NOTES		1, 2, 3	1, 2

NOTES:
1. OUTER CASING SHALL BE MINIMUM 22-GAUGE GALVANIZED STEEL. INTERNAL PERFORATED BAFFLES SHALL BE MINIMUM 24-GAUGE GALVANIZED STEEL.
2. DISSIPATIVE ACOUSTIC INFILL SHALL BE INORGANIC GLASS FIBER PACKED UNDER A MINIMUM OF 15% COMPRESSION. MEDIA SHALL BE VERMIN-PROOF, MOLD-RESISTANT, AND HAVE A FLAME SPREAD INDEX UNDER 25.
3. A MINIMUM OF 42 INCHES OF STRAIGHT, RIGID DUCTWORK MUST BE MAINTAINED BETWEEN THE DISCHARGE FACE OF SA-1 AND THE FIRST DOWNSTREAM ELBOW. DOWNSTREAM ELBOW MUST INCLUDE FACTORY-INSTALLED TURNING VANES.

FAN SCHEDULE

DESIGNATION		EF-1	EF-2	EF-3	EF-4	EF-5	EF-6	EF-7
AREA/ROOM SERVED & BUILDING		LOBBY RESTROOMS	MUSIC ROOMS	LOCKER ROOM	GYM / STAGE	LOCKER ROOM	CONCESSIONS	JANITOR CLOSET
SERVICE		TOILET EXHAUST	ERV EXHAUST	FEMALE	ERV EXHAUST	MALE	GENERAL EXHAUST	GENERAL EXHAUST
MANUFACTURER		GREENHECK	GREENHECK	GREENHECK	GREENHECK	GREENHECK	GREENHECK	GREENHECK
MODEL		G-120-VG	G-160-VG	G-120-VG	G-300-VG	G-120-VG	SP-A200	SP-A200
TYPE		DOWNBLAST	DOWNBLAST	DOWNBLAST	DOWNBLAST	DOWNBLAST	CEILING	CEILING
FAN CONSTRUCTION		ALUMINUM	ALUMINUM	ALUMINUM	ALUMINUM	ALUMINUM	PP & GALV.	PP & GALV.
DRIVE TYPE		DIRECT	DIRECT	DIRECT	DIRECT	DIRECT	DIRECT	DIRECT
AIR FLOWRATE DESIGN	CFM	1000	2400	800	9000	800	100	50
DESIGN STATIC PRESSURE	IN	0.6	1.3	0.6	1.3	0.6	0.4	0.4
DESIGN FAN SPEED	RPM	1250	1396	1124	806	1124	900	900
RADIATED SOUND POWER	SONES	9	16.7	7.7	19.1	7.7	4	4
ELECTRICAL CHARACTERISTICS	V/Ø/HZ	120 / 1 / 60	460 / 3 / 60	120 / 1 / 60	460 / 3 / 60	120 / 1 / 60	120 / 1 / 60	120 / 1 / 60
MOTOR HORSEPOWER	HP	1/2	2	1/4	5	1/4	48 W	48 W
MCA / MOP	AMPS	8 / 15	4 / 15	4.8 / 15	9.2 / 15	4.8 / 15	0.6 / 15	0.6 / 15
OPTIONS		3, 4, 5, 6, 7	3, 5, 6, 7, 8	3, 4, 5, 6, 7	3, 5, 6, 7, 8	3, 4, 5, 6, 7	1,2,3	1,2,3
CONTROL NOTES		1	3	1	3	1	2	1
PROJECT QTY.		1	1	1	1	1	1	1

OPTIONS:
1. ALUMINUM GRILLE.
2. PREWIRED MOTOR DISCONNECT SWITCH, NEMA-1.
3. BACKDRAFT DAMPER
4. VARI-GREEN MOTOR
5. PREWIRED MOTOR DISCONNECT SWITCH, NEMA-3R.
6. FAN & CURB ARE TO BE RATED FOR HIGH WIND APPLICATION
7. PROVIDE ROOF CURB TO MATCH ROOF PITCH, CURB SHALL EXTEND MIN. 8" ABOVE ROOFING.
8. VARI-GREEN MOTOR AND INPUT FOR 0-10V SIGNAL
9. WALL BRACKET FOR SIDE-WALL MOUNTING.
10. FOR USE IN FLAMMABLE STORAGE APPLICATION, CLASS I, DIV 1, GROUP D. FAN TO BE SPARK RESISTANT AND MOTOR TO BE EXPLOSION-PROOF.

CONTROL NOTES:
1. FAN WILL OPERATE DURING OCCUPIED HOURS VIA BAS.
2. FAN WILL OPERATE BASED ON OCCUPANCY SENSOR.
3. FAN WILL BE VARIABLE SPEED TO PROVIDE CONSTANT BUILDING PRESSURE THROUGH BAS.
4. FAN WILL OPERATE VIA WALL SWITCH.

GRAVITY VENTILATOR SCHEDULE

DESIGNATION		GV-1	GV-2
SERVICE		EXHAUST	WALL CAP
NOMINAL SIZE (WXH)	IN	8	6
FREE AREA (DESIGN MINIMUM)	SQ FT	0.37	-
AIR FLOW RATE	CFM	70-300	70
MAXIMUM PRESSURE DROP	IN	0.2	0.2
THROAT VELOCITY	FPM	VARIES	350
MATERIAL/CONSTRUCTION		ALUMINUM	ALUMINUM
CURB CAP	IN	19x19	N/A
ROOF CURB		YES	N/A
CURB HEIGHT	IN	12", F.V.	N/A
ROOF OPENING	IN	10.5 x 10.5	6"Ø
BASIS OF DESIGN MANUFACTURER		GREENHECK	GREENHECK
BASIS OF DESIGN MODEL		GRSR	WC-6
PROJECT QTY.		2	1
NOTES		1-4	1, 5

NOTES:
1. HEAVY-GAUGE ALUMINUM CONSTRUCTION, STANDARD FINISH
2. PROVIDE ROOF CURB TO MATCH ROOF PITCH, CURB SHALL EXTEND MIN. 8" ABOVE ROOFING.
3. CURB CAP TO BE PRE-PUNCHED FOR MOUNTING TO CURB
4. BIRD SCREEN, 1/2" GALV. MESH
5. PROVIDE WITH DAMPER & NO BIRD SCREEN.

LAY-IN SUPPLY AIR GRILLE NECK SIZES

AIR FLOW RANGE (CFM)	NECK SIZE SIZE (IN)
25-120	6"Ø
125-225	8"Ø
230-350	10"Ø
351-500	12"Ø

NOTES:
1. EQUIVALENT SQUARE/RECT SIZES ARE ACCEPTABLE.

LAY-IN RETURN/EXHAUST/TRANSFER AIR GRILLE CONNECTION SIZES (UOS)

AIR FLOW RANGE (CFM)	NECK/DUCT CONNECTION SIZE (UOS) (IN)
0-100	6"Ø
101-175	8"Ø
176-300	10"Ø
301-450	12"Ø
451-750	14"Ø

FUTURE COOLING & HEATING LOADS

BUILDING	SQ.FT.	C/C CAPACITY TONS	CHW FLOW GPM	H/C CAPACITY MBH	HHW FLOW GPM	
BLDG 15	N/A	30	60	89	9	
BLDG 16	N/A	15	30	28	3	
BLDG 18	N/A	38	76	419	42	
BLDG 18	N/A	** 27	N/A	** 219	N/A	**DX & GAS COILS
GYM	36,000	150	300	700	70	
CLASSROOMS A	35,000	106	212	580	58	
CLASSROOMS B	23,000	70	140	390	39	
ADMIN / MEDIA	18,000	45	90	300	30	

CONNECTED TO CHILLER: 454 TONS 908 GPM 2500 MBH 250 GPM HHW SYSTEM

ZONE DIRECT EXHAUST	EXHAUST CFM	O/A CFM		
AHU-1	1050	1500		
103 JANITOR	50			
106 RR-F	550			
108 RR-M	350			
111 CONCESSIONS	100			
AHU-2	0	3200		
AHU-3	1500	1500		
117A COACH RR	50			
118 LOCKER ROOM	350			
120 LOCKER RR-M	350			
141A COACH RR	50			
142 LOCKER ROOM	350			
144 LOCKER RR-F	350			
AHU-4	0	11,000		

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REVISION NO.	DESCRIPTION	DATE

PERMIT DOCUMENTS

CLIENT
LEON COUNTY SCHOOLS

PROJECT TITLE
RAA MIDDLE SCHOOL - PHASE 1 GYM

401 W THARPE STREET, TALLAHASSEE, FL 32303

PROJECT NUMBER
250225

ISSUE DATE
07/28/26

DRAWING TITLE
MECHANICAL SCHEDULES

SHEET NUMBER
M-101

AIR COOLED ROTARY SCREW CHILLER

DESIGNATION		CH-1	CH-2
MANUFACTURER		TRANE	TRANE
MODEL		ACR-225 5V	ACR-225 5V
REFRIGERANT / OPERATING CHARGE		R513A / 408 LBS	R513A / 408 LBS
COOLING CAPACITY (NOMINAL / ACTUAL)	TONS	225 / 244	225 / 244
UNIT POWER CONSUMPTION	KW	273.4	273.4
FULL LOAD EFFICIENCY / EER (MIN)	BTUH / W	10.75	10.75
INTEGRATED PART LOAD VALUE (MIN)	kW / TON	19.31	19.31
AMBIENT CONDITIONS	°F	95°	95°
EVAPORATOR FLOW RATE (NOMINAL)	GPM	489 (261 MIN)	489 (261 MIN)
SYSTEM PRESSURE DROP (MAX)	FT	16.2	16.2
ENTERING WATER TEMPERATURE	°F	56°	56°
LEAVING WATER TEMPERATURE	°F	44°	44°
AVAILABLE HEAD PRESSURE for CHWS	TDH	N/A	N/A
EXPANSION TANK	GAL	N/A	N/A
BUFFER TANK	GAL	N/A	N/A
FOULING FACTOR	HR-SF-°F/ BTU	0.00010	0.00010
INDEPENDENT REFRIGERANT CIRCUITS	MIN	2	2
COMPRESSORS	MAX	2	2
CAPACITY CONTROL DOWN TO	MIN. %	20%	20%
CHILLER ELECTRICAL CHARACTERISTICS	V/Ø/HZ	460 / 3 / 60	460 / 3 / 60
UNIT POWER REQUIREMENT (MAX)	MCA/MOP	454.4 / 600	454.4 / 600
SHORT CIRCUIT CURRENT RATING (MIN)	kA	65	65
EVAP HEAT POWER ELECTRICAL	V / MOP	120v / 15A	120v / 15A
PROGRAMMABLE RELAYS	V / MOP	120v / 20A	120v / 20A
SOUND PRESSURE 100% LOAD @ 10m	dBA	64 / 57 / 59	64 / 57 / 59
SHIPPING WEIGHT	LBS	17,000	17,000
UNIT DIMENSIONS L x W x H	IN	340 x 88 x 98	340 x 88 x 98

NOTES:
1. HIGH-EFFICIENCY AIR-COOLED SCREW CHILLER; INCLUDES VARIABLE SPEED COMPRESSORS & VARIABLE SPEED PERMANENT MAGNET MOTORS FOR CONDENSER FANS. VFDs ARE FACTORY SUPPLIED, MOUNTED AND WIRED, 5% HARMONIC FILTER.
2. SYSTEM TO BE VARIABLE PRIMARY, WITH REDUNDANT PUMP. PUMPS BY OTHERS.
3. SINGLE-POINT POWER CONNECTION.
4. FACTORY CONTROL PANEL WITH LCD DISPLAY & BACNET CARD. BACNET OVER MS/TP OR IP.
4. LOW AMBIENT TEMPERATURE OPERATION: 0°-105°F
5. FREEZE PROTECTION TO -20°F.
6. INCLUDE EVAPORATOR INSULATION FOR HIGH HUMIDITY CLIMATE, MIN. 1.25" THICK; AND EVAP HEATER FOR FREEZE PROTECTION.
7. PROVIDE EVAPORATOR INLET STRAINER FOR FIELD INSTALLATION.
8. PROVIDE FACTORY MOUNTED AND WIRED FLOW SWITCH AT EVAP OUTLET.
9. PROVIDE NECESSARY SOUND ATTENUATION TO MEET SCHEDULED SOUND PRESSURES. PRESSURES ARE LISTED AT 10 METERS FROM THE BROAD SIDES / CONTROL PANEL / OPPOSITE END FROM THE CONTROL PANEL. IT IS ANTICIPATED THAT THIS WILL BE THE HIGHEST LEVEL OF NOISE ATTENUATION OFFERED.
10. PROVIDE ELASTOMERIC ISOLATORS FOR MOUNTING TO CONCRETE PAD.
11. PROVIDE FACTORY MOUNTED CIRCUIT BREAKER.
12. PROVIDE COMPLETE MANUFACTURER 10-YEAR PARTS, LABOR & REFRIGERANT WARRANTY.

BOILER SCHEDULE

DESIGNATION		B-1	B-2
SERVICE		HYDRONIC HEAT	HYDRONIC HEAT
BOILER TYPE		CONDENSING	CONDENSING
VENT TYPE		MFR STD	MFR STD
MANUFACTURER		PATTERSON KELLY	PATTERSON KELLY
MODEL		ST1250	ST1250
MAX PRESSURE	PSIG	160	160
MAX TEMPERATURE	°F	194	194
LEAVING WATER TEMP (DESIGN)	°F	160	160
ENTERING WATER TEMP	°F	140	140
FUEL TYPE		NATURAL GAS	NATURAL GAS
OUTPUT CAPACITY (LOW/HIGH)	MBH	121.5 / 1212.5	121.5 / 1212.5
HEATING EFFICIENCY	%	97	97
INPUT (LOW/HIGH)	MBH	125 / 1250	125 / 1250
WATER FLOW RATE (MIN / DESIGN)	GPM	38 / 121	38 / 121
TEMPERATURE DIFF (DESIGN)	°F	20	20
WATER PRESSURE DROP (MAX)	FT WG	18.8	18.8
INLET GAS PRESSURE RANGE	IN WG	3.5" - 14"	3.5" - 14"
ELECTRICAL CHARACTERISTICS	V/Ø/Hz	208 / 1 / 60	208 / 1 / 60
POWER REQUIREMENTS (MAX)	AMPS	20	20
DIMENSIONS (LxWxH)	IN	58x34x55	58x34x55
OPERATING WEIGHT	#	1112	1112

FEATURES:
1. BOILERS WILL BE INSTALLED INDOORS IN A VARIABLE PRIMARY LOOP CONFIGURATION.
2. BOILERS WILL BE COMMON VENTED IN A NEGATIVE PRESSURE FLUE. PROVIDE RECOMMENDED COMBUSTION AIR DAMPER AND/OR BACKFLOW PREVENTER.
3. FLUE MATERIAL IS TO BE AL29-4C DOUBLE WALL STAINLESS STEEL.
4. PROVIDE NEUTRALIZATION KIT FOR INSTALLATION BY CONTRACTOR.
5. FULL MODULATION, 10:1 TURNDOWN
6. ASME CSD-1 RATED
7. FACTORY INTEGRATED CONTROLS
8. PROVIDE A BACNET PROTOCOL CONVERTER, INCLUDING ENCLOSURE AND 24VDC POWER.
9. HIGH LIMIT AND OPERATING THERMOSTATS.
10. LOW WATER CUT-OFF, 75 PSIG PRESSURE RELIEF VALVE W/ TEMP INDICATOR.
11. PROVIDE GAS TRAIN WITH VALVES
12. HIGH EXHAUST BACK PRESSURE SWITCH
13. DP COMBUSTION AIR SWITCH
14. COMBUSTION BLOWER, VARIABLE SPEED. PROVIDE FILTER AND SPARE FILTER FOR START-UP.

VARIABLE FREQUENCY DRIVE SCHEDULE

DESIGNATION		VFD-CHWP-1, 2, & 3	VFD-HHWP-1, 2, & 3	
SERVICE		CHILLED WATER PUMP	HOT WATER PUMP	
QTY.		3	3	
DRIVE RATED HORSEPOWER CAPACITY (MIN)	HP	25	5	
DRIVE MOTOR FULL LOAD AMPACITY (MIN)	AMP	34	7.6	
DRIVE AMBIENT OPERATING TEMP (MAX)	°F	104	104	
MOTOR ELECTRICAL SERVICE	V/PH/HZ	480/3/60	480/3/60	
SPEED CONTROL SIGNAL		0-10vDC	0-10vDC	
DRIVE EFFICIENCY (MINIMUM AT FULL LOAD)		95%	95%	
POWER FACTOR (MINIMUM)		0.95	0.95	
DISCONNECT		YES	YES	
BYPASS		NO	NO	
ENCLOSURE TYPE		NEMA TYPE 1	NEMA TYPE 1	
BASIS OF DESIGN MANUFACTURER/MODEL		ABB ACH580-PDR	ABB ACH580-PDR	
APPLICABLE NOTES		1-6	1-5	

NOTES:
1. PROVIDE FACTORY CERTIFIED STARTUP OF NEW DRIVE.
2. PROVIDE BACNET PROTOCOL TO COMMUNICATE WITH THE BAS.
3. PROVIDE HAND-OFF-AUTO CAPABILITY.
4. PROVIDE THREE (3) YEAR PARTS/LABOR WARRANTY.
5. DRIVE TO INCLUDE 5% DC CHOKE.
6. PROVIDE EARLY-BREAK CONTACT CONNECTION FOR DOWNSTREAM DISCONNECT SWITCH.

CHEMICAL POT FEEDER SCHEDULE

DESIGNATION		HHW - CPF	CHW - CPF
SYSTEM SERVED		CHW	CHW
MANUFACTURER		NEPTUNE	NEPTUNE
MODEL		DBF-5HP	DBF-5HP
CONNECTION SIZE & TYPE		3/4" NPT	3/4" NPT
CAPACITY	GAL.	5	5
FILTER BAG KIT	-	YES	YES
DESIGN PRESSURE	PSIG	300	300
DIMENSIONS (DIA/HT)	IN	10 x 30	10 x 30
DRY WEIGHT	LB	38	38
OPTIONS/FEATURES		1	1

NOTES:
1. PROVIDE OPTIONAL FILTER BAG KIT FBK-5.
2. TANK TO BE INSULATED BY CONTRACTOR; MAINTAIN ACCESS TO CAP.

PUMP SCHEDULE

DESIGNATION		CHWP-1, CHWP-2, CHWP-3	HHWP-1, HHWP-2, HHHWP-3
SYSTEM SERVED		CHILLED WATER	HEATING HOT WATER
DUTY		VARIABLE PRIMARY	VARIABLE PRIMARY
MANUFACTURER		TACO	TACO
MODEL		FI 14011C	KV2009D
CASING / IMPELLER		C.I. / BRONZE	C.I. / BRONZE
CONNECTION SIZES (SUCTION/DISCHARGE)	IN	5" / 4"	2" x 2"
PUMP TYPE		FRAME MOUNTED	VERTICAL INLINE
FLOW RATE NORMAL / MINIMUM	GPM	500 / 261	121 / 40
TEMP	°F	44	160
TOTAL DYNAMIC HEAD	FT	85	75
SHUT-OFF HEAD	FT	135	106
PUMP EFFICIENCY	%	81%	72%
IMPELLER DIA	IN	11	9.5
PUMP SPEED	RPM	1486	1588
MOTOR SPEED @ 60Hz	RPM	1760	1750
ELECTRICAL CHARACTERISTICS	V/Ø/HZ	460/3/60	460/3/60
MOTOR HORSEPOWER	HP	25	5
MOTOR TYPE		TEFC, INVERTER RATED	TEFC, INVERTER RATED
SUCTION DIFFUSER, FLG'D	IN	6" x 5"	N/A
MULTI-PURPOSE VALVE, FLG'D	IN	N/A	N/A
APPLICABLE NOTES		2, 3, 4, 5	2, 3, 5, 6

NOTES:
1. FIXED-SPEED PUMP
2. PUMP OPERATED BY VARIABLE FREQUENCY DRIVE, PROVIDED BY OTHERS.
3. STANDARD MECHANICAL SEAL WITH NO EXTERNAL FLUSH.
4. INSTALLED OUTSIDE.
5. PUMPS ARE SCHEDULED WITH FULL-SIZE IMPELLERS.
6. PROVIDE WITH OPTIONAL SUPPORT STAND.

HYDRONIC SYSTEMS DATA / EXPANSION TANK SCHEDULE

DESIGNATION		HHW-ET	CHW-ET
SYSTEM SERVED		HEATING HOT WATER	CHILLED WATER
TANK TYPE		FULL ACCEPT BLADDER	FULL ACCEPT BLADDER
MANUFACTURER		TACO	TACO
MODEL		CA300-125A	CA215-125A
SIZE	IN.	Ø24x58	Ø20x59
SYSTEM CONNECTION	IN.	1" NPT	1" NPT
MAKE-UP FILL PRESSURE	PSI	25	25
MAKE-UP RELIEF PRESSURE	PSI	75	75
MIN OPERATING TEMP	°F	60	40
MAX DESIGN TEMP	°F	160	100
APPROXIMATE SYSTEM VOLUME	GALLONS	2000	4000
CALCULATED EXPANSION VOLUME	GALLONS	41	23
REQUIRED TANK VOLUME	GALLONS	200	112
APPLICABLE NOTES		1-4	1-4

NOTES:
1. RATED FOR 125 PSI & 240 F
2. REMOVABLE BUTYL RUBBER BLADDER
3. FULL ACCEPTANCE BLADDER
4. ASME Section VIII CONSTRUCTION

AIR & DIRT SEPARATOR SCHEDULE

DESIGNATION		CHW - ADS	HHW - ADS
SYSTEM SERVED		CHW	HHW
MANUFACTURER		TACO	TACO
MODEL		4908ADH-150	4904-ADH-150
CONNECTION SIZE & TYPE		8" FLANGED	4" FLANGED
FLOW RATE	GPM	1000	242
PRESS DROP (MAX)	FT H2O	1.5	1.2
SUPPORT	TYPE	PIPE SUPPORT	PIPE SUPPORT
DIMENSIONS (DIA/HT)	IN	Ø24x70	Ø14x40
DRY WEIGHT	LB	520	130
OPTIONS/FEATURES		SEE BELOW	SEE BELOW

NOTES:
1. RATED FOR 150 PSI & 350° F
2. TANGENTIAL NOZZLES FOR CENTRIFUGAL PARTICULATE REMOVAL
3. PROVIDE BASE RING, AIR VENT, & BLOWDOWN VALVE
4. ASME Section VIII CONSTRUCTION
5. TANK TO BE INSULATED BY CONTRACTOR
6. SUPPORT PER MANUFACTURER'S INSTRUCTIONS.
7. PROVIDE WITH BASE RING.

FLOW METER SCHEDULE

DESIGNATION		FM-1	FM-2
SERVICE		CHILLER	BOILER
FLUID		CHILLED WATER	HOT WATER
MANUFACTURER		ONICON	ONICON
MODEL NUMBER		F-3200	F-3200
SENSING METHOD		ELECTROMAGNETIC	ELECTROMAGNETIC
TYPE		INLINE	INLINE
CONNECTION		6" 150# FLG	3" 150# FLG
BODY		CARBON STEEL	CARBON STEEL
LINER		PTFE	PTFE
ACCURACY (FULL SCALE)		+/- 0.2%	+/- 0.2%
INPUT POWER		24 VDC	24 VDC
TRANSMITTER		INTEGRAL	INTEGRAL
OPERATING FLOW	GPM	500	121
DESIGN / OPERATING TEMPERATURE	°F	0 to 212 / 45	0 to 212 / 160
DESIGN / OPERATING PRESSURE	PSIG	580 / 60	580 / 60
OUTPUT		(2) 4-20 mA	(2) 4-20 mA
LOCAL DISPLAY		YES	YES
PROJECT QTY.		2	2
NOTES		1, 2, 3	1, 2, 3

NOTES:
1. FLOW & TEMPERATURE MONITOR. FOR LOCAL DISPLAY ONLY.
2. INSTALL PER MFR INSTRUCTIONS - 3D UPSTREAM, 2D DOWNSTREAM; METER MUST ALWAYS BE FULL OF WATER.
3. AS SPECIFIED, OR EQUIVALENT.

CHILLED/HHW WATER PIPING ACCESSORIES

DESCRIPTION	MODEL	REMARKS	QTY.
EJ-3, 3"	METRAFLEX MSRDEE	PUMP EXPANSION JOINT, EPDM, ANSI 125#/150# FLANGED ENDS, 6" LENGTH, RETAINING RING. INCLUDE CONTROL RODS.	6
EJ-4, 4"	METRAFLEX MSRDEE	PUMP DISCHARGE EXPANSION JOINT, EPDM, ANSI 125#/150# FLANGED ENDS, 6" LENGTH, RETAINING RING. INCLUDE CONTROL RODS.	3
EJ-6, 6"	METRAFLEX MSRDEE	PUMP SUCTION EXPANSION JOINT, EPDM, ANSI 125#/150# FLANGED ENDS, 6" LENGTH, RETAINING RING. INCLUDE CONTROL RODS.	3
EJ-6V, 6"	METRAFLEX MSRDEE	CHILLER EXPANSION JOINT, EPDM, VICTAULIC ENDS, 6" LENGTH, RETAINING RING. INCLUDE CONTROL RODS.	2

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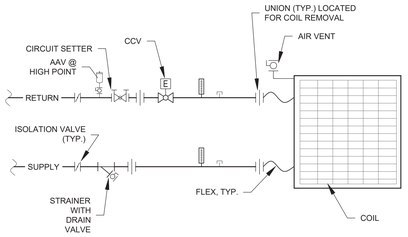
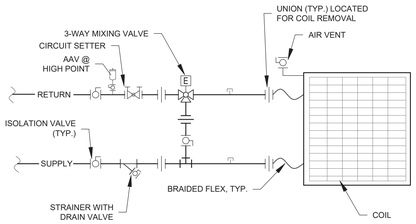
SHEET NUMBER
M-102

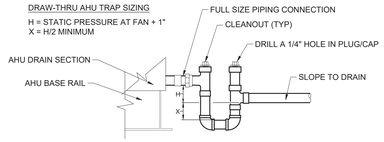


COOLING COIL DETAIL - 2-WAY VALVE



HEATING COIL DETAIL - 3-WAY VALVE

3-WAY VALVES: AHU-1, AHU-4
2-WAY VALVES: AHU-2, AHU-3

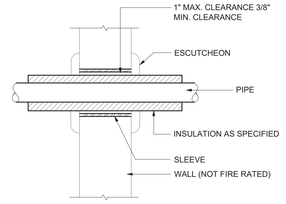


CONDENSATE P-TRAP DETAIL

SCALE: NTS

NOTES:

1. SEE MANUFACTURER SUBMITTAL FOR MINIMUM TRAP HEIGHT.
2. CONDENSATE PIPING SHALL BE FULL SIZE DWV OR TYPE L COPPER WITH CAST DWB OR PRESSURE SOLDER JOINTS.
3. ROUTE CONDENSATE PIPING TO DRAIN.
4. SLOPE CONDENSATE PIPING 1/4" PER FOOT TOWARD DRAIN.

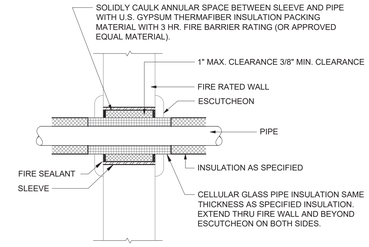


NON-RATED WALL PENETRATION

SCALE: NONE

NOTES:

1. SUBMIT MANUFACTURER'S UL LISTED APPROVAL FOR WALL SYSTEM AND RATING TO ARCHITECT/ENGINEER FOR REVIEW/APPROVAL.
2. SEE PLAN FOR WALL RATINGS.
3. INSTALL PRODUCTS IN STRICT ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS AND RATING.

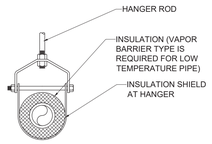


FIRE-RATED WALL PENETRATION

SCALE: NONE

NOTES:

1. SUBMIT MANUFACTURER'S UL LISTED APPROVAL FOR WALL SYSTEM AND RATING TO ARCHITECT/ENGINEER FOR REVIEW/APPROVAL.
2. SEE PLAN FOR WALL RATINGS.
3. INSTALL PRODUCTS IN STRICT ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS AND RATING.

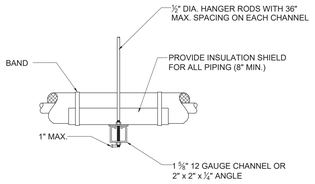


ADJUSTABLE CLEVIS HANGER

N.T.S.

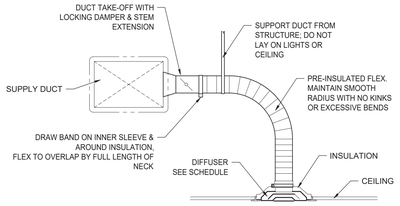
NOTES:

1. INSTALL INCOMPRESSIBLE THERMAL INSERT WITH GALVANIZED SHIELD AT CLEVIS HANGERS WHERE COMPRESSIBLE INSULATION, SUCH AS FIBERGLASS, IS USED. INSERT SHALL BE EQUAL TO VALUE ENGINEERED PRODUCTS PRO-SHIELD FOR SPECIFIC PIPE SIZE.



TRAPEZE HANGER FOR UP TO 1000 LB. LOAD

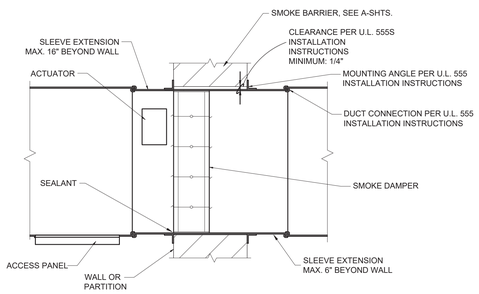
NOTE:
1. SEE SPECIFICATIONS FOR SPACING OF HANGERS.
2. PROVIDE INCOMPRESSIBLE INSERT AT SUPPORT.
3. MAY USE A 360° INCOMPRESSIBLE INSERT WITH GALVANIZED SHIELD EQUAL TO PRO-SHIELD AS MANUFACTURED BY VALUE ENGINEERED PRODUCTS, INC.



DIFFUSER INSTALLATION DETAIL

NOTES:

1. FLEXIBLE DUCT SHOWN, BUT RECTANGULAR DUCT IS SIMILAR.
2. SEAL INSULATION EDGES, SEAMS, JOINTS, ETC. WITH TAPE.
3. EXHAUST DUCTS WILL NOT BE INSULATED, BUT GRILLE WILL HAVE FACTORY INSULATION.

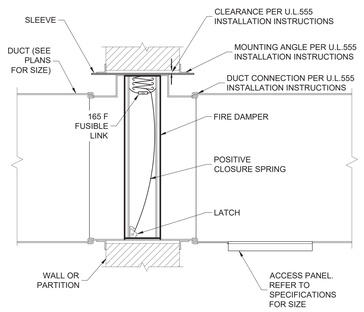


SMOKE DAMPER DETAIL

SCALE: NONE

NOTES:

1. DAMPERS SHALL BE CONSTRUCTED, TESTED AND LABELED IN ACCORDANCE WITH UNDERWRITERS LABORATORIES SAFETY STANDARD 555 & 555S. GREENHECK SMD-201, OR EQUAL
2. INSTALLATION SHALL BE IN STRICT ACCORDANCE WITH THE U.L. INSTALLATION INSTRUCTION SHEET PROVIDED WITH DAMPERS.
3. THE STEEL SLEEVE SHALL BE 14 GAUGE, OR AS ALLOWED BY U.L. STANDARD 555.
4. DETECTORS ARE PROVIDED BY THE FIRE ALARM CONTRACTOR AND INSTALLED IN THE SPACE.

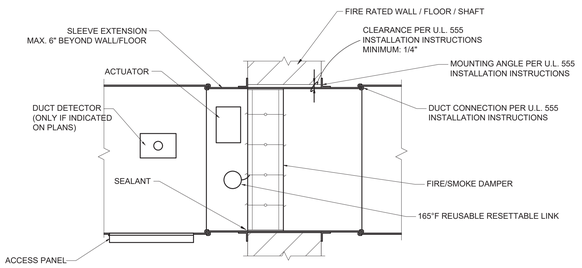


FIRE DAMPER DETAIL

SCALE: NTS

NOTES:

1. DAMPERS SHALL BE CONSTRUCTED, TESTED AND LABELED IN ACCORDANCE WITH UNDERWRITERS LABORATORIES SAFETY STANDARD 555 FOR DYNAMIC SYSTEM AND SHALL BE PROVIDED WITH CLOSURE SPRINGS. DAMPERS SHALL BE RATED FOR CLOSURE AGAINST AIRFLOW IN ANY INSTALLATION CONFIGURATION, I.E. DUCTED, UNDUCTED, VERTICAL, HORIZONTAL, HORIZONTAL AIRFLOW UP, OR HORIZONTAL AIRFLOW DOWN.
2. INSTALLATION SHALL BE IN STRICT ACCORDANCE WITH THE U.L. INSTALLATION INSTRUCTION SHEET PROVIDED WITH DAMPERS.
3. FIRE DAMPER BLADES SHALL BE OUT OF THE AIRSTREAM (WHEN OPEN)

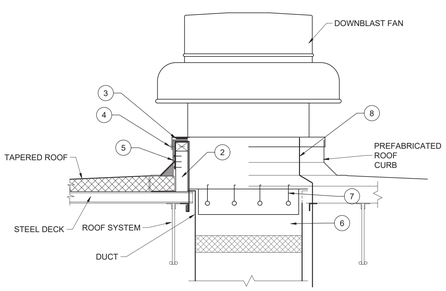


FIRE-SMOKE DAMPER DETAIL

SCALE: NONE

NOTES:

1. DAMPERS SHALL BE CONSTRUCTED, TESTED AND LABELED IN ACCORDANCE WITH UNDERWRITERS LABORATORIES SAFETY STANDARD 555 & 555S
2. INSTALLATION SHALL BE IN STRICT ACCORDANCE WITH THE U.L. INSTALLATION INSTRUCTION SHEET PROVIDED WITH DAMPERS.
3. THE STEEL SLEEVE SHALL BE 14 GAUGE, OR AS ALLOWED BY U.L. STANDARD 555.
4. WHERE NOTED, DUCT DETECTORS ARE PROVIDED BY THE FIRE ALARM CONTRACTOR AND INSTALLED BY THE MECHANICAL CONTRACTOR.

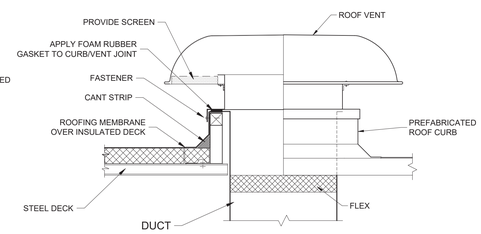


DOWNBLAST ROOF FAN DETAIL

SCALE: NONE

NOTES:

1. ALL WORK SHALL MAINTAIN ROOFING SYSTEM WARRANTY.
2. VERIFY EXISTING ROOF CURB SIZE. PROVIDE A CURB ADAPTER BETWEEN THE CURB AND THE NEW FAN.
3. APPLY FOAM RUBBER GASKET TO TOP OF CURB FOR AIR-TIGHT JOINT.
4. SECURE FAN TO CURB WITH ⅜" Ø LAG BOLTS @ 12" O.C. ALL AROUND OR AS REQUIRED BY THE MANUFACTURER TO COMPLY WITH THE PRODUCT'S WIND LOAD CAPABILITY.
5. ROOF MEMBRANE SHALL COVER THE EXTERIOR OF THE CURB AND THE TIE STRAPS.
6. UPPER SECTION OF DUCT TO BE SUPPORTED AT ROOF.
7. BACK-DRAFT DAMPER
8. POWER TO CONNECT TO FACTORY DISCONNECT

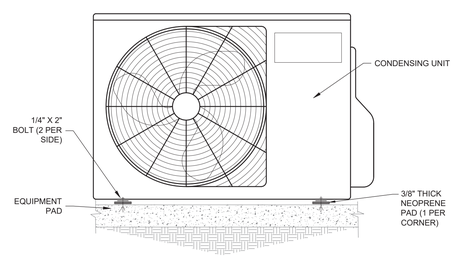


ROOF EXHAUST VENT DETAIL

SCALE: NONE

NOTES:

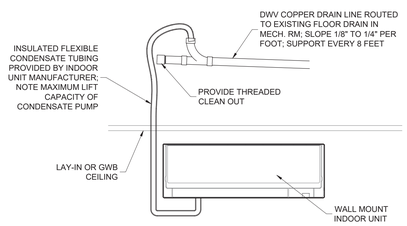
1. SECURE CURB TO ROOF DECK AS DIRECTED BY THE MANUFACTURER TO COMPLY WITH THE UNIT'S WIND LOAD CAPABILITY.
2. SECURE HOOD TO ROOF CURB AS REQUIRED BY THE MANUFACTURER TO COMPLY WITH THE PRODUCT'S WIND LOAD CAPABILITY.



CONDENSING UNIT ANCHORING DETAIL

NOTES:

1. PLACE UNIT ON 3/8" X 4" SQ. THICK NEOPRENE ISOLATION PADS, ONE AT EACH CORNER UNDER EACH SUPPORT/STANDOFF. USE ADDITIONAL PADS TO RAISE UNIT AS NEEDED TO MAKE THE SIDES PLUMB.
2. SECURE UNIT TO PAD USING SUPPLIED MOUNTING POINTS AS SHOWN. USE 1/4" X 2" LONG CONCRETE EXPANSION BOLTS IN CONCRETE.



INDOOR UNIT CONDENSATE REMOVAL

SCALE: NTS

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LCS#: 10-25-HKL-234

JON M. BARBER LICENSE No. 55427 STATE OF FLORIDA PROFESSIONAL ENGINEER

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REVISION		
NO.	DESCRIPTION	DATE

PERMIT DOCUMENTS

CLIENT

LEON COUNTY SCHOOLS

PROJECT TITLE

RAA MIDDLE SCHOOL - PHASE 1 GYM

401 W THARPE STREET, TALLAHASSEE, FL 32303

PROJECT NUMBER

250225

ISSUE DATE

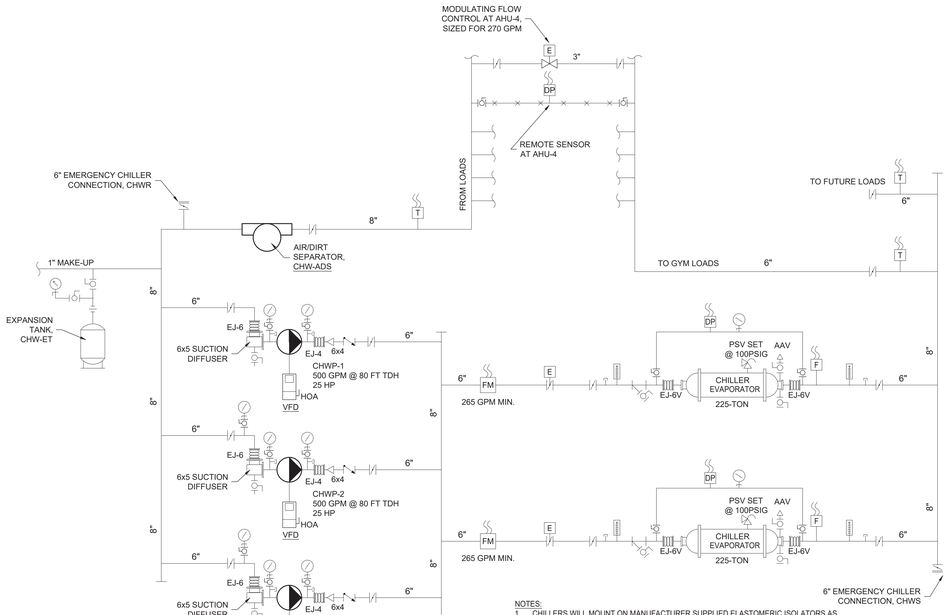
07/28/26

DRAWING TITLE

MECHANICAL DETAILS

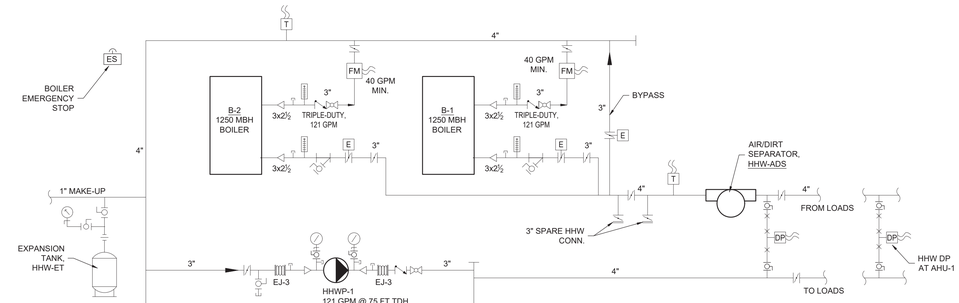
SHEET NUMBER

M-103



NOTES:
1. CHILLERS WILL MOUNT ON MANUFACTURER SUPPLIED ELASTOMERIC ISOLATORS AS INDICATED IN THE SUBMITTAL. ISOLATORS TO BE DRILLED & EPOXIED INTO FOUNDATION PER MFR INSTRUCTIONS.
2. COORDINATE AND INSTALL DEVICES THAT ARE SHIPPED LOOSE WITH THE CHILLER. SEE CHILLER IOM MANUAL.
3. PROVIDE ADEQUATE PIPE SUPPORT INDEPENDENT OF EVAPORATOR.
4. THE CHILLED WATER PUMPS ARE INSTALLED IN AN N+1 CONFIGURATION AND SHALL BE CONTROLLED BY THE BAS.
5. EACH CHILLER CIRCUIT WILL HAVE AN AUTOMATIC ISOLATION VALVE AND FLOW METER.
6. INSTALL INSTRUMENTS INTO PIPING. INSTRUMENTS TO BE SUPPLIED BY THE CONTROLS CONTRACTOR; PIPING CONNECTIONS BY MECHANICAL CONTRACTOR
7. FULLY INSULATE PIPING & APPURTENANCES TO PREVENT CONDENSATION.
8. VERIFY EXPANSION TANK BLADDER AIR PRESSURE MATCHES MAKE-UP WATER PRESSURE.

VARIABLE PRIMARY CHILLED WATER PIPING SCHEMATIC

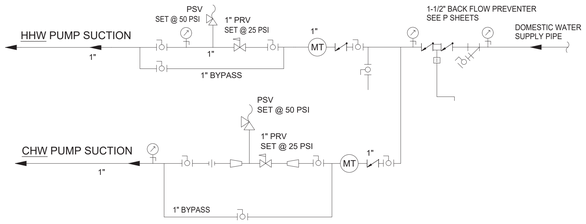


NOTES:
1. BOILER RETURN AND SUPPLY HEADERS ARE TO BE AT LEAST ONE PIPE SIZE LARGER THAN BOILER CONNECTION.
2. BYPASS AND ISOLATION VALVES ARE 2-WAY VALVES AND OPERATED BY THE BOILER.
3. SEE BOILER IOM MANUAL FOR BOILER APPURTENANCES THAT ARE SUPPLIED BY MANUFACTURER FOR INSTALLATION BY CONTRACTOR, INCLUDING:
   - BURNER GAS TRAIN
   - COMBUSTION BLOWER & AIR DAMPER
   - LOW WATER CUT-OFF
   - PRESSURE SAFETY VALVE
4. BOILERS SHALL HAVE REMOTE KILL SWITCH SUPPLIED AND WIRED BY CONTROLS CONTRACTOR. COORDINATE WITH ELECTRICAL AND CONTROLS.
5. BOILER CONDENSATE IS ACIDIC AND SHALL BE TREATED THROUGH A CONDENSATE NEUTRALIZATION KIT.
6. PUMPS ARE INSTALLED IN AN N+1 CONFIGURATION. BOILER CONTROLS TO ROTATE LEAD PUMP.
7. MINIMUM FLOW FOR BOILER FIRING SHALL BE 40 GPM. MAXIMUM DEMAND THROUGH INSTALLED SYSTEM IS 242 GPM.
8. FULLY INSULATE PIPING & APPURTENANCES FOR HEAT CONSERVATION.
9. VERIFY EXPANSION TANK BLADDER AIR PRESSURE MATCHES MAKE-UP WATER PRESSURE.

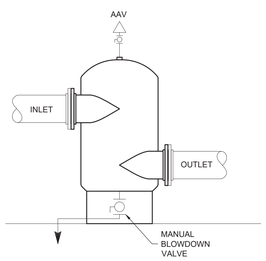
VARIABLE PRIMARY HOT WATER PIPING SCHEMATIC

CONTROLS LEGEND & ABBREV.

DESIGNATION	DESCRIPTION
T/H	SPACE TEMP/RH SENSOR & WIREWAY
D	DUCT DETECTOR
	THERMOMETER
	PRESS GAUGE & COCK
F	FLOW SWITCH
T	TEMPERATURE SENSOR
FS	FREEZE STAT
HP	HIGH PRESSURE SWITCH
SP	STATIC PRESSURE
LS	LEVEL SWITCH
RH	HUMIDISTAT
FM	FLOW METER
DP	DIFFERENTIAL PRESSURE TRANSDUCER
CT	CURRENT TRANSDUCER
E	ELECTRIC ACTUATOR
M	MANUAL ACTUATOR
ES	EMERGENCY SWITCH
	PUMP
PT	PRESS/TEMP PORT
	TWO-WAY CONTROL VALVE
	THREE-WAY CONTROL VALVE
HOA	COMBINATION MOTOR STARTER DISCONNECT WITH HOA SWITCH
HOA	VARIABLE FREQ. DRIVE W/HOA SWITCH
T	SPACE TEMPERATURE SENSOR & WIREWAY
BAS	BUILDING AUTOMATION SYSTEM



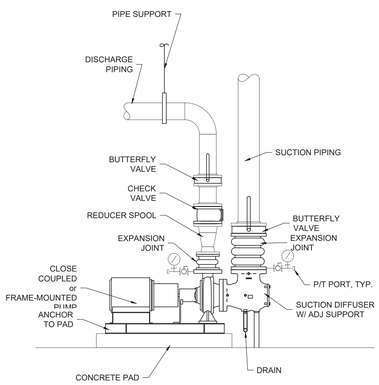
MAKE-UP WATER STATION SCHEMATIC



AIR-DIRT SEPARATOR DETAIL

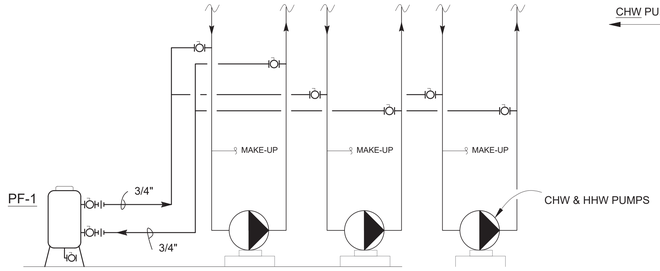
SCALE: NTS

NOTES:
1. SEE EQUIPMENT SCHEDULE.
2. DIRECT AIR VENT & BLOWDOWN TO A SAFE LOCATION.
3. INSULATE SEPARATOR FOR ENERGY CONSERVATION AND PERSONNEL PROTECTION.
4. 4" AND SMALLER ADS WILL BE SUPPORTED VIA PIPING.



PUMP DETAIL

SCALE: NTS



BY-PASS FEEDER DETAIL

NTS

NOTES:
1. INSTALL UNIT PER THE MANUFACTURER'S REQUIREMENTS.
2. PROVIDE ISOLATION VALVES AT CONNECTION TO MAIN PIPING.
3. INSULATE PIPING, VALVES, TANK.

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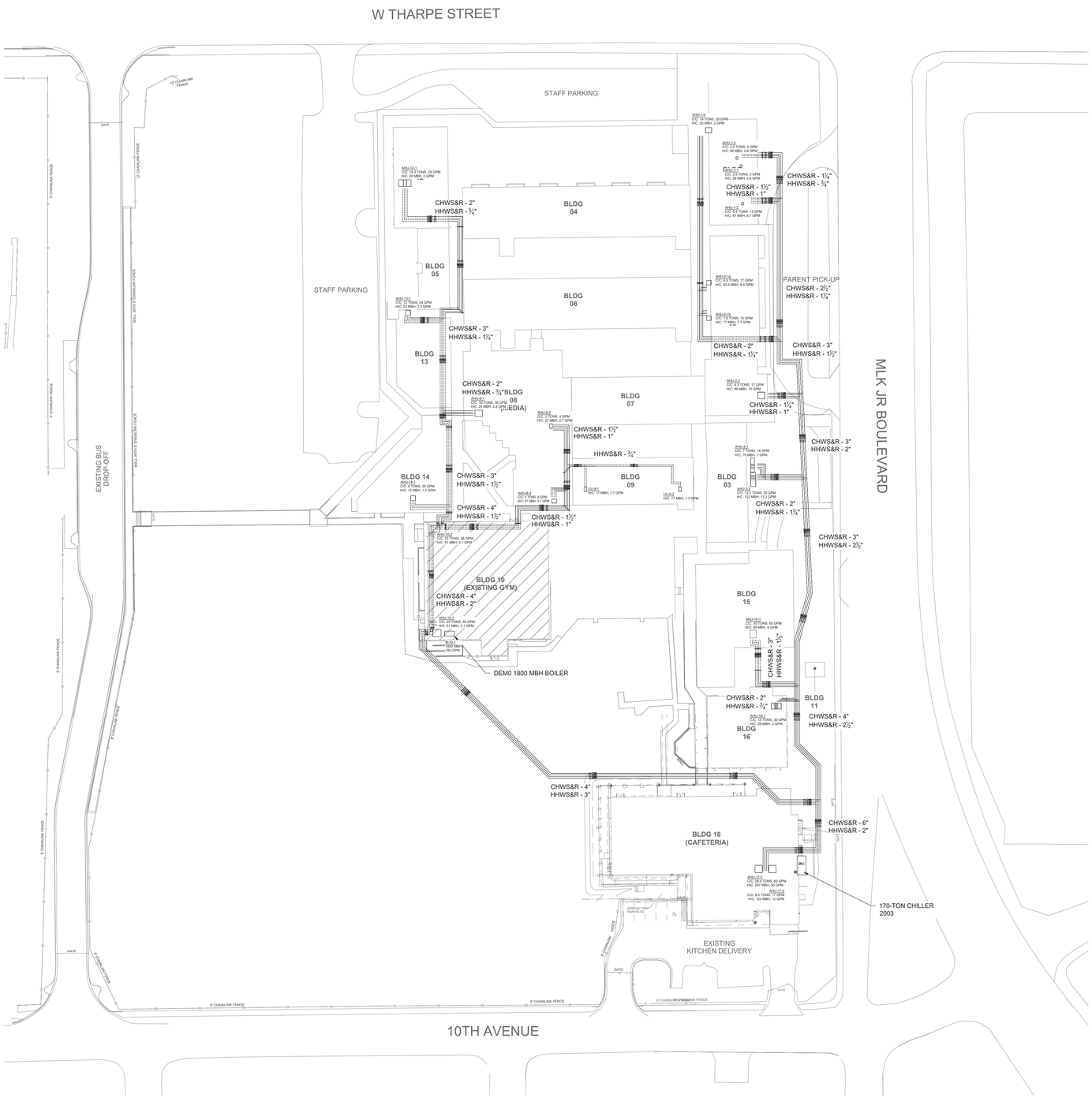
PROJECT NUMBER
250225

ISSUE DATE
07/28/26

DRAWING TITLE
MECHANICAL DETAILS

SHEET NUMBER
M-104



DEMOLITION NOTES

1. DEMOLITION SCOPE
   - BLDG 10: REMOVE ALL HVAC EQUIPMENT AND ASSOCIATED APPURTENANCES IN EXISTING BUILDING. THE CHILLED WATER AND HEATING HOT WATER PIPING WILL BE REROUTED TO THE NEW UTILITY PLANT.
   - ALL BUILDING CONTROLS WILL BE REMOVED - LCS WILL SALVAGE ANY MODULES, THERMOSTATS AND SENSORS PRIOR TO DEMOLITION
2. THE CONTRACTOR SHALL THOROUGHLY EXAMINE THE SITE PRIOR TO SUBMITTING A BID. DUE TO THE NATURE OF THIS PROJECT AND THE STATE OF THE EXISTING BUILDING, IT IS IMPOSSIBLE TO COMPLETELY RELATE THE SCOPE OF THE DEMOLITION REQUIRED TO THE CONTRACTOR THROUGH THE CONTRACT DOCUMENTS. FAILURE TO VISIT THE SITE WILL NOT RELIEVE THE CONTRACTOR OF DEMOLITION RESPONSIBILITIES UNDER THIS CONTRACT. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE AND COORDINATE THE EXACT CONTENT OF DEMOLITION NECESSARY TO PROVIDE A RENOVATED AND UPGRADED SPACE AND TO FACILITATE NEW WORK.
3. INFORMATION REGARDING THE EXISTING CONDITIONS WAS GATHERED FROM THE ALL AVAILABLE EXISTING DRAWINGS, SURVEY AND CORRESPONDENCE WITH UTILITY, STAFF AND MUNICIPAL PERSONNEL. THERE ARE NO GUARANTEES AS TO THE ACCURACY OF THIS INFORMATION AND IT IS OFFERED FOR INFORMATION ONLY.
4. VERIFY EXISTING LOCATIONS OF EQUIPMENT, PIPING AND SYSTEM COMPONENTS PRIOR TO DEMOLITION. IF EXISTING CONDITIONS ARE DIFFERENT THAN WHAT IS INDICATED ON THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT PRIOR TO PROCEEDING WITH WORK.
5. MINIMIZE DISTURBANCE AND/OR DAMAGE TO EXISTING FINISHED SURFACES AND FINISHES. WHERE DEMOLITION OF SYSTEM COMPONENTS DAMAGES EXISTING SURFACE TO REMAIN, RESTORE THOSE SURFACES TO THE SAME CONDITION AS THE ADJACENT SURFACES. RESTORATION MUST BE PERFORMED BY WORKMEN SKILLED IN PERFORMING SUCH WORK. ALL FIRE AND SMOKE RATINGS SHALL BE RETAINED AS PART OF THE REPAIRS AND PATCH/SEAL HOLES WEATHER TIGHT WHERE REQUIRED. ALL PATCHES AND REPAIRS SHALL BE SUBJECT TO REVIEW AND APPROVAL OF THE ARCHITECT.
6. ALL AREAS OF EGRESS SHALL BE KEPT OPEN AND FREE FROM DEBRIS AT ALL TIMES.
7. DO NOT REMOVE ITEMS SUPPORTING OTHER ITEMS WITHOUT PROVIDING TEMPORARY OR PERMANENT SUPPORT AS REQUIRED. SEE DRAWINGS FOR AREAS AND EXTENT OF DEMOLITION. PROPERLY SUPPORT ALL EXISTING ITEMS TO REMAIN. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING REQUIRED SUPPORTS FOR AFFECTED ITEMS.
8. VERIFY EXTENT OF PIPING, EQUIPMENT, COMPONENTS AND CONTROLS TO BE RETAINED OR REUSED PRIOR TO THE DEMOLITION OF SPECIFIC SYSTEM. PROTECT ITEMS WHICH ARE TO BE REUSED ON SITE TO MINIMIZE POST CONSTRUCTION REPAIRS. ANY ITEMS WHICH ARE DAMAGED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE REPAIRED OR REPLACED AT NO ADDITIONAL COST TO THE CONTRACT.
9. REMOVE EQUIPMENT OWNER WISHES TO RETAIN AND DELIVER TO THE LOCATION DESIGNATED BY THE OWNER. REMOVE PROMPTLY FROM SITE ALL MATERIALS AND EQUIPMENT INDICATED FOR REMOVAL WHICH ARE NOT SPECIFIED FOR REUSE, STORAGE, OR RETAINED BY OWNER.
10. VERIFY ALL EXISTING STRUCTURAL CONDITIONS AND NOTIFY STRUCTURAL ENGINEER FOR APPROVAL PRIOR TO PENETRATING EXISTING BUILDING STRUCTURAL SYSTEMS.
11. NO DEMOLITION SHALL OCCUR WHICH LEAVES THE BUILDING INTERIOR WITHOUT WEATHER PROTECTION. ALL DEMOLITION OF EXTERIOR OF EXTERIOR SURFACES SHALL BE FOLLOWED IMMEDIATELY BY PROTECTIVE CONSTRUCTION. CONTRACTORS SHALL PROVIDE AND INSTALL TEMPORARY PROTECTION IN ALL OPENINGS WHERE WINDOWS AND EXTERIOR DOORS HAVE BEEN REMOVED.

EXISTING COOLING & HEATING LOADS

BUILDING	YEAR	C/C CAPACITY TONS	CHW FLOW GPM	H/C CAPACITY MBH	HHW FLOW GPM	
BLDG 1	2011	25.2	50	141	14	
BLDG 2	2003	24.4	50	260	26	
BLDG 3	2003	19	38	192	19	
BLDG 4	2003	39	N/A	282	N/A	**DX
BLDG 5	2007	12	N/A	97	N/A	**DX
BLDG 6	2007	39	N/A	282	N/A	**DX
BLDG 7	2007	12	N/A	97	N/A	**DX
BLDG 8	2011	25	50	108	11	
BLDG 9	2011	N/A	N/A	34	3.5	
BLDG 10	2011	46	92	102	10	
BLDG 11	N/A	N/A	N/A	N/A	N/A	
BLDG 12	2011	14	28	20	2	
BLDG 13	2011	12	24	23	2.3	
BLDG 14	2003	9	18	12	1.2	
BLDG 15	2011	30	60	89	9	
BLDG 16	2011	15	30	28	3	
BLDG 18	'03/'16	65	76	638	42	**DX & CHW AHUs
	TOTAL:	390 TONS		2405 MBH		
CONNECTED TO CHILLER:		258 TONS	516 GPM	1428 MBH	143 GPM	HHW SYSTEM

01 **DEMOLITION SITE PLAN - MECHANICAL - PHASE 1**
1" = 40'-0"

NORTH

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REVISION		
NO.	DESCRIPTION	DATE

100% CONSTRUCTION DOCUMENTS

CLIENT
LEON COUNTY SCHOOLS

PROJECT TITLE
RAA MIDDLE SCHOOL - PHASE 1 GYM EARLY RELEASE
401 W THARPE STREET, TALLAHASSEE, FL 32303

PROJECT NUMBER
250225

ISSUE DATE
06/05/2026

DRAWING TITLE
DEMOLITION SITE PLAN - MECHANICAL

SHEET NUMBER
MD-101

01 NEW WORK SITE PLAN - MECHANICAL - PHASE 1

1" = 40'-0"

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NO.	DESCRIPTION	DATE

PERMIT DOCUMENTS

CLIENT

LEON COUNTY SCHOOLS

PROJECT TITLE

RAA MIDDLE SCHOOL - PHASE 1 GYM

401 W THARPE STREET, TALLAHASSEE, FL 32303

PROJECT NUMBER

250225

ISSUE DATE

07/28/26

DRAWING TITLE

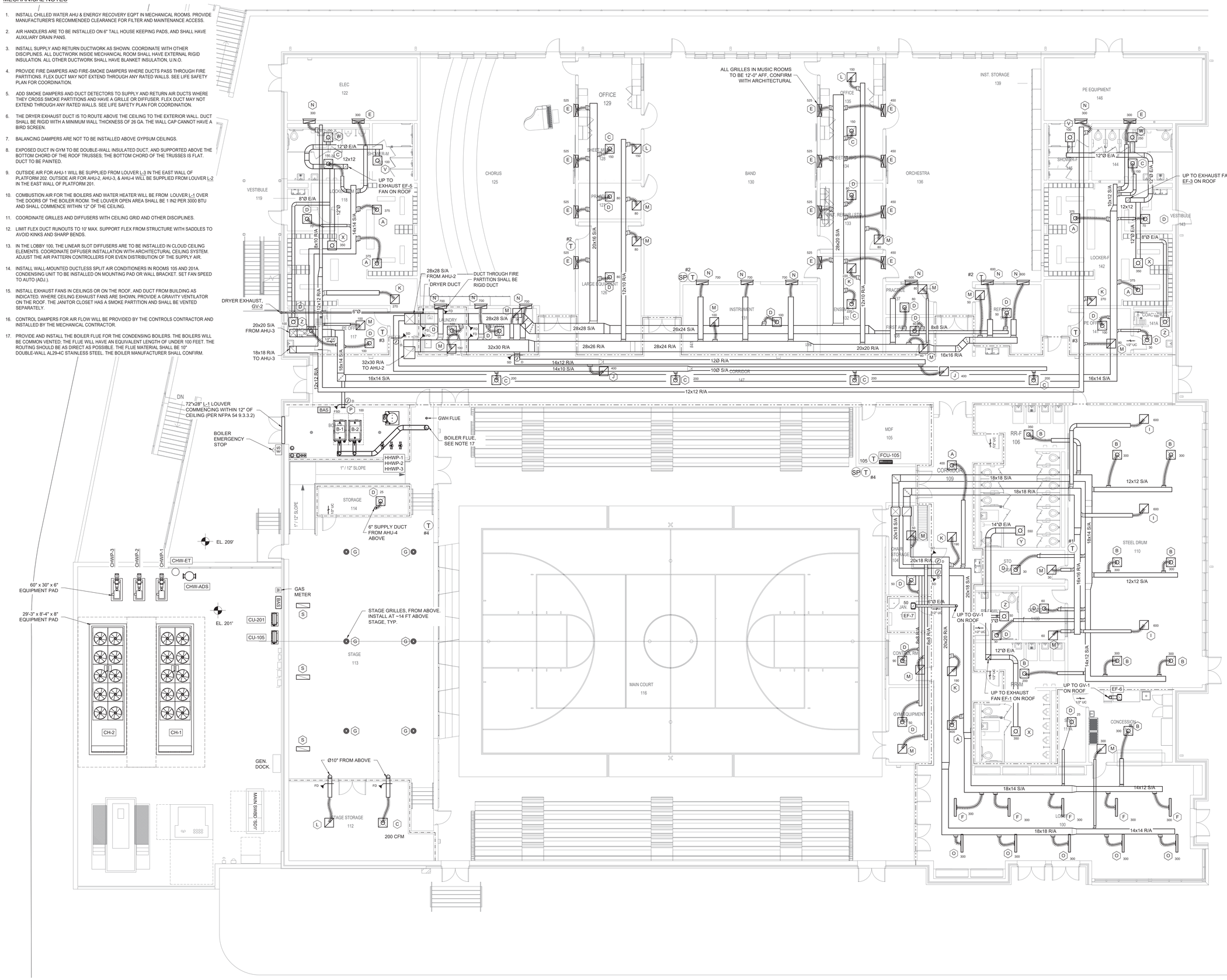
SITE PLAN - MECHANICAL

SHEET NUMBER

M-201

MECHANICAL NOTES

1. INSTALL CHILLED WATER AHU & ENERGY RECOVERY EQPT IN MECHANICAL ROOMS. PROVIDE MANUFACTURER'S RECOMMENDED CLEARANCE FOR FILTER AND MAINTENANCE ACCESS.
2. AIR HANDLERS ARE TO BE INSTALLED ON 6" TALL HOUSE KEEPING PADS, AND SHALL HAVE AUXILIARY DRAIN PANS.
3. INSTALL SUPPLY AND RETURN DUCTWORK AS SHOWN. COORDINATE WITH OTHER DISCIPLINES. ALL DUCTWORK INSIDE MECHANICAL ROOM SHALL HAVE EXTERNAL RIGID INSULATION. ALL OTHER DUCTWORK SHALL HAVE BLANKET INSULATION, U.N.O.
4. PROVIDE FIRE DAMPERS AND FIRE-SMOKE DAMPERS WHERE DUCTS PASS THROUGH FIRE PARTITIONS. FLEX DUCT MAY NOT EXTEND THROUGH ANY RATED WALLS. SEE LIFE SAFETY PLAN FOR COORDINATION.
5. ADD SMOKE DAMPERS AND DUCT DETECTORS TO SUPPLY AND RETURN AIR DUCTS WHERE THEY CROSS SMOKE PARTITIONS AND HAVE A GRILLE OR DIFFUSER. FLEX DUCT MAY NOT EXTEND THROUGH ANY RATED WALLS. SEE LIFE SAFETY PLAN FOR COORDINATION.
6. THE DRYER EXHAUST DUCT IS TO ROUTE ABOVE THE CEILING TO THE EXTERIOR WALL. DUCT SHALL BE RIGID WITH A MINIMUM WALL THICKNESS OF 26 GA. THE WALL CAP CANNOT HAVE A BIRD SCREEN.
7. BALANCING DAMPERS ARE NOT TO BE INSTALLED ABOVE GYPSUM CEILINGS.
8. EXPOSED DUCT IN GYM TO BE DOUBLE-WALL INSULATED DUCT, AND SUPPORTED ABOVE THE BOTTOM CHORD OF THE ROOF TRUSSES; THE BOTTOM CHORD OF THE TRUSSES IS FLAT. DUCT TO BE PAINTED.
9. OUTSIDE AIR FOR AHU-1 WILL BE SUPPLIED FROM LOUVER L-3 IN THE EAST WALL OF PLATFORM 202. OUTSIDE AIR FOR AHU-2, AHU-3, & AHU-4 WILL BE SUPPLIED FROM LOUVER L-2 IN THE EAST WALL OF PLATFORM 201.
10. COMBUSTION AIR FOR THE BOILERS AND WATER HEATER WILL BE FROM LOUVER L-1 OVER THE DOORS OF THE BOILER ROOM. THE LOUVER OPEN AREA SHALL BE 1 IN2 PER 3000 BTU AND SHALL COMMENCE WITHIN 12" OF THE CEILING.
11. COORDINATE GRILLES AND DIFFUSERS WITH CEILING GRID AND OTHER DISCIPLINES.
12. LIMIT FLEX DUCT RUNOUTS TO 10' MAX. SUPPORT FLEX FROM STRUCTURE WITH SADDLES TO AVOID KINKS AND SHARP BENDS.
13. IN THE LOBBY 100, THE LINEAR SLOT DIFFUSERS ARE TO BE INSTALLED IN CLOUD CEILING ELEMENTS. COORDINATE DIFFUSER INSTALLATION WITH ARCHITECTURAL CEILING SYSTEM. ADJUST THE AIR PATTERN CONTROLLERS FOR EVEN DISTRIBUTION OF THE SUPPLY AIR.
14. INSTALL WALL-MOUNTED DUCTLESS SPLIT AIR CONDITIONERS IN ROOMS 105 AND 201A. CONDENSING UNIT TO BE INSTALLED ON MOUNTING PAD OR WALL BRACKET. SET FAN SPEED TO AUTO (ADJ.).
15. INSTALL EXHAUST FANS IN CEILINGS OR ON THE ROOF, AND DUCT FROM BUILDING AS INDICATED. WHERE CEILING EXHAUST FANS ARE SHOWN, PROVIDE A GRAVITY VENTILATOR ON THE ROOF. THE JANITOR CLOSET HAS A SMOKE PARTITION AND SHALL BE VENTED SEPARATELY.
16. CONTROL DAMPERS FOR AIR FLOW WILL BE PROVIDED BY THE CONTROLS CONTRACTOR AND INSTALLED BY THE MECHANICAL CONTRACTOR.
17. PROVIDE AND INSTALL THE BOILER FLUE FOR THE CONDENSING BOILERS. THE BOILERS WILL BE COMMON VENTED; THE FLUE WILL HAVE AN EQUIVALENT LENGTH OF UNDER 100 FEET. THE ROUTING SHOULD BE AS DIRECT AS POSSIBLE. THE FLUE MATERIAL SHALL BE 10" DOUBLE-WALL AL29-4C STAINLESS STEEL. THE BOILER MANUFACTURER SHALL CONFIRM.



01 NEW WORK GYMNASIUM PLAN - MECHANICAL
1/8" = 1'-0"

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REVISION		
NO.	DESCRIPTION	DATE

PERMIT DOCUMENTS

CLIENT
LEON COUNTY SCHOOLS

PROJECT TITLE
RAA MIDDLE SCHOOL - PHASE 1 GYM

401 W THARPE STREET, TALLAHASSEE, FL 32303

PROJECT NUMBER
250225

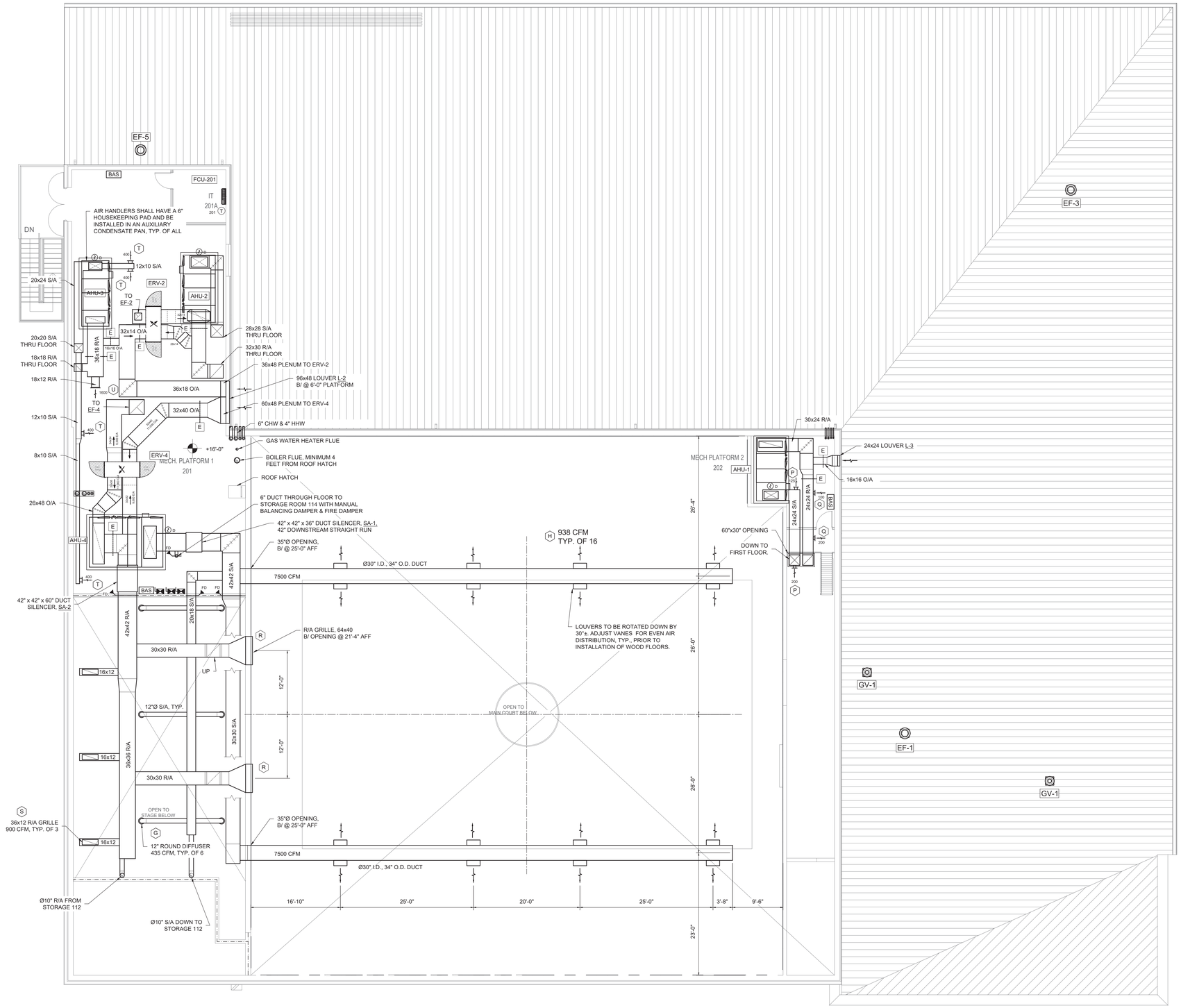
ISSUE DATE
07/28/26

DRAWING TITLE
GYM FLOOR PLAN - MECHANICAL

SHEET NUMBER
M-301

MECHANICAL NOTES

1. INSTALL CHILLED WATER AHU & ENERGY RECOVERY EQPT IN MECHANICAL ROOMS. PROVIDE MANUFACTURER'S RECOMMENDED CLEARANCE FOR FILTER AND MAINTENANCE ACCESS.
2. AIR HANDLERS ARE TO BE INSTALLED ON 6" TALL HOUSE KEEPING PADS, AND SHALL HAVE AUXILIARY DRAIN PANS.
3. INSTALL SUPPLY AND RETURN DUCTWORK AS SHOWN. COORDINATE WITH OTHER DISCIPLINES. ALL DUCTWORK INSIDE MECHANICAL ROOM SHALL HAVE EXTERNAL RIGID INSULATION. ALL OTHER DUCTWORK SHALL HAVE BLANKET INSULATION, U.N.O.
4. PROVIDE FIRE DAMPERS AND FIRE-SMOKE DAMPERS WHERE DUCTS PASS THROUGH FIRE PARTITIONS. FLEX DUCT MAY NOT EXTEND THROUGH ANY RATED WALLS. SEE LIFE SAFETY PLAN FOR COORDINATION.
5. ADD SMOKE DAMPERS AND DUCT DETECTORS TO SUPPLY AND RETURN AIR DUCTS WHERE THEY CROSS SMOKE PARTITIONS AND HAVE A GRILLE OR DIFFUSER. FLEX DUCT MAY NOT EXTEND THROUGH ANY RATED WALLS. SEE LIFE SAFETY PLAN FOR COORDINATION.
6. THE DRYER EXHAUST DUCT IS TO ROUTE ABOVE THE CEILING TO THE EXTERIOR WALL. DUCT SHALL BE RIGID WITH A MINIMUM WALL THICKNESS OF 26 GA. THE WALL CAP CANNOT HAVE A BIRD SCREEN.
7. BALANCING DAMPERS ARE NOT TO BE INSTALLED ABOVE GYPSUM CEILINGS.
8. EXPOSED DUCT IN GYM TO BE DOUBLE-WALL INSULATED DUCT, AND SUPPORTED ABOVE THE BOTTOM CHORD OF THE ROOF TRUSSES; THE BOTTOM CHORD OF THE TRUSSES IS FLAT. DUCT TO BE PAINTED.
9. OUTSIDE AIR FOR AHU-1 WILL BE SUPPLIED FROM LOUVER L-3 IN THE EAST WALL OF PLATFORM 202. OUTSIDE AIR FOR AHU-2, AHU-3, & AHU-4 WILL BE SUPPLIED FROM LOUVER L-2 IN THE EAST WALL OF PLATFORM 201.
10. COMBUSTION AIR FOR THE BOILERS AND WATER HEATER WILL BE FROM LOUVER L-1 OVER THE DOORS OF THE BOILER ROOM. THE LOUVER OPEN AREA SHALL BE 1 IN2 PER 3000 BTU AND SHALL COMMENCE WITHIN 12" OF THE CEILING.
11. COORDINATE GRILLES AND DIFFUSERS WITH CEILING GRID AND OTHER DISCIPLINES.
12. LIMIT FLEX DUCT RUNOUTS TO 10' MAX. SUPPORT FLEX FROM STRUCTURE WITH SADDLES TO AVOID KINKS AND SHARP BENDS.
13. IN THE LOBBY 100, THE LINEAR SLOT DIFFUSERS ARE TO BE INSTALLED IN CLOUD CEILING ELEMENTS. COORDINATE DIFFUSER INSTALLATION WITH ARCHITECTURAL CEILING SYSTEM. ADJUST THE AIR PATTERN CONTROLLERS FOR EVEN DISTRIBUTION OF THE SUPPLY AIR.
14. INSTALL WALL-MOUNTED DUCTLESS SPLIT AIR CONDITIONERS IN ROOMS 105 AND 201A. CONDENSING UNIT TO BE INSTALLED ON MOUNTING PAD OR WALL BRACKET. SET FAN SPEED TO AUTO (ADJ.).
15. INSTALL EXHAUST FANS IN CEILINGS OR ON THE ROOF. AND DUCT FROM BUILDING AS INDICATED. WHERE CEILING EXHAUST FANS ARE SHOWN, PROVIDE A GRAVITY VENTILATOR ON THE ROOF. THE JANITOR CLOSET HAS A SMOKE PARTITION AND SHALL BE VENTED SEPARATELY.
16. CONTROL DAMPERS FOR AIR FLOW WILL BE PROVIDED BY THE CONTROLS CONTRACTOR AND INSTALLED BY THE MECHANICAL CONTRACTOR.
17. PROVIDE AND INSTALL THE BOILER FLUE FOR THE CONDENSING BOILERS. THE BOILERS WILL BE COMMON VENTED; THE FLUE WILL HAVE AN EQUIVALENT LENGTH OF UNDER 100 FEET. THE ROUTING SHOULD BE AS DIRECT AS POSSIBLE. THE FLUE MATERIAL SHALL BE 10" DOUBLE-WALL AL29-4C STAINLESS STEEL. THE BOILER MANUFACTURER SHALL CONFIRM.



01 NEW WORK GYMNASIUM PLATFORM PLAN - MECHANICAL

1/8" = 1'-0"

NORTH

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REVISION		
NO.	DESCRIPTION	DATE

PERMIT DOCUMENTS

CLIENT
LEON COUNTY SCHOOLS

PROJECT TITLE
RAA MIDDLE SCHOOL - PHASE 1 GYM

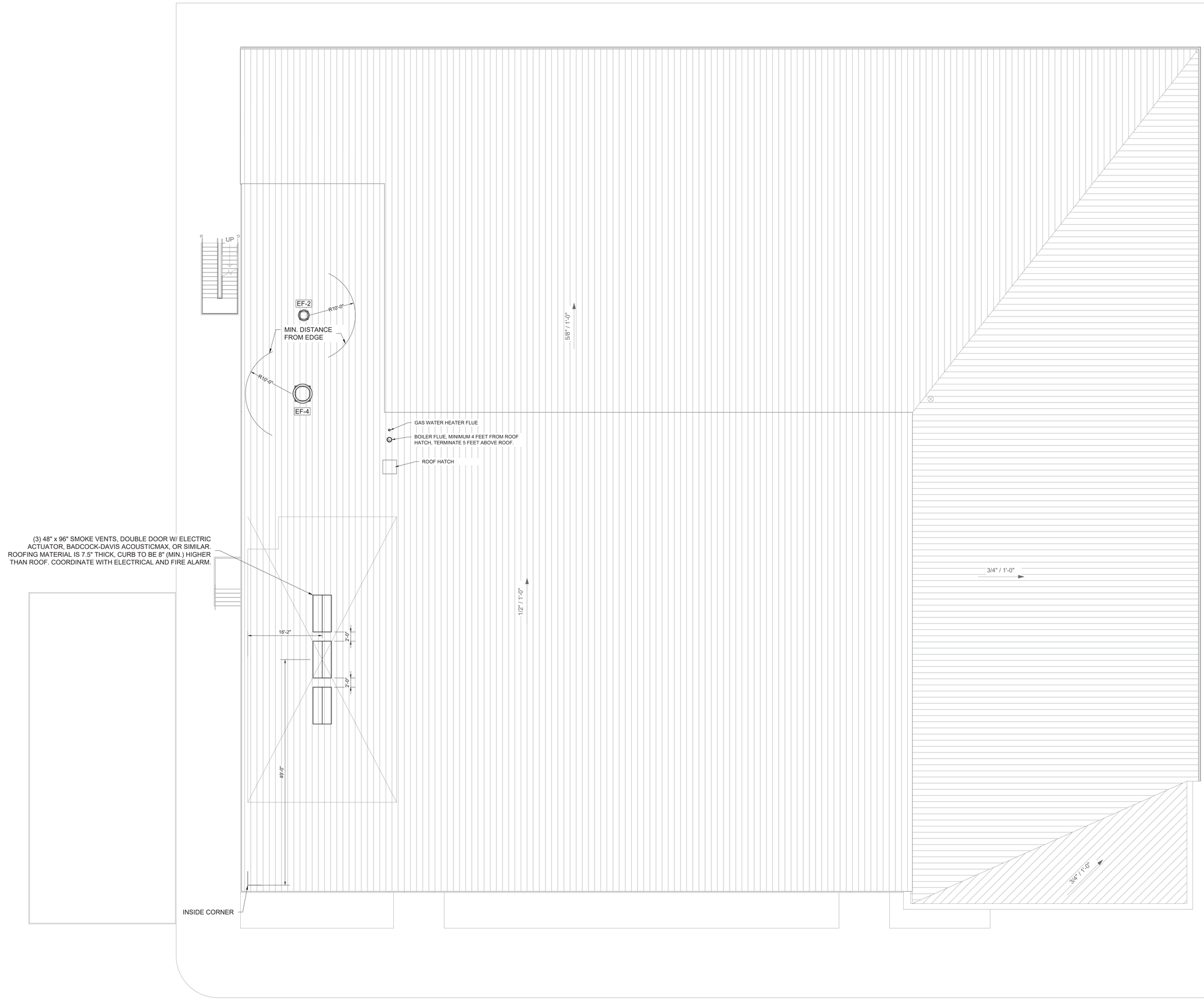
401 W THARPE STREET, TALLAHASSEE, FL 32303

PROJECT NUMBER
250225

ISSUE DATE
07/28/26

DRAWING TITLE
GYM PLATFORM PLAN - MECHANICAL

SHEET NUMBER
M-302



01 **NEW WORK GYMNASIUM ROOF PLAN - MECHANICAL**

1/8" = 1'-0"

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JON M. BARBER
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PROFESSIONAL ENGINEER

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LEON COUNTY SCHOOLS

PROJECT TITLE

RAA MIDDLE SCHOOL - PHASE 1 GYM

401 W THARPE STREET, TALLAHASSEE, FL 32303

PROJECT NUMBER

250225

ISSUE DATE

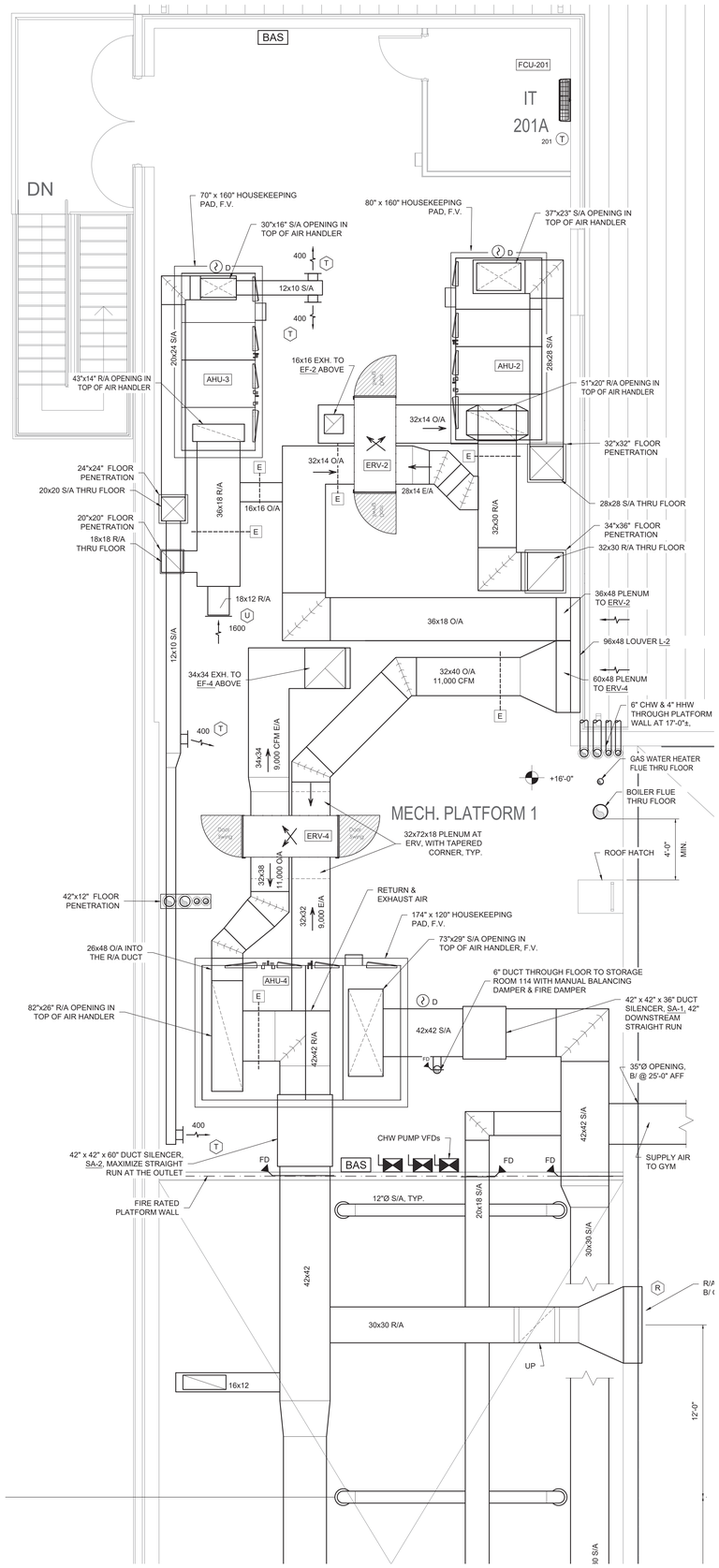
07/28/26

DRAWING TITLE

GYM ROOF PLAN - MECHANICAL

SHEET NUMBER

M-303



01 ENLARGED PLAN - MECH PLATFORM 201

1/4" = 1'-0"

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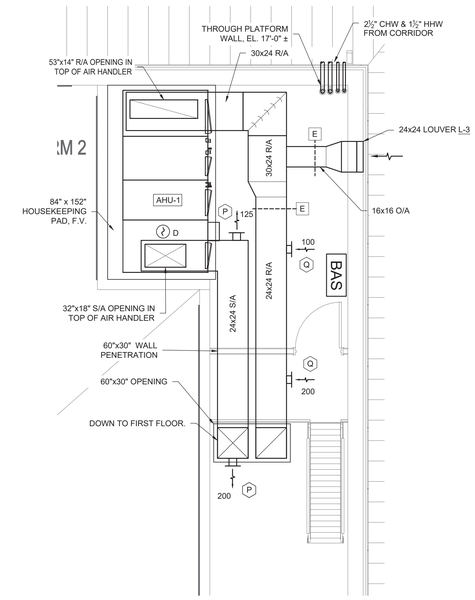
DUCT NOTES

1. ON THE PLATFORMS, MAINTAIN 7-FT MINIMUM CLEARANCE TO THE BOTTOM OF THE DUCTS AND ERV-2, INCLUDING INSULATION.



02 ENLARGED PLAN - MECH PLATFORM 202

1/4" = 1'-0"

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LEON COUNTY SCHOOLS

PROJECT TITLE

RAA MIDDLE SCHOOL - PHASE 1 GYM

401 W THARPE STREET, TALLAHASSEE, FL 32303

PROJECT NUMBER

250225

ISSUE DATE

07/28/26

DRAWING TITLE

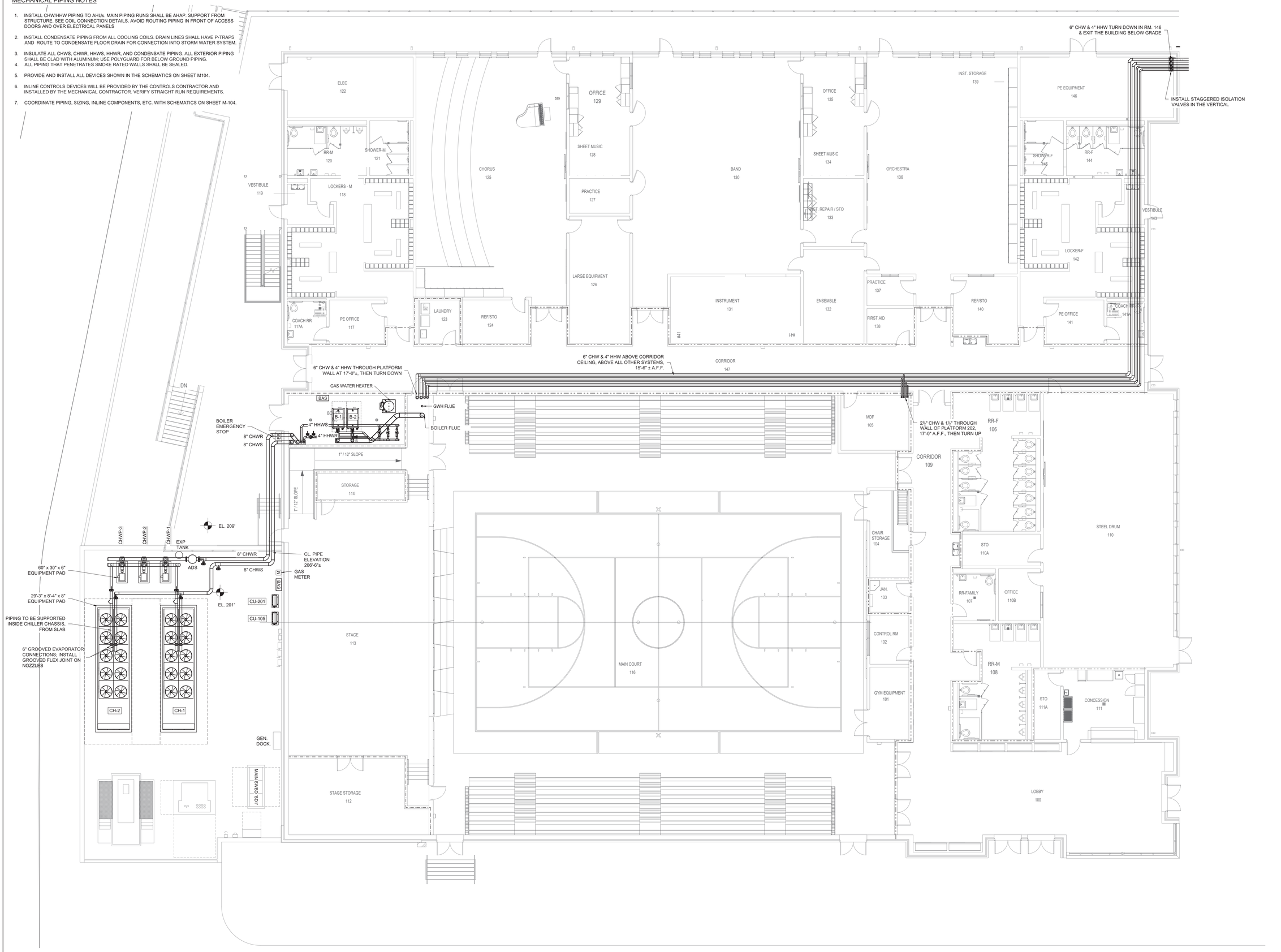
ENLARGED PLANS - MECHANICAL

SHEET NUMBER

M-304

MECHANICAL PIPING NOTES

1. INSTALL CHW/HHW PIPING TO AHUs. MAIN PIPING RUNS SHALL BE AHAP. SUPPORT FROM STRUCTURE. SEE COIL CONNECTION DETAILS. AVOID ROUTING PIPING IN FRONT OF ACCESS DOORS AND OVER ELECTRICAL PANELS
2. INSTALL CONDENSATE PIPING FROM ALL COOLING COILS. DRAIN LINES SHALL HAVE P-TRAPS AND ROUTE TO CONDENSATE FLOOR DRAIN FOR CONNECTION INTO STORM WATER SYSTEM.
3. INSULATE ALL CHWS, CHWR, HHWS, HHWR, AND CONDENSATE PIPING. ALL EXTERIOR PIPING SHALL BE CLAD WITH ALUMINUM; USE POLYGUARD FOR BELOW GROUND PIPING.
4. ALL PIPING THAT PENETRATES SMOKE RATED WALLS SHALL BE SEALED.
5. PROVIDE AND INSTALL ALL DEVICES SHOWN IN THE SCHEMATICS ON SHEET M104.
6. INLINE CONTROLS DEVICES WILL BE PROVIDED BY THE CONTROLS CONTRACTOR AND INSTALLED BY THE MECHANICAL CONTRACTOR. VERIFY STRAIGHT RUN REQUIREMENTS.
7. COORDINATE PIPING, SIZING, INLINE COMPONENTS, ETC. WITH SCHEMATICS ON SHEET M-104.



01 NEW WORK GYMNASIUM PLAN - MECHANICAL PIPING
1/8" = 1'-0"

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LEON COUNTY SCHOOLS

PROJECT TITLE
RAA MIDDLE SCHOOL - PHASE 1 GYM

401 W THARPE STREET, TALLAHASSEE, FL 32303

PROJECT NUMBER
250225

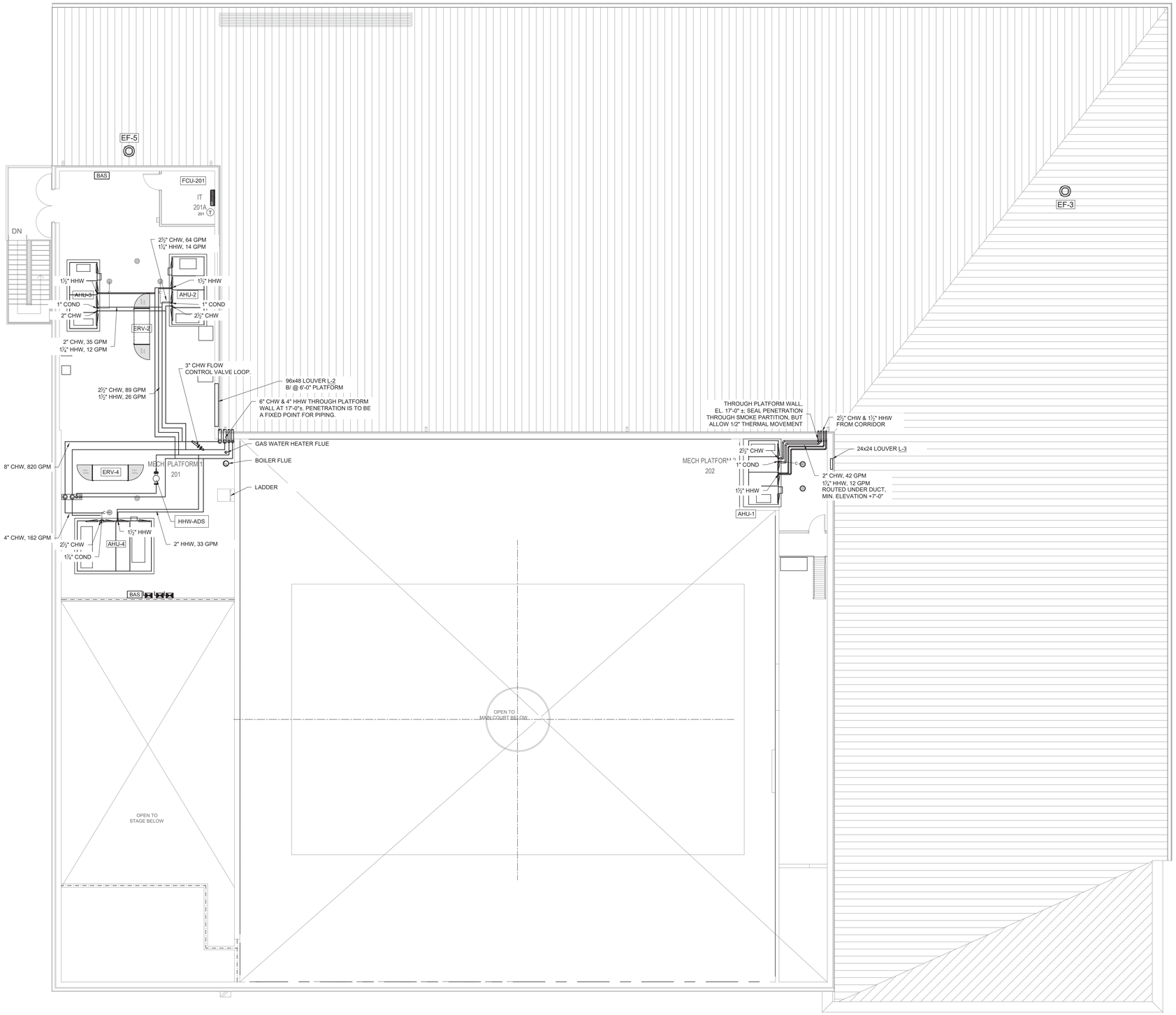
ISSUE DATE
07/28/26

DRAWING TITLE
GYM FLOOR PLAN - MECHANICAL PIPING

SHEET NUMBER
M-305

MECHANICAL PIPING NOTES

1. INSTALL CHW/HHW PIPING TO AHUs. MAIN PIPING RUNS SHALL BE AHAP. SUPPORT FROM STRUCTURE. SEE COIL CONNECTION DETAILS. AVOID ROUTING PIPING IN FRONT OF ACCESS DOORS AND OVER ELECTRICAL PANELS
2. INSTALL CONDENSATE PIPING FROM ALL COOLING COILS. DRAIN LINES SHALL HAVE P-TRAPS AND ROUTE TO CONDENSATE FLOOR DRAIN FOR CONNECTION INTO STORM WATER SYSTEM.
3. INSULATE ALL CHWS, CHWR, HHWS, HHWR, AND CONDENSATE PIPING. ALL EXTERIOR PIPING SHALL BE CLAD WITH ALUMINUM; USE POLYGUARD FOR BELOW GROUND PIPING.
4. ALL PIPING THAT PENETRATES SMOKE RATED WALLS SHALL BE SEALED.
5. PROVIDE AND INSTALL ALL DEVICES SHOWN IN THE SCHEMATICS ON SHEET M104.
6. INLINE CONTROLS DEVICES WILL BE PROVIDED BY THE CONTROLS CONTRACTOR AND INSTALLED BY THE MECHANICAL CONTRACTOR. VERIFY STRAIGHT RUN REQUIREMENTS.
7. COORDINATE PIPING, SIZING, INLINE COMPONENTS, ETC. WITH SCHEMATICS ON SHEET M-104.
8. INSTALL HIGH POINT VENTS ON PLATFORM PIPING. VENTS TO BE SPIRAX SARCO 13WS, OR EQUAL.



01 NEW WORK GYMNASIUM PLATFORM PLAN - MECHANICAL PIPING
1/8" = 1'-0"

NORTH

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NO.	DESCRIPTION	DATE

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CLIENT
LEON COUNTY SCHOOLS

PROJECT TITLE
RAA MIDDLE SCHOOL - PHASE 1 GYM

401 W THARPE STREET, TALLAHASSEE, FL 32303

PROJECT NUMBER
250225

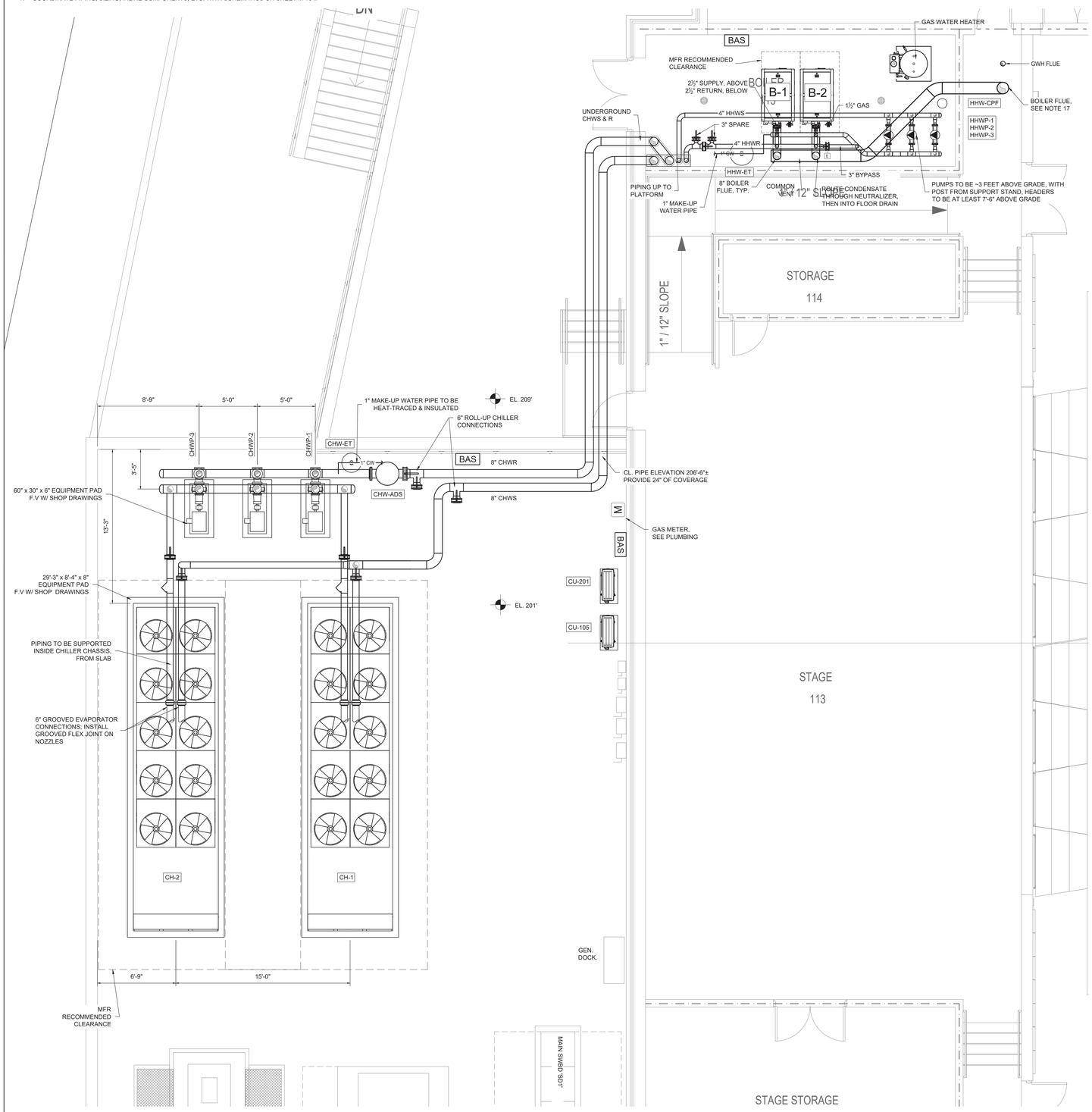
ISSUE DATE
07/28/26

DRAWING TITLE
GYM PLATFORM PLAN - MECHANICAL PIPING

SHEET NUMBER
M-306

MECHANICAL PIPING NOTES

1. INSTALL CHW/HHW PIPING TO AHUs. MAIN PIPING RUNS SHALL BE AHAP. SUPPORT FROM STRUCTURE. SEE COIL CONNECTION DETAILS. AVOID ROUTING PIPING IN FRONT OF ACCESS DOORS AND OVER ELECTRICAL PANELS
2. INSTALL CONDENSATE PIPING FROM ALL COOLING COILS. DRAIN LINES SHALL HAVE P-TRAPS AND ROUTE TO CONDENSATE FLOOR DRAIN FOR CONNECTION INTO STORM WATER SYSTEM.
3. INSULATE ALL CHWS, CHWR, HHWS, HHWR, AND CONDENSATE PIPING. ALL EXTERIOR PIPING SHALL BE CLAD WITH ALUMINUM; USE POLYGUARD FOR BELOW GROUND PIPING.
4. ALL PIPING THAT PENETRATES SMOKE RATED WALLS SHALL BE SEALED.
5. PROVIDE AND INSTALL ALL DEVICES SHOWN IN THE SCHEMATICS ON SHEET M104.
6. INLINE CONTROLS DEVICES WILL BE PROVIDED BY THE CONTROLS CONTRACTOR AND INSTALLED BY THE MECHANICAL CONTRACTOR. VERIFY STRAIGHT RUN REQUIREMENTS.
7. COORDINATE PIPING, SIZING, INLINE COMPONENTS, ETC. WITH SCHEMATICS ON SHEET M-104.



01 **ENLARGED PLAN - CHILLER YARD**
1/4" = 1'-0"

NORTH

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REVISION		
NO.	DESCRIPTION	DATE

PERMIT DOCUMENTS

CLIENT
LEON COUNTY SCHOOLS

PROJECT TITLE
RAA MIDDLE SCHOOL - PHASE 1 GYM

401 W THARPE STREET, TALLAHASSEE, FL 32303

PROJECT NUMBER
250225

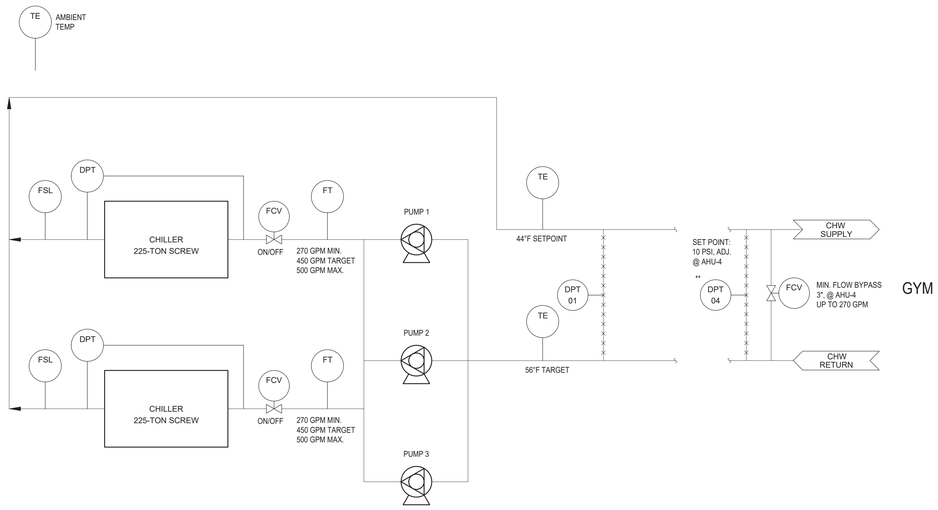
ISSUE DATE
07/28/26

DRAWING TITLE
ENLARGED PLANS - CHILLER & BOILER

SHEET NUMBER
M-307

HVAC CONTROLS:

- CONTROL SYSTEM INCLUDES (BUT IS NOT LIMITED TO) LABOR AND MATERIALS FOR TERMINATIONS, PATHWAYS, INSTALLATIONS, CERTIFICATIONS, TESTING, SYSTEM VERIFICATION, PROJECT COMMISSIONING, INTEGRATION EQUIPMENT, AND INSTRUMENTATION.
- CONTROL WIRING REQUIRED FOR THIS SYSTEM SHALL BE PROVIDED & INSTALLED PER DIVISION 26. WIRING MUST BE IN CONDUIT OVER ITS ENTIRE LENGTH; COORDINATE SUPPORTS & WALL PENETRATIONS WITH OTHER TRADES.
  1. INSIDE CONTROL WIRING: MINIMUM OF ¾" CONDUIT FOR ALL CONTROL WIRING WITH EXCEPTION OF ½" FOR THE ROOM TEMPERATURE WALL SENSORS BACK TO THE TERMINAL UNIT.
  2. AHU MECHANICAL ROOMS: MINIMUM OF ¾" CONDUIT FOR ALL CONTROL WIRING - WITH ½ INCH STEEL FLEX (6FT. MAX) - WITH ALL STEEL FITTINGS FOR EMT AND FLEX CONNECTORS.
  3. CENTRAL PLANT: EMT ABOVE 6FT ABOVE FINISHED FLOOR. RIGID BELOW 6FT + SEALTITE (6FT MAX) TO ALL DEVICES.
  4. TSTATS: 2 X 4 VERTICAL BOX BY ELECTRICAL DIVISION. LOCATIONS TO BE COORDINATED WITH OTHER TRADES
  5. CONDUITS BETWEEN BUILDINGS: 1" BY ELECTRICAL DIVISION. THESE TYPICALLY RUN BETWEEN COMM ROOMS OR BETWEEN TWO MECHANICAL ROOMS.
  6. EXTERIOR CONDUIT: RIGID CONDUIT+ SEALTITE FOR ANY OUTSIDE CONTROL WIRING.
- UNLESS EXPLICITLY LISTED BELOW, THE CONTROLS DEVICES AND PROGRAMMING SHALL BE SUPPLIED BY THE CONTROLS CONTRACTOR. THE SEQUENCE ON THIS SHEET SHALL GOVERN THE OPERATION OF THE CONTROLS.
  1. THE VFDs ARE SUPPLIED BY THE MECHANICAL CONTRACTOR
- CONTACT CLOSURES ARE AVAILABLE FROM THE LIGHTING CONTROL SYSTEM FOR INTEGRATION OF OCCUPANCY.
- THE CONTROLS CONTRACTOR SHALL PROVIDE THE FOLLOWING EQUIPMENT AND COORDINATE INSTALLATION WITH THE MECHANICAL AND ELECTRICAL CONTRACTORS:
  1. 2-WAY COOLING COIL VALVES, MODULATING, FAIL CLOSED
  2. 3-WAY & 2-WAY HEATING COIL VALVES, DIVERTING, MODULATING, FAIL TO BYPASS POSITION
  3. R/A & O/A CONTROL DAMPERS AND ACTUATORS. MODULATING OPERATION.
  4. ANALOG AND BINARY DEVICES FOR AHU AND DUCT - VERIFY REQUIRED STRAIGHT RUN REQ'S
  5. ANALOG AND BINARY DEVICES FOR HYDRONIC SYSTEMS - VERIFY REQUIRED STRAIGHT RUN REQ'S
- ALL DEVICES SHALL BE INTEGRATED INTO THE BAS; VISIBLE AND CONTROLLABLE (WHERE APPLICABLE) IN THE USER INTERFACE.
- PRIOR TO START-UP, PERFORM SYSTEM OPERATIONAL CHECKOUT.
- THE CONTROLS VENDOR SHALL ASSIST THE COMMISSIONING AGENT THROUGH ACCEPTANCE OF FUNCTIONAL PERFORMANCE TESTING.
- PROVIDE OWNER TRAINING, INCLUDING PROCESS TO START-UP AND OPERATE EQUIPMENT
- AT THE END OF THE PROJECT, PROVIDE RECORD DOCUMENTS, MANUFACTURER INFORMATION FOR BAS & INSTRUMENTS, AND OPERATION MANUALS.



CONTROLS LEGEND & ABBREV.

DESIGNATION	DESCRIPTION
T/H	SPACE TEMP/RH SENSOR & WIREWAY
D	DUCT DETECTOR
	THERMOMETER
	PRESS GAUGE & COCK
F	FLOW SWITCH
T	TEMPERATURE SENSOR
FS	FREEZE STAT
HP	HIGH PRESSURE SWITCH
SP	STATIC PRESSURE
LS	LEVEL SWITCH
RH	HUMIDISTAT
FM	FLOW METER
DP	DIFFERENTIAL PRESSURE TRANSDUCER
CT	CURRENT TRANSDUCER
E	ELECTRIC ACTUATOR
M	MANUAL ACTUATOR
ES	EMERGENCY SWITCH
	PUMP
PT	PRESS/TEMP PORT
	TWO-WAY CONTROL VALVE
	THREE-WAY CONTROL VALVE
HOA	COMBINATION MOTOR STARTER DISCONNECT WITH HOA SWITCH
HOA	VARIABLE FREQ. DRIVE W/HOA SWITCH
T	SPACE TEMPERATURE SENSOR & WIREWAY
BAS	BUILDING AUTOMATION SYSTEM

CHILLED WATER SYSTEM

SEE SCHEMATIC ON M-104 FOR ALL INLINE DEVICES

CHILLED WATER SYSTEM

GENERAL

THIS PROJECT WILL INSTALL (2) 225-TON AIR-COOLED SCREW CHILLERS AND 3 VARIABLE PRIMARY PUMPS IN AN N+1 CONFIGURATION. VFDs WILL BE REMOTELY MOUNTED.

PLANT DP IS FOR REFERENCE, REMOTE DP IS FOR CONTROL.

REFERENCE "VARIABLE PRIMARY CHILLED WATER PIPING SCHEMATIC" ON SHEET M-104

THE CHILLER IS SUPPLIED WITH A MANUFACTURER CONTROLLER WITH BACNET COMPATIBILITY. COMMUNICATION WITH CHILLER & DEVICES SHALL BE VIA BACNET, INCLUDING PUMP CONTROL & FLOW SWITCH STATUS.

THE MECHANICAL CONTRACTOR SHALL COORDINATE WITH THE CONTROLS CONTRACTOR.

PROVIDE CHILLER AND PRIMARY PUMP GRAPHICS. OUTDOOR AIR TEMPERATURE SHALL BE DISPLAYED ON THE CHILLER SCREEN.

PROGRAM TREND DATA FOR KEY OPERATING PARAMETERS OF PLANT SYSTEMS TO INCLUDE CHILLER % RATED AMPS, LEAVING AND ENTERING WATER TEMPERATURES, SETPOINTS, RUN TIME, EQUIPMENT STATUS, PROOF OF FLOW, CHILLER DP, ALARMS, ETC.

START-UP SEQUENCE
THE SYSTEM SHALL NOT BE ALLOWED TO START UNLESS ALL SAFETIES ARE OUT OF ALARM.

THE SYSTEM SHALL BE ACTIVE ANY TIME AN ASSOCIATED AIR HANDLING UNIT IS ACTIVE AND CALLS FOR COOLING.

UPON START-UP COMMAND, VIA BAS:
1. CHILLED WATER BYPASS VALVE OPENS.
2. LEAD CHILLER ISOLATION VALVE OPENS.
3. LEAD PUMP STARTS, IS COMMANDED TO MINIMUM SPEED OF 34 Hz (ADJ) AND IS PROVEN (MINIMUM SPEED TO BE DETERMINED BY T&B AND WILL CORRESPOND TO CHILLER MINIMUM FLOW)
4. CHILLER STARTS AND IS PROVEN.
5. DIFFERENTIAL PRESSURE RESET SEQUENCE ACTIVATES.
6. TEMPERATURE CONTROL SEQUENCE ACTIVATES.
7. BYPASS CONTROL VALVE SEQUENCE ACTIVATES.

IF A PUMP OR CHILLER IS NOT PROVEN WITHIN 60 SECONDS OF START COMMAND, THE SHUTDOWN SEQUENCE ACTIVATES FOR THAT EQUIPMENT, AN ALARM IS GENERATED, AND THE LAG EQUIPMENT STARTS.

DIFFERENTIAL PRESSURE RESET
EVERY 15 MINUTES (ADJ), THE DIFFERENTIAL PRESSURE SETPOINT RESETS WITHIN MINIMUM AND MAXIMUM LIMITS:
1. IF ANY ASSOCIATED CHILLED WATER VALVE COMMAND IS GREATER THAN 90% (ADJ), INCREASE SETPOINT BY 1.0 PSID (ADJ).
2. IF ALL ASSOCIATED CHILLED WATER VALVE COMMANDS ARE LESS THAN 60% (ADJ), DECREASE SETPOINT BY 1.0 PSID (ADJ).

TEMPERATURE CONTROL
CHILLER CAPACITY MODULATES TO MAINTAIN LOOP SUPPLY TEMPERATURE SETPOINT:

THE SETPOINT FOR LEAVING WATER TEMPERATURE WILL BE 44°F (ADJ).

BYPASS VALVE CONTROL
VALVE SHALL MODULATE TO MAINTAIN MINIMUM FLOW RATE THROUGH CHILLERS.

CHILLER OPERATION MINIMUM FLOW RATE = 265 GPM.

LEAD/LAG PUMP ROTATION
EVERY TWO WEEKS(ADJ) UPON ROTATION COMMAND OR OPERATOR INPUT, THE LEAD/LAG DESIGNATIONS ROTATE, ASSIGNED IN ORDER OF RUN HOURS.

SHUTDOWN SEQUENCE
UPON SHUTDOWN COMMAND:
1. CHILLED WATER BYPASS VALVE OPENS
2. ALL ACTIVE SEQUENCES DEACTIVATE.
3. CHILLER STOPS AND IS PROVEN.
4. PUMP RUNS FOR 10 MINUTES, THEN STOPS AND IS PROVEN.

CHILLER PUMP COMMAND:
FREEZE PROTECTION - WHEN CHILLER CALLS FOR PUMP OPERATION BASED ON LOW AMBIENT TEMPERATURE, OPEN BYPASS VALVE TO 100%, START LEAD PUMP AND RUN AT FULL FLOW UNTIL THE CHILLER ENDS THE REQUEST

EQUIPMENT FAILURE
IF THE CHILLER FAILS, THE SHUTDOWN SEQUENCE ACTIVATES, AN ALARM IS GENERATED.

THE DESIGN DP ACROSS THE EVAPORATOR & STRAINER IS 20 FT H2O (VERIFY WITH T&B.) WHEN THE DP REACHES 25 FT H2O (ADJ) GENERATE AN ALARM

	POINT NAME	UNITS	CONTROL POINTS											
			POINTS						ALARM		GENERAL			
			INPUT			OUTPUT								
			ANALOG	DIGITAL	INTEGRATED	ANALOG	DIGITAL	INTEGRATED	GENERAL	UNIT SHUTDOWN		TREND LOG	GRAPHIC	INTERLOCK
	PUMP 1 RUN COMMAND	ON/OFF					X					X	X	
	PUMP 1 SPEED COMMAND	% SPEED						X				X	X	
	PUMP 1 RUN STATUS	ON/OFF		X					X			X	X	
	PUMP 2 RUN COMMAND	ON/OFF					X					X	X	
	PUMP 2 SPEED COMMAND	% SPEED						X				X	X	
	PUMP 2 RUN STATUS	ON/OFF		X					X			X	X	
	PUMP 3 RUN COMMAND	ON/OFF					X					X	X	
	PUMP 3 SPEED COMMAND	% SPEED						X				X	X	
	PUMP 3 RUN STATUS	ON/OFF		X					X			X	X	
	CHILLER ENABLE COMMAND	ON/OFF						X				X	X	
	CHILLER #1 STATUS	ON/OFF						X				X	X	
	CHILLER #1 ISOLATION VALVE	OPEN/CLOSE						X				X	X	
	CHILLER #1 ISOLATION VALVE POSITION	OPEN/CLOSE		X								X	X	
	CHILLER #1 PROOF OF FLOW	YES/NO			X							X	X	
	EVAPORATOR #1 DP	PSID	X						X			X	X	
	CHILLER #2 STATUS	ON/OFF						X				X	X	
	CHILLER #2 ISOLATION VALVE	OPEN/CLOSE						X				X	X	
	CHILLER #2 ISOLATION VALVE POSITION	OPEN/CLOSE		X								X	X	
	CHILLER #2 PROOF OF FLOW	YES/NO			X							X	X	
	EVAPORATOR #2 DP	PSID	X						X			X	X	
	OUTSIDE AIR TEMPERATURE	DEG F	X									X	X	
	CHW LOOP RETURN TEMPERATURE	DEG F	X									X	X	
	CHW LOOP SUPPLY TEMPERATURE	DEG F	X									X	X	
	CHW PLANT DIFFERENTIAL PRESSURE	PSID	X									X	X	
	CHW LOOP DIFFERENTIAL PRESSURE	PSID	X									X	X	
	BYPASS CONTROL VALVE	%				X						X	X	
	CHW SUPPLY TEMPERATURE SETPOINT	DEG F						X				X	X	
	CHW DIFFERENTIAL PRESSURE SETPOINT	PSID						X				X	X	
EACH CHILLER	CHW ENTERING TEMPERATURE	DEG F			X							X	X	
EACH CHILLER	CHW LEAVING TEMPERATURE	DEG F			X							X	X	
EACH CHILLER	EVAP HEATER	ON/OFF			X							X	X	
EACH CHILLER	COMPRESSOR CURRENT	% RLA			X							X	X	
EACH CHILLER	COMPRESSOR CURRENT MAX SETPOINT	% RLA			X							X	X	
EACH CHILLER	CHILLER RUN STATUS	ON/OFF			X							X	X	
EACH CHILLER	CHILLER RUN STATUS ALARM	NORMAL/ALARM			X							X	X	
EACH CHILLER	CHILLER CLEAR ALARM							X						
EACH CHILLER	SERVICE REQUEST								X					
	PLANT CONSUMPTION TOTALIZED	TON HR			X							X	X	

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CLIENT
LEON COUNTY SCHOOLS

PROJECT TITLE
RAA MIDDLE SCHOOL - PHASE 1 GYM

401 W THARPE STREET, TALLAHASSEE, FL 32303

PROJECT NUMBER
250225

ISSUE DATE
07/28/26

DRAWING TITLE
CONTROLS - CHILLER

SHEET NUMBER
M-401

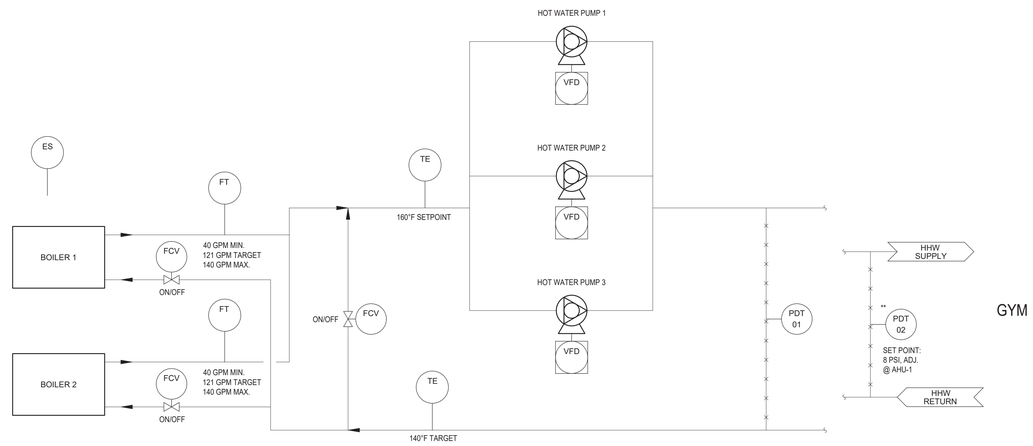
BOILER SHUT DOWN CONTROLS (BY CONTROLS VENDOR)

PROVIDE A SINGLE EMERGENCY STOP SWITCH STATION ON THE INTERIOR OF THE MECHANICAL YARD NEAR THE ENTRANCE GATE, SEE PLAN.

SWITCH SHALL INTERRUPT THE BOILER'S SAFETY CIRCUIT AND INCLUDE SHUTDOWN OF THE BOILER'S GAS TRAIN.

THE SWITCH SHALL BE CERTIFIED TO MEET THE REQUIREMENTS OF ASME CSD-1 AND INCLUDE A NEMA 3R ENCLOSURE FOR INSTALLATION OUTSIDE.

PROVIDE SIGNAGE AT SWITCH STATING "BOILER EMERGENCY STOP SWITCH ".



HEATING HOT WATER PLANT SYSTEM

GENERAL
THE SYSTEM IS COMPOSED OF (2) 1250 MBH CONDENSING BOILERS AND THREE VARIABLE VOLUME PUMPS IN AN N+1 CONFIGURATION.

PLANT DP IS FOR REFERENCE, REMOTE DP IS FOR CONTROL.

REFERENCE "VARIABLE PRIMARY HOT WATER PIPING SCHEMATIC" ON SHEET M-104.

THE BOILER ISOLATION AND BYPASS VALVES SHALL BE WIRED INTO THE BOILER CONTROLLER AND CONTROLLED BY THE BOILER.

EACH BOILER MINIMUM FLOW RATE IS 40 GPM. THERE WILL BE 3-WAY VALVES AT THE FOLLOWING EQUIPMENT
AHU-1, 12 GPM
AHU-4, 33 GPM

THERE WILL BE 2-WAY VALVES AT THE FOLLOWING EQUIPMENT
AHU-2, 14 GPM
AHU-3, 12 GPM

START-UP SEQUENCE
THE SYSTEM SHALL NOT BE ALLOWED TO START UNLESS ALL SAFETIES ARE OUT OF ALARM.

THE SYSTEM SHALL BE ENABLED ANY TIME AN ASSOCIATED AIR HANDLING UNIT CALLS FOR HEATING.

UPON START-UP COMMAND, VIA BAS:
1. BOILER ISOLATION VALVE OPENS (BY BOILER)
2. LEAD PRIMARY PUMP STARTS, IS COMMANDED TO MINIMUM SPEED OF 23 Hz (ADJ), AND IS PROVEN FOR 5 MINUTES. (MINIMUM SPEED TO BE DETERMINED BY T&B AND WILL CORRESPOND TO BOILER MINIMUM FLOW)
3. BOILER STARTS AND IS PROVEN.
4. DIFFERENTIAL PRESSURE CONTROL SEQUENCE ACTIVATES.
5. DIFFERENTIAL PRESSURE RESET SEQUENCE ACTIVATES.
6. TEMPERATURE CONTROL SEQUENCE ACTIVATES.

IF A PUMP OR BOILER IS NOT PROVEN WITHIN 60 SECONDS OF START COMMAND, THE SHUTDOWN SEQUENCE ACTIVATES FOR THAT EQUIPMENT, AN ALARM IS GENERATED, AND THE LAG EQUIPMENT STARTS.

DIFFERENTIAL PRESSURE CONTROL
THE PUMP SPEED MODULATES TO MAINTAIN REMOTE DIFF PRESSURE SETPOINT.

SECONDARY PRESSURE RESET
EVERY 15 MINUTES (ADJ), THE PRESSURE SETPOINT RESETS WITHIN MINIMUM AND MAXIMUM LIMITS:
1. IF ANY ASSOCIATED HOT WATER VALVE COMMAND IS GREATER THAN 90% (ADJ), INCREASE SETPOINT BY 1.0 PSI (ADJ).
2. IF ALL ASSOCIATED HOT WATER VALVE COMMANDS ARE LESS THAN 60% (ADJ), DECREASE SETPOINT BY 1.0 PSI (ADJ).

TEMPERATURE CONTROL
BOILER CAPACITY MODULATES TO MEET SUPPLY WATER TEMPERATURE SETPOINT.

SUPPLY WATER TEMPERATURE RESET
THE LOOP SUPPLY WATER TEMPERATURE SEQUENCE ACTIVES ONLY IF PUMP SPEED (FLOW) HAS BEEN RESET TO MINIMUM.

EVERY 5 MINUTES (ADJ), THE TEMPERATURE SETPOINT RESETS WITHIN MINIMUM AND MAXIMUM LIMITS:
1. IF PUMP SPEED IS AT MINIMUM FLOW, AND RWT IS ABOVE 140F AND CLIMBING, RESET LWT DOWN BY 2F
2. IF RWT IS BELOW 140F, RESET LWT UP BY 2F, UP TO MAX SET POINT

LEAD/LAG PUMP ROTATION
EVERY TWO WEEKS(ADJ) UPON ROTATION COMMAND OR OPERATOR INPUT, THE LEAD/LAG DESIGNATIONS ROTATE, ASSIGNED IN ORDER OF RUN HOURS.

SHUTDOWN SEQUENCE
UPON SHUTDOWN COMMAND
1. ALL ACTIVE SEQUENCES DEACTIVATE
2. BOILER STOPS AND IS PROVEN.
3. BOILER ISOLATION VALVES CLOSE.
4. PUMP RUNS FOR 10 MINUTES (WITH PROOF OF FLOW) THEN STOPS AND IS PROVEN.

EQUIPMENT FAILURE
IF THE LEAD PUMP OR BOILER FAILS, THE SHUTDOWN SEQUENCE ACTIVATES FOR THAT EQUIPMENT, AN ALARM IS GENERATED,

MANUAL RESET IS REQUIRED FOR ALL EQUIPMENT AFTER EQUIPMENT TRIP.

HEATING HOT WATER SYSTEM

SEE SCHEMATIC ON M-104 FOR ALL INLINE DEVICES

		CONTROL POINTS										
		POINTS						ALARM		GENERAL		
		INPUT			OUTPUT							
POINT NAME	UNITS	ANALOG	DIGITAL	INTEGRATED	ANALOG	DIGITAL	INTEGRATED	GENERAL	UNIT SHUTDOWN	TREND LOG	GRAPHIC	INTERLOCK
BOILER EMERGENCY STOP SWITCH	ON/OFF		X					X	X	X	X	
BOILER ENABLE COMMAND	ON/OFF						X			X	X	
BYPASS ISOLATION VALVE POSITION	OPEN/CLOSE		X							X	X	
BOILER #1 RUN STATUS	ON/OFF			X						X	X	
BOILER #1 ISOLATION VALVE POSITION	OPEN/CLOSE		X							X	X	
BOILER #1 FLOW	GPM	X						X		X	X	
BOILER #2 RUN STATUS	ON/OFF			X						X	X	
BOILER #2 ISOLATION VALVE POSITION	OPEN/CLOSE		X							X	X	
BOILER #2 FLOW	GPM	X						X		X	X	
PUMP 1 RUN COMMAND	ON/OFF					X				X	X	
PUMP 1 SPEED COMMAND	% SPEED						X			X	X	
PUMP 1 RUN STATUS	ON/OFF		X					X		X	X	
PUMP 2 RUN COMMAND	ON/OFF					X				X	X	
PUMP 2 SPEED COMMAND	% SPEED						X			X	X	
PUMP 2 RUN STATUS	ON/OFF		X					X		X	X	
PUMP 3 RUN COMMAND	ON/OFF					X				X	X	
PUMP 3 SPEED COMMAND	% SPEED						X			X	X	
PUMP 3 RUN STATUS	ON/OFF		X					X		X	X	
HW PLANT DIFFERENTIAL PRESSURE	PSID	X								X	X	
HW LOOP DIFFERENTIAL PRESSURE	PSID	X								X	X	
HW LOOP RETURN TEMPERATURE	DEG F	X						X		X	X	
HW LOOP SUPPLY TEMPERATURE	DEG F	X						X		X	X	
HW SUPPLY TEMPERATURE SETPOINT	DEG F			X						X	X	
HW PLANT DP SETPOINT	PSID			X						X	X	
HW REMOTE DP SETPOINT	PSID									X	X	
BOILER 1 RUN STATUS ALARM	NORMAL/ALARM			X						X	X	
BOILER 2 RUN STATUS ALARM	NORMAL/ALARM			X						X	X	
PLANT CONSUMPTION	MBH			X						X	X	

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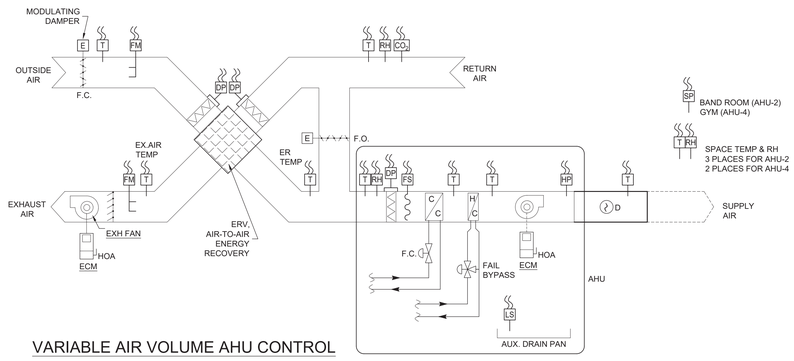
401 W THARPE STREET, TALLAHASSEE, FL 32303

PROJECT NUMBER
250225

ISSUE DATE
07/28/26

DRAWING TITLE
CONTROLS - BOILER

SHEET NUMBER
M-402



VARIABLE AIR VOLUME AHU CONTROL

TYPICAL OF 2 SYSTEMS, AHU-2 & AHU-4

NOTES:

- AHU-4 WILL HAVE A 3-WAY HHW VALVE, AHU-2 WILL HAVE A 2-WAY HHW VALVE
- DUCT SMOKE DETECTORS SHOWN DIAGRAMMATICALLY FOR COORDINATION PURPOSES.
- SENSORS LOCATED IN CABINET SHALL HAVE THEIR PENETRATIONS SEALED WITH BUTYL CAULK ON INSIDE AND OUTSIDE.

		CONTROL POINTS										
		POINTS					ALARM		GENERAL		
		INPUT			OUTPUT						
POINT NAME	UNITS	ANALOG	DIGITAL	INTEGRATED	ANALOG	DIGITAL	INTEGRATED	GENERAL	UNIT SHUTDOWN	TREND LOG	GRAPHIC	INTERLOCK
OUTSIDE AIR DAMPER					X					X	X	
O/A TEMPERATURE	°F	X								X	X	
O/A FLOW	CFM	X								X	X	
ENERGY RECOVERY O/A FILTER STATUS	DP, IN W.C.		X					X		X	X	
ENERGY RECOVERY E/A FILTER STATUS	DP, IN W.C.		X					X		X	X	
EXHAUST AIR TEMPERATURE	°F	X								X	X	
EXHAUST AIR FLOW	CFM	X								X	X	
E/A FAN CONTROL & STATUS			X		X	X				X	X	
RETURN AIR TEMPERATURE	°F	X								X	X	
R/A RELATIVE HUMIDITY	%	X								X	X	
R/A CO2 CONCENTRATION	PPM	X								X	X	
RETURN AIR DAMPER					X					X	X	
MIXED AIR TEMPERATURE	°F	X								X	X	
MIXED AIR RELATIVE HUMIDITY	%	X								X	X	
AIR HANDLER FILTER STATUS	DP, IN W.C.		X					X		X	X	
AHU FREEZE STAT			X					X	X	X	X	X
AHU COOLING COIL					X					X	X	
COOLING COIL TEMPERATURE	°F	X								X	X	
AHU DRAIN PAN LEVEL			X					X	X	X	X	
AHU HOT WATER COIL					X					X	X	
HEATING COIL TEMPERATURE	°F	X								X	X	
AHU FAN			X		X	X				X	X	
AHU HIGH STATIC PRESSURE			X					X	X	X	X	X
AHU SMOKE DETECTOR			X					X	X	X	X	X
SUPPLY AIR TEMPERATURE	°F	X								X	X	
SPACE STATIC PRESSURE	IN W.C.	X								X	X	
SPACE TEMP & %RH (QTY. 2 or QTY. 3)	°F & %	X								X	X	
ENABLE COMMAND	ON/OFF						X			X	X	
AHU ECM FAN STATUS, QTY. 3 or 4	ON/OFF			X						X	X	
COOLING COIL TEMP SETPOINT	°F						X			X	X	
REHEAT COIL TEMP SETPOINT	°F						X			X	X	
ZONE TEMP SETPOINT	°F						X			X	X	
ZONE HUMIDITY SETPOINT	% RH						X			X	X	
CO_2 CONCENTRATION SETPOINT	PPM						X			X	X	
SPACE OCCUPANCY **				X						X	X	

** LIGHTING CONTROL MODULES HAVE A BAS RELAY INTERFACE

AIR HANDLING SYSTEM

GENERAL
THE AIR HANDLING SYSTEM IS A VARIABLE AIR VOLUME SYSTEM WITH CHILLED WATER COOLING AND HOT WATER HEATING THAT DISTRIBUTES AIR TO A SINGLE ZONE. THE SYSTEM INCLUDES AIR-TO-AIR ENERGY RECOVERY.

VENTILATION AIR WILL BE VIA DEMAND CONTROL VENTILATION. ENERGY RECOVERY AND EXHAUST AIR WILL BE CONTROLLED ON BUILDING PRESSURE.

OPTIMAL START
ADJUST START TIME OF UNIT TO:
1. WARM-UP FACILITY FOR AN AVERAGE INDOOR AIR TEMPERATURE OF 70°F (ADJ).
2. COOL DOWN FACILITY FOR AN AVERAGE INDOOR TEMPERATURE OF 74°F (ADJ).

WARM-UP / COOL-DOWN MODE
THE SYSTEM SHALL NOT BE ALLOWED TO START UNLESS ALL SAFETIES ARE OUT OF ALARM.

UPON WARM-UP/COOL-DOWN START COMMAND, VIA BAS SCHEDULE OR OPTIMAL START COMMAND:
1. OCCUPIED SETPOINTS ACTIVATE.
2. OUTSIDE AIR DAMPER OPENS TO MINIMUM POSITION & IS PROVEN OPEN.
3. SUPPLY FAN STARTS & IS PROVEN.
   - THE SUPPLY FAN IS COMMANDED TO MINIMUM SPEED (12 Hz, ADJ).
   - ON STATUS PROOF, FAN SPEED CONTROL RELEASES.
   - IF THE FAN HAS FAILED (60 SEC DELAY), THE SHUTDOWN SEQUENCE ACTIVATES.
4. EXHAUST FAN IS ENABLED TO MAINTAIN SPACE STATIC PRESSURE
5. ZONE TEMPERATURE CONTROL SEQUENCES ACTIVATE

START COMMAND
UPON INITIATION OF START COMMAND OVERRIDE:
1. OUTSIDE AIR DAMPER OPENS TO MINIMUM POSITION AND IS PROVEN.
2. SUPPLY FAN STARTS AND IS PROVEN.
   - THE SUPPLY FAN IS COMMANDED TO MINIMUM SPEED (12 Hz, ADJ).
   - ON STATUS PROOF, FAN SPEED CONTROL RELEASES.
   - IF THE FAN HAS FAILED (60 SEC DELAY), THE SHUTDOWN SEQUENCE ACTIVATES.
3. EXHAUST FAN IS ENABLED TO MAINTAIN SPACE STATIC PRESSURE
4. OCCUPIED MODE SEQUENCES ACTIVATE.

OCCUPIED MODE
UPON OCCUPIED COMMAND, VIA BAS SCHEDULE:
1. WARM-UP / COOL-DOWN SEQUENCES REMAIN ACTIVE.
2. ZONE TEMPERATURE CONTROL SEQUENCE ACTIVATES.
3. LOW TEMPERATURE SEQUENCE ACTIVATES.
4. DEMAND CONTROL VENTILATION SEQUENCE ACTIVATES
5. EXHAUST AIR FAN SEQUENCE ACTIVATES
6. COOLING COIL LAT RESET SEQUENCE ACTIVATES

OCCUPIED STANDBY MODE
DURING OCCUPIED HOURS AND ALL ROOM OCCUPANCY SENSORS INDICATE UNOCCUPIED:
1. MODULATE AHU TO 15Hz (ADJ)
2. MODULATE OUTSIDE AIR FLOW TO MINIMUM FLOW

UNOCCUPIED MODE
UPON UNOCCUPIED COMMAND, VIA BAS SCHEDULE:
1. SHUTDOWN SEQUENCE ACTIVATES
2. UNOCCUPIED HEATING & COOLING SHALL BE AVAILABLE WITH NO OUTSIDE AIR.
3. UNOCCUPIED SET POINTS ACTIVATE
4. O/A DAMPER CLOSES; R/A DAMPER OPENS TO 100%; EXHAUST FANS ARE OFF

SHUTDOWN SEQUENCE
UPON SHUTDOWN COMMAND OR LOSS OF FAN STATUS:
1. SUPPLY FAN STOPS AND IS PROVEN.
2. RETURN AIR DAMPER OPENS TO 100%
3. OUTSIDE AIR FLOW CONTROL SEQUENCE DEACTIVATES AND DAMPER CLOSES.
4. EXHAUST FAN STOPS AND IS PROVEN.
5. ALL OTHER SEQUENCES DEACTIVATE.

ZONE TEMPERATURE CONTROL
1. IF ZONE TEMPERATURE IS ABOVE ZONE COOLING TEMPERATURE SETPOINT:
   A. COOLING COIL CONTROL VALVE MODULATES TO MAINTAIN LEAVING AIR TEMPERATURE SETPOINT AT MINIMUM VALUE.
   B. SUPPLY FAN SPEED MODULATES TO MAINTAIN ZONE TEMPERATURE SETPOINT.
   C. HEATING COIL VALVE REMAINS CLOSED.
2. IF ZONE TEMPERATURE IS BETWEEN COOLING AND HEATING TEMPERATURE SETPOINTS:
   A. COOLING COIL CONTROL VALVE MODULATES TO MAINTAIN LEAVING AIR TEMPERATURE SETPOINT.
   B. SUPPLY FAN SPEED MODULATES TOWARDS MINIMUM.
   C. HEATING COIL VALVE REMAINS CLOSED.
3. IF ZONE TEMPERATURE IS BELOW HEATING TEMPERATURE SETPOINT:
   A. COOLING COIL CONTROL VALVE MODULATES CLOSED.
   B. SUPPLY FAN SPEED REMAINS AT MINIMUM.
   C. HEATING COIL CONTROL VALVE MODULATES TO MAINTAIN LEAVING AIR TEMPERATURE SETPOINT.
4. IF ZONE TEMPERATURE CONTINUES TO FALL BELOW HEATING TEMPERATURE SETPOINT:
   A. COOLING COIL CONTROL VALVE REMAINS CLOSED.
   B. SUPPLY FAN SPEED MODULATES TO MAINTAIN ZONE TEMPERATURE SETPOINT.
   C. HEATING COIL VALVE MODULATES TO MAINTAIN MAX. HEATING COIL LEAVING AIR TEMPERATURE SETPOINT.

COOLING COIL LEAVING AIR TEMPERATURE RESET
EVERY 15 MINUTES (ADJ), THE COOLING COIL LEAVING AIR TEMPERATURE SETPOINT RESETS WITHIN THE MINIMUM AND MAXIMUM LIMITS:
1. IF RETURN HUMIDITY IS BELOW OCCUPIED SETPOINT, LEAVING AIR TEMPERATURE INCREASES BY 1 °F (ADJ)
2. IF RETURN HUMIDITY EXCEEDS OCCUPIED SETPOINT, THE LEAVING AIR TEMPERATURE DECREASES BY 1° EVERY 15 MINUTES

OUTSIDE AIR FLOW CONTROL SEQUENCE
THE OUTSIDE AIR DAMPER MODULATES TO MAINTAIN THE OUTSIDE AIR FLOW SETPOINT DETERMINED BY THE DEMAND CONTROL VENTILATION SEQUENCE.

IF THE OUTSIDE AIR DAMPER IS 100% OPEN AND CO2 SETPOINT IS NOT ACHIEVED, THE RETURN AIR DAMPER MODULATES CLOSED TO INDUCE HIGHER OUTSIDE AIR FLOW, UNTIL SETPOINT IS ACHIEVED.

EXHAUST AIR FAN CONTROL SEQUENCE
THE EXHAUST FAN IS AVAILABLE DURING OCCUPIED HOURS
1. THE SPACE POSITIVE PRESSURE SETPOINT IS 0.02" W.C. (ADJ)
2. EXHAUST FAN SPEED MODULATES TO MAINTAIN SPACE PRESSURE DURING OCCUPIED HOURS.
3. MINIMUM FAN FREQUENCY IS 10 Hz (ADJ)

DEMAND CONTROL VENTILATION
EVERY 15 MINUTES (ADJ), THE OUTSIDE AIR FLOW SETPOINT RESETS WITHIN THE MINIMUM AND MAXIMUM LIMITS:
1. IF RETURN AIR CO_2 CONCENTRATION IS BELOW THE CO_2 CONCENTRATION LIMIT, THE OUTSIDE AIR FLOW SETPOINT DECREASES IN INCREMENTS OF 100 CFM (ADJ).
2. IF RETURN AIR CO_2 CONCENTRATION IS ABOVE THE CO_2 CONCENTRATION LIMIT, THE OUTSIDE AIR FLOW SETPOINT INCREASES IN INCREMENTS OF 100 CFM (ADJ).

DEHUMIDIFICATION MODE CONTROL
IF THE ZONE HUMIDITY EXCEEDS HIGH LIMIT SETPOINT FOR 15 MINUTES AND DOES NOT BEGIN TO DECLINE:
1. COOLING COIL LEAVING AIR TEMPERATURE RESETS TO MINIMUM VALUE.
2. THE REHEAT VALVE MODULATES TO MAINTAIN A SUPPLY AIR TEMPERATURE OF 60°F (ADJ.)
3. SUPPLY FAN SPEED MODULATES TO MAINTAIN ZONE TEMP SETPOINT.

WHEN ZONE HUMIDITY READINGS ARE BELOW OCCUPIED HIGH LIMIT SETPOINT:
1. REHEAT VALVE CLOSES
2. COOLING COIL LEAVING AIR TEMPERATURE RESET CONTROL SEQUENCE RESUMES NORMAL OPERATION.

LOW TEMPERATURE SEQUENCE
1. IF MIXED AIR TEMPERATURE IS BELOW 40 °F (ADJ)
   A. THE COOLING COIL & HEATING COIL VALVES OPEN TO 100%.
   B. THE EXHAUST FAN STOPS
   C. THE RETURN AIR DAMPER OPENS TO 100%
   D. THE OUTSIDE AIR DAMPER CLOSES
2. IF MIXED AIR TEMPERATURE FALLS BELOW 35 °F (ADJ), THE SHUTDOWN SEQUENCE ACTIVATES.

ECONOMIZING:
1. WHEN THE SPACE CALLS FOR COOLING AND THE MIXED AIR DEW POINT IS BELOW 57°F, AND THE MIXED AIR TEMPERATURE IS BELOW THE ZONE TEMPERATURE SET POINT, THE COOLING COIL LEAVING AIR TEMP WILL RESET UP TO MAINTAIN ZONE TEMPERATURE AND HUMIDITY.

EQUIPMENT FAILURE
IF SUPPLY FAN OR ERV EXHAUST FAN FAILURE IS DETECTED, THE SHUTDOWN SEQUENCE ACTIVATES AND AN ALARM IS GENERATED.

SAFETIES
THE FOLLOWING SAFETIES ACTIVATE THE SHUTDOWN SEQUENCE:
1. LOW TEMPERATURE LIMIT SWITCH
2. DUCT SMOKE ALARM
3. HIGH STATIC PRESSURE ALARM
4. DRAIN PAN FLOAT SWITCH

A MANUAL RESET IS REQUIRED AFTER SAFETY ACTIVATION.

OCCUPIED COOLING SETPOINT: 74°F (ADJ.)
UNOCCUPIED COOLING SETPOINT: 80°F (ADJ.)
OCCUPIED HEATING SETPOINT: 70°F (ADJ.)
UNOCCUPIED HEATING SETPOINT: 63°F (ADJ.)

OCCUPIED RELATIVE HUMIDITY SETPOINT: 55% RH (ADJ.)
UNOCCUPIED RELATIVE HUMIDITY SETPOINT: 60% RH (ADJ.)

OCCUPIED CO_2 CONCENTRATION SETPOINT: 900 PPM
OCCUPIED CO_2 CONCENTRATION MINIMUM: 500 PPM
OCCUPIED CO_2 CONCENTRATION MAXIMUM: 1000 PPM

COOLING COIL SET POINT 52°F to 57°F
HEATING COIL SET POINT 75°F to 85°F

BUILDING PRESSURE SET POINT 0.02" W.C. (ADJ)

AHU-2
OUTSIDE AIR MAX. FLOW: 3200 CFM
OUTSIDE AIR MIN. FLOW - OCCUPIED: 500 CFM
OUTSIDE AIR MIN. FLOW - UNOCCUPIED 500 CFM

AHU-4
OUTSIDE AIR MAX. FLOW: 11,000 CFM
OUTSIDE AIR MIN. FLOW - OCCUPIED: 1,00 CFM
OUTSIDE AIR MIN. FLOW - UNOCCUPIED: 1,00 CFM

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This item has been digitally signed and sealed by **Jon Barber, PE** on 7/27/26
Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

REVISION		
NO.	DESCRIPTION	DATE

PERMIT DOCUMENTS

CLIENT
LEON COUNTY SCHOOLS

PROJECT TITLE
RAA MIDDLE SCHOOL - PHASE 1 GYM

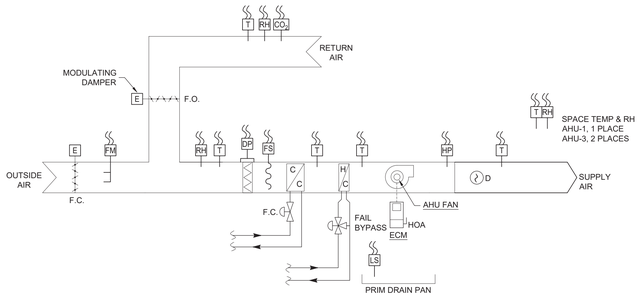
401 W THARPE STREET, TALLAHASSEE, FL 32303

PROJECT NUMBER
250225

ISSUE DATE
07/28/26

DRAWING TITLE
CONTROLS - AIR HANDLER W/ ERV

SHEET NUMBER
M-403

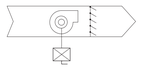


VARIABLE AIR VOLUME AIR HANDLER

TYPICAL OF 2 SYSTEMS, AHU-1 & AHU-3

NOTES:

- AHU-1 WILL HAVE A 3-WAY HHW VALVE, AHU-3 WILL HAVE A 2-WAY HHW VALVE.
- DUCT SMOKE DETECTORS SHOWN DIAGRAMMATICALLY FOR COORDINATION PURPOSES.
- SENSORS LOCATED IN CABINET SHALL HAVE THEIR PENETRATIONS SEALED WITH BUTYL CAULK ON INSIDE AND OUTSIDE.



EXHAUST FANS
EF-1, EF-3, EF-5, EF-7

GENERAL
THE EXHAUST FANS SHALL RUN DURING OCCUPIED HOURS. 4 PLACES.

NOTE: CONCESSIONS EXHAUST FAN EF-6 OPERATES VIA OCCUPANCY SENSOR

EXHAUST FAN

POINT NAME	UNITS	CONTROL POINTS										
		POINTS					ALARM		GENERAL			
		INPUT			OUTPUT							
		ANALOG	DIGITAL	INTEGRATED	ANALOG	DIGITAL	INTEGRATED	GENERAL	UNIT SHUTDOWN	TREND LOG	GRAPHIC	INTERLOCK
RETURN AIR TEMPERATURE	°F	X								X	X	
R/A RELATIVE HUMIDITY	%	X								X	X	
R/A CO2 CONCENTRATION	PPM	X								X	X	
RETURN AIR DAMPER	%				X					X	X	
OUTSIDE AIR DAMPER	%				X					X	X	
OUTSIDE AIR FLOW	CFM	X								X	X	
MIXED AIR TEMPERATURE	°F	X						X		X	X	
MIXED AIR RELATIVE HUMIDITY	%	X								X	X	
R/A FILTER STATUS	DP, IN W.C.		X					X		X	X	
FREEZE STAT	°F		X					X	X	X	X	X
AHU COOLING COIL VALVE	%				X					X	X	
COOLING COIL TEMPERATURE	°F	X								X	X	
COOLING COIL PAN LEVEL			X					X	X	X	X	
AHU HEATING COIL VALVE	%				X					X	X	
REHEAT COIL TEMPERATURE	°F	X								X	X	
AHU AIR FAN			X		X	X				X	X	
AHU HIGH STATIC PRESSURE	IN W.C.		X					X	X	X	X	X
AHU DUCT DETECTOR			X					X	X	X	X	X
SUPPLY AIR TEMPERATURE	°F	X								X	X	
SPACE OCCUPANCY			X							X	X	
SPACE TEMP & %RH (QTY. 1 or 2)	°F & %	X								X	X	
ENABLE COMMAND	ON/OFF						X			X	X	
AHU ECM FAN STATUS, QTY. 2	ON/OFF			X			X			X	X	
COOLING COIL TEMP SETPOINT	°F						X			X	X	
REHEAT COIL TEMP SETPOINT	°F						X			X	X	
ZONE TEMP SETPOINT	°F						X			X	X	
ZONE HUMIDITY SETPOINT	% RH						X			X	X	
CO_2 CONCENTRATION SETPOINT	PPM						X			X	X	
SPACE OCCUPANCY **				X						X	X	
EXHAUST FAN	ON/OFF					X				X	X	
EXHAUST FAN STATUS	ON/OFF		X							X	X	

** LIGHTING CONTROL MODULES HAVE A BAS RELAY INTERFACE

AIR HANDLING SYSTEM

GENERAL
THE AIR HANDLING SYSTEM IS A VARIABLE AIR VOLUME SYSTEM WITH CHILLED WATER COOLING AND HOT WATER HEAT/REHEAT THAT DISTRIBUTES AIR TO A SINGLE ZONE.

OUTSIDE AIR DAMPER SHALL MODULATE TO MAINTAIN TARGET OUTSIDE AIR FLOW RATE DURING OCCUPIED HOURS. THE SYSTEM WILL OTHERWISE BE AVAILABLE FOR CLIMATE CONTROL.

OPTIMAL START
ADJUST START TIME OF UNIT TO:
1. WARM-UP FACILITY FOR AN AVERAGE INDOOR AIR TEMPERATURE OF 70°F (ADJ).
2. COOL DOWN FACILITY FOR AN AVERAGE INDOOR TEMPERATURE OF 74°F (ADJ).

WARM-UP / COOL-DOWN MODE
THE SYSTEM SHALL NOT BE ALLOWED TO START UNLESS ALL SAFETIES ARE OUT OF ALARM.

UPON WARM-UP/COOL-DOWN START COMMAND, VIA BAS SCHEDULE OR OPTIMAL START COMMAND:
1. OCCUPIED SETPOINTS ACTIVATE.
2. SUPPLY FAN STARTS & IS PROVEN.
   - THE SUPPLY FAN IS COMMANDED TO MINIMUM SPEED (12 Hz, ADJ).
   - ON STATUS PROOF, FAN SPEED CONTROL RELEASES.
   - IF THE FAN HAS FAILED (60 SEC DELAY), THE SHUTDOWN SEQUENCE ACTIVATES.
4. OUTSIDE AIR DAMPER OPENS; FLOW IS SET TO UNOCCUPIED FLOW
5. EXHAUST FANS ARE OFF
6. ZONE CONTROL SEQUENCES ACTIVATE, EXCEPT FOR ZONE UNOCCUPIED CONTROL

START COMMAND
UPON INITIATION OF START COMMAND OVER:
1. SUPPLY FAN STARTS AND IS PROVEN.
   - THE SUPPLY FAN IS COMMANDED TO MINIMUM SPEED (12 Hz, ADJ).
   - ON STATUS PROOF, FAN SPEED CONTROL RELEASES.
3. ZONE TEMP CONTROL SEQUENCE ACTIVATES
4. OCCUPIED MODE SEQUENCE ACTIVATES.

OCCUPIED MODE
UPON OCCUPIED COMMAND, VIA BAS SCHEDULE:
1. WARM-UP / COOL-DOWN SEQUENCES REMAIN ACTIVE.
2. ZONE TEMPERATURE CONTROL SEQUENCE ACTIVATES.
3. LOW TEMPERATURE SEQUENCE ACTIVATES.
4. EXHAUST FANS START
5. DEMAND CONTROL VENTILATION SEQUENCE ACTIVATES
6. COOLING COIL LAT RESET SEQUENCE ACTIVATES

OCCUPIED STANDBY MODE
DURING OCCUPIED HOURS AND ALL ROOM OCCUPANCY SENSORS INDICATE UNOCCUPIED:
1. MODULATE TO 12Hz (ADJ)
2. EXHAUST FANS ARE OFF
3. MODULATE OUTSIDE AIR FLOW TO MINIMUM FLOW.

UNOCCUPIED MODE
UPON UNOCCUPIED COMMAND, VIA BAS SCHEDULE:
1. SHUTDOWN SEQUENCE ACTIVATES
2. UNOCCUPIED HEATING & COOLING SHALL BE AVAILABLE WITH NO OUTSIDE AIR.
3. UNOCCUPIED SET POINTS ACTIVATE
4. O/A DAMPER CLOSES; R/A DAMPER OPENS TO 100%; EXHAUST FANS ARE OFF

SHUTDOWN SEQUENCE
UPON SHUTDOWN COMMAND OR LOSS OF FAN STATUS:
1. SUPPLY FAN STOPS AND IS PROVEN.
2. RETURN AIR DAMPER OPENS TO 100%
3. OUTSIDE AIR FLOW CONTROL SEQUENCE DEACTIVATES AND DAMPER CLOSES.
4. ALL OTHER SEQUENCES DEACTIVATE.

ZONE TEMPERATURE CONTROL
1. IF ZONE TEMPERATURE IS ABOVE ZONE COOLING TEMPERATURE SETPOINT:
   A. COOLING COIL CONTROL VALVE MODULATES TO MAINTAIN LEAVING AIR TEMPERATURE SETPOINT AT MINIMUM VALUE.
   B. SUPPLY FAN SPEED MODULATES TO MAINTAIN ZONE TEMPERATURE SETPOINT.
   C. HEATING COIL VALVE REMAINS CLOSED.

2. IF ZONE TEMPERATURE IS BETWEEN COOLING AND HEATING TEMPERATURE SETPOINTS:
   A. COOLING COIL CONTROL VALVE MODULATES TO MAINTAIN LEAVING AIR TEMPERATURE SETPOINT.
   B. SUPPLY FAN SPEED MODULATES TOWARDS MINIMUM.
   C. HEATING COIL VALVE REMAINS CLOSED.
3. IF ZONE TEMPERATURE IS BELOW HEATING TEMPERATURE SETPOINT:
   A. COOLING COIL CONTROL VALVE MODULATES CLOSED.
   B. SUPPLY FAN SPEED REMAINS AT MINIMUM.
   C. HEATING COIL CONTROL VALVE MODULATES TO MAINTAIN LEAVING AIR TEMPERATURE SETPOINT.
4. IF ZONE TEMPERATURE CONTINUES TO FALL BELOW HEATING TEMPERATURE SETPOINT:
   A. COOLING COIL CONTROL VALVE REMAINS CLOSED.
   B. SUPPLY FAN SPEED MODULATES TO MAINTAIN ZONE TEMPERATURE SETPOINT.
   C. HEATING COIL VALVE MODULATES TO MAINTAIN HEATING COIL LEAVING AIR TEMPERATURE SETPOINT.

COOLING COIL LEAVING AIR TEMPERATURE RESET
EVERY 15 MINUTES (ADJ), THE COOLING COIL LEAVING AIR TEMPERATURE SETPOINT RESETS WITHIN THE MINIMUM AND MAXIMUM LIMITS:
1. IF RETURN HUMIDITY IS BELOW OCCUPIED SETPOINT, LEAVING AIR TEMPERATURE INCREASES BY 1 °F (ADJ)
2. IF RETURN HUMIDITY EXCEEDS OCCUPIED SETPOINT, THE LEAVING AIR TEMPERATURE RESETS TO THE MINIMUM.

OUTSIDE AIR FLOW CONTROL SEQUENCE
THE OUTSIDE AIR DAMPER MODULATES TO MAINTAIN THE OUTSIDE AIR FLOW SETPOINT DETERMINED BY THE DEMAND CONTROL VENTILATION SEQUENCE.

IF THE OUTSIDE AIR DAMPER IS 100% OPEN AND CO2 SETPOINT IS NOT ACHIEVED, THE RETURN AIR DAMPER MODULATES CLOSED TO INDUCE HIGHER OUTSIDE AIR FLOW, UNTIL SETPOINT IS ACHIEVED.

DEMAND CONTROL VENTILATION
EVERY 15 MINUTES (ADJ), THE OUTSIDE AIR FLOW SETPOINT RESETS WITHIN THE MINIMUM AND MAXIMUM LIMITS:
1. IF RETURN AIR CO_2 CONCENTRATION IS BELOW THE CO_2 CONCENTRATION LIMIT, THE OUTSIDE AIR FLOW SETPOINT DECREASES IN INCREMENTS OF 50 CFM (ADJ).
2. IF RETURN AIR CO_2 CONCENTRATION IS ABOVE THE CO_2 CONCENTRATION LIMIT, THE OUTSIDE AIR FLOW SETPOINT INCREASES IN INCREMENTS OF 50 CFM (ADJ).

DEHUMIDIFICATION MODE CONTROL
IF THE ZONE HUMIDITY EXCEEDS HIGH LIMIT SETPOINT FOR 15 MINUTES AND DOES NOT BEGIN TO DECLINE:
1. COOLING COIL LEAVING AIR TEMPERATURE RESETS TO MINIMUM VALUE.
2. THE REHEAT VALVE MODULATES TO MAINTAIN A SUPPLY AIR TEMPERATURE OF 60°F (ADJ.)
3. SUPPLY FAN SPEED MODULATES TO MAINTAIN ZONE TEMP SETPOINT.

WHEN ZONE HUMIDITY READINGS ARE BELOW OCCUPIED HIGH LIMIT SETPOINT:
1. REHEAT VALVE CLOSES
2. COOLING COIL LEAVING AIR TEMPERATURE RESET CONTROL SEQUENCE RESUMES NORMAL OPERATION.

LOW TEMPERATURE SEQUENCE
1. IF MIXED AIR TEMPERATURE IS BELOW 40 °F (ADJ)
   A. THE COOLING COIL & HEATING COIL VALVES OPEN TO 100%.
   B. THE RETURN AIR DAMPER OPENS TO 100%
   C. THE OUTSIDE AIR DAMPER CLOSES
2. IF MIXED AIR TEMPERATURE FALLS BELOW 35 °F (ADJ), THE SHUTDOWN SEQUENCE ACTIVATES.

ECONOMIZING:
1. WHEN THE SPACE CALLS FOR COOLING AND THE MIXED AIR DEW POINT IS BELOW 57°F, AND THE MIXED AIR TEMPERATURE IS BELOW THE ZONE TEMPERATURE SET POINT, THE COOLING COIL LEAVING AIR TEMP WILL RESET UP TO MAINTAIN ZONE TEMPERATURE AND HUMIDITY.

EQUIPMENT FAILURE
IF SUPPLY FAN FAILURE IS DETECTED, THE SHUTDOWN SEQUENCE ACTIVATES AND AN ALARM IS GENERATED.

SAFETIES
THE FOLLOWING SAFETIES ACTIVATE THE SHUTDOWN SEQUENCE:
1. LOW TEMPERATURE LIMIT SWITCH
2. DUCT SMOKE ALARM
3. HIGH STATIC PRESSURE ALARM
4. DRAIN PAN FLOAT SWITCH

A MANUAL RESET IS REQUIRED AFTER SAFETY ACTIVATION.

OCCUPIED COOLING SETPOINT: 74°F (ADJ.)
UNOCCUPIED COOLING SETPOINT: 80°F (ADJ.)
OCCUPIED HEATING SETPOINT: 70°F (ADJ.)
UNOCCUPIED HEATING SETPOINT: 63°F (ADJ.)

OCCUPIED RELATIVE HUMIDITY SETPOINT: 55% RH (ADJ.)
UNOCCUPIED RELATIVE HUMIDITY SETPOINT: 60% RH (ADJ.)

OCCUPIED CO_2 CONCENTRATION SETPOINT: 900 PPM
OCCUPIED CO_2 CONCENTRATION MINIMUM: 500 PPM
OCCUPIED CO_2 CONCENTRATION MAXIMUM: 1000 PPM

COOLING COIL SET POINT 52°F to 57°F
HEATING COIL SET POINT 75°F to 85°F

AHU-1
OUTSIDE AIR MAX. FLOW: 1500 CFM
OUTSIDE AIR MIN. FLOW - OCCUPIED: 1100 CFM
OUTSIDE AIR MIN. FLOW - UNOCCUPIED: 300 CFM (EXHAUST FANS OFF)

AHU-3
OUTSIDE AIR MAX. FLOW: 1500 CFM
OUTSIDE AIR MIN. FLOW - OCCUPIED: 1500 CFM
OUTSIDE AIR MIN. FLOW - UNOCCUPIED: 300 CFM (EXHAUST FANS OFF)

EQUIPMENT

RP-1

POINT DESCRIPTION	UNITS	USER INFORMATION								
		POINT TYPE			SETPOINT VALUE			ALARM CONDITION		
		ANALOG	DIGITAL	INTEGRATED	DEFAULT	MAXIMUM	MINIMUM	HIGH LIMIT	LOW LIMIT	ALARM DELAY (MIN)
PUMP COMMAND	ON/OFF		X							
PUMP STATUS	ON/OFF		X							
HOT WATER LOOP RETURN WATER TEMP	°F	X								
HOT WATER LOOP SUPPLY WATER TEMP	°F	X								
WATER HEATER SCHEDULE	ON/OFF			X						
WATER HEATER RETURN WATER TEMP	°F			X						
WATER HEATER SUPPLY WATER TEMP	°F			X						

GENERAL
HOT WATER CIRCULATING PUMP THAT OPERATE DURING ALL HOURS TO MITIGATE BACTERIA GROWTH.

SEE PLUMBING SHEET P-102. CONNECT TO WATER HEATER CONTROLLER VIA BACNET FOR SCHEDULING AND STATUS

OCCUPIED MODE
UPON OCCUPIED COMMAND, VIA SCHEDULE:
1. PUMP STARTS

UNOCCUPIED MODE
UPON UNOCCUPIED COMMAND, VIA SCHEDULE:
1. PUMP CONTINUES RUNNING

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This item has been digitally signed and sealed by **Jon Barber, PE** on 7/27/26. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

REVISION NO.	DESCRIPTION	DATE

PERMIT DOCUMENTS

CLIENT
LEON COUNTY SCHOOLS

PROJECT TITLE
RAA MIDDLE SCHOOL - PHASE 1 GYM

401 W THARPE STREET, TALLAHASSEE, FL 32303

PROJECT NUMBER
250225

ISSUE DATE
07/28/26

DRAWING TITLE
CONTROLS - VAV AIR HANDLER

SHEET NUMBER
M-404