HVAC GENERAL NOTES

1. THIS CONTRACTOR SHALL PERFORM IS WORK IN COMPLIANCE WITH ALL PERTINENT CODES, RULES, ORDINANCES AND REGULATIONS OF ALL STATE, LOCAL AND NATIONAL GOVERNING AUTHORITIES THAT HAVE JURISDICTION OVER THIS BUILDING.
2. DO NOT SCALE DRAWINGS – ALL DIMENSIONS SHALL BE CHECKED AND VERIFIED BY THIS CONTRACTOR. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DEVIATIONS THAT ARE FOUND BETWEEN THE DRAWINGS AND SITE CONDITIONS.
3. CONTRACTOR SHALL REPORT ALL DISCREPANCIES FOUND IN THE DRAWINGS AND/OR IN THE SPECIFICATIONS FOR CLARIFICATION.
4. THE DRAWINGS ARE DIAGRAMMATIC AND SHOW ONLY THE GENERAL ARRANGEMENT OF ALL DUCTWORK, PIPING AND EQUIPMENT LAYOUT. BECAUSE OF THE SMALL SCALE OF THE DRAWINGS, IT IS NOT POSSIBLE TO SHOW OR INDICATE ALL OFFSETS, FITTINGS AND ACCESSORIES WHICH MAY BE REQUIRED TO AVOID EXISTING PIPING OR STRUCTURAL FEATURES THEREFORE THE CONTRACTOR SHALL PROVIDE WHAT IS REQUIRED TO INSTALL A COMPLETE SYSTEM.
5. ALL DUCTWORK SIZES NOTED ARE FREE AREA SIZES. THE FIRST FIGURE OF THE DUCT SIZE INDICATES THE DIMENSION OF THE FACE SHOWN OR INDICATED.
6. ALL MANUAL BALANCING VOLUME DAMPERS SHALL BE OF THE LOCKING BLADE TYPE.
7. ALL TURNS SHALL HAVE RADIUS ELBOWS.
8. INSURE THAT ALL EXHAUST, FLUE AND VENTS ARE MINIMUM 10'–0" FROM ALL FRESH AIR INTAKES.
9. HVAC EQUIPMENT SHALL BE CLEANED, LUBRICATED AND HAVE NEW FILTERS INSTALLED PRIOR TO START–UP.
10. ALL DUCTWORK SHALL BE RUN AS HIGH AS POSSIBLE FOR MAXIMUM HEAD ROOM.
11. ALL CUTTING AND PATCHING REQUIRED FOR THIS WORK SHALL BE DONE BY THE GENERAL CONTRACTOR.
12. DUCTWORK AND EQUIPMENT INSTALLATION SHALL BE COORDINATED WITH ALL OTHER TRADES.
13. THIS CONTRACTOR SHALL COORDINATE ALL HVAC POWER REQUIREMENTS WITH THE ELECTRICAL CONTRACTOR.
14. RADIANT SLAB HEATING SYSTEM SHALL BE COORDINATED WITH SYSTEM MANUFACTURER FOR ALL REQUIRED SIZING, COMPONENTS, CONTROLS, TUBING, SPACING, EQUIPMENT, MANIFOLDS, VALVES, CIRCULATORS, ETC. TO INSURE A COMPLETE FUNCTIONAL SYSTEM INSTALLATION.
15. THIS CONTRACTOR SHALL INSURE THAT THE DESIGN AND ALL COMPONENTS REQUIRED FOR A COMPLETE RADIANT SLAB HEATING SYSTEM ARE REVIEWED BY THE SYSTEM MANUFACTURER AND ARE INCLUDED IN THE BID.
16. THE CONTRACTOR SHALL INSURE THAT THE ALL–WEATHER LOUVERS INSTALLED FOR FRESH AIR INTAKE DO NOT EXCEED THE WATER PENETRATION VELOCITY.
17. THE EXHAUST FANS FANS SHALL BE INTERLOCKED WITH THE RESPECTIVE MOTORIZED DAMPERS ON INTAKE LOUVERS AS REQUIRED.
18. PROVIDE FIRE DAMPERS THROUGH ALL FIRE RATED CONSTRUCTION AS REQUIRED.
19. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING JOIST CONFIGURATION WITH EQUIPMENT LOCATIONS AND DUCT LAYOUT, PRIOR TO ORDERING DUCT PACKAGE, TO INSURE THAT LAYOUT WILL FIT IN AVAILABLE SPACE. THIS CONTRACTOR SHALL MAKE CHANGES AS REQUIRED WITHOUT COST TO THE OWNER.
20. CAP AND SEAL ALL DUCTWORK, PIPING, FLUES, INTAKES, ETC. UNTIL FINAL CONNECTION IS MADE.
21. DO NOT RUN DUCTWORK OVER ELECTRICAL EQUIPMENT.
22. PROVIDE RECOMMENDED MANUFACTURER CLEARANCES AROUND EQUIPMENT FOR SERVICING AND OPERATION.
23. VERIFY ALL MOUNTING HEIGHTS AND REQUIREMENTS FOR EQUIPMENT WITH ARCHITECTURAL DRAWINGS, CODE ENFORCEMENT OFFICER AND OWNER.
24. DUCTWORK SHALL BE SHEET METAL.
25. ELECTRICAL DISCONNECT SWITCHES BY E.C.
26. ALL EQUIPMENT IN THE WASH BAY SHALL BE CORROSION RESISTANT CONSTRUCTION AND BE APPROVED FOR WET LOCATIONS.

HVAC SPECIFICATIONS:

1. THE WORK REQUIRED UNDER THIS CONTRACT SHALL INCLUDE ALL LABOR, MATERIALS, APPURTENANCES, EQUIPMENT AND SERVICES NECESSARY AND REQUIRED TO FURNISH AND INSTALL ALL ITEMS INDICATED OR REQUIRED FOR COMPLETE INSTALLATION IN ACCORDANCE WITH STANDARD PROCEDURES UNDER HVAC CONSTRUCTION.
2. THE ENTIRE INSTALLATION SHALL CONFIRM WITH ALL PERTINENT CODES AND REGULATIONS OF LOCAL, MUNICIPAL, COUNTY AND STATE AUTHORITIES, THE PENNSYLVANIA DEPARTMENT OF LABOR AND INDUSTRY, THE NATIONAL BOARD OF FIRE UNDERWRITERS, AND THE NATIONAL ELECTRIC CODE.
3. WHERE APPLICABLE MATERIALS AND EQUIPMENT SHALL BEAR STAMPS OR SEALS OF NBFU, ASME, NEMA AND OTHER INDUSTRY REGULATIONS AGENCIES, IF ANY OF THE WORK SHOWN OR SPECIFIED CONFLICT WITH CODES OR REGULATIONS THE CONTRACTOR SHALL MAKE SURE CHANGES ARE AS REQUIRED WITHOUT ADDITIONAL COST TO THE OWNER.
4. ALL WORK UNDER THIS SPECIFICATION SHALL BE GUARANTEED FREE OF DEFECTS IN MATERIAL, DESIGN, OR WORKMANSHIP FOR A PERIOD OF (1) YEAR FROM THE DATE OF FINAL ACCEPTANCE OF THE WORK. ANY DEFECTS IN THE WORK DEVELOPING DURING THIS PERIOD SHALL BE REMEDIED WITHOUT COST TO THE OWNER.
5. THE CONTRACTOR SHALL SECURE AND PAY FOR THE PERMITS AND TESTS REQUIRED.
6. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND SPECIFICATIONS COVERING ALL ITEMS TO BE PROVIDED.
7. ALL DUCTWORK SHALL BE INSTALLED AS REQUIRED TO PROVIDE MAXIMUM HEAD ROOM.
8. FURNISH AND INSTALL ALL HANGERS AND SUPPORTS FOR DUCTWORK AS REQUIRED AND IN ACCORDANCE WITH STANDARD CONSTRUCTION REQUIREMENTS.
9. ALL CONTROL WIRING AND THERMOSTATS SHALL BE FURNISHED AND INSTALLED BY THE HVAC CONTRACTOR.
10. EXHAUST DUCTWORK CONSTRUCTION SHALL BE 24 GAUGE ZINC–COATED IRON OR STEEL. ROUND DUCTWORK CONSTRUCTION SHALL BE 24 GAUGE ZINC–COATED IRON OR STEEL. SHEET METAL FOR CUPS AND DRIVE CAPS SHALL BE OF THE SAME MATERIAL AN THICKNESS AS THE DUCTWORK. ALL DUCTWORK SHALL BE SEALED AIR TIGHT WITH DUCT SEALER.

    ELBOW SHALL HAVE A CENTERLINE RADIUS EQUAL TO 1 1/2 TIMES THE WIDTH OF THE DUCT IN DIRECTION OF TURN UNLESS DRAWINGS INDICATE SQUARE ELBOW IN WHICH CASE, TURNING VANES SHALL BE PROVIDED AS MANUFACTURED BY HART & COOLEY (DUCTURNS).

    DAMPERS SHALL BE INSTALLED IN DUCTS WHERE SHOWN AND WHEREVER REQUIRED TO PERMIT COMPLETE ADJUSTMENT OF AIR QUANTITIES AT ALL OUTLETS. DAMPERS SHALL BE LOCATED WHERE THEY CAN BE ADJUSTED AT ANY TIME AFTER COMPLETION OF THE WORK.

    ALL DUCTWORK INSTALLATION SHALL CONFORM TO SMACNA AND ASHRAE STANDARDS.
11. FURNISH AND INSTALL ALL GRILLES AS SHOWN ON THE PLANS.

    THEY SHALL BE OF A COMMERCIAL GRADE CONSTRUCTED OF ALUMINUM OR STEEL WITH MITERED CORNER AND SPONGE RUBBER GASKETS.

    ALL GRILLES SHALL BE FINISHED AS SELECTED BY THE OWNER AND SHALL BE AS MANUFACTURED BY TUTTLE & BAILEY.

    ALL GRILLES SHALL BE PROVIDED WITH INTEGRAL OPPOSED BLADE DAMPERS FOR BALANCING PURPOSES.
12. UNDERFLOOR RADIANT SYSTEM SHALL BE AS MANUFACTURED BY RADIANTEC, INC, VIEGA OR APPROVED EQUAL. COORDINATE DESIGN AND INSTALLATION REQUIREMENTS WITH SYSTEM MANUFACTURER PRIOR TO BIDDING AND CONSTRUCTION.

    TUBING SHALL BE AS RECOMMENDED BY MANUFACTURER FOR SIZING AND SPACING, PROVIDE PEX TUBING WITH OXYGEN BARRIER AS RECOMMENDED BY SYSTEM MANUFACTURER. BALANCING VALVES SHALL BE PROVIDED FOR EACH LOOP AND FLOW RATES PER CIRCUIT SHALL BE AS RECOMMENDED BY SYSTEM MANUFACTURER.

    FLOOR SENSORS SHALL BE INSTALLED IN BRASS FITTING AT LOCATIONS AS RECOMMENDED BY MANUFACTURER.

    IN–LINE CIRCULATING PUMPS SHALL SIZED BY SYSTEM MANUFACTURER AND SHALL BE GRUNDFOS OR AS RECOMMENDED BY MANUFACTURER.

    CONTRACTOR SHALL HAVE RADIANTEC, INC, VIEGA OR APPROVED MANUFACTURER DESIGN THE SYSTEM PER THE DESIGN INTENT AS INDICATED AND PROVIDE INFORMATION WITH REGARD TO THE TUBING SIZE, TUBING LENGTH, TUBING SPACING, INSTALLATION HEIGHT IN CONCRETE, GPM FLOW PER CIRCUIT, GPM FLOW PER MANIFOLD, FLUID TEMPERATURE RANGES FOR HEATING AND SNOW MELTING, FLUID SOLUTION RECOMMENDED, CIRCULATING PUMP(S), MANIFOLDS, VALVING, FLOW CONTROLS, ETC. TO PROVIDE A COMPLETE SYSTEM TO MAINTAIN MINIMUM SPACE TEMPERATURE OF 60° F. MAXIMUM EFFICIENCY AND COST EFFECTIVENESS OF THE DESIGN ALONG WITH ANY RECOMMENDATIONS FOR PIPING,TO PROVIDE A BETTER INSTALLATION. COORDINATE MANIFOLD BOXES LOCATIONS AND MOUNTING WITH OWNER PRIOR TO ORDERING AND CONSTRUCTION.

    RADIANT SLAB SYSTEM SHALL CONSIST OF THE FOLLOWING:

    PEX TUBE IN THE SLAB (WITH OXYGEN BARRIER) AS RECOMMENDED BY SYSTEM MANUFACTURER. INSTALL 1" FROM BOTTOM OF SLAB OR AS RECOMMENDED BY SYSTEM MANUFACTURER.

    THE DESIGN INTENT FOR THIS PROJECT INCLUDES (3) THREE GAS FIRED BOILER AS MANUFACTURED BY VIESSMANN MODEL B2HA–60, RENNAI OR APPROVED EQUAL, LIQUID PROPANE GAS INPUT MODULATION 15 CFH TO 212 CFH, 94% AFU, MAXIMUM HEATING OUTPUT 194 MBH @ 140° F., 1.9 GALLON VOLUME, PROVIDE WITH OUTDOOR RESET CONTROLS, STAINLESS STEEL BURNER, 1 1/2" SUPPLY AND 1 1/2" RETURN CONNECTIONS, 1" LIQUID PROPANE GAS CONNECTION, 3.25" VENT AND 5" COMBUSTION AIR INTAKE, INTEGRAL CONTROLS, 30 PSI RELIEF VALVE PIPED TO FLOOR DRAIN AS REQUIRED, CONDENSATE TRAP AND DRAIN PIPING TO FLOOR DRAIN, AUTOMATIC AIR VENT, WALL MOUNTED, 15"X19"X40 5/8", APPROXIMATE WEIGHT 155 LBS. INCLUDE BASE MIXING STATION, WITH HIGH HEAD 3–SPEED CIRCULATOR, PROPRESS. (3) IN–LINE CIRCULATING PUMPS, SIZED BY MANUFACTURER/VENDOR FOR GPM, FT. HD LOSS, HP, RPM, 120V–1ø, AMPS, AS MANUFACTURED BY GRUNDFOS OR APPROVED EQUAL.

    MANIFOLD CABINET SYSTEM AS SPECIFIED BY SYSTEM MANUFACTURER, CONTAINING STAINLESS STEEL MANIFOLD BALL VALVE SET, UNION XF NPT; STAINLESS MANIFOLD SHUT OFF BALANCING, OUTLETS AND INLETS. UNIT SHALL BE CAPABLE OF CONNECTIONS AS DESIGNED BY MANUFACTURER. MANIFOLD SHALL INCLUDE MANUAL AIR VENTS, SWIVEL PURGING VALVES, BUILT–IN POSITIVE SHUT–OFF VALVES, FLOW INDICATORS, SOUND ISOLATING BRACKET, AND FILL AND DRAIN VALVES AS MANUFACTURED BY VIEGA OR APPROVED EQUAL.

    PROVIDE SEVEN MANIFOLD STATIONS – EACH CONFIGURED AS DESIGNED BY SYSTEM MANUFACTURER FOR LOOPS OF PEX TUBING, LINEAL FEET FOR EACH LOOP, TO BE INSTALLED 12 INCHES FROM PERIMETER WALLS AND SPACING AS SPECIFIED BY SYSTEM MANUFACTURER. EACH LOOP SHALL BE PROVIDED WITH GPM AND TEMPERATURE AS SPECIFIED BY SYSTEM MANUFACTURER. SYSTEM TOTAL GPM SHALL BE PROVIDED BY SYSTEM MANUFACTURER. PRESSURE LOSSES WILL BE PROVIDED BY MANUFACTURER IN FT. OF WATER. MIMIMUM HEATING CAPACITY OF 199,000 BTUH WITH A 10°F. TEMPERATURE DROP IN LOOP TEMPERATURE.

    WATER WITH A PERCENTAGE OF PROPYLENE GLYCOL AS RECOMMENDED BY THE SYSTEM MANUFACTURER SHALL BE PROVIDED TO THE LOOPS AT GPM, TEMPERATURE, HEAD LOSS AND BTUH HEATING LOAD AS CALCULATED BY SYSTEM MANUFACTURER.

    FLOOR PREPARATION AND CONSTRUCTION SHALL BE AS RECOMMENDED BY SYSTEM MANUFACTURER AND GOOD INSTALLATION PRACTICES FOR PREVENTION OF SLAB SEPARATION AND POTENTIAL FOR DAMAGE TO TUBING. SLAB PERIMETER AND FLOOR SHALL BE INSULATED IN ACCORDANCE WITH SYSTEM MANUFACTURERS RECOMMENDATIONS WITH TUBING RUN INTERIOR OF THE INSULATION. ALL SLAB PREPARATION SHALL BE BY THE GENERAL CONTRACTOR AND SHOULD BE COORDINATED WITH THE SYSTEM MANUFACTURER AND THIS CONTRACTOR.
13. PROVIDE FULLY FUNCTIONAL TESTING OF ALL EQUIPMENT AND PROVIDE DOCUMENTATION FOR VERIFICATION.
14. PROVIDE PERMANENT IDENTIFICATION TAGS FOR ALL EQUIPMENT. TAG SHALL INCLUDE DRAWING ID, CAPACITY AND ELECTRICAL CHARACTERISTICS. OUTDOOR UNITS REQUIRE STAMPED METAL PLATES FIXED TO EQUIPMENT.

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PENNSYLVANIA ONE CALL SYSTEM, INC.
1–800–242–1776

PENNSYLVANIA LAW REQUIRES NOT LESS THAN THREE NOR MORE THAN TEN WORKING DAYS NOTICE BEFORE EXCAVATION

REFER TO PENNSYLVANIA ONE CALL SYSTEM, INC. UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE.

Cox Engineering
175 Matamoras Road
Halifax, PA 17032
Phone/Fax: (717)896-8242
Mobile: (717)877-0102
E-Mail: Cox.Engineering@comcast.net

Cox Engineering

LARRY EUGENE COX, JR. — PROFESSIONAL ENGINEER — COMMONWEALTH OF PENNSYLVANIA

NO.	REVISION NOTES	DATE

BREHM–LEBO ENGINEERING, INC.
CIVIL ENGINEERS ▲ PLANNERS ▲ SURVEYORS ▲ STRUCTURAL ENGINEERS
17 STATE AVENUE
CARLISLE, PA 17013
PH: (717) 243–4114
FAX: (717) 243–3301
40 NORTH SECOND STREET
CHAMBERSBURG, PA 17201
PH: (717) 267–1401
FAX: (717) 243–3301

NOT FOR CONSTRUCTION – ISSUED FOR BID AND PERMIT 08–21–23

EQUIPMENT BUILDING
CONSTRUCTION DRAWING
FOR
PROPOSED FIRST FLOOR PLAN
SOUTHAMPTON TWP. CUMBERLAND COUNTY, PA

Drawn By: LEC
Designed By: LEC
Checked By: LEC
File: 2022–SH–009
Date: 08/18/2023
Scale: 3/16"=1'–0"
Drawing No.
H–3