

MECHANICAL SPECIFICATIONS (OUTLINE)

GENERAL PROVISIONS

GENERAL CONDITIONS: THE GENERAL CONDITIONS, SPECIAL CONDITIONS, SUPPLEMENTARY CONDITIONS AND MECHANICAL SPECIFICATIONS OF THE SPECIFICATIONS AND "GENERAL CONDITIONS OF THE CONTRACT", CURRENT EDITION, ESTABLISHED IN STANDARD FORM BY THE AMERICAN INSTITUTE OF ARCHITECTS SHALL APPLY TO ALL WORK ON THIS PROJECT EXCEPT AS MODIFIED BELOW. THIS CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THESE PROVISIONS AND ADHERE TO THESE REQUIREMENTS. CONTRACTOR SHALL COORDINATE HIS WORK WITH OTHER TRADES PRIOR TO INSTALLATION.

DEFINITIONS: FURNISH MEANS TO SUPPLY AND DELIVER TO PROJECT SITE, READY FOR INSTALLATION. INSTALL MEANS TO PLACE IN POSITION AND MAKE CONNECTIONS FOR SERVICE OR USE. PROVIDE MEANS TO FURNISH AND INSTALL, COMPLETE AND READY FOR INTENDED USE.

RELATED DOCUMENTS: THIS CONTRACTOR IS REFERRED TO THE ARCHITECTURAL, STRUCTURAL AND ELECTRICAL PLANS AND SPECIFICATIONS. SUCH PLANS AND SPECIFICATIONS ARE A PART OF THE CONTRACT DOCUMENTS. CONTRACTORS SHALL VISIT THE SITE AND FAMILIARIZE THEMSELVES WITH ALL CONDITIONS SURROUNDING THE WORK. IF ANY OF THE CONDITIONS REQUIRE A MODIFICATION OF THE SYSTEMS INDICATED BY THESE PLANS AND SPECIFICATIONS, THE CONTRACTOR SHALL INCLUDE THE COST OF SUCH MODIFICATIONS IN HIS BID. NO EXTRA COMPENSATION WILL BE ALLOWED BECAUSE OF FAILURE TO FIELD VERIFY EXISTING CONDITIONS PRIOR TO SUBMITTING BIDS.

MODIFICATIONS TO PLANS AND SPECIFICATIONS: THROUGHOUT THE COURSE OF THE WORK, THE ARCHITECT/ENGINEER MAY REQUEST MINOR CHANGES AND ADJUSTMENTS TO PLANS AND SPECIFICATIONS. THE CONTRACTOR SHALL MAKE SUCH ADJUSTMENTS WITHOUT ADDITIONAL COST TO THE OWNER, WHERE SUCH ADJUSTMENTS ARE NECESSARY FOR THE PROPER INSTALLATION AND OPERATION AND WITHIN THE INTENT OF THE CONTRACT DOCUMENTS.

INTENT OF DOCUMENTS: IT IS THE INTENT OF THE PLANS AND SPECIFICATIONS TO FORM A GUIDE FOR A COMPLETE INSTALLATION. EVERYTHING NECESSARY FOR THE COMPLETION AND SUCCESSFUL OPERATION OF THE WORK, WHETHER OR NOT HEREBY DEFINITELY SPECIFIED OR INDICATED ON THE DRAWINGS SHALL BE FURNISHED AND INSTALLED AS WELL AS AND AS FAITHFULLY AS IF SO SPECIFIED OR INDICATED WITHOUT ADDITIONAL COSTS TO THE OWNER. THIS CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND LENGTHS PRIOR TO INSTALLATION.

DISCREPANCY PROCEDURE: IF ANY ERRORS, DISCREPANCIES OR OMISSIONS APPEAR IN THE DRAWINGS, SPECIFICATIONS OR OTHER CONTRACT DOCUMENTS, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER IN WRITING OF SUCH ERROR OMISSION. IN THE EVENT OF THE CONTRACTOR FAILING TO GIVE SUCH NOTICE BEFORE CONSTRUCTION AND/OR FABRICATION OF THE WORK, HE WILL BE HELD RESPONSIBLE FOR THE RESULTS OF ANY SUCH ERRORS, DISCREPANCIES OR OMISSIONS AND THE COST TO RECTIFYING SAME.

CODE COMPLIANCE: CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF ALL STATE, LOCAL AND NATIONAL CODES REGULATING THIS WORK.

PERMITS, FEES, LICENSES: THIS CONTRACTOR SHALL PAY ALL FEES AND RELATED CHARGES REQUIRED FOR PERMITS, LICENSES, ETC., REQUIRED FOR INSTALLATION OF THE MECHANICAL SYSTEMS.

EQUIPMENT SUBSTITUTION: THIS CONTRACTOR SHALL REIMBURSE THE ELECTRICAL CONTRACTOR, WITHOUT ANY CHARGE TO OWNER, ANY COSTS THE ELECTRICAL CONTRACTOR INCURS DUE TO THIS CONTRACTOR'S SUBSTITUTION OF MECHANICAL EQUIPMENT HAVING DIFFERENT ELECTRICAL SERVICE REQUIREMENTS THAN THE SPECIFIED EQUIPMENT.

EQUIPMENT ORDER: THE CONTRACTOR SHALL ORDER ALL EQUIPMENT REQUIRED WITHIN TEN DAYS UPON RECEIPT OF CONTRACT IN ORDER TO ENSURE TIMELY RECEIPT OF MATERIAL. SUBSTITUTIONS AFTER THIS DATE DUE TO LACK OF PLACEMENT OF ORDER WILL NOT BE APPROVED.

SHOP DRAWINGS: THIS CONTRACTOR SHALL PROVIDE THE OWNER WITH A MINIMUM OF SIX (6) CERTIFIED COPIES OF ALL SHOP AND EQUIPMENT DRAWINGS FOR HIS APPROVAL, TWO OF WHICH SHALL BE RETAINED BY THE OWNER, AND THE REMAINING BEING RETURNED TO THE CONTRACTOR. DRAWINGS SHALL BE SUBMITTED BEFORE START OF CONSTRUCTION. FAILURE OF COMPLIANCE WITH THIS PARAGRAPH WILL RESULT IN WITHHOLDING OF FINAL PAYMENT.

WARRANTY: THIS CONTRACTOR SHALL WARRANT HIS WORK TO BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR AFTER SUBSTANTIAL COMPLETION OR OWNER ACCEPTANCE OF THE COMPLETED PROJECT.

BASIC MATERIALS AND METHODS

PROVIDE EQUIPMENT INDICATED ON THE DRAWINGS, AND AS REQUIRED FOR A COMPLETE FUNCTIONING SYSTEM. ALL WORKMANSHIP AND MATERIALS SHALL BE OF THE HIGHEST QUALITY IN EVERY RESPECT. ALL MATERIALS AND EQUIPMENT SHALL BE NEW, OF THE LATEST DESIGN AND FREE OF DEFECTS. ALL MATERIALS AND EQUIPMENT SHALL CONFORM TO THE LATEST AMENDED EDITION OF ALL APPLICABLE STANDARDS, INCLUDING BUT NOT LIMITED TO, SMACNA, UL AND NEMA STANDARDS.

PROVIDE VIBRATION ISOLATION DEVICES FOR ALL MOVING MACHINERY. PROVIDE FLEXIBLE CONNECTIONS TO ALL MOVING MACHINERY.

MECHANICAL CONTRACTOR SHALL PROVIDE ALL ELECTRICAL DISCONNECTS FOR ALL MECHANICAL EQUIPMENT PROVIDED.

DESIGN ALL PIPING AND DUCTWORK TO PRESENT A NEAT AND ORDERLY APPEARANCE. RUN ALL LINES PARALLEL WITH BUILDING WALLS AND CONSTRUCTION. KEEP PIPING AND DUCTWORK FREE FROM CONTACT WITH STRUCTURE OR EQUIPMENT TO PREVENT NOISE TRANSMISSION, ALLOWING CLEARANCE FOR EXPANSION AND CONTRACTION. PROVIDE ACCESS DOORS OR PANELS FOR ALL VALVES, CLEANOUTS, DAMPERS, CONTROLS, DEVICES, ETC.

INSULATION: INSULATION SHALL BE REQUIRED ON ALL SURFACES TO RETARD UNDESIRABLE HEAT TRANSFERS AND PREVENT CONDENSATION. INSULATION SHALL BE APPLIED TO PIPE LINES, DUCTWORK AND EQUIPMENT ONLY AFTER THEY HAVE BEEN TESTED, INSPECTED AND ALL SURFACES THOROUGHLY CLEANED OF ALL MOLDSTUFF, FOREIGN MATERIAL, GREASE AND RUST. INSULATION SHALL BE CONTINUOUS THROUGH WALLS, FLOORS, PARTITIONS, SLEEVES, ETC., EXCEPT WHERE OTHERWISE INDICATED OR SPECIFIED. ALL INSULATION ADHESIVES, SEALERS AND COATINGS SHALL HAVE A FIRE HAZARD RATING NOT TO EXCEED 25/50/50 FLAME SPREAD, FUEL CONTRIBUTED AND SMOKE DEVELOPED IN ACCORDANCE WITH UL 723 AND ASTM-E84. PROVIDE INSULATION FOR HOT AND COLD WATER PIPING, REFRIGERANT PIPING, SUPPLY AIR, RETURN AIR, EXHAUST AIR SHEET METAL DUCTWORK.

ROOF PENETRATIONS SHALL COMPLY WITH "SMACNA" AND "NRC" STANDARDS, AND SHALL COMPLY WITH THE REQUIREMENTS OF THE EXISTING ROOFING WARRANTY. DO NOT PERFORM ROOFING PENETRATIONS IN A MANNER WHICH WOULD VOID OR OTHERWISE LIMIT ANY EXISTING ROOF WARRANTY.

PROVIDE TWO (2) BOND SETS OF OPERATION MANUALS, MAINTENANCE MANUALS AND SCHEMATICS FOR ALL MECHANICAL EQUIPMENT INSTALLED TO THE OWNER AT PROJECT COMPLETION.

HVAC

AIR DISTRIBUTION SYSTEM: THE AIR DISTRIBUTION SYSTEM SHALL BE FABRICATED AS RECOMMENDED IN THE LATEST EDITION OF THE SMACNA LOW VELOCITY DUCT MANUAL AND INSTALLED WHERE SHOWN ON HVAC PLAN. CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING ALL REQUIRED DAMPERS, TRANSITIONS, AND CONNECTIONS TO AIR TERMINALS NECESSARY FOR A COMPLETE OPERATING SYSTEM.

DUCT DIMENSIONS: UNLESS OTHERWISE NOTED, DUCT DIMENSIONS ON THE DRAWINGS ARE MINIMUM INSIDE CLEAR DIMENSIONS.

SHEETMETAL DUCTWORK: PROVIDE SHEETMETAL DUCTWORK FABRICATED AND INSTALLED IN ACCORDANCE WITH ASHRAE AND SMACNA STANDARDS. FOR 1" W.G. PRESSURE CLASS, FABRICATION PRESSURE CLASS SHALL BE EQUAL TO OR GREATER THAN THE RATED EXTERNAL STATIC PRESSURE RATING OF THE APPLIANCE TO WHICH THE DUCT IS CONNECTED. SEAL CLASS "A". SHEETMETAL SHALL BE GALVANIZED SHEET STEEL OF LOCK FORMING QUALITY WITH 90% ZINC COATING. SHEET STEEL SHALL COMPLY WITH ASTM A653 STANDARD SPECIFICATION FOR STEEL SHEETMETAL, ZINC COATED (GALVANIZED) OR ZINC-IRON ALLOY-COATED (ALUMINIZED) BY THE HOT DIP PROCESS, AND A242 STANDARD SPECIFICATION FOR GENERAL REQUIREMENTS FOR SHEET, METALLIC-COATED BY THE HOT DIP PROCESS. ALL ANGLE IRON USED FOR SUPPORT SHALL BE GALVANIZED. CONNECTIONS TO WALLS OR FLOOR SHALL BE AIR TIGHT WITH ANGLE IRON AND CAULKING. SEAL ALL DUCT SEAMS, TRANSVERSE AND LONGITUDINAL, AIR TIGHT. PROVIDE TURNING VANES AT ALL 90° ELBOWS.

TRAPEZE DUCT HANGERS: PROVIDE MINIMUM 1" x 2" x 1" x 18 GAUGE CHANNELS WITH MINIMUM 1" x 18 GAUGE STRAPS TO STRUCTURAL SUPPORT.

ROUND SHEET METAL DUCT: PROVIDE SPIRAL SEAM (ALL SIZES) OR SNAP LOCK (DUCT SIZES UP TO 10") GALVANIZED STEEL, COMPLYING WITH SMACNA STANDARDS. SPIRAL SEAM DUCTWORK SHALL HAVE SMACNA SEAM TYPE RL-1.

FLEXIBLE DUCT: PROVIDE FACTORY ASSEMBLED CLASS 1 AIR DUCT (UL 181) WITH 1" THICK 1 PCF FIBERGLASS INSULATION AND REINFORCED OUTER PROTECTIVE COVER/VAPOR BARRIER. FLEXIBLE DUCT SHALL MEET NFPA 90A WITH FLAME SPREAD UNDER 25, SMOKE DEVELOPED UNDER 50, AND SHALL BE RATED FOR MINIMUM 2" W.G. PRESSURE AND 0 TO 250°F TEMPERATURE. PROVIDE SCREW-OPERATED METAL ADJUSTABLE CLAMPING DEVICES. USE TWIST-LOCK TAP COLLARS AT CONNECTIONS INTO SHEET METAL DUCTWORK. INSULATED FLEXIBLE DUCT SHALL BE GENERAL ENVIRONMENTAL CORPORATION TYPE G30A, OR APPROVED EQUAL. FLEXIBLE DUCT RUNS SHALL BE LIMITED TO A MAXIMUM LENGTH OF 5'-0" AND SHALL HAVE ONLY ONE 45 DEG MAXIMUM ELBOW.

FLEXIBLE DUCT CONNECTORS: PROVIDE U.L. LABELED 30 OUNCE NEOPRENE COATED FIBERGLASS FABRIC DUCT CONNECTORS.

EXPOSED DUCTWORK: EXPOSED DUCTWORK SHALL BE CLEANED OF DEBRIS AND OIL, THEN WIPED DOWN WITH VINEGAR OR OTHER SURFACE PREPARING CHEMICAL TO PREPARE DUCT FOR PAINT.

DUCT SEALANT: PROVIDE POLYMERIC RUBBER TYPE SEALANT FOR USE ON BOTH INTERIOR LOCATED DUCTWORK AND DUCTWORK EXPOSED TO OUTDOOR CONDITIONS. SEALER SHALL HAVE HIGH BONDING STRENGTH FOR SURE, FIRST TIME SEALING OF JOINTS IN LOW, MEDIUM, AND HIGH PRESSURE DUCT SYSTEMS. SEALER SHALL BE HIGH IN SOLID CONTENT. PROVIDE A TWO-PART TAPE TAPE SEALING SYSTEM, CONSISTING OF WOVEN FIBER TAPE IMPREGNATED WITH A GYPSUM MINERAL COMPOUND, AND A MODIFIED ACRYLIC/SILOXANE ACTIVATOR THAT REACTS EXOTHERMICALLY WITH THE TAPE. TWO PART TAPE SEALING SYSTEM MUST BE RATED FOR BOTH INDOOR AND OUTDOOR APPLICATION. TAPE SHALL NOT CONTAIN ASBESTOS.

ROUND VOLUME DAMPERS: PROVIDE MINIMUM 20 GAUGE GALVANIZED STEEL FRAME AND BLADES, MINIMUM 3/8" SQUARE STEEL AXLE, MOLDED SYNTHETIC BEARINGS, WITH LOCKING POSITION REGULATOR. REGULATOR SHALL BE POSITIONED WITH SHEET METAL BRACKET BEYOND DUCT COVERING. WHERE POSITIONING REGULATOR IS NOT ACCESSIBLE, PROVIDE COUPLING AND EXTENSION ROD WITH REGULATOR FOR CEILING OR WALL INSTALLATION, AS REQUIRED.

RECTANGULAR VOLUME DAMPERS: PROVIDE MINIMUM 16 GAUGE GALVANIZED STEEL CHANNEL FRAME, 16 GAUGE GALVANIZED STEEL BLADES, MINIMUM 1/4" HEXAGONAL AXLE, BOLDED SYNTHETIC BEARINGS, WITH 3/8" SQUARE PLATED STEEL CONTROL SHAFT. LINKAGES SHALL BE CONCEALED IN THE FRAME. OPERATING SHAFT SHALL EXTEND BEYOND FRAME AND DUCT TO A LOCKING QUADRANT WITH ADJUSTABLE LEVER. MAXIMUM BLADE WIDTH SHALL NOT EXCEED 6".

FIRE DAMPERS: GALVANIZED STEEL CURTAIN TYPE WITH INTERLOCKING BLADES, STAINLESS STEEL CLOSURE SPRINGS AND LATCHES FOR HORIZONTAL INSTALLATION, BLADES OUT OF AIR STREAM, FUSIBLE LINKS, UL LISTED 33.

FIRE SMOKE DAMPERS: PROVIDE AND INSTALL AS SHOWN ON PLANS, DAMPERS SHALL BE UL 555 & UL 556S FOR CLASSIFIED. WITH 1 1/2 HOUR LABEL UNLESS OTHERWISE NOTED. SHALL MEET NFPA AND IBC REQUIREMENTS. PROVIDE ACCESS DOOR IN DUCTWORK AND CEILING AS NECESSARY REQUIRED FOR INSPECTION AND SETTING OF ACTUATORS. ACTUATORS TO BE ELECTRIC 24V TYPE INTERLOCK WITH FIRE ALARM SYSTEMS. DAMPERS SHALL BE OF OPPOSES BLACK CONFIGURATIONS. APPROVED MANUFACTURERS: GREENHECK, TITUS, KRUEGER, NALOR & PRICE.

DUCT TURNING VANES: PROVIDE FABRICATED TURNING VANES AND VANE RUNNERS, CONSTRUCTED IN ACCORDANCE WITH SMACNA "HAC DUCT CONSTRUCTION STANDARDS". PROVIDE TURNING VANES CONSTRUCTED OF CURVED BLADES, SUPPORTED WITH BARS PERPENDICULAR TO BLADES, AND SET INTO SIDE STRIPS SUITABLE FOR MOUNTING IN DUCTWORK. FOLLOW SMACNA GUIDELINES FOR SPACING SUPPORT, AND CONSTRUCTION. ALL BLADES SHALL BE DOUBLE THICKNESS AIRFOIL TYPE.

DUCT ACCESS DOORS: PROVIDE HINGED ACCESS DOORS IN DUCTWORK WHERE REQUIRED FOR ACCESS TO EQUIPMENT. PROVIDE INSULATED ACCESS DOORS FOR INSULATED DUCTWORK. CONSTRUCT OF SAME OR THICKER GAUGE SHEET METAL, AS DUCT IN WHICH IT IS INSTALLED. PROVIDE FLUSH FRAMES FOR UNSULATED DUCTS, AND EXTENDED FRAMES FOR EXTERNALLY INSULATED DUCTS. PROVIDE CONTINUOUS HINGE ON ONE SIDE, WITH ONE HANDLE-TYPE LATCH FOR ACCESS DOORS 12" HIGH AND SMALLER, AND TWO HANDLE-TYPE LATCHES FOR LARGER ACCESS DOORS.

DIFFUSERS, GRILLES AND REGISTERS: PROVIDE TITUS, PRICE, KRUEGER, METALARE, OR APPROVED EQUAL, DIFFUSERS, GRILLES AND REGISTERS AS SHOWN AND SPECIFIED.

DUCT INSULATION: AIR CONDITIONING SUPPLY AIR DUCTWORK (ABOVE CEILING) SHALL BE WRAPPED WITH 1" THICK DUCT WRAP FIBERGLASS INSULATION COMPLYING WITH ASTM C-553, TYPE II, WITH FACTORY APPLIED KRAFT BONDED TO ALUMINUM FOIL, REINFORCED WITH FIBERGLASS VAPOR BARRIER/JACKET. JACKET SHALL CONFORM TO ASTM C-1136, TYPE II, OR APPROVED EQUAL. EXHAUST AIR DUCTWORK WITHIN 10'-0" OF DISCHARGE OPENING SHALL BE WRAPPED WITH 2" FIBERGLASS BATT INSULATION WITH FOIL VAPOR BARRIER. ALL SEAMS SHALL BE SEALED AIR TIGHT. RETURN AIR DUCTWORK WITHIN 15'-0" OF THE AIR HANDLING UNIT RETURN OPENING SHALL BE PROVIDED WITH 1" DUCT LINER. DUCT LINER SHALL CONFORM TO ASTM 1338, ASTM 621, ASTM 622 & NFPA 90A & 90B. DUCT LINER SHALL HAVE A DENSITY OF 2.0 PCF.

(ROUND AIR CONDITIONING SUPPLY DUCTWORK ABOVE CEILING) PROVIDE MINIMUM 1" THICK BLANKET TYPE FIBERGLASS STEEL SHS INSULATION COMPLYING WITH ASTM C-553, TYPE II, WITH FACTORY APPLIED KRAFT BONDED TO ALUMINUM FOIL, REINFORCED WITH FIBERGLASS VAPOR BARRIER/JACKET. JACKET SHALL CONFORM TO ASTM C-1136, TYPE II.

TEMPERATURE CONTROL

TEMPERATURE CONTROLS: THIS CONTRACTOR SHALL FURNISH AND INSTALL ALL THERMOSTATS, SENSORS, CONTROLLERS, RELAYS, CONTRACTORS, DAMPERS, ACTUATORS AND ALL OTHER MATERIALS NECESSARY FOR A COMPLETE AND PROPERLY OPERATING TEMPERATURE CONTROL SYSTEM AS SPECIFIED. ALL CONTROL WIRING SHALL BE BY THE HVAC CONTRACTOR AND INSTALLED IN CONDUIT.

THIS CONTRACTOR SHALL PROVIDE ALL CONTROLS NECESSARY TO EXECUTE SEQUENCE OF OPERATIONS. COMPLY WITH INDUSTRY STANDARDS FOR PROPER SYSTEM CONTROL, INCLUDING BUT NOT LIMITED TO PROVIDING ALL REQUIRED SAFETY SHUT DOWN DEVICES WHETHER SPECIFICALLY INDICATED OR NOT TO COMPLY WITH ALL STATE AND LOCAL CODE AND ORDINANCES.

PROVIDE SEVEN (7) DAY PROGRAMMABLE THERMOSTAT COMPATIBLE TO ROOFTOP UNIT AND CONTROL WIRING IN CONDUIT. THERMOSTAT SHALL MEET SETPOINT ADJUSTMENT FOR UNOCCUPIED MODE: HEATING DOWN TO 55 DEGREES AND COOLING UP TO 85 DEGREES. PROVIDE INTERLOCK CONTROL WIRING BETWEEN HOOD EXHAUST FANS AND ROOFTOP UNITS.

SYSTEM TESTING AND BALANCING

THIS CONTRACTOR SHALL PROVIDE A CERTIFIED AIR BALANCE CONTRACTOR TO ACCURATELY BALANCE THE AIR SYSTEMS AS APPLICABLE. SUBMIT TWO COPIES OF THE BALANCE REPORT TO THE ARCHITECT/ENGINEER FOR REVIEW AS REQUIRED. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR SCHEDULING THE TEST AND BALANCE. TEST AND ADJUST ALL MECHANICAL SYSTEMS AND EQUIPMENT TO ASSURE PROPER BALANCE AND OPERATION. PERFORM TESTS IN ACCORDANCE WITH NEBB OR AABC, AND ASHRAE STANDARDS. ELIMINATE NOISE AND VIBRATION, AND ASSURE PROPER FUNCTION OF CONTROLS. SUBMIT COMPLETED TEST AND BALANCE REPORT TO OWNER'S REPRESENTATIVE AFTER ARCHITECT/ENGINEER REVIEW FOR OWNER'S RECORDS. BALANCING CONTRACTOR SHALL BE AN INDEPENDENT CERTIFIED TEST AND BALANCE CONTRACTOR, WITH NEBB OR AABC CERTIFICATION. BALANCE ALL SYSTEMS TO WITHIN 10% OF AIR FLOWS INDICATED ON THE DRAWINGS, AND REPORT ALL DISCREPANCIES TO HVAC INSTALLER FOR CORRECTION. MARK FINAL BALANCE POSITIONS ON DAMPERS WITH PERMANENT MARKER.

PLUMBING

THE WORK INCLUDES MODIFICATION TO THE EXISTING PLUMBING SYSTEM AND PROVIDING NEW MATERIALS, FITTINGS AND ACCESSORIES NECESSARY FOR A COMPLETE FUNCTIONING PLUMBING SYSTEM. THE WORK ALSO INCLUDES ROUGH-IN AND FINAL CONNECTIONS TO FOOD SERVICE EQUIPMENT AND BEVERAGE DISPENSING EQUIPMENT PROVIDED BY OTHERS. ALL WORK SHALL BE IN ACCORDANCE WITH LOCAL CODES AND/OR ORDINANCES AND IS SUBJECT TO INSPECTION.

THE INTENT OF THE DRAWINGS IS TO INDICATE THE GENERAL EXTENT OF WORK REQUIRED FOR THE PROJECT. THE DRAWINGS FOR PLUMBING WORK ARE DIAGRAMMATIC, SHOWING THE GENERAL LOCATION, TYPE, FIXTURES AND EQUIPMENT REQUIRED. THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENTS. REFER TO MANUFACTURER'S STANDARD ROUGH-IN DRAWINGS FOR PLUMBING FIXTURE. INSTALLATION REQUIREMENTS, COMPLY WITH ALL APPLICABLE ADA INSTALLATION REQUIREMENTS.

HOOK-UP CHARGES, PERMITS AND ALL OTHER EXPENSES RELATED TO A COMPLETE AND FUNCTIONING PLUMBING SYSTEM ARE INCLUDED AS A PART OF THIS SECTION.

ALL WATER PIPING SHALL RUN ABOVE FLOOR OF PLAN ON WHICH SHOWN UNLESS OTHERWISE INDICATED. ALL DRAIN AND WASTE PIPING SHALL RUN BELOW FLOOR OF PLAN ON WHICH SHOWN UNLESS OTHERWISE INDICATED. REFER TO FIXTURES LISTED IN SCHEDULES AND LOCATED ON ARCHITECTURAL PLANS.

COORDINATE WITH THE WORK OF OTHER SECTIONS, EQUIPMENT FURNISHED BY OTHERS, AND WITH THE CONSTRAINTS OF THE EXISTING CONDITIONS OF THE PROJECT SITE.

PIPING SYSTEMS - GENERAL: ALL PIPING SHALL BE RUN PARALLEL TO BUILDING LINES AND SUPPORTED AND ANCHORED AS REQUIRED TO FACILITATE EXPANSION AND CONTRACTION. ALL PIPING SHALL BE CONCEALED EXCEPT IN UNFINISHED SPACES. INSTAL AS REQUIRED TO MEET ALL CONSTRUCTION CONDITIONS AND TO ALLOW FOR INSTALLATION OF T. STEEL SPOUTER WORK SUCH AS DUCTS AND ELECTRICAL CONDUIT. AT ALL CONNECTIONS BETWEEN FERROUS PIPING AND NONFERROUS PIPING, PROVIDE AN INSULATING DIALECTIC UNION. ALL HANGERS SHALL BE COMPATIBLE WITH PIPING MATERIAL TO PREVENT CORROSION.

PROVIDE ALL FITTINGS, ACCESSORIES, OFFSETS, AND MATERIALS NECESSARY TO FACILITATE THE PLUMBING SYSTEM'S FUNCTIONING AS INDICATED BY THE DESIGN AND THE EQUIPMENT INDICATED.

FIXTURES/EQUIPMENT FURNISHED BY OTHERS: PLUMBING CONTRACTOR SHALL PROVIDE UTILITY CONNECTIONS REQUIRED SUCH AS WATER, GAS, AIR, SUPPLIES, WASTE OUTLET, TRAPS, ECT. AT ALL PLUMBING TYPE FIXTURES OR EQUIPMENT FURNISHED BY OWNER. GENERAL CONTRACTOR, FOOD SERVICE CONTRACTOR, EQUIPMENT SUPPLIER, ETC. INCLUDED ARE STOP VALVES, ESCUTCHEONS, AND CHROME PLATED BRASS TUBING WITH COMPRESSION FITTINGS.

SOIL, WASTE AND VENT PIPING: ALL ABOVE GROUND (EXPOSED TO RETURN AIR PLENUMS) SANITARY SOIL, WASTE AND VENT PIPING SHALL BE NO-HUB CAST IRON SANITARY SYSTEM COMPLYING WITH CSPI #301-69T OR SCHEDULED GALVANIZED PIPE WITH CAST IRON DRAINAGE FITTINGS. ALL BELOW GROUND SANITARY SOIL AND WASTE PIPING SHALL BE NO-HUB CAST IRON SANITARY SYSTEM COMPLYING WITH CSPI #031-69T OR SERVICE WEIGHT CAST IRON HUB AND SPOUT WITH NEOPRENE GASKET COMPLYING WITH CSPI #HSH-68T. DWV PVC PLASTIC SCHEDULE 40 PIPING WITH SOLVENT WELD FITTINGS WOULD BE USE (WHERE PERMITTED BY CODE/LOCAL AUTHORITIES). ALL DRAINAGE PIPING SHALL BE UNIFORMLY PITCHED, 1/4" PER FOOT UNLESS OTHERWISE REQUIRED BY EXISTING CONDITIONS, OR INDICATED ON THE DRAWINGS. ALL UNDERGROUND PIPING SHALL BE MINIMUM 2-INCH.

VENTS: PROVIDE A COMPLETE SYSTEM OF STANDARD WEIGHT CAST IRON NO-HUB VENT RISERS WHERE THE CEILING SPACE IS USED AS A RETURN AIR PLENUM OR USE DWV PLASTIC (WHERE PERMITTED BY CODE/LOCAL AUTHORITIES) WHERE THERE IS A DUCTED RETURN AIR SYSTEM. DO NOT USE DWV PLASTIC IN RETURN AIR PLENUM SPACES. THE VENT SYSTEM SHALL BE CARRIED THROUGH THE ROOF WITH APPROPRIATE ROOF JACKS AND FLASHING.

CONDENSATE AND INDIRECT DRAIN PIPING: TYPE M COPPER TUBING UP TO 1" ID, TYPE DWV TUBING AND FITTINGS FOR 1-1/4" AND LARGER SIZES.

CLEANOUTS: PROVIDE CLEANOUTS AT THE END OF EACH HORIZONTAL RUN, AND AT THE BASE OF ALL VERTICAL WASTE AND DRAIN PIPES. CLEANOUTS SHALL BE OF THE SAME SIZE AS THE PIPES THEY SERVE, CONFORMING TO CODE REQUIREMENTS. PROVIDE SUITABLE WALL OR FLOOR CLEANOUTS WITH ACCESSORIES TO OBSCURE FROM VIEW.

FLOOR DRAINS: LAQUERED CAST IRON TWO PIECE BODY WITH DOUBLE DRAINAGE FLANGE, HEAVY DUTY GRATE, WEEP HOLES, REVERSIBLE CLAMPING COLLAR, AND ROUND, ADJUSTABLE NICKEL-BRONZE STRAINER. MANUFACTURERS: WADE W-1100, JOSAM 30000, SMITH 2010, ZURN Z-415, ANCON FD-100.

FLOOR SINKS: SQUARE, LAQUERED CAST IRON BODY WITH INTEGRAL SEEPAGE PAN, 6 1/4" DEEP, ACID-RESISTANT EPOXY COATED INTERIOR, DOME STRAINER, BOTTOM OUTLET, NICKEL BRONZE FRAME AND SLOPED RIM GRATE. MANUFACTURERS: WADE- W-9140, JOSAM-49000, ANCON FS-660.

ABOVE GROUND STORM WATER CONDUCTOR PIPING: PIPE SIZE 15" AND SMALLER- CAST IRON HUB-AND-SPOUT SOIL PIPE; SERVICE WEIGHT; CAST IRON, HUB-AND-SPOUT SOIL PIPE FITTINGS, COMPRESSION GASKET JOINTS. PIPE SIZE 8" AND SMALLER: HUBLESS CAST IRON SOIL PIPE; SERVICE WEIGHT; HUBLESS CAST IRON JOINT PIPE FITTINGS, HUBLESS JOINTS.

UNDERGROUND STORM WATER BUILDING DRAIN PIPING: PIPE SIZE 12" AND SMALLER: PVC SOIL PIPE; PVC SOIL PIPE FITTINGS, AS REQUIRED BY THE MINNESOTA PLUMBING CODE.

ROOF DRAINS: TYPE "RD": CAST IRON ROOF DRAIN WITH FLANGE, FLASHING RING WITH GRAVEL STOP, UNDERDECK CLAMP, CAST IRON MUSHROOM DOME STRAINER, AND ADJUSTABLE EXTENSION FOR VARYING INSULATION THICKNESS. SHALL BE A WASTE SERIES 3000AE, JOSAM SERIES 21000 OR APPROVED EQUAL. TYPE "RD-OF": CAST IRON ROOF DRAIN WITH FLANGE, FLASHING RING WITH GRAVEL STOP, UNDERDECK CLAMP, CAST IRON MUSHROOM DOME STRAINER, ADJUSTABLE EXTENSION FOR VARYING INSULATION THICKNESS, AND ADJUSTABLE PVC STAMPOPPER.

WATER SUPPLY PIPING: ALL ABOVE GROUND WATER SUPPLY PIPE SHALL BE TYPE L HARD TEMPER COPPER WATER TUBE COMPLYING WITH ASTM B88. ALL FITTINGS SHALL BE WROUGHT COPPER COMPLYING WITH USAS B16.18 & B16.18A. DIELECTRIC COUPLINGS SHALL BE USED BETWEEN STEEL AND COPPER CONNECTIONS. ALL BELOW GROUND WATER SUPPLY PIPE SHALL BE TYPE K COPPER WATER TUBE

LAYOUT WATER PIPING SO THAT THE ENTIRE SYSTEM CAN BE DRAINED. HOT AND COLD WATER PIPING SHALL BE 1/2" MIN. TYPE L COPPER TUBING WITH WROUGHT COPPER FITTINGS AND SWEAT CONNECTIONS. PROVIDE WATER HAMMER ARRESTERS AT EACH FIXTURE OR GROUP OF FIXTURES AS REQUIRED. INSTALL CHROME PLATED BRASS ESCUTCHEON PLATES AT ALL PENETRATIONS THROUGH FINISHED SURFACES (INCLUDING CABINET INTERIORS). USE TIN-ANTIMONY SOLDER, 95/5 FOR ALL SWEAT FITTINGS OF COPPER PIPING.

WATER METER: THIS CONTRACTOR SHALL VERIFY THE SPECIFIC REQUIREMENTS OF THE LOCAL WATER UTILITY AND PROVIDE METER AS REQUIRED. IF NOT REQUIRED OTHERWISE BY THE LOCAL AUTHORITIES, PROVIDE A HERSEY, MODEL 582, OR EQUAL, MAGNET DRIVE, POSITIVE DISPLACEMENT, NUTATING DISC TYPE. METER SHALL COMPLY WITH ALL PERFORMANCE AND MATERIAL STANDARDS OF THE AMWA. PROVIDE REMOTE DIGITAL READOUT AT 5'-0" A.F.F. COORDINATE LOCATION WITH OWNER.

PIPE INSULATION: INSULATE ALL DOMESTIC WATER SERVICE PIPING, CONDENSATE DRAIN AND STORM PIPING AS FOLLOWS. DOMESTIC COLD/HOT WATER, HOT WATER RETURN, PROVIDE 3/4" PREFORMED FIBERGLASS, ASJ/SS-11, FLAME SPREAD 25, SMOKE DEVELOPED 50, ASTM C-447. STORM WATER PIPING, INSULATE FIRST 45'-0" FROM INTERIOR ROOF DRAIN. PROVIDE 3/4" PREFORMED FIBERGLASS, ASJ/SS-11, FLAME SPREAD 25, SMOKE DEVELOPED 50, ASTM C-547. FOR CONDENSATE PIPING PROVIDE 1/2" THICK INSULATION OF SAME CHARACTERISTICS AS LISTED FOR 1" ABOVE, WHEN PERMITTED BY LOCAL CODES, PROVIDE 3/4" SELF-ADHESIVE UNICELLULAR FOAM PIPE INSULATION WITH PRE-FORMED PVC FITTING COVERS - EQUAL TO SELF-ADHESIVE ARMSTRONG 2000 WITH K FACTOR OF 0.27 AT 75 DEGREES MEAN TEMPERATURE. INSULATE ANY EXPOSED CONDENSATE PIPING WITH WASTE TEMPERATURE BELOW 60 DEGREES F.

REFRIGERANT PIPING: THE REFRIGERANT PIPING INSTALLED BETWEEN ANY CONDENSING UNIT AND ITS ASSOCIATED EQUIPMENT SHALL BE AGR TYPE L HARD DRAIN COPPER WITH WROUGHT COPPER FITTINGS AND 95/5 SOLDERED JOINTS AND SHALL BE INSTALLED PER DETAIL AND SHALL BE SIZED PER EQUIPMENT MANUFACTURER'S RECOMMENDATION AFTER CONFIRMING VERTICAL AND HORIZONTAL DISTANCES BETWEEN EQUIPMENT. COORDINATE THE ROUTING WITH THE LANDLORD.

PIPE HANGERS AND SUPPORTS: SUPPORT HORIZONTAL PIPING ADEQUATELY FROM SLABS OR OTHER STRUCTURAL MEMBERS AT INTERVALS SPECIFIED BELOW. USE GRINNELL #260 HANGERS, OR APPROVED EQUAL, HAVING ADJUSTABLE WROUGHT CLEVIS, SOLID RODS AND SOCKETS. PIPING INSTALLED ABOVE WALLS SHALL BE SUPPORTED BY GRINNELL #190, OR APPROVED EQUAL, STEEL ANGLE BRACKETS. THE SPACING OF PIPE SUPPORTS FOR STEEL PIPE 3/4" TO 2" SHALL BE 10'-0" AND FOR COPPER PIPE SIZE UP TO 2" SHALL BE 6'-0". HANGERS IN CONTACT WITH COPPER SHALL BE COPPER PLATED AND SHALL BE EQUAL TO GRINNELL FIGURE CT-65. HANGER RODS SHALL BE 3/8" DIAMETER FOR PIPES UP TO 2" IN SIZE.

ACCESS PANELS: SHALL BE PROVIDED WHERE CONCEALED CONTROL DEVICES, VALVES, ETC. ARE CONCEALED WITHIN WALLS. WHERE ACCESS FOR ADJUSTMENT AND MAINTENANCE IS POSSIBLE THROUGH LAY-IN SUSPENDED CEILING, ACCESS PANELS ARE NOT REQUIRED.

INSTALLATION: THOROUGHLY CLEAN ITEMS BEFORE INSTALLATION. CAP PIPE OPENINGS TO EXCLUDE DIRT UNTIL FIXTURES ARE INSTALLED AND FINAL CONNECTIONS HAVE BEEN MADE. PROCEED AS RAPIDLY AS CONSTRUCTION WILL PERMIT. SET FIXTURES LEVEL AND IN PROPER ALIGNMENT. INSTALL SUPPLIES IN PROPER ALIGNMENT WITH FIXTURES. INSTALL SILICONE SEALANT BETWEEN FIXTURES AND ADJACENT MATERIAL, FOR SANITARY JOINT, AND OMIT ESCUTCHEONS.

REPAIR EXISTING PLUMBING SYSTEM COMPONENTS DAMAGED BY CONSTRUCTION OPERATIONS AND RESTORE TO ORIGINAL CONDITIONS.

PIPE SLEEVES AND OPENINGS: THE MECHANICAL CONTRACTOR SHALL CUT ALL OPENINGS IN PREPOURED FLOORS AND WALLS REQUIRED FOR PENETRATION OF PIPING. FINISH ALL OPENINGS FOR SOUND DRAINAGE AND FIRE SEPARATION. GENERAL CONTRACTOR SHALL PERFORM ALL PATCH PATCHING AS REQUIRED BY ARCHITECTURAL SPECIFICATIONS. ALL HORIZONTAL PIPING WHICH PENETRATES WALLS SHALL BE FITTED WITH PIPE SLEEVES MADE UP OF SIMILAR MATERIALS AS PIPE, 1" GREATER IN DIAMETER THAN OUTSIDE DIAMETER OF PIPE AND PIPE INSULATION. THE VOID BETWEEN PIPE AND SLEEVE SHALL BE SEALED WITH ROPE AND FILLED WITH EXPANDO (NON-SHRINKING) CEMENT. SLEEVES SHALL BE OF SUCH LENGTH THAT THEY END FLUSH WITH WALL FINISH ON BOTH SIDES OF WALL. ALL PENETRATIONS THROUGH FIRE OR SMOKE PARTITIONS SHALL BE SEALED UTILIZING AN APPROVED U/L LISTED PRODUCT THAT IS APPLIED IN ACCORDANCE WITH THE PRODUCT LISTING.

WHERE UNCOVERED EXPOSED PIPES PASS THRU WALLS, THEY SHALL BE FITTED WITH CRANE #10, OR EQUAL, WALL PLATES. SLEEVES THROUGH WATER PROOF FLOORS SHALL EXTEND 2" ABOVE FINISHED FLOOR.

TEST WATER SYSTEM UNDER 150 PSIG HYDROSTATIC PRESSURE, FOR FOUR (4) HOURS MINIMUM. WHEN TESTING INDICATES MATERIALS OR WORKMANSHIP IS DEFICIENT, REPLACE OR REPAIR AS REQUIRED, AND REPEAT TEST UNTIL STANDARDS ARE ACHIEVED. ALL WATER, WASTE AND VENT PIPING SHALL BE TESTED AS REQUIRED BY ALL STATE AND LOCAL CODES AND ORDINANCES

VALVES: THIS CONTRACTOR SHALL FURNISH AND INSTALL VALVES WHERE INDICATED ON PLAN AND NECESSARY FOR PROPER SYSTEM OPERATION AND COMPONENT ISOLATION. PROVIDE VALVES RATED FOR 125 PSI OR GREATER WORKING PRESSURE IN WATER PIPING.

Table with 2 columns: Valve type and Manufacturer/Model. Includes Check Valve, Globe Valve, Gate Valve, Ball Valve, Temp. & Press. Relief Valve, Shockstop, Backflow Preventer, Vacuum Relief Valve, Pressure Reducing Valve, Trap Seal Primer, Apollo 61-109, Crane 1240, Apollo Series 70-100, Waits 10 Mod, Waits #10, Waits No. 80, Waits No. 38A, Waits No. 10, Waits No. 8250.

SHUTOFF VALVES, WITH UNIONS SHALL BE PROVIDED FOR SERVICE TO EACH PLUMBING FIXTURE, FOOD SERVICE EQUIPMENT ITEM OR OTHER EQUIPMENT ITEM, TO FACILITATE ISOLATION FOR REPAIR OR REPLACEMENT. VALVES SHALL BE EQUAL TO JENKINS #902-1 BALL VALVE, CHROME-FINISHED BRONZE, TEFLON SEATS AND PACKING, 400 LB. W.O.G., SOLDER END.

WATER HAMMER ARRESTORS - STAINLESS STEEL SHELL, ELASTOMER OR STAINLESS STEEL NESTED BELLOW. ARRESTORS MUST CONFORM TO STANDARD PD-WH201. SIZE SHALL BE ADEQUATE TO HANDLE FIXTURES SERVED. PRECHARGED SUITABLE FOR OPERATION IN TEMPERATURE RANGE -100 TO 300 DEGREES F AND MAXIMUM 250 PSIG WORKING PRESSURE. ACCEPTABLE MANUFACTURERS: JOSAM SERIES 75000, WADE SHOKSTOP, ZURN SHOKTRK, AMTROL DATROL, WATTS SERIES 15, ANCON SG SERIES.

NATURAL GAS PIPING

PROVIDE A COMPLETE GAS PIPING SYSTEM TO SERVE GAS FIRED HVAC EQUIPMENT AS NOTED ON THE DRAWINGS. PROVIDE EITHER THREADED STEEL OR MALLEABLE IRON PIPE WITH MALLEABLE FITTINGS OR WELDED STEEL. PROVIDE ALL UNIONS, SHUT-OFF VALVES AND DIRT LEGS REQUIRED BY NFPA-54 AND GOVERNING LOCAL CODES AND AT EACH GAS APPLIANCE CONNECTION. PROVIDE ALL TESTS, METERS, INSPECTIONS, HANGERS AND EQUIPMENT CONNECTIONS REQUIRED FOR A COMPLETE AND OPERATING SYSTEM. ALL PIPING 2 1/2" AND LARGER SCHEDULE 40 THICKNESS BLACK STEEL (ANSI B36.10) WELDED AND 2" AND SMALLER MALLEABLE IRON SCHEDULE.

PIPE (INDOOR) 2 1/2" AND LARGER SCHEDULE 40 THICKNESS BLACK STEEL WELDED (ANSI B36.10) 2" AND SMALLER SCHEDULE 40 THICKNESS BLACK STEEL (ANSI B36.10) OR TYPE K SOFT DRAWN COPPER.

FITTINGS (INDOOR) 2 1/2" AND LARGER BLACK STEEL, SCHEDULED 40, WELDED. 2" AND SMALLER BLACK STEEL, SCREWED MALLEABLE IRON TO BE USED WITH SCHEDULE 40 BLACK STEEL PIPING. FLARE FITTINGS TO BE USED WITH TYPE K SOFT DRAWN COPPER.

PIPE (OUTSIDE ABOVE GROUND) 2 1/2" AND LARGER SCHEDULE 40 THICKNESS BLACK STEEL WELDED (ANSI B36.10), FINISH WITH RUST INHIBITIVE PRIMER AND PAINT. 2" AND SMALLER SCHEDULE 40 THICKNESS GALVANIZED (ANSI B36.10).

FITTINGS (OUTSIDE ABOVE GROUND) 2 1/2" AND LARGER BLACK STEEL, SCHEDULE 40, WELDED, PRIMED AND PAINTED. 2" AND SMALLER MALLEABLE IRON, SCREWED, GALVANIZED.

VALVES (ISOLATION AND SHUT OFF) PIPE SIZES 4" AND SMALLER, CAST IRON BODY, BRONZE OR NICKEL PLATED CAST IRON ECCENTRIC PLUG, HYCAR PLUG SEAL, SCREWED ENDS, U.L. LISTED. MANUFACTURER: DEZURK 425 RS 49. MILWAUKEE 6A759 OR EQUAL.

ALTERNATIVE VALVE. BRONZE BODY BALL VALVE, LEVER HANDLE, SOLDER OR SCREWED ENDS, TEFLON SEATS AND SEAL, 300LB. WOG OR MINIMUM AT 275 DEGREES F. MANUFACTURER: APOLLO SERIES 80, CRANE 2330 FT, CONTRONATICS 11000-AA, LUNKENHEIMER 700 ST OR 722 ST, WOCHESTER 411T. MILWAUKEE 6A759 OR EQUAL.

GAS PRESSURE REGULATORS FULL LOCK UP TYPE WITH VENT LIMITING DEVICE TO LIMIT THE ESCAPE OF GAS FROM THE VENT OPENING IN THE EVENT OF DAPHRAGM FAILURE. PRESSURE REGULATORS SHALL BE SIZED TO DELIVER THE QUANTITY OF GAS REQUIRED BY THE EQUIPMENT WITH AN INLET PRESSURE OF 2 PSI AND AN OUTLET PRESSURE REQUIRED BY THE EQUIPMENT.

SEQUENCE OF OPERATIONS

ROOF TOP UNITS RTU-1 THRU RTU-5

- A. OCCUPIED MODE
1. OCCUPIED/UNOCCUPIED MODE IS CONTROLLED THROUGH TIME CLOCK FUNCTION THROUGH THE PROGRAMMABLE THERMOSTAT. UNOCCUPIED MODE MAY BE OVERRIDDEN FOR A TWO HOUR PERIOD (ADJUSTABLE) BY ACTIVATING THE "OVERRIDE" BUTTON ON THE PROGRAMMABLE THERMOSTAT.
2. SUPPLY FAN RUNS CONTINUOUSLY.
3. OUTSIDE AIR DAMPER IS ENABLED AND CONTROLLED BY THE CO2 MONITORING CONTROLS. ONE OUTSIDE AIR CO2 SENSOR SHALL BE SHARED FOR ALL SYSTEMS. ONE CO2 SENSORS FOR EACH SYSTEM LOCATED IN THE RETURN AIR STREAM FOR THE RTU. VENTILATION CONTROL SHALL BE ESTABLISHED BY COMPARING THE RETURN AIR CO2 WITH THE OUTSIDE AIR CO2 AND ADJUSTING THE OUTSIDE AIR DAMPER TO MAINTAIN PERMISSIBLE CO2 LEVELS. THE INITIAL CO2 BE FULL OPEN. MAXIMUM AIR FLOW
4. BAROMETRIC RELIEF DAMPER TRACKING CONTROL. AFTER SUPPLY FAN HAS BEEN ENABLED THE OUTSIDE AIR DAMPER OPENS TO ITS MINIMUM CFM POSITION. THE RELIEF AIR BAROMETRIC DAMPER OPENS AND CLOSSES AS REQUIRED TO MAINTAIN SPACE STATIC PRESSURE SET POINT.
5. OCCUPIED COOLING MODE
a. SPACE PROGRAMMABLE THERMOSTAT SHALL ENABLE DX COOLING CONDENSING UNIT WHEN SPACE TEMPERATURE EXCEEDS SET POINT BY 3 DEGREES F (ADJUSTABLE). DX CONDENSING UNIT SHALL BE DISABLED WHEN SPACE TEMPERATURE IS 1 DEGREE F (ADJUSTABLE) BELOW SET POINT.
b. OCCUPIED HEATING MODE
a. SPACE PROGRAMMABLE THERMOSTAT SHALL ENABLE HEATING OPERATION WHEN SPACE TEMPERATURE IS 2 DEGREES F (ADJUSTABLE) BELOW SET POINT. HEATING OPERATION SHALL BE DISABLED WHEN SPACE TEMPERATURE EXCEEDS SET POINT BY 2 DEGREE F (ADJUSTABLE).

B. UNOCCUPIED MODE (HEATING AND COOLING)

- 1. SUPPLY FAN IS OFF.
2.