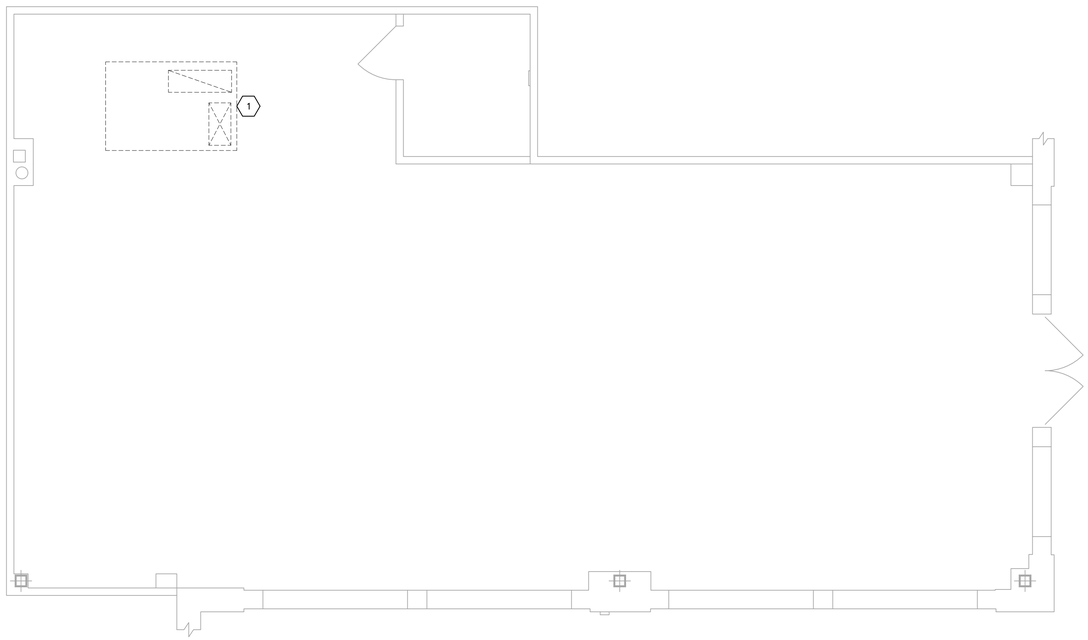

1 MECHANICAL DEMO PLAN

SCALE: 1/4" = 1'-0"

GENERAL NOTES

A. THE GENERAL CONTRACTOR IS RESPONSIBLE AT THE BEGINNING OF THE PROJECT TO MEASURE THE SPACE WHILE REVIEWING THE ARCHITECT'S DRAWINGS TO VERIFY THAT THE INFORMATION CONTAINED IN THE MECHANICAL DOCUMENTS, ON WHICH HE/SHE QUOTED TO THE CLIENT, ARE COMPATIBLE WITH THE WORK TO BE PERFORMED AND THAT ALL SPACES ARE SUFFICIENT IN SIZE FOR THE WORK TO BE COMPLETED INCLUDING WIDTHS, LENGTHS, HEIGHTS, ETC.

KEY NOTES

1 REMOVE EXISTING RTU AND ASSOCIATED DUCTWORK IN IT'S ENTIRETY, EXISTING ROOF CURB WILL BE REUSED, CONTRACTOR SHALL FIELD VERIFY IT'S CONDITION, REPORT IN WRITING ANY PROBLEMS WHICH WOULD REQUIRE REPLACEMENT OF ROOF CURB INSTEAD OF REUSE TO THE TENANTS CONSTRUCTION MANAGER .

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THE GENERAL CONTRACTOR AND/OR ALL SUB-CONTRACTORS WORKING FROM THESE PLANS AND SPECIFICATIONS ARE NOT TO SCALE SUCH INFORMATION BUT TO CONTACT THE ARCHITECT OR HIS REPRESENTATIVE REGARDING MEASUREMENTS, IF SUCH MEASUREMENTS DO NOT APPEAR CORRECT, ADD UP PROPERLY OR SCALE CORRECTLY TO THE INDICATED SIZE.

ENGINEER

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EEA Project No. 20246520
State of Registration OHIO
Firm Registration No. COA-02295

PROJECT NUMBER	DATE:
240238	06.07.2024
DRAWN BY: SL	CHECK BY: JTS
THESE DRAWINGS WERE COMPLETED UNDER THE DIRECT SUPERVISION OF:	JTS

REVISION LOG:	
ISSUED FOR CLIENT	05.29.24
ISSUED FOR LL PERMIT + BID	06.07.24

LIBERTY CENTER
7139 FOUNDRY ROW
SPACE F-122
LIBERTY TOWNSHIP, OH 45069

DRAWING NO.

MD-102

MECHANICAL DEMO PLAN

JEREMY T. SMITH

EEA CONSULTING ENGINEERS

DATE: 05/29/24

PROJECT NO.: 240238

LOCATION: LIBERTY CENTER, LIBERTY TOWNSHIP OH

PLOT SCALE: 1:1

MEP GENERAL CONDITIONS

1. IT IS THE INTENT OF THE CONTRACT DOCUMENTS TO PROVIDE AN INSTALLATION COMPLETE IN EVERY RESPECT. WORK SHALL BE EXECUTED IN A WORKMANLIKE MANNER AND SHALL INCLUDE ALL LABOR, MATERIALS, AND SUPERVISION ESSENTIAL TO PROVIDE COMPLETE FUNCTIONING SYSTEMS AS DESCRIBED IN THE CONTRACT DOCUMENTS. IN THE EVENT THAT ADDITIONAL DETAILS OR SPECIAL CONSTRUCTION IS REQUIRED FOR WORK INDICATED, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE SAME AS WELL AS TO PROVIDE MATERIAL AND EQUIPMENT USUALLY FURNISHED WITH SUCH SYSTEMS OR REQUIRED TO COMPLETE THE INSTALLATION AT NO EXPENSE TO THE OWNER.
2. DEVIATIONS TO THE INTENDED DESIGN OR THE SCOPE OF THE WORK MUST BE APPROVED BY THE ENGINEER PRIOR TO COMMENCING WORK. FAILURE TO DO SO MAY RESULT IN THE WORK TO BE REMOVED AT NO COST TO THE OWNER.
3. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE LOCAL CODES, STANDARDS, AND AMENDMENTS AND/OR OTHER AUTHORITIES THAT MAY HAVE JURISDICTION PERTAINING TO THE WORK. IN ADDITION, ALL WORK SHALL CONFORM TO THE STANDARDS AND PRACTICES OF THE OWNER.
4. ALL EQUIPMENT INSTALLED ON THIS PROJECT SHALL BE NEW AND UNUSED UNLESS NOTED OTHERWISE. THE CONTRACTOR SHALL REMOVE ALL SHIPPING LABELS, DIRT, PAINT SPOTS, GREASE, AND STAINS FROM ALL EQUIPMENT. DEBRIS SHALL BE REMOVED AS IT ACCUMULATES. UPON COMPLETION OF HIS WORK, THE CONTRACTOR SHALL CLEAN ALL EQUIPMENT. NO LOOSE PARTS OR SCRAPS OF EQUIPMENT SHALL BE LEFT ON THE PREMISES.
5. ALL MATERIALS SALVAGED FOR THE OWNER SHALL BE STORED BY CONTRACTOR UNTIL END OF PROJECT THEN RETURNED TO THE OWNER.
6. ALL WORK SHALL BE GUARANTEED AGAINST DEFECTIVE MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE (1) YEAR AFTER THE DATE AS DEFINED BY THE CONTRACT. THE CONTRACTOR SHALL REPAIR OR REPLACE, AT HIS/HER OWN EXPENSE WHEN ORDERED TO DO SO, ALL WORK THAT MAY DEVELOP DEFECTS IN MATERIAL OR WORKMANSHIP WITHIN SAID PERIOD OF TIME. ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S PUBLISHED RECOMMENDATIONS FOR SERVICE INTENDED, AS INTERPRETED BY THE ENGINEER. THE INSTALLATION OF ALL EQUIPMENT SHALL BE MADE BY EXPERIENCED CRAFTSMAN IN A NEAT, WORKMANLIKE MANNER. ALL MATERIALS, TOOLS, COSTS, AND SERVICES NECESSARY TO COMPLETELY INSTALL ALL WORK SHALL BE PROVIDED BY THE CONTRACTOR.
7. ALL SAFETY EXPOSURES OR VIOLATIONS SHALL BE RECTIFIED IMMEDIATELY BY THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING PROTECTION OF PERSONS AND PROPERTY, PROVIDING SAFE WORKING CONDITIONS THROUGHOUT THE WORK PROGRESS, PROVIDING TEMPORARY COVERINGS FOR OPENINGS THROUGH WALLS OR FLOORS, AND PROVIDING TEMPORARY BARRIERS, PARTITIONS AND/OR DUST BARRIERS WHERE REQUIRED TO MAINTAIN OSHA AND THE OWNER'S SAFETY STANDARDS AND TO PREVENT DAMAGE TO PROPERTY. ALL AREAS ADJACENT TO THE CONSTRUCTION AREA OR AFFECTED BY THE CONSTRUCTION MUST BE PROTECTED FROM DAMAGE, CLEANED, AND RESTORED TO THE ORIGINAL CONDITION AT NO ADDITIONAL EXPENSE TO THE OWNER. THE CONTRACTOR SHALL PROVIDE PROTECTIVE CLOTHING AND EYEWEAR FOR ALL PERSONNEL WHO ARE REQUIRED TO HANDLE HAZARDOUS CHEMICAL PRODUCTS OR WORK IN HAZARDOUS LOCATIONS.
8. DO NOT DISTURB ASBESTOS CONTAINING MATERIALS (ACM). IF ACM ARE ENCOUNTERED OR SUSPECTED DURING THE COURSE OF WORK, THE CONTRACTOR SHALL IMMEDIATELY CONTACT THE OWNER AND ACCOMMODATE FURTHER NECESSARY ABATEMENT BY THE OWNER. ASBESTOS ABATEMENT SHALL OCCUR PRIOR TO CONTRACTOR COMMENCING OR CONTINUING DEMOLITION OR CONSTRUCTION OPERATIONS.
9. CONTRACTOR SHALL DIRECT ALL QUESTIONS TO THE OWNER. THE CONTRACTOR SHALL VERIFY ALL WORKING CONDITIONS SUCH AS STARTING TIME, NOISE AND VIBRATION LIMITATIONS, CONFINED SPACE, ETC. THROUGH THE OWNER AND APPROVAL SHALL BE RECEIVED TO START WORK.
10. THE CONTRACTOR SHALL VISIT THE JOBSITE AND VERIFY THE SCOPE OF WORK REQUIRED INCLUDING ALL EXISTING CONDITIONS, LOCATIONS, DIMENSIONS, AND QUANTITIES AS SHOWN AND NOTED ON THE DRAWINGS AND THE EXTENT AND EFFECT OF EXISTING SYSTEMS. NOTIFY THE OWNER IF ANY OF THE WORK CANNOT BE SAFELY ACCESSED.
11. THE CONTRACTOR SHALL ENSURE FULL COORDINATION WITH OTHER TRADES AND CONTRACTORS TO ACCOMPLISH THE WORK AS SHOWN AND NOTED IN THESE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL COMPARE THE DRAWINGS OF OTHER TRADES AND REPORT ANY DISCREPANCIES TO THE OWNER.
12. NOT ALL EXISTING UTILITIES ARE SHOWN FOR CLARITY OF THE DRAWING. THE CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND SHALL PERFORM FIELD MEASUREMENTS PRIOR TO FABRICATION AND/OR PURCHASE OF ANY MATERIAL. CONTACT THE OWNER SHOULD EXISTING CONDITIONS BE DIFFERENT FROM THE DESIGN DRAWINGS. CONFLICTS ARISING DUE TO LACK OF COORDINATION SHALL BE THE RESPONSIBILITY AND AT THE EXPENSE OF THE CONTRACTOR.
13. THE CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS, LICENSES, CLEARANCES AND CERTIFICATES FROM THE OWNER AND LOCAL AUTHORITIES HAVING JURISDICTION AS REQUIRED PRIOR TO THE COMMENCEMENT OF THE WORK.
14. THE CONTRACTOR SHALL TRAIN HIS/HER EMPLOYEES AND SUBCONTRACTORS AS REQUIRED BY THE OWNER, IN THE RECOGNITION AND AVOIDANCE OF UNSAFE CONDITIONS, AND IN THE REGULATIONS AND HAZARDS WHICH APPLY TO THE AREA IN WHICH THE WORK WILL TAKE PLACE.
15. ANY REQUIRED CHANGES TO THE DRAWINGS RESULTING FROM THE ACCEPTANCE OF ALTERNATIVES AND/OR SUBSTITUTIONS ARE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE SUBMITTED TO THE OWNER FOR APPROVAL.
16. SUBMITTALS
    - A. ALL SUBMITTALS SHALL BE REVIEWED BY THE CONTRACTOR PRIOR TO SUBMITTING TO THE ENGINEER. ALL SUBMITTALS NOT REVIEWED BY THE CONTRACTOR WILL BE RETURNED WITHOUT REVIEW. AFTER REVIEW HAS BEEN COMPLETED, SUBMIT A COPY OF EACH SUBMITTAL TO THE OWNER WITH THE APPROVAL SEAL OF THE ENGINEER AND THE CONTRACTOR. SUBMITTALS SHALL BE APPROVED PRIOR TO STARTING ANY WORK.
    - B. SUBMIT MATERIAL SAFETY DATA SHEETS AND MANUFACTURER'S CURRENT RECOMMENDED METHOD OF INSTALLATION TO THE OWNER FOR ALL MATERIALS USED TO PERFORM THE WORK INDICATED BY THESE DOCUMENTS. ALL CHEMICALS OR CHEMICAL COMPOUNDS PROPOSED FOR USE ON THE PROPERTY INCLUDING, BUT NOT LIMITED TO PAINT THINNERS, SOLVENTS, ADHESIVES, SEALANTS, CLEANING COMPOUNDS, EPOXIES, ETC. MUST BE APPROVED BY THE OWNER.
    - C. PROVIDE PRODUCT DATA SUBMITTALS ON ALL MAJOR EQUIPMENT, COMPONENTS, AND MATERIALS SPECIFIED IN THESE PLANS FOR ENGINEER'S AND OWNER'S REVIEW AND ACCEPTANCE PRIOR TO INSTALLATION. SUBMIT CATALOG DATA SHOWING MANUFACTURER'S NAME AND CONTACT INFORMATION, ALL STANDARD FEATURES, AMPERAGE, VOLTAGE, A/C RATINGS, DIMENSIONS, WEIGHTS, LISTINGS & PRODUCT LABELS, MATERIAL TYPES, FINISHES AND CLEARLY INDICATING WHICH OPTIONAL FEATURES WILL BE PROVIDED. EACH SUBMITTAL SHALL INCLUDE A COPY OF THE RELEVANT EQUIPMENT OR MATERIALS SCHEDULE ON THE PLANS AND SPECIFICATION SECTION WITH EACH LINE ITEM MARKED COMPLIES OR DOES NOT COMPLY WITH THE REQUIREMENTS.
        - C1. WHERE MULTIPLE SIZES ARE LISTED, INDICATE SIZES TO BE USED.
        - C2. WHERE MULTIPLE PRODUCTS ARE SHOWN ON THE SAME PAGE, INDICATE WHICH PRODUCTS TO BE USED.
        - C3. INCLUDE ALL RELEVANT ELECTRICAL DIAGRAMS INCLUDING SCHEMATIC AND INTERCONNECTION DIAGRAMS FOR POWER, SIGNAL, AND CONTROL WIRING.
    - D. PROVIDE SHOP DRAWINGS SHOWING ALL DUCTWORK, PIPING AND CONDUIT 2" AND ABOVE, AND ALL MAJOR EQUIPMENT AND HOUSEKEEPING PADS. THE USE OF REPRODUCTIONS OF THESE CONTRACT DRAWINGS BY ANY CONTRACTOR, SUBCONTRACTOR, ERECTOR, FABRICATOR OR MATERIAL SUPPLIER, IN LIEU OF THE PREPARATION OF SHOP DRAWINGS IS FORBIDDEN. SHOP DRAWINGS RECEIVED BEARING THE ENGINEER'S TITLE AND SEAL SHALL BE PROMPTLY REJECTED.
    - E. ALL SUBMITTALS SHALL BE PROVIDED IN PDF FORMAT.
17. SHOULD ANY ERRORS, OMISSIONS, CONFLICTS, OR AMBIGUITIES EXIST IN THE DRAWINGS, THE CONTRACTOR SHALL BRING THESE TO THE ATTENTION OF THE OWNER IMMEDIATELY FOR ADJUSTMENT IN WRITING BEFORE SIGNING THE CONTRACT OR PROCEEDING WITH THE WORK. OTHERWISE, HE/SHE SHALL AT HIS/HER OWN EXPENSE, SUPPLY THE PROPER MATERIALS AND LABOR TO MAKE GOOD ANY DAMAGE OR DEFECT CAUSED BY SUCH UNINTENTIONAL ERROR.
18. CONTRACTOR SHALL CHECK ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS FOR ACCURACY, AND CONFIRM THAT THE WORK IS BUILDABLE AS SHOWN AND MEETS ALL APPLICABLE CODES BEFORE PROCEEDING WITH CONSTRUCTION. IF THERE ARE ANY QUESTIONS REGARDING THESE OR OTHER COORDINATION ISSUES, THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM THE OWNER BEFORE PROCEEDING WITH THE WORK IN QUESTION OR RELATED WORK.
19. THE CONTRACTOR SHALL NOT FABRICATE OR INSTALL ITEMS AS SHOWN ON THE DRAWINGS IF THERE ARE DISCREPANCIES OR CONFLICTS BETWEEN THE EXISTING CONDITIONS AND THE INFORMATION SHOWN ON THE DRAWINGS UNTIL SUCH DISCREPANCIES HAVE BEEN RESOLVED. PRIOR TO FABRICATION OR INSTALLATION, THE CONTRACTOR SHALL IMMEDIATELY CALL SUCH DISCREPANCIES OR CONFLICTS TO THE ATTENTION OF THE OWNER AND THE ENGINEER.
20. ALL WORK NOTED "NIC" OR "NOT IN CONTRACT" IS TO BE ACCOMPLISHED BY ANOTHER CONTRACTOR AND IS NOT TO BE PART OF THE CONSTRUCTION AGREEMENT.
21. IN CASES OF A DIFFERENCE BETWEEN THE MINIMUM REQUIREMENTS OF THE VARIOUS LAWS, CODES, AUTHORITIES, AND THE DOCUMENTS; THE WORK SHALL MEET THE GREATER OR MORE STRINGENT REQUIREMENTS.
22. THE SEQUENCE OF CONSTRUCTION AND ANY SERVICE OUTAGES SHALL BE SCHEDULED AND COORDINATED WITH THE OWNER.
23. WORK AREAS SHALL BE KEPT CONTINUOUSLY, AT ALL TIMES, FREE OF DEBRIS AND NON-HAZARDOUS MATERIAL TO THE SATISFACTION OF THE OWNER. ALL EXISTING PIPING AND CONDUITS SHALL HAVE TEMPORARY PROTECTION DURING CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE STORAGE OF MATERIALS, PARKING OF VEHICLES, AND RESTRICTIONS OF WORK WITH THE OWNER. AFTER PROJECT COMPLETION, THE SITE SHALL BE CLEANED UP AND RESTORED TO ITS ORIGINAL CONDITION OR BETTER PRIOR TO THE START OF THE PROJECT TO THE SATISFACTION OF THE OWNER.
24. THE DRAWINGS ARE DIAGRAMMATIC ONLY AND DO NOT GIVE FULLY DIMENSIONED LOCATIONS OF VARIOUS ELEMENTS OF WORK OR INDICATE ALL OFFSETS THAT MAY BE REQUIRED. DETERMINE EXACT LOCATIONS FROM FIELD MEASUREMENTS. MAKING ADJUSTMENTS TO FIELD CONDITIONS IS CONSIDERED A PART OF THE WORK REQUIRED.
25. WRITTEN DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS.
26. CONTRACT CLOSEOUT: INCLUDE THE FOLLOWING:
    - A. RECORD DRAWINGS
        - A.1. THE CONTRACTOR SHALL MAINTAIN TWO SETS OF CONSTRUCTION DRAWINGS ON SITE AT ALL TIMES SO THAT ALL CHANGES BETWEEN THE DRAWINGS AND THE ACTUAL CONSTRUCTION CAN BE NOTED ON THE DRAWINGS. THIS INCLUDES ALL DEVIATIONS FROM THE ORIGINAL CONTRACT. THE CONTRACTOR SHALL INDICATE ALL CHANGES FROM THE ORIGINAL PLANS MADE DURING THE INSTALLATION OF THE WORK IN RED INK ON TWO SETS OF PRINTS. AT THE END OF CONSTRUCTION, THE CONTRACTOR SHALL SIGN AND DATE THE DRAWINGS CERTIFYING THAT THEY ARE AN ACCURATE REFLECTION OF THE ACTUAL CONSTRUCTION.
    - B. OPERATIONS AND MAINTENANCE DATA: SUBMIT O&M DATA IN PDF FORMAT WITH COVER PAGE AND INDEX. INCLUDE THE FOLLOWING FOR EACH PIECE OF EQUIPMENT: MAINTENANCE INSTRUCTIONS, PARTS LIST, OPERATING INSTRUCTIONS, WARRANTY DOCUMENTS AND FINAL APPROVED SUBMITTAL.
    - C. TEST & BALANCE REPORTS IN PDF FORMAT.

MEP GENERAL CONDITIONS (CONT.)

27. ALL STRUCTURAL ENGINEERING AS IT PERTAINS TO ATTACHING MEP ELEMENTS INCLUDING BUT NOT LIMITED TO EQUIPMENT, PIPE, DUCTWORK AND CONDUIT TO THE BUILDING STRUCTURE AND ROOF SHALL BE PROVIDED BY THE STRUCTURAL ENGINEER UNLESS NOTED OTHERWISE. DESIGN SHALL INCLUDE SUPPORTS AND WIND-LOADING AND SEISMIC RESTRAINTS FOR ALL MEP ELEMENTS INSTALLED ON THE ROOF. DESIGN SHALL ALSO INCLUDE DESIGN OF SEISMIC RESTRAINTS FOR ALL HANGERS AND SUPPORTS OF MEP ELEMENTS. CONTRACTOR SHALL SUBMIT DESIGN REACTION FORCES TO THE PROJECT STRUCTURAL ENGINEER FOR REVIEW.
28. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING WORK AS REQUIRED TO INSTALL THE SYSTEMS AS SHOWN ON THE DRAWINGS. ANY CUTTING THRU STRUCTURAL MEMBERS OR FLOORS SHALL FIRST BE APPROVED BY THE OWNER AND STRUCTURAL ENGINEER. ALL PATCHING AT WALLS SHALL BE THE SAME MATERIAL AS THE WALL AND TOUCHED UP WITH PAINT. ALL NEW WALL AND FLOOR PENETRATIONS SHALL BE MADE AT 90 DEGREE ANGLES. THERE SHALL BE NO DRILLING INTO THE FLOOR FROM ABOVE OR BELOW WITHOUT FIRST CONTACTING THE OWNER, AND STRUCTURAL ENGINEER.
29. PRIOR TO ANY CUTTING OR TRENCHING, VERIFY WITH OWNER, UTILITY COMPANIES, AND LANDLORD THAT ALL AVAILABLE INFORMATION IS KNOWN REGARDING UNDERGROUND OBSTRUCTIONS. TAKE CAUTION WHEN TRENCHING NOT TO DISTURB ANY EXISTING UTILITIES. NOTIFY OWNERS REPRESENTATIVE IMMEDIATELY UPON UNCOVERING UNKNOWN UTILITIES FOR FURTHER DIRECTION. REFER TO CIVIL-SITE DRAWINGS FOR BURIED PIPE TRENCHING AND BACKFILL SPECIFICATIONS AND DETAILS.
30. CONTRACTOR TO PROVIDE START-UP AND COMMISSIONING SUPPORT SERVICES FOR ALL NEW SYSTEMS AND EQUIPMENT, AS WELL AS TRAINING SERVICES FOR THE OWNER'S MAINTENANCE PERSONNEL IN THE USE OF THESE SYSTEMS AND EQUIPMENT. CONTRACTOR SHALL ALSO ASSIST TEST & BALANCE CONTRACTOR AND THE COMMISSIONING AGENT AS REQUIRED.
31. CONTRACTOR TO COORDINATE FINAL INSPECTION OF THE WORK WITH THE OWNER AND ENGINEER, AND DEMONSTRATE PROPER FUNCTIONALITY OF ALL NEW SYSTEMS.
32. CONTRACTOR TO COORDINATE ALL SYSTEM OUTAGES WITH THE OWNER; PROVIDE MINIMUM TWO WEEKS NOTICE.

GENERAL MEP NOTES

1. ALL NEW OPENINGS THROUGH FLOORS, ROOF, STRUCTURAL WALLS, AND STRUCTURAL MEMBERS (WHERE APPROVED BY THE OWNER) AND INSTALLATION OF ROOF-MOUNTED EQUIPMENT SHALL BE COORDINATED WITH THE ARCHITECT AND DESIGNED BY THE STRUCTURAL ENGINEER. PENETRATIONS THROUGH SHEAR WALLS ARE PROHIBITED.
2. DUCT, PIPE AND CONDUIT ROOF PENETRATIONS:
    - 2.A. ALL DUCT, PIPE, AND CONDUIT ROOF PENETRATIONS SHALL BE THROUGH AN INSULATED, FACTORY-MANUFACTUREDFULLY-WELDED GALVANIZED STEEL ROOF CURBS. CURBS MUST EXTEND 14" ABOVE THE FINISHED SURFACE OF THE ROOF AND SHALL BE SLOPED TO MATCH ROOF, SHALL MATCH ROOF MANUFACTURER'S REQUIREMENTS, AND SHALL BE INSTALLED TO MAINTAIN ROOF WARRANTY. ATTACH CURB TO ROOF PER STRUCTURAL ENGINEER'S DESIGN. IF DESIGN IS NOT INCLUDED IN PROJECT STRUCTURAL ENGINEER'S SCOPE, THE DESIGN SHALL BE PERFORMED BY THE CONTRACTOR'S LICENSED STRUCTURAL ENGINEER.
    - 2.B. ENTIRE ASSEMBLY SHALL BE DESIGNED TO WITHSTAND ALL IBC AND ASCE-7 WINDLOADING REQUIREMENTS FOR BUILDINGS LESS THAN 60' HIGH (revise if >60' high) . THIS SPECIFICALLY APPLIES TO THE ATTACHMENT TO THE ROOF AND THE REQUIRED RESTRAINTS NECESSARY TO COMPLY WITH IBC AND ASCE-7, AS WELL AS ASSOCIATED DUCTWORK, PIPING, AND EQUIPMENT PLATFORMS ABOVE THE ROOF.
    - 2.C. CONTRACTOR SHALL PROVIDE STAINLESS STEEL FLASHING TO SEAL BETWEEN THE DUCT / PIPE AND THE ROOF CURB.
    - 2.D. FLUES AND VENT STACKS SHALL MAINTAIN CLEARANCE FROM COMBUSTIBLE CONSTRUCTION AND INSULATED ASSEMBLIES IN ACCORDANCE WITH THE VENT MANUFACTURER'S INSTRUCTIONS. TOP WITH BIRD PROOF FLUE CAP.
    - 2.E. THE WEIGHT OF ALL DUCTS PENETRATING THE ROOF SHALL BE SUPPORTED FROM BELOW-ROOF STRUCTURE, NOT AT THE ROOF CURB.
    - 2.F. COORDINATE LOCATIONS OF EXISTING AND NEW ROOF PENETRATIONS TO MINIMIZE NUMBER OF OPENINGS. ELECTRICAL AND REFRIGERANT LINES ARE TO USE THE SAME PENETRATIONS WHERE POSSIBLE.
    - 2.G. COORDINATE ALL ROOF WORK WITH OWNERS ROOFING CONTRACTOR TO MAINTAIN THE WARRANTY.
3. PIPE AND CONDUITS PENETRATING FIRE-RATED FLOORS AND WALLS:
    - 3.A. A UL-RATED FIRESTOP SYSTEM SHALL BE INSTALLED AT ALL PIPE PENETRATIONS THROUGH SMOKE AND/OR FIRE-RATED FLOORS AND WALLS. FIRESTOP SYSTEM SHALL BE SUITABLE FOR THE FLOOR AND WALL TYPE, MATERIALS OF CONSTRUCTION, AND PIPE MATERIALS; RATINGS SHALL MATCH FIRE BARRIER RATINGS. ONLY PRODUCTS BY A SINGLE MANUFACTURER SHALL BE USED ON THE PROJECT; APPROVED MANUFACTURERS ARE STI, 3M AND HILTI. INSTALLERS SHALL BE CERTIFIED BY THE FIRESTOP SYSTEM MANUFACTURER. CONTRACTOR TO PROVIDE INVENTORY OF ALL PENETRATIONS.
    - 3.B. PIPE WEIGHT SHALL BE SUPPORTED AT THE FLOOR OR FROM HANGERS TO EITHER SIDE OF THE WALL OR FLOOR; PIPE WEIGHT SHALL NOT BE SUPPORTED BY THE WALL.
    - 3.C. INSULATION AND VAPOR BARRIER SHALL BE CONTINUOUS THROUGH THE PENETRATION.
    - 3.D. FLOOR PENETRATIONS SHALL BE SEALED WATER TIGHT AT THE TOP OF THE FLOOR.
4. PIPE AND CONDUITS PENETRATING NON-FIRE RATED FLOORS AND WALLS INCLUDING SLAB ON GRADE:
    - 4.A. WEIGHT SHALL BE SUPPORTED AT THE FLOOR OR FROM HANGERS ABOVE OR BELOW THE FLOOR. PIPE WEIGHT SHALL NOT BE SUPPORTED BY THE WALL.
    - 4.B. INSULATION AND VAPOR BARRIER SHALL BE CONTINUOUS THROUGH THE FLOOR.
    - 4.C. FLOOR PENETRATION SHALL BE SLEEVED WITH MINIMUM 16 GA. GALVANIZED STEEL EXTENDING 2" ABOVE THE SLAB AND SEALED WATER TIGHT.
    - 4.D. WHERE FLOOR OR WALL PENETRATIONS ARE EXPOSED IN OCCUPIED SPACES, ESCUTCHEON PLATES SHALL BE INSTALLED TO COVER THE OPENING.
    - 4.E. PENETRATIONS THROUGH EXTERIOR WALLS TO BE SEALED WATERTIGHT.
5. NO ASBESTOS CONTAINING MATERIALS SHALL BE USED IN ANY OF THE NEW CONSTRUCTION.
6. ALL INSULATING MATERIALS AND ALL MATERIALS USED IN PLENUMS SHALL BE PLENUM RATED AND SHALL CONFORM TO ASTM E 84, HAVING A MAXIMUM FLAME SPREAD OF <25 AND A MAXIMUM SMOKE DEVELOPED RATING OF <50.
7. EQUIPMENT SCHEDULED ON THE DRAWINGS IS BASED UPON EQUIPMENT OF MANUFACTURER NOTED. EQUIPMENT FROM ANOTHER MANUFACTURER MAY BE USED PROVIDED THAT THE CONTRACTOR SUBMIT PROOF THAT THE EQUIPMENT TO BE USED IS EQUAL TO OR BETTER THAN THAT SCHEDULED ON THE DRAWINGS AND IS APPROVED BY THE OWNER AND ENGINEER. PRICE SPECIFIED ITEM AS WELL AS PROPOSED SUBSTITUTION.
8. INVERTER READY MOTORS SHALL BE PROVIDED WITH AEGIS SHAFT GROUNDING RING, COOLBLUE INDUCTIVE ABSORBERS, OR CERAMIC BEARINGS AND CLASS F 105° C RISE INSULATION. REFERENCE NEMA MG1 PART 31.
9. PROVIDE TEFC MOTORS FOR ALL WET LOCATIONS AND ALL OUTDOOR LOCATIONS.
10. LOCATION OF NEW EQUIPMENT IS APPROXIMATE WHERE SHOWN. IF THERE IS A CONFLICT WITH AN EQUIPMENT LOCATION SHOWN ON THE PLANS, DO NOT PROCEED UNTIL THE ENGINEER APPROVES A NEW LOCATION.
11. INSTALL ALL NEW EQUIPMENT WITH MANUFACTURER-RECOMMENDED CLEARANCES ON ALL SIDES FOR SERVICE AND MAINTENANCE AS WELL AS REMOVAL OF INDIVIDUAL COMPONENTS WITHOUT REMOVING THE ENTIRE UNIT. PROVIDE NEC-REQUIRED CLEARANCE IN FRONT OF LINE VOLTAGE CONTROL PANELS; MINIMUM 3'.
12. DUCTWORK, PIPING, CONDUIT, CABLING, ETC. SHOWN ON EACH PLAN IS RUN ABOVE THE CEILING ON THE FLOOR WHERE IT IS SHOWN UNLESS OTHERWISE NOTED.
13. DUCTWORK, PIPING, CONDUIT, CABLING, ETC. SHOWN ON DRAWINGS SHALL BE COORDINATED WITH AIR DISTRIBUTION DEVICES, SPECIAL CEILING, FLOOR, AND STRUCTURE CONSTRUCTION, ETC. PROVIDE ADDITIONAL RISES AND DROPS TO THOSE INDICATED ON THE DRAWINGS AS REQUIRED TO COORDINATE WITH ARCHITECTURAL, STRUCTURAL OR MEP ELEMENTS SHOWN ON THE CONTRACT DOCUMENTS. ALL UTILITIES SHALL BE ROUTED IN AN ORDERLY MANNER, GROUPED TOGETHER WHEREVER POSSIBLE, AND LOCATED SO AS TO CONSERVE BUILDING SPACE.
14. COORDINATION OF ALL TRADES IN CEILING SPACES TO ALLOW AN 8-INCH CLEAR PLANE FOR LOCATION OF LIGHTS IS OF UTMOST IMPORTANCE TO MAXIMIZE FUTURE FLEXIBILITY. REALIZING THAT THIS IS NOT POSSIBLE IN ALL CASES, DUE TO CEILING ELEVATION AND STRUCTURAL LIMITATIONS, MAXIMUM EFFORT SHALL BE GIVEN TO MAINTAINING THE 8-INCH LIGHTING PLANE UNLESS NOTED OTHERWISE.
15. MAINTAIN MINIMUM VERTICAL CLEARANCE OF 7'-6" FROM THE FLOOR TO THE BOTTOM OF DUCTWORK , PIPING, AND ASSOCIATED HANGERS AND SUPPORTS UNLESS NOTED OTHERWISE ON THE PLANS.
16. POWDER ACTUATED FASTENERS ARE NOT ALLOWED.
17. PROVIDE AND INSTALL MINIMUM 2 $\frac{1}{2}$" LONG X $\frac{3}{4}$" WIDE ENGRAVED PHENOLIC PLASTIC EQUIPMENT TAGS, BLACK LETTERS ON WHITE BACKGROUND, FOR ALL EQUIPMENT TO MATCH TAGS INDICATED ON PLANS. IF EXISTING TAGS ARE PRESENT EITHER FROM THE MANUFACTURER OR EXISTING CONDITIONS, COVER OR PAINT OVER THE OLD TAG AS REQUIRED TO ELIMINATE CONFLICTING TAG NAMES. LABEL THERMOSTATS TO MATCH UNIT DESIGNATION. INDICATE ELECTRICAL PANEL AND CIRCUIT BREAKER NUMBER IDENTIFICATION ON NAMEPLATE IN SMALLER LETTERS IN PARENTHESES.
18. U.N.O, PROVIDE CONCRETE HOUSEKEEPING PADS FOR ALL FLOOR MOUNTED MEP EQUIPMENT. INCLUDING EQUIPMENT MOUNTED ON VIBRATION ISOLATORS, BASE RAILS AND CONCRETE INERTIA BASES. CONTRACTOR TO COORDINATE LOCATIONS AND SIZES. REFER TO DETAIL ON THIS SHEET.
19. THE CONTRACTOR SHALL CONSULT THE ARCHITECTURAL, STRUCTURAL, ELECTRICAL, MECHANICAL, AND OTHER DRAWINGS RELATED TO THIS PROJECT FOR ADDITIONAL WORK TO BE PROVIDED.

GENERAL M & P PIPING NOTES

1. PIPING IS NOT PERMITTED ABOVE ELECTRICAL AND TELECOMMUNICATIONS ROOMS.
2. INSTALL ISOLATION VALVES AT ALL PIPING BRANCH TAPS (WATER, AIR, STEAM, ETC.). INCLUDE A UNION AT ALL THREADED VALVES TO ALLOW REMOVAL OR ADJUSTMENT.
3. INSTALL VALVES IN TOP HALF OF HORIZONTAL PIPING WITH VALVE STEMS INCLINED AT A MINIMUM OF 30 DEGREES OR ONE FLANGE BOLT HOLE ABOVE HORIZONTAL TO MINIMIZE DEBRIS COLLECTING AROUND THE VALVE STEM.
4. WHEN JOINING DISSIMILAR METALS USE DIELECTRIC NIPPLES OR DIELECTRIC COUPLINGS FOR PIPING 2" AND SMALLER. USE DIELECTRIC FLANGE KITS ON LARGER PIPING. DIELECTRIC UNIONS ARE NOT ALLOWED. FOR PIPING SYSTEMS CONVEYING FLAMMABLE MATERIALS WHICH ARE REQUIRED BY CODE TO BE GROUNDED, INSTALL JUMPERS ACROSS DIELECTRIC FITTINGS AND FLANGES TO ENSURE A CONTINUOUS ELECTRICAL PATH.
5. PROVIDE PIPE HANGERS OR SUPPORTS PER THE BUILDING CODE AND ANSI/MSS SP-58 FOR ROD SIZES AND SPACING, AND IN ACCORDANCE WITH THE VIBRATION ISOLATION SCHEDULE..
    - A. PROVIDE COATED OR COPPER PLATED HANGERS AND SUPPORTS FOR COPPER PIPING.
    - B. PLACE HANGER WITHIN TWELVE INCHES OF EACH HORIZONTAL ELBOW.
    - C. SUPPORTS, HANGERS, AND ASSOCIATED ATTACHMENTS TO STRUCTURAL SHALL BE DESIGNED BY THE CONTRACTOR'S STRUCTURAL ENGINEER. SUBMIT SHOP DRAWINGS AND CALCULATIONS STAMPED BY PROFESSIONAL ENGINEER FOR ALL INDIVIDUAL HANGER LOADS OVER 500 LBS. CALCULATIONS SHALL INCLUDE A 20% SAFETY FACTOR.
    - D. ALL HANGER RODS SHALL HAVE A DOUBLE NUT ABOVE AND BELOW THE CLEVIS HANGER OR TRAPEZE STRUCTURAL MEMBER.
    - E. ANCHORS TO BE INSTALLED IN EXISTING CONCRETE SHALL BE AN UNDERCUT STYLE, SUITABLE FOR BOTH CRACKED AND NON-CRACKED CONCRETE. ANCHORS SHALL BE TYPE 304 STAINLESS STEEL IN UNCONDITIONED SPACES AND GALVANIZED CARBON STEEL IN CONDITIONED SPACES, HILTI TYPE HDA OR EQUAL.
    - F. PIPE WEIGHT TO INCLUDE WEIGHT OF WATER AND INSULATION FOR CALCULATIONS.
6. INERTIA BASES: INSTALL IN ACCORDANCE WITH THE VIBRATION ISOLATION SCHEDULE.
7. APPLY ADHESIVE PLASTIC PIPE MARKERS WITH INFORMATION INDICATING FLOW DIRECTION ARROW AND FLUID IN PIPE. INSTALL IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. APPLY ON NEW PIPING AT 20 FT. INTERVALS AND AT EACH CHANGE IN DIRECTION.
8. PROVIDE REDUCERS AT PIPING CONNECTIONS AS REQUIRED.
9. PROVIDE AUTOMATIC HIGH POINT AIR VENTS AND LOW POINT MANUAL DRAINS. ROUTE AIR VENT DISCHARGE TO NEAREST FLOOR DRAIN.
10. BRANCH PIPING SADDLE TAPS IN NEW PIPE SHALL BE LESS THAN 50% OF THE MAIN LINE SIZE.
11. HOT TAPS ARE NOT ALLOWED UNLESS APPROVED BY THE OWNER. HOT TAPS SHALL BE LESS THAN 50% OF THE MAIN LINE SIZE AND SHALL BE MADE IN THE TOP HALF OF HORIZONTAL PIPING. TURN COUPON OVER TO THE OWNER UPON COMPLETION OF EACH HOT TAP TO CONFIRM THAT IT IS NOT LOST IN THE PIPING SYSTEM.
12. EXPANSIVE SOILS: SUPPORT UNDER-SLAB PIPING FROM THE SLAB ABOVE AND ISOLATE FROM MOVEMENT OF THE EXPANSIVE SOIL. USE FLEX JOINT TO CONNECT TO SITE PIPING OUTSIDE OF THE BUILDING.
13. PRESSURE TEST ALL PIPING SYSTEMS PER APPLICABLE BUILDING AND ASME CODES.
14. VALVES:
    - A. ISOLATION OR OPEN/CLOSE: 2" & BELOW - FULL-PORT BALL; >2" - LUG BODY BUTTERFLY
    - B. BALANCING, ALL SIZES: BALL OR LUG BODY BUTTERFLY WITH MEMORY STOPS; GLOBE WHERE SPECIFICALLY SHOWN ON THE PLANS.
    - C. GATE AND GLOBE VALVES TO BE RISING STEM TYPE.
    - D. FURNISH VALVES WITH EXTENDED STEM FOR USE IN INSULATED PIPING.
    - E. CONTROL VALVE BYPASS VALVE: GLOBE VALVE SIZED TO MATCH CONTROL VALVE.
    - F. ALL VALVES TO BE THREADED, FLANGED OR GROOVED; NO SOLDER ENDS.
    - G. ALL BUTTERFLY VALVES SHALL BE RATED FOR DEAD END SERVICE.
    - E. FURNISH CHAIN-WHEEL OPERATORS FOR VALVES 6 INCHES AND LARGER MOUNTED OVER 8 FEET ABOVE FLOOR.
    - F. LOCATE EQUIPMENT ISOLATION VALVES MINIMUM 7' AFF TO ALLOW ADEQUATE ROOM FOR EQUIPMENT SERVICE/REMOVAL/REPLACEMENT.
15. CHECK VALVES:
    - A. INSTALL WAFER CHECK VALVES AT VERTICAL PUMP DISCHARGE.
    - B. INSTALL SWING CHECK VALVES IN HORIZONTAL PIPING ONLY.
    - C. INSTALL CHECK VALVES WITH 5 DIAMETERS STRAIGHT LENGTH UPSTREAM.
    - D. SIZE CHECK VALVES FOR 3-8 FPS VELOCITY.
16. STRAINERS:
    - A. INCLUDE A SINGLE PRESSURE GAUGE WITH TAPS ON BOTH SIDES OF THE STRAINER TO INDICATE PRESSURE DROP ACROSS THE STRAINER.
    - B. INCLUDE BLOWDOWN VALVE WITH PIPE PLUG.
    - C. WHERE THERE IS A BYPASS AROUND A PUMP, INSTALL THE STRAINER UPSTREAM OF SPLIT. IF A SUCTION DIFFUSER IS USED, ALSO INSTALL A WYE STRAINER IN THE BYPASS.
    - D. WYE-STRAINERS SHALL BE INSTALLED WITH THE WYE BELOW 45 DEG IN HORIZONTAL PIPE OR IN DOWNWARD FLOW IN VERTICAL PIPING.
    - E. PROVIDE ADEQUATE SPACE FOR REMOVAL OF STRAINER BASKETS.

MEP RESPONSIBILITY MATRIX

	FURNISH	INSTALL	POWER
			120V & UP
MECHANICAL EQUIPMENT HOUSEKEEPING PADS	MC	MC	
ELECTRICAL EQUIPMENT HOUSEKEEPING PADS	EC	EC	
INERTIA BASES	MC	MC	
HANGERS & SUPPORTS, INCLUDING DESIGN	ALL	ALL	
DUCT SMOKE DETECTORS	MC	MC	EC
VFD'S - FWE	FWE	FWE	EC
VFD'S - NOT FWE	MC	EC	EC
STARTERS, DISCONNECTS - FWE	FWE	FWE	EC
STARTERS, DISCONNECTS - NOT FWE	EC	EC	EC
HEAT TRACE	MC	MC	EC
HVAC TERMINAL UNITS (120V W/ 24V XFMR)	MC	MC	EC
VALVES WITH ACTUATORS	CC	MC	EC
DAMPERS - FWE - PACKAGED EQUIPMENT	FWE	FWE	
DAMPERS - FWE - AHU'S	FWE	FWE	
DAMPERS - SEPARATE FROM EQUIPMENT	CC	MC	

NOTES:

1. FOLLOW THE RESPONSIBILITIES SHOWN ABOVE UNLESS NOTED OTHERWISE ON THE PLANS.
2. ABBREVIATIONS

FWE: FURNISHED WITH EQUIPMENT   FA: FIRE ALARM CONTRACTOR   EC: ELECTRICAL CONTRACTOR
ALL: ALL CONTRACTORS, BY DISCIPLINE   MC: MECHANICAL CONTRACTOR   CC: CONTROLS CONTRACTOR

DEMOLITION NOTES

EACH CONTRACTOR SHALL VERIFY DEMOLITION SCOPE OF WORK WITH THE GENERAL CONTRACTOR AND OWNER PRIOR TO REMOVAL OF ANY EXISTING MEP ELEMENTS SHOWN ON THE PLANS TO BE REMOVED. ROOF, WALLS, AND FLOORS AFFECTED BY DEMOLITION ARE TO BE PATCHED/REPAIRED TO MATCH EXISTING STRUCTURE. PIPES, DUCTS, OR CONDUIT IN THE FLOOR, EMBEDDED IN CONCRETE, OR OTHERWISE INACCESSIBLE ARE TO BE CUT OFF AND SEALED BELOW OR WITHIN FLOOR OR WALL LEVEL. CONFIRM THE EXTENT OF DEMOLITION WITH THE GENERAL CONTRACTOR PRIOR TO BID AND INCLUDE IN BID PROPOSAL AS DIRECTED.OWNER WILL DECONTAMINATE ALL EQUIPMENT, DUCTWORK, PIPING AND ASSOCIATED COMPONENTS, WHERE REQUIRED, PRIOR TO CONTRACTOR CUTTING AND REMOVING THESE MATERIALS.

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EEA Project No. 20246520
State of Registration OHIO
Firm Registration No. COA-02295

PROJECT NUMBER	DATE:
240238	06.07.2024
DRAWN BY: SL	CHECK BY: JTS
THESE DRAWINGS WERE COMPLETED UNDER THE DIRECT SUPERVISION OF:	JTS

REVISION LOG:

ISSUED FOR CLIENT	05.29.24
ISSUED FOR LL PERMIT + BID	06.07.24

LIBERTY CENTER
7139 FOUNDRY ROW
SPACE F-122
LIBERTY TOWNSHIP, OH 45069

DRAWING NO.
M-100
MEP GENERAL NOTES

JEREMY T. SMITH
EEA CONSULTING ENGINEERS

DATE: 05/29/24
PROJECT NO: 240238
LOCATION: LIBERTY CENTER, LIBERTY TOWNSHIP OH
PLOT SCALE: 1:1

MECHANICAL SYMBOLS AND ABBREVIATIONS

NOTE: ALL SYMBOLS AND ABBREVIATIONS SHOWN ARE NOT NECESSARILY USED ON THE DRAWINGS

GENERAL NOTES

1. PERFORM ALL WORK IN ACCORDANCE WITH ALL APPLICABLE CODES AND AUTHORITIES HAVING JURISDICTION. PROVIDE ALL PERMITS, INSPECTIONS, LICENSES AND FEES. FURNISH ALL LABOR, EQUIPMENT, SUPPLIES, AND MATERIALS NECESSARY TO PROVIDE COMPLETE AND OPERATIONAL SYSTEMS.

2. THE DRAWINGS AND SPECIFICATIONS INDICATE THE GENERAL DESIGN AND ARRANGEMENT OF PIPES, FIXTURES, EQUIPMENT, SYSTEMS, ETC. INFORMATION SHOWN IS DIAGRAMMATIC IN CHARACTER AND DOES NOT NECESSARILY INDICATE EVERY REQUIRED OFFSET, FITTING, ETC DO NOT SCALE THE DRAWINGS FOR DIMENSIONS. TAKE ALL DIMENSIONS, MEASUREMENTS, EQUIPMENT LOCATIONS, LEVELS, ETC. FROM THE ARCHITECTURAL DRAWINGS, FIELD MEASUREMENTS, AND FROM THE EQUIPMENT TO BE FURNISHED. PIPING MAY BE RELOCATED OR OFFSET FOR PROPER CLEARANCES OR TO AVOID CONFLICTS WITH OTHER TRADES. THE DESIGN INTENT (I.E. PITCHES, VELOCITIES, PRESSURE DROPS, VOLTAGE DROPS, ETC.) CANNOT BE GREATLY ALTERED WITHOUT THE APPROVAL OF THE ARCHITECT. THE COST OF THESE DEVIATIONS TO AVOID INTERFERENCE'S SHALL BE PART OF THE ORIGINAL CONTRACT BID.

3. CONFER AND COOPERATE WITH ALL OTHER TRADES TO COORDINATE THEIR WORK. COORDINATION SHALL INCLUDE, BUT SHALL NOT BE LIMITED TO, MATERIALS AND EQUIPMENT ROUTED IN CEILING AND WALL CAVITIES, EQUIPMENT ARRANGEMENT IN MECHANICAL SPACES, INCLUDING EQUIPMENT CLEARANCE REQUIREMENTS, ELEVATIONS AND DIMENSIONS OF STRUCTURAL MEMBERS AND OPENINGS, ETC. NOTIFY THE ARCHITECT OF ANY CONFLICTS.

4. BASE FINAL INSTALLATION OF MATERIALS AND EQUIPMENT ON ACTUAL DIMENSIONS AND CONDITIONS AT THE PROJECT SITE. FIELD MEASURE FOR MATERIALS AND EQUIPMENT REQUIRING EXACT FIT. NO EXTRAS WILL BE GIVEN FOR THE CONTRACTOR'S FAILURE TO FIELD COORDINATE.

5. THE OWNER OR ENGINEER ARE NOT RESPONSIBLE FOR THE CONTRACTOR'S SAFETY PRECAUITIONS OR FOR MEANS, METHODS, TECHNIQUES, CONSTRUCTION SEQUENCES, OR PROCEDURES REQUIRED TO PERFORM THE WORK.

6. LOCATE ALL EQUIPMENT THAT MUST BE SERVICED, OPERATED, OR MAINTAINED IN FULLY ACCESSIBLE POSITIONS. EQUIPMENT SHALL INCLUDE, BUT NOT BE LIMITED TO, VALVES, MOTORS, CONTROLLERS, SWITCHGEAR, AND DRAIN POINTS IF REQUIRED FOR BETTER ACCESSIBILITY FURNISH ACCESS DOORS FOR THIS PURPOSE. MINOR DEVIATIONS FROM THE DRAWINGS MAY BE ALLOWED TO PROVIDE FOR BETTER ACCESSIBILITY. ANY CHANGES SHALL BE APPROVED BY THE ARCHITECT AND CONSTRUCTION MANAGER/GENERAL CONTRACTOR PRIOR TO MAKING THE CHANGE.

7. PROVIDE ACCESS DOORS, WALL OPENINGS, ROOF OPENINGS, OR ANY OTHER CONSTRUCTION REQUIREMENT NEEDED TO ACCOMMODATE THE MECHANICAL EQUIPMENT. LOCATIONS OF THESE OPENINGS SHALL BE SUBMITTED IN SUFFICIENT TIME TO BE INSTALLED IN THE NORMAL COURSE OF WORK.

8. COORDINATE ELECTRICAL REQUIREMENTS OF APPROVED MECHANICAL EQUIPMENT WITH THE ELECTRICAL SUB-CONTRACTOR PRIOR TO THE PURCHASE AND INSTALLATION OF ANY ELECTRICAL EQUIPMENT, DEVICES, WIRING, OR CONDUIT.

9. PROVIDE GENERAL CONTROL WIRING, THERMOSTATS, MOTORIZED DAMPERS AND CONDUIT ASSOCIATED WITH HVAC EQUIPMENT. COORDINATE THE LOCATION OF ALL THERMOSTATS, ROOM SENSORS, ETC. WITH THE ARCHITECT AND ALL OTHER TRADES PRIOR TO INSTALLATION. IF A CONFLICT WITH MILLWORK, LIGHT SWITCHES, WINDOWS, ETC. EXISTS, NOTIFY THE ARCHITECT OF THE POTENTIAL INTERFERENCE PRIOR TO INSTALLATION. INSTALL THERMOSTATS WITH PROTECTIVE LOCKING COVER, CENTERED AT 4'-0" ABOVE FINISHED FLOOR, UNLESS OTHERWISE INDICATED. COMPLY WITH THE PROVISIONS OF THE AMERICANS WITH DISABILITIES ACT (ADA) AND THE TEXAS ACCESSIBILITY'S STANDARD (TAS).

10. ALL DIMENSIONS SHOWN ON THE DRAWINGS FOR DUCTWORK ARE NET INSIDE CLEAR DIMENSIONS. FOR RECTANGULAR DUCT, THE FIRST FIGURE OF THE DUCT SIZE INDICATES THE DIMENSION OF THE FACE SHOWN. VERIFY THAT THE DUCTWORK SPECIFIED WILL FIT IN THE SPACE AVAILABLE USING THE ARCHITECTURAL, STRUCTURAL, AND ELECTRICAL DRAWINGS AS REFERENCE PRIOR TO FABRICATION AND INSTALLATION.

11. PROVIDE TURNING VANES ON ALL RECTANGULAR SUPPLY, EXHAUST, AND RETURN DUCTWORK INCLUDING THE TOP AND BOTTOM OF VERTICAL DUCTS UNLESS OTHERWISE INDICATED.

12. PROVIDE A LOCKING QUADRANT VOLUME DAMPER AT THE TAP OF EACH RUN-OUT TO DIFFUSERS FOR BALANCING PURPOSES, UNLESS OTHERWISE INDICATED. THE RUN-OUT DUCT SIZE IS THE SAME SIZE AS THE DIFFUSER OR GRILLE NECK SIZE, UNLESS OTHERWISE INDICATED.

13. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATION OF ALL FIRE RATED WALLS AND CEILINGS. PROVIDE FIRE DAMPERS AND/OR COMBINATION FIRE/SMOKE DAMPERS IN DUCTWORK AT ALL LOCATIONS WHERE DUCTS PASS THROUGH FIRE RATED ASSEMBLY. MECHANICAL SUB-CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING FIRE AND FIRE/SMOKE DAMPERS. COORDINATE CONSTRUCTION REQUIREMENTS AND PROVISIONS FOR CONNECTIONS TO FIRE ALARM SYSTEM.

14. ALL DUCTWORK SHALL BE SHEET METAL FABRICATED IN ACCORDANCE WITH SMACNA STANDARDS. ALL DUCTWORK ASSOCIATED WITH CONSTANT VOLUME SYSTEMS SHALL BE CONSTRUCTED TO 2" W.G. AND SEALED TO SMACNA CLASS A. SEAL ALL SEAMS WITH MASTIC SEALANT UL 181 LISTED FOR THE APPLICATION USED. SEALANT SHALL BE DESIGNED FOR USE ON METAL DUCT AND FLEXIBLE DUCT.

15. SUPPLY AND RETURN DUCTWORK LOCATED OUTSIDE, EXPOSED TO AMBIENT CONDITIONS, SHALL BE INTERNALLY LINED WITH 2" DUCT LINER. DUCTWORK SHALL BE WELDED STAINLESS STEEL. LINER SHALL BE FOIL-FACED, SUITABLE FOR HEALTHCARE APPLICATION; OTHERWISE USE DOUBLE WALL CONSTRUCTION. BREAK SHEET METAL IN A MANNER TO PREVENT STANDING WATER ON HORIZONTAL SURFACES. SEAL ALL SEAMS WITH MASTIC SEALANT UL 181 LISTED FOR THE APPLICATION USED. SEALANT SHALL BE DESIGNED FOR USE ON METAL DUCT AND FLEXIBLE DUCT.

16. ALL RECTANGULAR AND ROUND SUPPLY AND RETURN DUCTWORK LOCATED IN EXPOSED INTERIOR AREAS SHALL BE INTERNALLY LINED WITH DUCT LINER AND EXTERNALLY PAINTED. REFER TO ARCHITECT FOR COLOR SELECTION.

17. INSTALL DX PIPING AS SPECIFIED, INCLUDING FILTER/DRYER, SIGHT GLASS, ISOLATION/CHARGING VALVES, AND ALL APPURTENANCES PER MANUFACTURER'S RECOMMENDATIONS. INSTALLATION SHALL BE ACCOMPLISHED IN A NEAT AND ORDERLY FASHION, AS APPROVED BY THE ENGINEER. COORDINATE FOR ROUTING OF DX PIPING, UP INSIDE OF WALLS, ETC. AS REQUIRED. TERMINATING AT AHU's. PROVIDE BRACING/ISOLATION AS REQUIRED TO PREVENT VIBRATION OF DX PIPING INSIDE WALLS, ETC. SIZE, ROUTE, AND INSULATE DX PIPING PER MANUFACTURER'S RECOMMENDATIONS AND SPECIFICATION REQUIREMENTS.

18. PROVIDE VIBRATION ISOLATORS FOR MOTOR DRIVEN EQUIPMENT, UNLESS OTHERWISE NOTED PROVIDE ISOLATION AS INDICATED OR AS RECOMMENDED BY THE EQUIPMENT MANUFACTURER.

19. SOME PIPES AND DUCTS SHOWN ON EACH FLOOR PLAN MAY BE SHOWN WITH AN OFFSET FOR CLARITY.

20. SEAL ALL PIPE AND DUCT PENETRATIONS THROUGH FIRE RATED BUILDING ELEMENTS WITH AN APPROVED FIRE PROOFING MATERIAL.

21. ALL EQUIPMENT SHALL HAVE IDENTIFICATION TAGS. TAGS SHALL BE PLASTIC LAMINATE, WHITE FACE WITH 1/2" TALL BLACK LETTERS. THE TAG SHALL MATCH THE UNIT DESIGNATIONS SHOWN ON THE SCHEDULES.

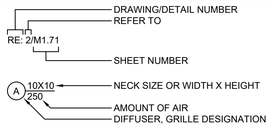
22. EXPAND OR REDUCE DUCTS AT EQUIPMENT CONNECTIONS BASED ON THE EQUIPMENT PURCHASED, WITH TRANSITIONS NOT TO EXCEED 30 DEGREES. SIZES SHOWN ON SCHEDULES, ETC. ARE FOR GUIDANCE ONLY. ASPECT RATIO SHALL BE NO GREATER THAN 4:1, PER SMACNA'S GUIDELINES.

23. ALL DUCTS WITH A DIMENSION GREATER THAN 12" PASSING THRU A NON-RATED WALL SHALL HAVE THE OPENING FRAMED IN WITH METAL STUDS. COORDINATE OPENING SIZE AND LOCATION WITH OTHER TRADES.

24. ALL INSULATING MATERIALS AND ALL MATERIALS USED IN PLENUMS SHALL BE PLENUM RATED AND SHALL CONFORM TO ASTM E 84,HAVING A MAXIMUM FLAME SPREAD OF <25 AND A MAXIMUM SMOKE DEVELOPED RATING OF <50.

25. THE OWNER SHALL BE RESPONSIBLE TO HIRE A COMMISSIONING AGENT, IN ACCORDANCE WITH LOCAL REQUIREMENTS, TO PERFORM ALL PORTIONS OF COMMISSIONING SET FORTH IN THE OHIO COMMERCIAL ENERGY CODE 2019 REQUIRED BY THE LOCAL AHJ. A COMMISSIONING PLAN SHALL BE DEVELOPED BY THE PROJECT'S COMMISSIONING AUTHORITY.

DRAWING/DETAIL REFERENCE



SYMBOLS

SYMBOL	DESCRIPTION
20X20	SUPPLY AIR DUCT UP
20X20	RETURN AIR DUCT UP
20X20	EXHAUST AIR DUCT UP
20X20	SUPPLY AIR DUCT DN
20X20	RETURN AIR DUCT DN
20X20	EXHAUST AIR DUCT DN
18"Ø	ROUND SUPPLY AIR DUCT UP
18"Ø	ROUND RETURN AIR DUCT UP
18"Ø	ROUND EXHAUST AIR DUCT UP
18"Ø	ROUND SUPPLY AIR DUCT DN
18"Ø	ROUND RETURN AIR DUCT DN
18"Ø	ROUND EXHAUST AIR DUCT DN
	RECTANGULAR DUCT SQUARE ELBOW WITH TURNING VANES
W, R=3W/2	RECTANGULAR DUCT RADIUS ELBOW
20X20 16X20	TRANSITION CONCENTRIC UNLESS TOP LEVEL (TOP LVL) OR BOTTOM LEVEL (BOT LVL) IS NOTED
T	THERMOSTAT (OR) TEMP SENSOR
	MANUAL VOLUME DAMPER

BASIS OF MECHANICAL DESIGN

PRIMARY MECHANICAL CODES:
MECHANICAL: 2024 OHIO MECHANICAL CODE WITH AMENDMENTS.
ENERGY: 2021 COMERCIAL ENERGY CODE WITH AMENDMENTS.

PROJECT DESIGN VALUES:
OUTDOOR DESIGN TEMPERATURE (SUMMER): 92.3°F (DRYBULB), 74.6°F (WETBULB)
AMBIENT TEMPERATURE AT CONDENSING UNITS: 100°F (DRYBULB, SUMMER)
OUTDOOR DESIGN TEMPERATURE (WINTER): 3.0 °F (DRYBULB)
INDOOR DESIGN TEMPERATURE (SUMMER): 75°F (DRYBULB), 50% (RELATIVE HUMIDITY)
INDOOR DESIGN TEMPERATURE (WINTER): 68°F (DRYBULB)
OUTSIDE AIR REQUIREMENTS: PER OHIO MECHANICAL CODE CHAPTER 4 - VENTILATION.

NEW VOLUME DAMPER CABLE CONTROLS

TYPE	DESCRIPTION
VD-1	PROVIDE VOLUME DAMPER MODEL 5020CC FROM YOUNG REGULATOR. THE VOLUME DAMPER SHALL BE ADJUSTABLE FROM THE FACE OF THE DIFFUSER BY USE OF THE BOWDEN CABLE CONTROL SYSTEM (#270-275 CONTROLLER) MANUFACTURED BY YOUNG REGULATOR COMPANY OR APPROVED EQUIVALENT. DAMPER MUST BE INSTALLED WITHIN 30 FEET FROM THE FACE OF THE DIFFUSER. COORDINATE INSTALLATION WITH GENERAL CONTRACTOR. YOUNG REGULATOR (440) 232-9700.

NEW SENSOR SCHEDULE

T	ALL NEW THERMOSTATS SHOWN SHALL BE ELECTRONIC, PROGRAMMABLE TYPE CAPABLE OF TIME-OF-DAY SCHEDULING WITH MINIMUM OF 7 DAY PROGRAMS AND 4 CYCLES PER DAY, AUTOMATIC HEATING/COOLING CHANGEOVER, AND SETPOINT CONTROL. INCLUDE WIFI CAPABILITY WHERE SHOWN ON PLANS. THERMOSTAT SHALL BE CAPABLE OF PROVIDING A TEMPERATURE RANGE OR DEADBAND OF AT LEAST 5°F WITHIN WHICH THE SUPPLY OF HEATING AND COOLING ENERGY TO THE ZONE IS SHUT OFF OR REDUCED TO A MINIMUM. THERMOSTAT TO BE MOUNTED AT 48" AFF. THERMOSTAT SHALL BE TOUCH SCREEN, HONEYWELL VISION PRO 8000 IF POSSIBLE. VERIFY COMPATIBILITY WITH UNIT, PRIOR TO BID.
S	NEW COMPATABLE BUTTON PROBE SENSOR. MOUNT ON WALL AND WIRE BACK TO TSTAT IN MANAGERS OFFICE.

RTU SCHEDULE

CARRIER RTU SCHEDULE

Design conditions	Summer DB	Summer WB	Winter DB
Outdoor Air	92.3	74.6	3
Space Temp	75	62	68

General				Fan														Cooling						Electrical Heating					Electrical		
				Airflow (CFM)						EAT		LAT		CU Amb. (°F)	Capacity (MBH)		EAT	LAT												
Mark	Model	Size (Tons)	WEIGHT (LB)	SA	OA	%OA	Duct Config	Motor (BHP)	ESP (IWG)	DB	WB	DB	WB		Total	Sens.	DB	DB	Cap. (kW)	EER	IEER/ SEER	MCA (A)	MOCP (A)	V/PH
RTU-1	50FC-N08A2A6-0AAF0	7.5	743.0	2,600	300	12%	Downflow	1.54	0.80	77.0	65.4	57.30	55.10	100	81.0	54.0	62	100	30	11.4	15.2	54.0	60	460/3

FACTORY PROVIDED AND INSTALLED OPTIONS:

1. PROVIDE TWO STAGE COOLING RTU.
2. THERMAL EXPANSION VALVE (TXV)
3. CRANKCASE HEATERS.
4. THROUGH THE BASE ELECTRIC.
5. NON-FUSED DISCONNECTS.
6. HINGED ACCESS PANELS.
7. LOW LEAK ECONOMIZER WITH BAROMETRIC RELIEF AND DRY-BULB CONTROL.
8. MICROPROCESSOR CONTROL OPTION.
9. HAIL GUARDS.
10. PROVIDE WITH POWER EXHAUST.
11. MINIMUM TWO STAGE OF COOLING.
12. HOT GAS REHEAT.

FACTORY PROVIDED, CONTRACTOR INSTALLED OPTIONS:

11. 7 DAY PROGRAMMABLE THERMOSTAT WITH TEMPERATURE SETBACK, SET POINT OVERLAP RESTRICTIONS, 5° F DEADBAND RESTRICTIONS, 2 HOURS OVERRIDE, 10-HOUR BACKUP.
12. WALL MOUNTED REMOTE TEMPERATURE SENSORS (S).

CONTRACTOR INSTALLED ACCESSORIES/OPTIONS:

13. FLEXIBLE CONNECTION ON SUPPLY AND RETURN DUCTWORK CONNECTIONS FULL SIZE OF OPENINGS.
14. SMOKE DETECTOR ON RETURN.
15. (3) SETS OF 2" DEEP PLEATED MERV 8 RATED FILTERS (SUCH AS FARR 30/30 FILTERS).
16. 4' HIGH BLACK STENCIL LETTERS ON ALL HVAC INDICATING. HVAC UNIT NUMBER. VERUFY ADDITIONAL REQUIREMENTS WITH LANDLORD.

NOTES:

17. REUSE EXISTING ROOF CURB, CONTRACTOR SHALL FIELD VERIFY IT'S CONDITION. REPORT IN WRITING ANY PROBLEMS WHICH WOULD REQUIRE REPLACEMENT OF ROOF CURB INSTEAD OF REUSE TO THE TENANT'S CONSTRUCTION MANAGER.
18. PROVIDE MAKE AND MODEL SPECIFIED OR ENGINEER APPROVED EQUAL.
19. CONTRACTOR TO PROGRAM HVAC EQUIPMENT THERMOSTAT, INITIAL OPERATION HOURS AND TEMPERATURE SET POINTS. ADJUST OPERATIONAL HOURS WHEN OBTAINED BY GENERAL CONTRACTOR.
20. CONTRACTOR IS RESPONSIBLE FOR CLEAN HVAC COILS AT THE END OF CONSTRUCTION. PROVISIONS SHOULD BE TAKEN TO KEEP COILS CLEAN, AND IF COILS GET DIRTY, THEN CONTRACTOR IS RESPONSIBLE FOR CLEANING THEM.
21. CONTRACTOR SHALL REPLACE FILTERS JUST PRIOR TO AIR-BALANCE, AFTER ANY HEAVY SANDING, AND ONCE AGAIN AFTER FINAL STORE CLEANING IS COMPLETE.

AIR DEVICE SCHEDULE

MARK	SERVES	FACE SIZE	MOUTING	MATERIAL	MANUFACTURER MAKE AND MODEL (BASIS OF DESIGN)	MAX NC	NOTES
S1	SUPPLY	24x24	LAY-IN CEILING	ALUMINUM	KRUEGER 5PLQ	35	1, 2, 3, 4, 6
S2	SUPPLY	12x12	CEILING	ALUMINUM	KRUEGER 5PLQ	35	1, 2, 3, 4, 6
S3	SUPPLY	18"	CEILING	ALUMINUM	INVIAIR R1801100	30	1, 2, 3, 6, 9,10
LS	SUPPLY	SEE PLANS	CEILING	ALUMINUM	KRUEGER DFL-20	35	1, 2, 3, 5, 6, 8
R1	RETURN	24x24	CEILING	ALUMINUM	KRUEGER S580	35	1, 6, 7
R2	RETURN	12x12	CEILING	ALUMINUM	KRUEGER S580	35	1, 6, 7

NOTES:
1. UNITS SHALL BE FURNISHED WITH APPROPRIATE FRAMES, ETC. FOR MOUNTING IN RESPECTIVE CEILING/WALL TYPES AND CONDITIONS OR APPROVED EQUAL
2. SELECT DIFFUSER PER NECK SIZE. SEE PLANS.
3. TRANSITION FROM BACK OF AIR DEVICE TO DUCT SIZE SHOWN ON PLANS.
4. FOUR-WAY THROW UNLESS OTHERWISE NOTED.
5. LINEAR SLOT DIFFUSER WITH 1-SLOT, 2" WIDE SLOT WITH HT BLADES. PROVIDE WITH FACTORY FABRICATED INSULATED PLENUM BOX. INSTALL PER
6. ARCHITECT TO SELECT AIR DEVICE FINISH FROM MANUFACTURER'S FULL COLOR CATALOG PRIOR TO ORDERING.
7. PROVIDE WITH 35 DEGREE DEFLECTION.
8. EE BEVELED FRAME FOR MUD-IN. CONNECTED FOR A SEAMLESS LOOK WITH MITERED END CAPS.
9. TITUS OMNI-R IS APPROVED AS AN ALTERNATE OPTION.
10. PROVIDE WITH REMOVABLE FACE

FAN SCHEDULE

MARK	MANUFACTURER	MODEL	CFM	LOCATION	ESP	RPM	VOLTAGE / PHASE	WATTS
EF-1	GREENHECK	SP-B110	75	CEILING	0.3	950	115/1	80

NOTES:
1. PROVIDE BACKDRAFT DAMPER, VIBRATION ISOLATORS & DISCONNECT SWITCH
2. INTERLOCK WITH LIGHT SWITCH/OCCUPANCY SENSOR.
3. CEILING FAN SUSPENDED FROM STRUCTURE ABOVE

CONTROL DAMPER SCHEDULE

MARK	MANUFACTURER	MODEL	UNIT SIZE	INLET SIZE	CFM	VOLTAGE / PHASE	REMARKS
CD-1	YOUNG'S REGULATOR	4075-IF	-	8"	140	115/1	1
CD-2	YOUNG'S REGULATOR	4075-IF	-	8"	160	115/1	1
CD-3	YOUNG'S REGULATOR	4075-IF	-	8"	100	115/1	1

REMARKS:
1. FURNISH WITH #T-720-IF THERMOSTAT AND #3035 TRANSFORMER.

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ENGINEER
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EEA Project No. 20246520
State of Registration OHIO
Firm Registration No. COA-02295

PROJECT NUMBER	DATE:
240238	06.07.2024
DRAWN BY: SL	CHECK BY: JTS

THESE DRAWINGS WERE COMPLETED UNDER THE DIRECT SUPERVISION OF: JTS

REVISION LOG:

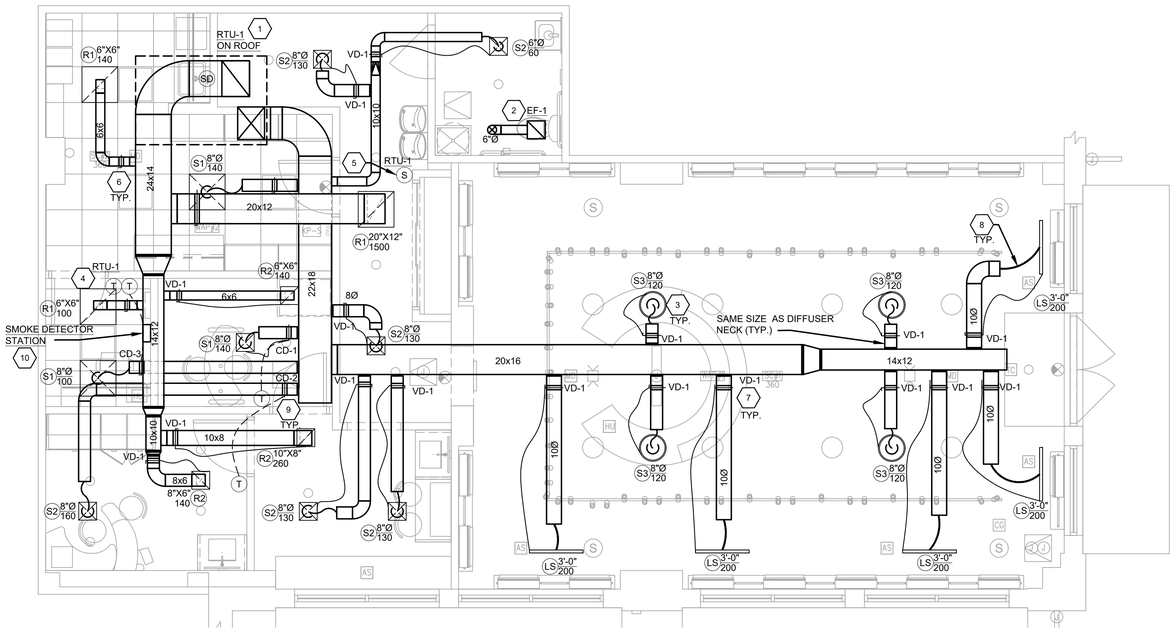
ISSUED FOR CLIENT	05.29.24
ISSUED FOR LL PERMIT + BID	06.07.24

LIBERTY CENTER
7139 FOUNDRY ROW
SPACE F-122
LIBERTY TOWNSHIP, OH 45069

DRAWING NO.
M-101
MECHANICAL LEGEND, NOTES, AND SCHEDULES

JEREMY T. SMITH
EEA CONSULTING ENGINEERS

DATE: 05/29/24
PROJECT NO: 240238
LOCATION: LIBERTY CENTER, LIBERTY TOWNSHIP OH
PLOT SCALE: 1:1



1 MECHANICAL PLAN

SCALE: 1/4" = 1'-0"

GENERAL NOTES

A. THE GENERAL CONTRACTOR IS RESPONSIBLE AT THE BEGINNING OF THE PROJECT TO MEASURE THE SPACE WHILE REVIEWING THE ARCHITECT'S DRAWINGS TO VERIFY THAT THE INFORMATION CONTAINED IN THE MECHANICAL DOCUMENTS, ON WHICH HE/SHE QUOTED TO THE CLIENT, ARE COMPATIBLE WITH THE WORK TO BE PERFORMED AND THAT ALL SPACES ARE SUFFICIENT IN SIZE FOR THE WORK TO BE COMPLETED INCLUDING WIDTHS, LENGTHS, HEIGHTS, ETC.

B. ALL MECHANICAL EQUIPMENT / DUCTWORK TO BE MOUNTED / INSTALLED TIGHT TO STRUCTURE.

C. DUCTWORK MOUNTING SHALL CONFORM TO SMACNA STANDARDS FOR HANGERS AND SUPPORTS.

D. ALL SUPPLY/RETURN DUCTWORK SHALL BE INTERNALLY LINED IF IT'S NOT EXTERNALLY INSULATED.

KEY NOTES

1. INSTALL NEW RTU PER MANUFACTURER'S IOM AND MAINTAIN CLEARENCES. TRANSITION DUCT TO FULL SIZE CONNECTION AT UNIT AS REQUIRED. REFER TO DETAIL 9/M-103.
2. PROVIDE NEW TOILET EXHAUST FAN PER SCHEDULE ON M-101. INTERLOCK FAN WITH LIGHT SWITCH. NEW 6"Ø EXHAUST DUCT UP TO ROOF AND TERMINATE INTO A ROOF CAP, EQUIVALENT TO GREENHECK MODEL GRSR SIZE 8. PROVIDE WITH INTEGRAL BIRDSCREEN, PREFABRICATED ROOF CURB AND GRAVITY BACKDRAFT DAMPER. FIELD VERIFY LOCATION AND DISTANCE IN FIELD TO MAINTAIN A MINIMUM DISTANCE OF 10'0" FROM AIR INTAKE.
3. 1-SLOT ROUND DIFFUSER. COORDINATE DIFFUSER LOCATION WITH TRACK LIGHTS, SPEAKERS AND EXISTING STRUCTURE. TRACK LIGHTS AND SPEAKER LOCATIONS SHALL NOT HAVE TO BE RELOCATED WITHOUT PRIOR APPROVAL FROM ARCHITECT AND/OR WARBY PARKER PM. MECHANICAL CONTRACTOR SHALL COORDINATE DIFFUSER LAYOUTS WITH ALL SUB-CONTRACTORS AND TRADES, PRIOR TO ANY FABRICATION OF DUCTWORK.
4. PROVIDE NEW THERMOSTAT, REFER TO SHEET M-101 FOR THERMOSTAT SPECIFICATION. WIRE BACK TO (N) RTU-1 ON ROOF. RUN WIRE IN CONDUIT.
5. PROVIDE NEW COMPATIBLE BUTTON PROBE TEMPERATURE SENSOR. MOUNT ON WALL AT LOCATION SHOWN AT 60" AFF. WIRE BACK TO THERMOSTAT LOCATED AT MANAGER'S OFFICE. RUN THE WIRE IN CONDUIT.
6. PROVIDE MANUAL VOLUME DAMPER WITH LOCKING QUADRANT IN EASILY ACCESSIBLE LOCATION WHEN POSSIBLE. PROVIDE DIFFUSER MOUNTED DAMPERS WHERE DUCT MOUNTED DAMPER WOULD BE INACCESSIBLE. TYPICAL OF BACK OF HOUSE.
7. PROVIDE BOWDEN CABLE CONTROLS AS SHOWN (VD-1). COORDINATE EXACT VOLUME DAMPER LOCATION IN FIELD. SEE M-101 FOR PRODUCT SPECIFICATIONS.
8. FLEXIBLE DUCT ALLOWED FOR FINAL CONNECTION TO DIFFUSER ONLY. FLEXIBLE DUCT NOT TO EXCEED 5'-0" IN TOTAL LENGTH.
9. GENERAL CONTRACTOR TO PROVIDE ACCESS PANELS FOR CD. REFER TO ARCHITECTURAL PLANS FOR ACCESS PANEL DETAILS AND SPECIFICATION.
10. SMOKE DETECTOR TEST STATION (SDT) IN MANAGER'S OFFICE WIRE BACK TO RTU FACTORY MOUNTED RETURN AIR SMOKE DETECTOR. PROVIDE A NEW IONIZATION OR PHOTO ELECTRIC TYPE SMOKE DETECTOR INSTALLED IN THE RETURN DUCT. REFER TO DETAIL 8/M-103.

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LIBERTY CENTER
7139 FOUNDRY ROW
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LIBERTY TOWNSHIP, OH 450€

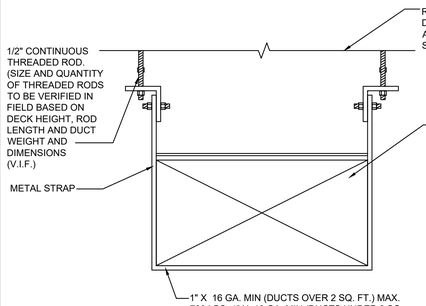
DRAWING NO.

M-102

MECHANICAL PLAN

JEREMY T. SMITH

EEA CONSULTING ENGINEERS

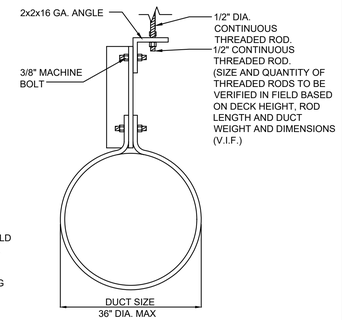


NOTE #1:
DISTANCE BETWEEN DUCT HANGERS SHALL BE IN ACCORDANCE WITH THE RULES OF THE AGENCIES HAVING JURISDICTION.

NOTE #2:
CONTRACTOR SHALL VERIFY MATERIAL OF EXISTING STRUCTURE/DECK ABOVE IN FIELD PRIOR TO BID, SHOP DRAWINGS, FABRICATION, OR WORK START. PROVIDE ADEQUATE DUCT SUPPORT(S) BASED ON EXISTING CONDITIONS.

DUCTWORK SUPPORT DETAIL
NOT TO SCALE

MAX. SIDE INCHES	RECTANGULAR DUCTS MIN. GALV. SHT. GAUGE	ALUMINUM MIN. B & S GAUGE
THROUGH 12	26 (0.022 IN.)	24 (0.020 IN.)
13 THROUGH 30	24 (0.028 IN.)	22 (0.025 IN.)
31 THROUGH 54	22 (0.034 IN.)	20 (0.032 IN.)
55 THROUGH 84	20 (0.040 IN.)	18 (0.040 IN.)
OVER 84	18 (0.052 IN.)	16 (0.051 IN.)



MAX WEIGHT PER FOOT = 16 LBS.

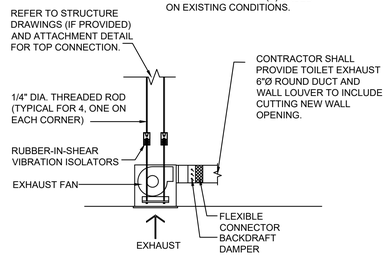
ROUND DUCT SUPPORT DETAIL
NOT TO SCALE

DIAMETER INCHES	ROUND DUCTS SPIRAL SEAM DUCT STEEL MIN. GALV. SHT. GAUGE	ROUND DUCTS LONGITUDINAL SEAM DUCT STEEL MIN. GALV. SHT. GAUGE	FITTINGS STEEL MIN. GALV. SHT. GAUGE
THROUGH 12	28 (0.019 IN.)	26 (0.022 IN.)	26 (0.022 IN.)
13 THROUGH 18	26 (0.022 IN.)	24 (0.028 IN.)	24 (0.028 IN.)
19 THROUGH 28	24 (0.028 IN.)	22 (0.034 IN.)	22 (0.034 IN.)
29 THROUGH 36	22 (0.034 IN.)	20 (0.040 IN.)	20 (0.040 IN.)
37 THROUGH 52	20 (0.040 IN.)	18 (0.052 IN.)	18 (0.052 IN.)

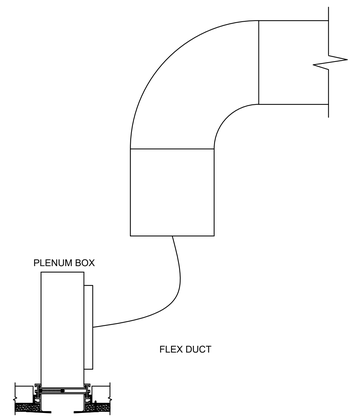
1 DUCT SUPPORT DETAIL
SCALE: N.T.S

NOTE #1:
CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE ADEQUATE CONNECTION TO STRUCTURE / DECK ABOVE BASED ON CONDITIONS.

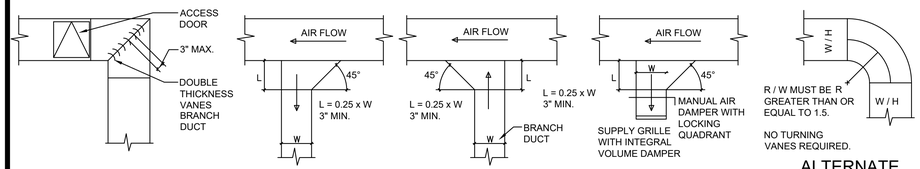
NOTE #2:
CONTRACTOR SHALL VERIFY MATERIAL OF EXISTING STRUCTURE/DECK ABOVE IN FIELD PRIOR TO BID, SHOP DRAWINGS, FABRICATION, OR WORK START. PROVIDE ADEQUATE SUPPORT(S) BASED ON EXISTING CONDITIONS.



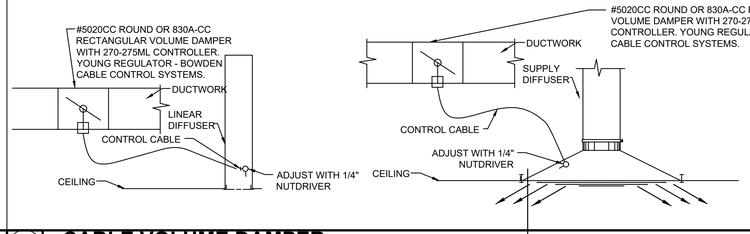
2 EXHAUST FAN DETAIL
SCALE: N.T.S



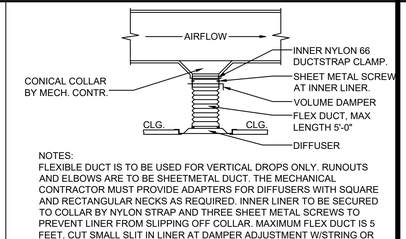
3 LINEAR DIFFUSER DUCT CONNECTION
SCALE: N.T.S



4 STANDARD DUCTWORK DETAIL
SCALE: N.T.S

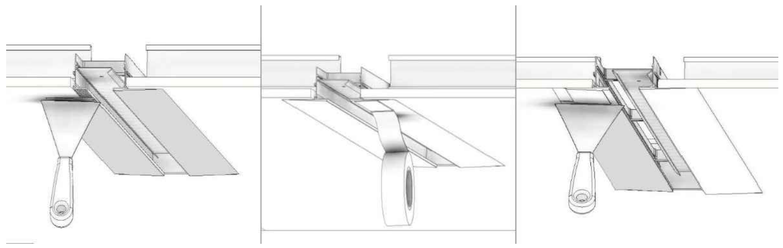


5 CABLE VOLUME DAMPER
SCALE: N.T.S



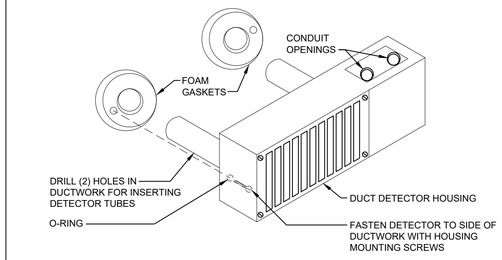
NOTES:
FLEXIBLE DUCT IS TO BE USED FOR VERTICAL DROPS ONLY. RUNOUTS AND ELBOWS ARE TO BE SHEETMETAL DUCT. THE MECHANICAL CONTRACTOR MUST PROVIDE ADAPTERS FOR DIFFUSERS WITH SQUARE AND RECTANGULAR NECKS AS REQUIRED. INNER LINER TO BE SECURED TO COLLAR BY NYLON STRAP AND THREE SHEET METAL SCREWS TO PREVENT LINER FROM SLIPPING OFF COLLAR. MAXIMUM FLEX DUCT IS 5 FEET. CUT SMALL SLIT IN LINER AT DAMPER ADJUSTMENT W/STRING OR WIRE MARKER TO SHOW LOCATION.

6 BOTTOM DISCHARGE DETAIL
SCALE: N.T.S



NOTES: CONTRACTOR SHALL TAPE AND SPACKLE THE DIFFUSER'S FRAME TO THE CEILING TO CONCEAL THE FLANGE. THE TAPE SHOULD COVER THE ALUMINUM PERIMETER FLANGE OF THE LINEAR DIFFUSER, AS WELL AS OVERLAP ONTO THE DRYWALL TO ENSURE A SMOOTH TRANSITION. FINISH THE INSTALLATION BY SANDING THE SURFACE SMOOTH, PRIMING IT AND PAINTING IT.

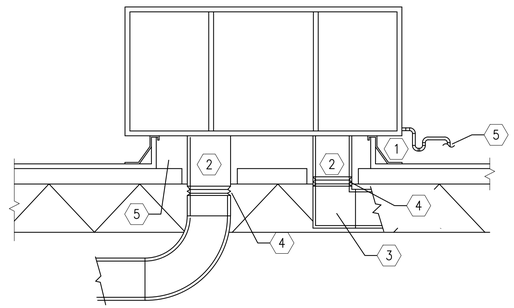
7 LINEAR DIFFUSER MOUNTING FRAME STYLE EE
SCALE: N.T.S



1. TOTALINE MODEL #P270-20001 UL 268A LISTED OR EQUIVALENT.
2. RUGGED NORYL HOUSING WITH STRONG CLEAR POLYCARBONATE INSPECTION COVER.
3. ACCOMMODATES ION (IONIZATION) OR PHOTO HEADS (PHOTOELECTRIC).
4. SUITABLE FOR 4 WIRE 14-18 AWG WIRE, 24VAC/DC OR 120/220 VAC OPERATION.
5. REMOTE TEST STATION OPTION.
6. POWERED OUTPUTS FOR REMOTE LED AND AUDIBLE ALARM.
7. AIR VELOCITY RATING FROM 300 TO 4000 FPM.
8. EQUIPPED WITH A DPDT AUXILIARY RELAY.

8 DUCT SMOKE DETECTOR DETAIL
SCALE: N.T.S

NOTES:
1. REUSE EXISTING ROOF CURB.
2. TRANSITION TO CONNECTION SIZES IN DUCT RISE, REFER TO PLANS FOR SIZES.
3. 1" ACOUSTIC LINED IN SUPPLY AND RETURN DUCTS FROM FAN DISCHARGE TO POINT INDICATED ON MECHANICAL DRAWINGS (10'-0" MIN.). DUCT SIZES INDICATED ON PLAN ARE EXTERIOR AND INCLUDE LINING. PAINT DUCTWORK TO MATCH CEILING. REFER TO ARCHITECTURAL DRAWINGS FOR COLOR SCHEME.
4. FLEXIBLE CONNECTION - TYPICAL.
5. T.G.C. TO ROUTE CONDENSATE ON ROOF TO NEAREST ROOF DRAIN.
6. ALL ROOF WORK MUST BE PERFORMED BY LANDLORD'S APPROVED ROOFING CONTRACTOR AT TENANT'S GC EXPENSE.



9 ROOFTOP HVAC DETAIL
SCALE: N.T.S

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LIBERTY TOWNSHIP, OH 45069

DRAWING NO.
M-103
MECHANICAL DETAILS

JEREMY T. SMITH
EEA CONSULTING ENGINEERS

DATE: 05/29/24
PROJECT NO.: 240238
LOCATION: LIBERTY CENTER, LIBERTY TOWNSHIP OH
PLOT SCALE: 1:1

SECTION 1 - SUPPLEMENTARY CONDITIONS FOR MECHANICAL WORK

1.1.1 GENERAL CONDITIONS

A. ALL WORK COVERED BY THIS SECTION OF THESE SPECIFICATIONS SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE RESPECTIVE DRAWINGS, INFORMATION OF INSTRUCTIONS TO BIDDERS, GENERAL REQUIREMENTS AND THE SUPPLEMENTARY GENERAL CONDITIONS OF THESE SPECIFICATIONS.

B. BIDDERS SHALL DETERMINE THE CONTENTS OF A COMPLETE SET OF DRAWINGS AND SPECIFICATIONS AND BE AWARE THAT THEY MAY BE BIDDING FROM A PARTIAL SET OF DRAWINGS, APPLICABLE ONLY TO THE VARIOUS SEPARATE CONTRACT, SUBCONTRACTS OR TRADES AS MAY BE ISSUED FOR BIDDING PURPOSES ONLY. THE CONTRACT DOCUMENTS ARE THE COMBINED ARCHITECTURAL, STRUCTURAL, PLUMBING, HEATING, VENTILATING AND AIR CONDITIONING AND ELECTRICAL DRAWINGS AND SPECIFICATIONS. ALL DRAWINGS AND SPECIFICATIONS ARE ON FILE IN THE ARCHITECT'S OFFICE, AND EACH BIDDER SHALL THOROUGHLY ACQUAINT HIMSELF WITH ALL OF THE DETAILS OF THE COMPLETE SET OF DRAWINGS AND SPECIFICATIONS BEFORE SUBMITTING HIS BID. ALL DRAWINGS AND SPECIFICATIONS FORM A PART OF THE CONTRACT DOCUMENTS FOR EACH SEPARATE CONTRACT. THEY SHALL BE CONSIDERED AS BOUND THEREWITH IN THE EVENT PARTIAL SETS OF PLANS AND SPECIFICATIONS SHALL BE DEEMED EVIDENCE OF THE REVIEW AND EXAMINATION OF ALL DRAWINGS, SPECIFICATIONS AND ADDENDA ISSUED FOR THIS PROJECT. NO ALLOWANCES WILL BE MADE BECAUSE OF THE CONTRACTOR'S UNFAMILIARITY WITH ANY PORTION OF THE COMPLETE SET OF DOCUMENTS.

C. ALL EQUIPMENT AND MATERIALS SHALL BE MANUFACTURED IN THE UNITED STATES OF AMERICA.

1.1.2 SCOPE

A. THE WORK INCLUDED UNDER THIS SPECIFICATION CONSISTS OF THE FURNISHING OF ALL LABOR, MATERIALS, TOOLS, TRANSPORTATION, SERVICES, ETC. WHICH ARE APPLICABLE AND NECESSARY TO COMPLETE THE INSTALLATION OF THE SYSTEMS SPECIFIED HEREIN; ALL AS DESCRIBED IN THESE SPECIFICATIONS, AS ILLUSTRATED ON THE ACCOMPANYING DRAWINGS, OR AS DIRECTED BY THE ARCHITECT.

B. IN GENERAL, THE VARIOUS LINES AND DUCTS TO BE INSTALLED BY THE VARIOUS TRADES UNDER THIS SPECIFICATION SHALL BE RUN AS INDICATED, AS SPECIFIED HEREIN, AS REQUIRED BY PARTICULAR CONDITIONS AT THE SITE AND AS REQUIRED TO CONFORM TO THE GENERALLY ACCEPTED STANDARDS SO AS TO COMPLETE THE WORK IN A NEAT AND SATISFACTORILY WORKABLE MANNER. RUN WORK PARALLEL OR PERPENDICULAR TO THE LINES OF THE BUILDING UNLESS OTHERWISE NOTED.

C. THE CONSTRUCTION DETAILS FOR THE BUILDING ARE ILLUSTRATED ON THE ARCHITECTURAL AND STRUCTURAL DRAWINGS. EACH CONTRACTOR SHALL THOROUGHLY ACQUAINT HIMSELF WITH THE DETAILS BEFORE SUBMITTING HIS BID, AS NO ALLOWANCE WILL BE MADE BECAUSE OF THE CONTRACTOR'S UNFAMILIARITY WITH THESE DETAILS. PLACE ALL INSERTS TO ACCOMMODATE THE ULTIMATE INSTALLATION OF PIPE HANGERS IN THE FORMS BEFORE CONCRETE IS POURED. SET SLEEVES IN PLACE IN FORMS BEFORE CONCRETE IS POURED, AND IN MASONRY WALLS WHILE THEY ARE UNDER CONSTRUCTION. ALL CONCEALED LINES SHALL BE INSTALLED AS REQUIRED BY THE PACE OF THE GENERAL CONSTRUCTION TO PRECEDE THAT GENERAL CONSTRUCTION.

1.1.3 INSPECTION OF SITE

A. THE CONTRACTORS SHALL VISIT THE SITE, VERIFY ALL EXISTING ITEMS SHOWN ON PLANS OR SPECIFIED HEREIN, AND FAMILIARIZE HIMSELF WITH THE WORKING CONDITIONS, HAZARDS, EXISTING GRADES, ACTUAL FORMATIONS, SOIL CONDITIONS, AND LOCAL REQUIREMENTS INVOLVED, AND SUBMISSION OF BIDS SHALL BE DEEMED EVIDENCE OF SUCH VISIT. ALL PROPOSALS SHALL TAKE THE EXISTING CONDITIONS INTO CONSIDERATION, AND THE LACK OF SPECIFIC INFORMATION ON THE DRAWINGS SHALL NOT RELIEVE THE CONTRACTOR OF ANY RESPONSIBILITY.

1.1.4 UTILITIES, LOCATIONS AND ELEVATIONS

A. LOCATIONS AND ELEVATIONS OF THE VARIOUS UTILITIES INCLUDED WITHIN THE SCOPE OF THIS WORK HAVE BEEN OBTAINED FROM CITY AND/OR OTHER SUBSTANTIALLY RELIABLE SOURCES AND ARE OFFERED SEPARATELY FROM THE CONTRACT DOCUMENTS, AS A GENERAL GUIDE ONLY, WITHOUT GUARANTEE AS TO ACCURACY. THE CONTRACTOR SHALL EXAMINE THE SITE, SHALL VERIFY TO THEIR OWN SATISFACTION THE LOCATIONS, ELEVATIONS AND AVAILABILITY OF ALL UTILITIES AND SERVICES REQUIRED AND SHALL ADEQUATELY INFORM THEMSELVES AS TO THEIR RELATION TO THE WORK; THE SUBMISSION OF BIDS SHALL BE DEEMED EVIDENCE THEREOF.

1.1.5 CODE REQUIREMENTS

A. ALL WORK SHALL COMPLY WITH THE PROVISIONS OF THESE SPECIFICATIONS, AS ILLUSTRATED ON THE ACCOMPANYING DRAWINGS, OR AS DIRECTED BY THE ARCHITECT, AND SHALL SATISFY ALL APPLICABLE LOCAL CODES, ORDINANCES, OR REGULATIONS OF THE GOVERNING BODIES, AND ALL AUTHORITIES HAVING JURISDICTION OVER THE WORK, OR SERVICES THERETO. IN ALL CASES WHERE ALTERATIONS TO, OR DEVIATIONS FROM THE DRAWINGS AND SPECIFICATIONS ARE REQUIRED BY THE AUTHORITY HAVING JURISDICTION, THE CONTRACTOR SHALL REPORT SAME IN WRITING TO THE OWNER AND SECURE HIS APPROVAL BEFORE PROCEEDING. UPON COMPLETION OF THE WORK, THE CONTRACTOR SHALL PROVIDE COMPLETE UTILITY SERVICE CONNECTIONS, AS DIRECTED, AND SUBMIT, AS REQUIRED, ALL NECESSARY DRAWINGS; HE SHALL SECURE ALL PERMITS AND INSPECTIONS NECESSARY IN CONNECTION WITH HIS WORK AND PAY ALL LEGAL FEES ON ACCOUNT THEREOF. IN THE ABSENCE OF OTHER APPLICABLE LOCAL CODES ACCEPTABLE TO THE ARCHITECT, THE NATIONAL ELECTRICAL CODE AND INTERNATIONAL PLUMBING CODE SHALL APPLY TO THIS WORK.

1.1.6 RECORDS FOR THE OWNER

A. THE CONTRACTOR SHALL OBTAIN AT HIS OWN EXPENSE A COMPLETE, FULL-SIZE SET OF PRINTS ON WHICH HE SHALL KEEP AN ACCURATE RECORD OF THE INSTALLATION OF ALL MATERIALS AND SYSTEMS COVERED BY HIS CONTRACTUAL AGREEMENT. THE RECORD SHALL INDICATE THE LOCATION OF ALL EQUIPMENT AND THE ROUTING OF ALL SYSTEMS. ALL CONDUIT BURIED IN CONCRETE SLABS, WALLS, AND BELOW GRADE SHALL BE LOCATED BY DIMENSION UNLESS A SURFACE MOUNTED DEVICE IN EACH SPACE INDICATES THE EXACT LOCATION. HE SHALL THEN OBTAIN AT HIS EXPENSE ONE COMPLETE REPRODUCIBLE SET OF THE ORIGINAL DRAWINGS ON WHICH HE SHALL NEATLY TRANSFER HIS NOTATIONS AND DELIVER THESE DRAWINGS TO THE ENGINEER AT JOB COMPLETION BEFORE THE FINAL PAYMENT FOR DELIVERY TO THE OWNER.

B. IN ADDITION TO THE ABOVE, THE CONTRACTOR SHALL ACCUMULATE DURING THE JOB PROGRESS THE FOLLOWING DATA IN DUPLICATE PREPARED IN A NEAT BROCHURE OR PACKET FOLDER BONDING FOR SUBSEQUENT DELIVERY TO THE OWNER. THE CONTRACTOR SHALL INCLUDE IN HIS BID THE COST OF BINDING INTO A BOOK:

1. ALL WARRANTIES, GUARANTEE, AND MANUFACTURER'S DIRECTIONS ON EQUIPMENT AND MATERIAL COVERED BY THE CONTRACT.
2. COPIES OF APPROVED SHOP DRAWINGS AND SUBMITTALS.
3. COPIES OF SEQUENCE OF OPERATIONS FOR ALL EQUIPMENT COVERED BY CONTRACT.

1.1.7 MATERIALS AND WORKMANSHIP

A. ALL MATERIALS, UNLESS OTHERWISE SPECIFIED, SHALL BE NEW, FREE FROM ANY DEFECTS AND OF THE BEST QUALITY OF THEIR RESPECTIVE KINDS. ALL LIKE MATERIALS USED SHALL BE OF THE SAME MANUFACTURER, MODEL AND QUALITY, UNLESS OTHERWISE SPECIFIED.

B. ALL MANUFACTURED ARTICLES, MATERIALS AND EQUIPMENT SHALL BE APPLIED, INSTALLED, CONNECTED, ERECTED, USED, CLEANED, ADJUSTED AND CONDITIONED AS RECOMMENDED BY THE MANUFACTURERS, OR ALL INDICATED IN THEIR PUBLISHED LITERATURE, UNLESS SPECIFICALLY HEREIN SPECIFIED TO THE CONTRARY. ALL WORK UNDER THIS CONTRACT SHALL BE PERFORMED BY COMPETENT WORKMEN AND EXECUTED IN A NEAT AND WORKMANLIKE MANNER PROVIDING A THOROUGH AND COMPLETE INSTALLATION. WORK SHALL BE PROPERLY PROTECTED DURING CONSTRUCTION, INCLUDING THE SHIELDING OF SOFT OR FRAGILE MATERIALS AND THE TEMPORARY PLUGGING OF OPEN LINES DURING CONSTRUCTION. AT COMPLETION, THE INSTALLATION SHALL BE THOROUGHLY CLEANED, AND ALL TOOLS, EQUIPMENT, OBSTRUCTION OR DEBRIS PRESENT AS A RESULT OF THIS CONTRACT SHALL BE REMOVED FROM THE PREMISES.

1.1.8 STORAGE AND PROTECTION

A. PROVIDE ADEQUATE FACILITIES FOR ITEMS FURNISHED UNDER THESE SPECIFICATIONS WHICH ARE SUBJECT TO DAMAGE IF EXPOSED TO ELEMENTS. TAKE SUCH PRECAUTIONS AS NECESSARY TO PROPERLY PROTECT APPARATUS FROM DAMAGE. FAILURE TO COMPLY WITH THIS PROVISION WILL BE SUFFICIENT CAUSE FOR REJECTION OF THE PARTICULAR APPARATUS INVOLVED.

1.1.9 COOPERATION

A. ALL WORK UNDER THESE SPECIFICATIONS SHALL BE ACCOMPLISHED IN CONJUNCTION WITH OTHER TRADES ON THIS PROJECT IN A MANNER WHICH WILL ALLOW EACH TRADE ADEQUATE TIME AT THE PROPER STAGE OF CONSTRUCTION TO FULFILL HIS WORK.

B. MAINTAINING CONTACT AND BEING FAMILIAR WITH THE PROGRESS OF THE GENERAL CONSTRUCTION AND THE TIMELY INSTALLATION OF SLEEVES AND INSERTS, ETC., BEFORE CONCRETE IS PLACED SHALL BE THE RESPONSIBILITY OF THIS TRADE, AS WILL THE INSTALLATION OF THE REQUIRED SYSTEMS IN THEIR SEVERAL STAGES, AT THE PROPER TIME TO EXPEDITE THIS CONTRACT AND AVOID UNNECESSARY DELAYS IN THE PROGRESS OF OTHER CONTRACTS, AND MEET ALL REQUIREMENTS OF PROGRESS SCHEDULES SET UP BY THE ARCHITECT.

C. SHOULD ANY QUESTION ARISE BETWEEN TRADES AS TO THE PLACING OF LINES, DUCTS, CONDUITS, FIXTURES OR EQUIPMENT, OR SHOULD IT APPEAR DESIRABLE TO REMOVE ANY GENERAL CONSTRUCTION WHICH WOULD AFFECT THE APPEARANCE OR STRENGTH OF THE STRUCTURE, REFERENCE SHALL BE MADE TO THE ARCHITECT FOR INSTRUCTION.

1.1.10 SCHEDULE OF MATERIAL AND EQUIPMENT

A. THE CONTRACTOR SHALL SUBMIT FOR APPROVAL A COMPLETE SCHEDULE OF MATERIAL AND EQUIPMENT WHICH IS TO BE INSTALLED UNDER THE CONTRACT. THE SCHEDULE SHALL BE SUBMITTED WITHIN 30 DAYS AFTER THE AWARD OF THIS CONTRACT AND PRIOR TO THE INSTALLATION OR FABRICATION OF ANY OF THE MATERIAL INVOLVED. THE SCHEDULE SHALL INCLUDE FOR MATERIALS THE MANUFACTURER'S NAME, CATALOG NUMBER, TYPE AND TRADE NAME; IN ADDITION, FOR EQUIPMENT, ATTACH MANUFACTURER'S ENGINEERING DATA AND SPECIFICATION SHEET.

1.1.11 SHOP DRAWINGS AND SUBMITTALS:

A. PROVIDE SUBMITTALS AND SHOP DRAWINGS (3 COPIES MINIMUM) FOR THE FOLLOWING EQUIPMENT AND LAYOUT:

1. DUCTWORK FABRICATION DETAILS AND LAYOUT AT 1/8" = 1'-0" SCALE.
2. MECHANICAL EQUIPMENT CUT SHEETS INCLUDING ALL PERFORMANCE CHARACTERISTICS, ACCESSORIES, DRAWINGS, WIRING DIAGRAMS, ETC. ACCESSORIES SHALL BE CLEARLY LABELED TO SHOW WHAT IS AND IS NOT PROVIDED.
3. PIPING DETAILS SHOWING MATERIALS USED AND JOINING/SEALING METHODS.
4. PIPING LAYOUT AT 1/8" = 1'-0" SCALE.

B. EQUIPMENT SHALL NOT BE ORDERED UNTIL APPROVED BY THE ARCHITECT AND ENGINEER OF RECORD. THE CONTRACTOR SHALL ALLOW TWO (2) WEEKS FOR DESIGN TEAM REVIEW OF SUBMITTALS.

1.1.12 DRAWINGS AND SPECIFICATIONS

A. THE DRAWINGS SHOW, DIAGRAMMATICALLY, THE LOCATIONS OF THE VARIOUS LINES, DUCTS, CONDUITS, FIXTURES AND EQUIPMENT AND THE METHOD OF CONNECTING AND CONTROLLING THEM. IT IS NOT INTENDED TO SHOW EVERY CONNECTION IN DETAIL AND ALL FITTINGS REQUIRED FOR A COMPLETE SYSTEM. THE SYSTEMS SHALL INCLUDE, BUT ARE NOT LIMITED TO, THE ITEMS SHOWN ON THE DRAWINGS. EXACT LOCATIONS OF THESE ITEMS SHALL BE DETERMINED BY REFERENCE TO THE GENERAL PLANS AND MEASUREMENTS AT THE BUILDING AND IN COOPERATION WITH OTHER SUB-CONTRACTORS AND, IN ALL CASES, SHALL BE SUBJECT TO THE APPROVAL OF THE CONTRACTOR. THE CONTRACTOR RESERVES THE RIGHT TO MAKE ANY REASONABLE CHANGE IN THE LOCATION OF ANY PART OF THIS WORK WITHOUT ADDITIONAL COST TO THE OWNER.

B. SHOULD ANY CHANGES BE DEEMED NECESSARY BY THE CONTRACTOR IN ITEMS SHOWN ON THE CONTRACT DRAWINGS, SHOP DRAWINGS AND DESCRIPTIONS, THE REASON FOR THE PROPOSED CHANGES SHALL BE SUBMITTED TO THE OWNER FOR APPROVAL.

C. EXCEPTIONS AND INCONSISTENCIES IN PLANS AND SPECIFICATIONS SHALL BE BROUGHT TO THE CONTRACTOR'S ATTENTION BEFORE BIDS ARE SUBMITTED; OTHERWISE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF ANY AND ALL CHANGES AND ADDITIONS THAT MAY BE NECESSARY TO ACCOMMODATE HIS PARTICULAR APPARATUS.

D. THE CONTRACTOR SHALL LAY OUT HIS WORK MAINTAINING ALL LINES, GRADES AND DIMENSIONS ACCORDING TO THESE DRAWINGS WITH DUE CONSIDERATION FOR OTHER TRADES AND VERIFY ALL DIMENSIONS AT THE SITE PRIOR TO ANY FABRICATION OR INSTALLATION. SHOULD THE LAYOUT BE IMPRACTICAL, THE CONTRACTOR SHALL BE NOTIFIED BEFORE ANY INSTALLATION OR FABRICATION, AND THE EXISTING CONDITIONS SHALL BE INVESTIGATED AND PROPER CHANGES EFFECTED WITHOUT ANY ADDITIONAL COST.

E. TITLES OF SECTIONS AND PARAGRAPHS IN THESE SPECIFICATIONS ARE INTRODUCED MERELY FOR CONVENIENCE AND ARE NOT TO BE CONSTRUED AS A CORRECT OR COMPLETE SEGREGATION TO TABULATION OF THE VARIOUS UNITS OF MATERIAL AND/OR WORK. THE ARCHITECT DOES NOT ASSUME ANY RESPONSIBILITY, EITHER DIRECT OR IMPLIED, FOR OMISSIONS OR DUPLICATIONS BY THE CONTRACTOR OR ANY SUB-CONTRACTOR DUE TO REAL OR ALLEGED ERROR IN THE ARRANGEMENT OF MATTER IN THE CONTRACT DOCUMENTS.

1.1.13 ARCHITECT'S APPROVAL

A. IN ANY STATEMENT UNDER THIS CONTRACT WHERE "APPROVAL" IS REQUIRED OR REQUESTED, IT IS UNDERSTOOD THAT SUCH APPROVAL MUST BE OBTAINED FROM THE ARCHITECT IN WRITING BEFORE PROCEEDING WITH THE PROPOSAL, AND AN ADEQUATE NUMBER OF COPIES OF ANY SUCH PROPOSAL SHALL BE SUBMITTED TO THE ARCHITECT.

B. THE APPROVAL BY THE ARCHITECT OF ANY MATERIALS, CHANGES, DRAWINGS, ETC., SUBMITTED BY THE CONTRACTOR WILL BE CONSIDERED AS GENERAL ONLY AND TO AID THE CONTRACTOR IN EXPEDITING HIS WORK. SUCH APPROVAL AS MAY BE GIVEN DOES NOT IN ANY WAY RELIEVE THE CONTRACTOR FROM THE NECESSITY OF FURNISHING THE MATERIALS AND PERFORMING ALL WORK AS REQUIRED BY THE DRAWINGS AND SPECIFICATIONS.

1.1.14 LOCAL RESTRICTIONS

A. THE CONTRACTOR SHALL BECOME FAMILIAR WITH ALL RULES AND REGULATIONS OF THE CITY, COUNTY AND STATE, OR ANY OTHER AUTHORITY HAVING JURISDICTION OVER THIS PROJECT. IF IT IS THE CONTRACTOR'S OPINION THAT ANY WORK OR MATERIALS SHOWN ON THE DRAWINGS OR SPECIFICATIONS DO NOT COMPLY WITH THESE RULES AND REGULATIONS AS TO SIZE, TYPE, CAPACITY AND QUALITY, HE MUST MAKE IT KNOWN PRIOR TO THE SUBMISSION OF HIS BID, WHICH SHALL BE DEEMED EVIDENCE OF COMPLIANCE; OTHERWISE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE APPROVAL OF ALL WORK OR MATERIAL AND, IN THE EVENT THAT SUCH AUTHORITY SHOULD INDICATE DISAPPROVAL, HE SHALL CORRECT SAME WITH MATERIALS APPROVED BY THE ARCHITECT AT NO ADDITIONAL COST TO THE OWNER.

1.1.15 ELECTRICAL WIRING

A. EXCEPT FOR SUCH ITEMS AS ARE NORMALLY WIRED UP AT THEIR POINT OF MANUFACTURE AND SO DELIVERED, AND UNLESS SPECIFICALLY NOTED TO THE CONTRARY HEREIN, THE ELECTRICAL SUBCONTRACTOR WILL DO ALL ELECTRIC WIRING OF EVERY CHARACTER FOR POWER SUPPLY. THE MECHANICAL SUBCONTRACTOR SHALL ERECT ALL MOTORS IN PLACE READY FOR CONNECTIONS AND SHALL FURNISH WITH EACH SUCH MOTOR A STARTER OF THE TYPE SPECIFIED AND DELIVER IT IN GOOD CONDITION TO THE ELECTRICAL SUBCONTRACTOR AT THE JOB. THE ELECTRICAL SUBCONTRACTOR WILL MOUNT ALL SUCH STARTERS, AS DIRECTED, FURNISHING SUPPORTING STRUCTURES WHERE NECESSARY. THE OWNER AND OTHER SUBCONTRACTORS SHALL FURNISH WITH EACH ITEM REQUIRING ELECTRICAL CONNECTIONS, THE NECESSARY INSTRUCTIONS AND WIRING DIAGRAMS TO THE ELECTRICAL SUBCONTRACTOR. THE ELECTRICAL SUBCONTRACTOR SHALL REFER TO THE SPECIFICATIONS TO DETERMINE THE SCOPE OF THE WORK.

1.1.16 LARGE APPARATUS AND EQUIPMENT

A. ALL LARGE APPARATUS AND EQUIPMENT WHICH IS SPECIFIED OR SHOWN TO BE FURNISHED OR INSTALLED UNDER THIS CONTRACT, AND WHICH MAY BE TOO LARGE TO BE MOVED INTO ITS FINAL POSITION THROUGH THE NORMAL BUILDING OPENINGS PLANNED, SHALL BE PLACED BY THIS SUBCONTRACTOR IN ITS APPROXIMATE FINAL POSITION. THIS SHALL BE ACCOMPLISHED THROUGH COOPERATION AND COORDINATION WITH OTHER SUBCONTRACTORS BEFORE ANY OBSTRUCTING STRUCTURE IS INSTALLED. ALL APPARATUS SHALL BE CRIBBED UP FROM THE FLOOR BY THIS SUBCONTRACTOR AND CARED FOR AS SPECIFIED UNDER "STORAGE AND PROTECTION" OR AS DIRECTED BY THE ARCHITECT.

1.1.17 RESPONSIBILITY

A. THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR THE SATISFACTORY AND COMPLETE EXECUTION OF ALL WORK INCLUDED. HE SHALL PRODUCE COMPLETE FINISHED OPERATING SYSTEMS AND PROVIDE ALL INCIDENTAL ITEMS REQUIRED AS PART OF HIS WORK, REGARDLESS OF WHETHER SUCH ITEM IS PARTICULARLY SPECIFIED OR INDICATED.

1.1.18 CLEAN UP

A. CLEAN UP TRASH AND DEBRIS CAUSED BY THE WORK OF THIS SECTION, KEEPING PREMISES, STREETS, SIDEWALKS AND ADJACENT AREAS CLEAN AND NEAT AT ALL TIMES. B. DISPOSE OF SUCH MATERIALS OUTSIDE THE LIMITS OF THE PROJECT SITE TO APPROVED LOCATIONS.

1.1.19 PAINTING

A. UPON COMPLETION, CLEAN ALL PIPES AND EQUIPMENT BEFORE PAINTING. PAINTING OF MECHANICAL EQUIPMENT AND PIPING IS SPECIFIED IN ARCHITECTURAL PAINTING SECTION.

1.1.20 ACCESS DOORS

A. ACCESS DOORS ARE TO BE PROVIDED BY THE CONTRACTOR. CONTRACTOR WILL CLOSELY COORDINATE LOCATIONS OF VALVES, ETC. IN ORDER TO HAVE ACCESS TO ALL CONCEALED PORTIONS OF THE SYSTEM REQUIRING PERIODIC SERVICE. PREPARE SHOP DRAWINGS FOR COORDINATION OF ALL ACCESS DOORS, LOCATING SAME FOR INSTALLATION BY GENERAL CONTRACTOR. ACCESS DOOR LOCATIONS SHALL BE APPROVED BY ARCHITECT OR OWNER BEFORE INSTALLATION.

1.1.21 EXCAVATION AND BACKFILLING

a. PROVIDE NECESSARY EXCAVATING AND BACKFILLING FOR THE INSTALLATION OF WORK SPECIFIED IN THIS DIVISION. TRENCHES FOR UNDERGROUND PIPING AND CONDUIT SHALL BE EXCAVATED TO REQUIRED DEPTHS WITH BELL HOLES PROVIDED AS NECESSARY TO INSURE UNIFORM BEARING. ARE SHOULD BE TAKEN NOT TO EXCAVATE BELOW DEPTH, AND ANY EXCAVATION BELOW DEPTH SHALL BE REFILLED WITH SAND OR GRAVEL FIRMLY COMPACTED. WHERE ROCK OR HARD OBJECTS ARE ENCOUNTERED, THEY SHALL BE EXCAVATED TO A GRADE SIX INCHES (6") BELOW THE LOWERMOST PART OF THE PIPE AND REFILLED TO THE PIPE GRADE AS SPECIFIED. AFTER THE PIPE HAS BEEN INSTALLED, TESTED AND APPROVED, THE TRENCHES SHALL BE BACKFILLED IN GRADE WITH APPROVED MATERIAL, WELL TAMPED OR PUDDLED COMPACTLY IN PLACE. DO NOT PROCEED WITH BACKFILL OPERATIONS UNTIL THE ARCHITECT OR CONTRACTOR HAS INSPECTED PIPING. ALL PIPING OUTSIDE THE BUILDING SHALL BE INSTALLED BELOW THE FROST LINE. WHERE STREETS, SIDEWALKS, ETC. ARE DISTURBED, CUT OR DAMAGED BY THIS WORK, THE EXPENSE OF REPAIRING SAME IN A MANNER APPROVED BY THE ARCHITECT SHALL BE A PART OF THIS CONTRACT.

1.1.22 SLEEVES AND ESCUTCHEONS

a. ALL PIPING OTHER THAN SANITARY SEWER LINES AND PVC OR POLYBUTAL PASSING THROUGH CONCRETE FLOOR SLABS SHALL BE COMPLETELY ISOLATED IN 1/2" THICK FLEXIBLE FOAM PLASTIC INSULATION FROM 6" BELOW THE SLAB TO 2" ABOVE THE SLAB. IF PIPES PASS THROUGH GRADE BEAMS, THE INSULATION THICKNESS SHALL BE 3/8". SANITARY SEWER LINES PASSING GRADE BEAMS SHALL BE WRAPPED WITH TWO (2) PLY OF 15#Q FELT TO ISOLATE THE PIPE FROM THE CONCRETE.

b. ESCUTCHEONS EXCEPT AS SPECIFICALLY NOTED OR SPECIFIED SHALL BE INSTALLED ON ALL PIPES PASSING EXPOSED THROUGH THE FLOORS, WALLS OR CEILINGS. ESCUTCHEONS SHALL BE CHROME PLATED SECTIONAL FLOOR AND CEILING PLATES AND SHALL FIT SNUGLY AND NEATLY AROUND PIPE OR PIPE INSULATION OR INSULATED LINES. SOLID CHROME PLATES WITH SETSCREWS SHALL BE USED IF SECTIONAL PLATES DO NOT FIT PROPERLY OR STAY IN PLACE.

1.1.23 FLASHINGS

a. FLASH AROUND ALL PIPES PASSING THROUGH THE ROOF IN CONNECTION WITH THIS CONTRACT WITH STANDARD MANUFACTURED FLASHINGS. FLASHINGS SHALL BE SHEET METAL WITH RUBBER GASKETS. FLASHINGS SHALL EXTEND INTO ROOFING AND UP PIPE DISTANCES IN ACCORDANCE WITH THE LOCAL CODE.

1.1.24 EXPANSION OF PIPING

a. THIS SUBCONTRACTOR SHALL FURNISH AND INSTALL ALL DEVICES REQUIRED TO PERMIT THE EXPANSION AND CONTRACTION OF ALL PIPE WORK INSTALLED PARTICULARLY IN WATER SUPPLY AND CIRCULATING SYSTEMS. IN THE MAIN WATER AND CIRCULATING LINES, HE SHALL EMPLOY EXPANSION JOINTS AS REQUIRED OR WHERE DIRECTED.

b. SHOULD THE INSTALLATION OF MECHANICAL EXPANSION JOINTS BECOME NECESSARY IN THE OPINION OF THE ARCHITECT, JOINTS 1-1/2" AND SMALLER SHALL BE FULTON SYLPHON NO. 111 PACKLESS EXPANSION JOINTS. JOINTS ON 2" AND LARGER LINES SHALL BE ADSCO, FLEXONES OR TUBE TURN, BELLOWS TYPE EXPANSION JOINTS WITH THE PROPER NUMBER OF BELLOWS SECTIONS OF STAINLESS STEEL.

c. ANCHOR ALL LINES HAVING EXPANSION JOINTS SO THAT EXPANSION AND CONTRACTION EFFECT IS EQUALLY DISTRIBUTED. VERIFY EXACT LOCATIONS OF ANCHORS WITH THE ARCHITECT PRIOR TO MAKING INSTALLATION. THE LINES HAVING EXPANSION JOINTS SHALL BE ACCURATELY GUIDED ON BOTH SIDES OF EACH JOINT. THESE GUIDES SHALL CONSIST OF SADDLES AND "E" CLAMPS PROPERLY ARRANGED AND SUPPORTED. SUBMIT COMPLETE DETAILS FOR APPROVAL.

1.1.25 FLAME SPREAD PROPERTIES OF MATERIALS

A. ALL MATERIALS AND ADHESIVES USED FOR ACOUSTICAL LININGS AND INSULATION, JACKETS, TAPES, ETC. SHALL CONFORM TO INTERIM FEDERAL STANDARD FLAME-SPREAD PROPERTIES OF MATERIALS, INC. FED. STD. NO. 00336A (COMM. NBS). THE CLASSIFICATION SHALL NOT EXCEED NO. 2, WITH THE RANGE OF INDICES BETWEEN 0 AND 25 FOR THESE CLASSIFICATIONS AS LISTED IN THE FEDERAL SPECIFICATIONS FOR THE BASIC MATERIALS, THE FINISHES, ADHESIVES, ETC. SPECIFIED FOR EACH SYSTEM, AND SHALL BE SUCH THAT WHEN COMPLETELY ASSEMBLED THE TOTAL WILL NOT EXCEED AN INDEX OF 50 IN CLASSIFICATION 111 AS LISTED IN THE FEDERAL SPECIFICATIONS. MODIFICATIONS SHALL BE MADE TO INSULATING MATERIALS, ETC. AS REQUIRED TO COMPLY WITH THE FEDERAL SPECIFICATIONS.

1.1.26 GUARANTEE

A. THE CONTRACTOR SHALL FURNISH A WRITTEN GUARANTEE IN TRIPLICATE, WARRANTING ALL MATERIALS, EQUIPMENT AND LABOR FURNISHED BY HIM TO BE FREE OF ALL DEFECTS FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE BY THE OWNER. HE SHALL FURTHER GUARANTEE THAT ALL EQUIPMENT SHALL MEET THE CHARACTERISTICS, CAPACITIES AND WORKMANSHIP SPECIFIED AND WITHIN THE WARRANTY PERIOD, THE DEFECTS AND/OR EQUIPMENT WILL BE REPAIRED OR MADE GOOD WITHOUT COST TO THE OWNER. THE CONTRACTOR FURTHER AGREES TO CORRECT WARRANTY DEFICIENCIES WITHIN 48 HOURS OF NOTIFICATION BY MANAGEMENT.

B. REFERENCE DOCUMENTS: CONDITIONS OF THE CONTRACT AND DIVISION 01 "GENERAL REQUIREMENTS" ARE MADE A PART OF THIS SECTION WHETHER ATTACHED HERETO OR NOT.

SECTION 4 - HEATING, VENTILATION AND AIR-CONDITIONING SYSTEMS

4.1.1 SCOPE

A. PROVIDE COMPLETE AIR SUPPLY, RETURN, OUTSIDE AIR AND EXHAUST SYSTEMS INCLUDING FANS, TERMINAL DEVICES AND OTHER COMPONENTS SPECIFIED HEREIN.

4.1.2 SUBMITTALS

A. SHOP DRAWINGS: SUBMIT COMPLETE SHOP DRAWINGS, IN ACCORDANCE WITH SECTION 1, INDICATING MATERIALS, QUANTITIES, SIZES AND INSTALLATION DETAILS.

4.1.3 COORDINATION

A. INSTALL MATERIALS AND EQUIPMENT AT PROPER TIME TO KEEP PACE WITH THE GENERAL CONSTRUCTION AND THE WORK OF THE OTHER TRADES INVOLVED.

4.1.4 WARRANTY

A. THE MECHANICAL SUB-CONTRACTOR SHALL WARRANTY ALL MATERIAL, WORKMANSHIP AND EQUIPMENT FOR A PERIOD OF ONE YEAR AFTER FINAL ACCEPTANCE BY THE OWNER. THE WARRANTY SPECIFICALLY IMPLIES THAT ANY DEFECTIVE PORTION BECOMING APPARENT DURING THIS PERIOD WILL BE REPAIRED, REPLACED OR OTHERWISE MADE GOOD AT NO ADDITIONAL COST TO THE OWNER. IT SHALL FURTHER INCLUDE REPLACEMENT OR REFRIGERANT LOSS NOT DUE TO OWNER NEGLIGENCE. COMPRESSORS SHALL CONTAIN AN ADDITIONAL FOUR-YEAR WARRANTY.

4.2.1 DUCTWORK

A. RIGID DUCTWORK: ALL AIR CONDITIONING AND EXHAUST DUCTWORK, PLENUM, CASINGS AND SHEET METAL, CONNECTIONS SHALL BE FABRICATED OF NEW JOINT-FORMING QUALITY GALVANIZED PRIME GRADE SHEETS.

B. RECTANGULAR LOW PRESSURE DUCTS: CONSTRUCTED OF THE FOLLOWING MINIMUM GAUGES:

LARGEST DIMENSION OF DUCT	GAUGE OF METAL
UP TO 12"	NO. 26 U.S. GAUGE
13" TO 30"	NO. 24 U.S. GAUGE
31" TO 54"	NO. 22 U.S. GAUGE

C. C. ROUND LOW PRESSURE DUCTS: "SNAP-LOK" AS MANUFACTURED BY UNITED SHEET METAL COMPANY.

D. RECTANGULAR DUCTWORK FITTINGS: FABRICATED PER SMACNA STANDARDS FOR LOW-PRESSURE DUCTWORK(2-INCH PRESSURE CLASS).

E. ROUND DUCTWORK FITTINGS: AS MANUFACTURED BY UNITED SHEET METAL CO., AND/OR AS DETAILED ON THE DRAWINGS.

F. FLEXIBLE CONNECTIONS: CONNECTIONS TO AIR CONDITIONING UNITS AND FANS SHALL BE FLEXIBLE CONNECTIONS WHICH SHALL BE NEOPRENE COATED GLASS FABRIC WEIGHING NOT LESS THAN 30 OUNCES PER SQUARE YARD AND AT LEAST 1/16" THICK.

G. AT THE CONTRACTOR'S OPTION, 2" INSULATED FLEXIBLE DUCT MAY BE USED FOR FINAL RUN OUT TO AIR DEVICES WHEN INSTALLED PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. FLEXIBLE RUN OUTS SHALL NOT EXCEED 5-FEET EXTENDED LENGTH.

H. SURFACE-BURNING CHARACTERISTICS FOR SEALANTS AND GASKETS SHALL BE A MAXIMUM FLAME-SPREAD INDEX OF 25 AND A MAXIMUM SMOKE-DEVELOPED INDEX OF 50 WHEN TESTED ACCORDING TO UL 723; CERTIFIED BY AN NRTL

I. ACCESS DOORS SHALL BE PROVIDED FOR ACCESS TO ALL DAMPERS, FUSIBLE LINKS, AND WHERE REQUIRED FOR MAINTENANCE AND CLEANING OPERATIONS. ACCESS DOORS SERVING INSULATED DUCTS SHALL BE DOUBLE-SKIN DOORS WITH ONE INCH OF INSULATION ON THE DOOR. WHERE DUCT SIZE PERMITS, THE ACCESS DOORS SHALL BE16-INCHES BY 18-INCHES. ACCESS DOORS SHALL BE AS MANUFACTURED BY MILCOR.

4.3.1 INSULATION

A. ALL RECTANGULAR SHEET METAL DUCTS SHALL BE INSULATED WITH 1.5-INCH" THICK, 3/4" LB DENSITY FIBERGLASS-FACED INSULATION, OR AS REQUIRED TO MEET A MINIMUM INSTALLED R-VALUE OF 6.0. INSTALL WITH ALL JOINTS OVERLAPPED AND NEATLY SEALED.

B. ALL ROUND SHEET METAL DUCTS SHALL BE INSULATED WITH 2" THICK, 3/4" LB DENSITY FIBERGLASS-FACED INSULATION, OR AS REQUIRED TO MEET A MINIMUM INSTALLED R-VALUE OF 6.0. INSTALL WITH ALL JOINTS OVERLAPPED AND NEATLY SEALED WITH UL 181 LISTED SEALANT.

C. INSULATE REFRIGERANT PIPING WITH 3/8" THICK ARMAFLEX. APPLY INSULATION WITH ALL JOINTS FIRMLY BUTTED TOGETHER.

4.4.1 FILTERS

A. FILTERS SHALL BE 1" THROW AWAY TYPE AND SHALL BE FARR 30-30 FILTER OR EQUAL TYPES BY CAMBRIDGE OR MICROTRON. MAXIMUM VELOCITY THROUGH FILTER MEDIA SHALL BE 500 FPM.

4.5.1 AIR DISTRIBUTION DEVICES

A. AIR DISTRIBUTION DEVICES SHALL BE FURNISHED WITH FRAME STYLES, DEFLECTING DEVICE, DAMPERS AND OTHER ACCESSORIES AS SHOWN ON THE SCHEDULE, AS MANUFACTURED BY TITUS OR APPROVED EQUAL BY METAL-AIRE, PRICE, OR KRUEGER.

B. WALL LOUVERS SHALL BE RECESSED FRAME DOUBLE WEATHER STOP WITH BIRD SCREEN. PROVIDE RUSKIN MODEL L545 OR APPROVED EQUAL BY GREENHECK OR SEMCO.

C. FURNISH AND INSTALL SCREENS ON ALL DUCT, FAN OR OTHER MECHANICAL OPENINGS OR EQUIPMENT FURNISHED BY THIS CONTRACTOR, WHICH LEAD TO OR ARE OUTDOORS. SCREENS SHALL BE 16 GAUGE, ONE-HALF INCH MESH IN REMOVABLE GALVANIZED FRAMES.

4.6.6 SYSTEM CHARGING AND STARTUP

A. SUPPLY THE INITIAL CHARGE OF REFRIGERANT AS REQUIRED TO COMPLETELY CHARGE THE SYSTEM. ANY LOSS OF REFRIGERANT OR OIL DURING TESTING PERIOD OR INITIAL RUNS SHALL BE REPLACED BY THE MECHANICAL SUB-CONTRACTOR AT HIS COST.

B. THE SYSTEMS SHALL BE CHARGED ONLY AFTER THEY HAVE BEEN TESTED AND RENDERED FREE OF LEAKS AND THOROUGHLY EVACUATED USING A VACUUM PUMP AND A RELIABLE VACUUM DEHYDRATION INDICATOR, FOLLOWING STANDARD RECOMMENDED PROCEDURES.

C. MECHANICAL SUB-CONTRACTOR SHALL OPERATE ALL SYSTEMS UNTIL THE SATISFACTORY PERFORMANCE OF SPECIFICATION REQUIREMENTS IS DEMONSTRATED TO THE COMPLETE SATISFACTION OF THE CONTRACTOR. PRIOR TO,AND DURING OPERATION, ALL CONTROLS AND OTHER APPURTENANCES AND DEVICES SHALL BE ADJUSTED AND CALIBRATED. TEST ALL SAFETY DEVICES AND MAKE READY FOR AUTOMATIC OPERATION. ALL SYSTEMS SHALL BE CALIBRATED, AND ALL FANS AND OTHER ROTATING PARTS SHALL BE PROPERLY LUBRICATED AND CHECKED FOR CORRECT ALIGNMENT.

D. THE MECHANICAL SUB-CONTRACTOR, DURING OPERATION AND BALANCING PERIODS, SHALL INSTRUCT THE CONTRACTOR'S AND OWNER'S PERSONNEL IN THE OPERATION AND CONTROL OF THE SYSTEMS AND MAINTENANCE SCHEDULE.

4.7.1 ROOF TOP AIR HANDLING UNITS

A. CASING:
1. GALVANIZED STEEL PAINTED WITH BAKED ENAMEL.
2. GALVANIZED-STEEL LINER.
3. INSULATED WITH FIBERGLASS.
4. STAINLESS-STEEL OR CORROSION RESISTANT DRAIN PAN.

B. SUPPLY-AIR FAN: BELT DRIVEN, FORWARD CURVED, CENTRIFUGAL.

C. CONDENSER-COIL FAN: DIRECT-DRIVEN PROPELLER.

D. SUPPLY-AIR REFRIGERANT COIL:
1. ALUMINUM-PLATE FINS AND SEAMLESS COPPER TUBE.
2. BAKED PHENOLIC COATING.

H. REFRIGERANT CIRCUIT COMPONENTS:
6. NUMBER OF REFRIGERANT CIRCUITS: ONE.
7. COMPRESSOR: HERMETIC SCROLL.
8. REFRIGERANT CHARGE: R-410A.

I. FILTERS: DISPOSABLE, PLEATED.

J. GAS FURNACE:
1. HEAT EXCHANGER AND DRAIN PAN: CORROSION RESISTANT.
2. FUEL: NATURAL.
3. IGNITION: ELECTRONIC.
4. GRAVITY VENT.
5. MODULATING GAS CONTROL VALVE.

K. OUTDOOR-AIR DAMPER (UNITS 5-TONS OR LESS): 0 TO 25 PERCENT, WITH MANUAL DAMPER AND HOOD.

L. ELECTRICAL POWER CONNECTION: SINGLE.

M. BASIC UNIT CONTROLS: PROGRAMMABLE WALL-MOUNTED THERMOSTAT.

N. ACCESSORIES:
1. GAS BURNER COMPARTMENT HEATER.
2. DUPLEX ELECTRICAL OUTLET.
3. FILTER DIFFERENTIAL PRESSURE SWITCH.
4. HAIL GUARDS.
5. ROOF CURB:
6. VIBRATION ISOLATORS.

SECTION 5 - SYSTEM BALANCING

5.1.1 SCOPE

A. TESTING, ADJUSTMENT AND START-UP OF MECHANICAL SYSTEMS SHALL BE PERFORMED BY PERSONNEL CERTIFIED BY THE AMERICAN AIR BALANCE COUNCIL OR SIMILAR ORGANIZATION. TESTING, ADJUSTING AND BALANCING SHALL BE PERFORMED BY AN INDEPENDENT 3RD PARTY CONTRACTOR. ALL NECESSARY TEST EQUIPMENT, INSTRUMENTS, MATERIALS AND LABOR REQUIRED FOR PERFORMING ALL THE TESTS DESCRIBED SHALL BE PROVIDED AS PART OF THE WORK OF THIS DIVISION.

B. UPON COMPLETION OF THE INSTALLATION AND START-UP OF THE MECHANICAL EQUIPMENT, CHECK, ADJUST AND BALANCE SYSTEMIC COMPONENTS TO OBTAIN OPTIMUM CONDITIONS IN EACH CONDITIONED SPACE IN THE BUILDING.

C. PRIOR TO REQUESTING A FINAL INSPECTION, THIS SUB-CONTRACTOR SHALL PREPARE AND SUBMIT TO THE ARCHITECT/ENGINEER OF RECORD COMPLETE REPORTS ON THE BALANCE AND OPERATIONS OF THE SYSTEM, BEARING THE SEAL OF A CERTIFIED AIR BALANCE TECHNICIAN. IN THIS REPORT, THE ORIGINAL CONDITIONS MEASURED AT STARTUP AND FINAL CONDITIONS AFTER BALANCING OF ALL EQUIPMENT SHALL BE CLEARLY INDICATED.

D. MAKE AN INSPECTION IN THE BUILDING DURING THE OPPOSITE SEASON FROM THAT IN WHICH THE INITIAL ADJUSTMENTS WERE MADE AND, AT THE TIME, MAKE ANY NECESSARY MODIFICATIONS TO THE INITIAL ADJUSTMENTS REQUIRED TO PRODUCE OPTIMUM OPERATION OF THE SYSTEMIC COMPONENTS TO PRODUCE THE PROPERTY CONDITIONS IN EACH CONDITIONED SPACE.

5.1.2 WORK INCLUDED

A. THE BALANCING TECHNICIAN SHALL BE RESPONSIBLE FOR INSPECTING, ADJUSTING, BALANCING AND LOGGING THE DATA ON THE PERFORMANCE OF FANS, ALL DAMPERS IN THE DUCT SYSTEMS AND ALL AIR DISTRIBUTION DEVICES. THE MECHANICAL CONTRACTOR AND THE SUPPLIERS OF THE EQUIPMENT INSTALLED SHALL ALL COOPERATE WITH THE BALANCING TECHNICIAN TO PROVIDE ALL NECESSARY DATA ON THE DESIGN AND PROPER APPLICATION OF THE SYSTEMATIC COMPONENTS AND SHALL FURNISH ALL LABOR AND MATERIALS REQUIRED TO ELIMINATE ANY DEFICIENCIES OR IMPROPER-PERFORMANCE.

B. DURING THE BALANCING, THE TEMPERATURE REGULATION SHALL BE ADJUSTED FOR PROPER RELATIONSHIP BETWEEN CONTROLLING INSTRUMENTS AND CALIBRATED BY THE TEMPERATURE CONTROLS SUB-CONTRACTOR USING DATA SUBMITTED BY THE BALANCING TECHNICIAN. THE TOTAL VARIATION SHALL NOT EXCEED 3 DEGREES FROM THE PRESENT MEDIAN TEMPERATURE DURING THE ENTIRE TEMPERATURE SURVEY PERIOD.

C. IN ALL FAN SYSTEMS, BALANCE THE AIR QUANTITIES TO BE BETWEEN PLUS 10- TO MINUS 5-PERCENT OF THE VALUES SHOWN ON THE PLANS. IT SHALL BE THE OBLIGATION OF THE MECHANICAL CONTRACTOR TO FURNISH OR REVISE FAN DRIVES AND/OR MOTORS, IF NECESSARY, WITHOUT COST TO THE CONTRACTOR, TO ATTAIN THE SPECIFIED AIR VOLUME.

5.1.3 REPORT

A. BEFORE FINAL ACCEPTANCE IS MADE, THE BALANCING TECHNICIAN SHALL PREPARE A DETAILED, WRITTEN REPORT.

B. THE DATA SHALL BE NEATLY ENTERED ON APPROPRIATE FORMS TOGETHER WITH ANY TYPED SUPPLEMENTS REQUIRED TO COMPLETELY DOCUMENT ALL RESULTS.

C. WRITTEN EXPLANATIONS OF ANY ABNORMAL CONDITIONS SHALL BE INCLUDED. ALL THIS SHALL BE ASSEMBLED INTO A SUITABLE BROCHURE, AND A TOTAL OF FOUR COPIES SHALL BE PROVIDED.

D. THE TYPED TEST DATA SHEETS AND CORRELATION OF THE TEST RESULTS SHALL BE CERTIFIED TO BE TRUE AND CORRECT BY A CERTIFIED AIR BALANCE TECHNICIAN OVER THE SIGNATURE OF THE SUBCONTRACTOR. SUCH SIGNATURE SHALL BE EXECUTED BY AN OFFICER IF THE SUBCONTRACTING FIRM IS A CORPORATION, A PARTNER IF A PARTNERSHIP, OR BY THE OWNER IS A SOLE OWNERSHIP. THIS DATA SHALL BE DELIVERED TO DESIGNATED MEMBERS OF THE BUILDING OPERATING PERSONNEL NOT LESS THAN THREE DAYS AFTER THE TEXTS ARE COMPLETE SETTINGS, READING, ETC. SHALL BE PREPARED AND SUBMITTED IN QUADRUPLICATE.

5.1.4 INSTRUCTIONS

A. DURING THE TEST PERIODS, THE BALANCING TECHNICIAN SHALL INSTRUCT THE BUILDING MAINTENANCE PERSONNEL IN THE CONSTRUCTION AND OPERATION OF ALL EQUIPMENT.

1 **MECHANICAL SPECIFICATIONS**
SCALE: N.T.S.

WARBY PARKER, INC.
233 EAST SPRING STREET
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ENGINEER

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EEA Project No.	20246520
State of Registration	OHIO
Firm Registration No.	COA-02295

PROJECT NUMBER 240238	DATE: 06.07.2024
DRAWN BY: SL	CHECK BY: JTS
THESE DRAWINGS WERE COMPLETED UNDER THE DIRECT SUPERVISION OF:	JTS

REVISION LOG:	
ISSUED FOR CLIENT	05.29.24
ISSUED FOR LL PERMIT + BID	06.07.24

LIBERTY CENTER
7139 FOUNDRY ROW
SPACE F-122
LIBERTY TOWNSHIP, OH 45069

DRAWING NO.
M-104
MECHANICAL SPECIFICATIONS

JEREMY T. SMITH
EEA CONSULTING ENGINEERS

DATE: 05/29/24
PROJECT NO: 240238
LOCATION: LIBERTY CENTER, LIBERTY TOWNSHIP OH
PLOT SCALE: 1:1

VENTILATION CALCULATION RTU-1

1. Summary

Ventilation Sizing Method	**ASHRAE Std 62.1-2016**	
Design Condition	**Heating operation**	
Occupant Diversity (D)	**1.000**	
Uncorrected Outdoor Air Intake (Vou)	**240**	CFM
System Ventilation Efficiency (Ev)	**0.802**	
Outdoor Air Intake (Vot)	**299**	CFM

2. Space Ventilation Analysis

Zone Name / Space Name	Mult.	Supply Air (CFM) (Vpz)	Space Floor Area (ft²) (Az)	Area Outdoor Air Rate (CFM/ft²) (Ra)	Time Averaged Occupancy (Occupants) (Pz)	People Outdoor Air Rate (CFM/person) (Rp)	Air Distribution Effectiveness (Ez)	Space Outdoor Air (CFM) (Voz)	Breathing Zone Outdoor Air (CFM) (Vbz)	Space Ventilation Efficiency (Evz)
Zone 1										
BOH	1	121	192.0	0.12	1.0	5.00	0.8	**35**	*28*	0.802
Compact Exam room	1	183	105.0	0.06	2.0	5.00	0.8	**20**	*16*	0.981
Contact store	1	306	101.0	0.06	2.0	5.00	0.8	**20**	*16*	1.027
MO	1	123	42.0	0.06	1.0	5.00	0.8	**9**	*8*	1.016
Passage/Waiting	1	358	167.0	0.06	2.0	5.00	0.8	**25**	*20*	1.022
Pre Exam room	1	153	68.0	0.06	2.0	5.00	0.8	**18**	*14*	0.978
Restroom	1	33	56.0	0.00	0.0	0.00	0.8	**0**	*0*	1.092
Sales area exterior	1	1059	539.0	0.06	8.0	7.50	0.8	**115**	*92*	0.983
Sales area interior	1	264	260.0	0.06	4.0	7.50	0.8	**57**	*46*	0.877
Totals (incl. Space Multipliers)		**2601**							**240**	**0.802**

LOAD CALCULATION RTU-1

Air System Information

Air System Name	**RTU-1**		Number of zones	**1**
Equipment Class	**PKG ROOF**		Floor Area	**1530.0** ft²
Air System Type	**SZCAV**		Location	**Butler County, Ohio**

Sizing Calculation Information

Calculation Months	**Jan to Dec**		Zone CFM Sizing	**Sum of space airflow rates**
Sizing Data	**Calculated**		Space CFM Sizing	**Individual peak space loads**

Central Cooling Coil Sizing Data

Total coil load	**6.1**	Tons	Load occurs at	**Aug 1400**
Total coil load	**73.5**	MBH	OA DB / WB	**91.7 / 74.4** °F
Sensible coil load	**60.9**	MBH	Entering DB / WB	**76.6 / 63.2** °F
Coil CFM at Aug 1400	**2601**	CFM	Leaving DB / WB	**54.4 / 53.2** °F
Max block CFM	**2601**	CFM	Coil ADP	**52.0** °F
Sum of peak zone CFM	**2601**	CFM	Bypass Factor	**0.100**
Sensible heat ratio	**0.829**		Resulting RH	**49** %
CFM/Ton	**424.5**		Design supply temp	**55.0** °F
ft²/Ton	**249.8**		Zone T-stat Check	**0 of 1** OK
BTU/(hr-ft²)	**48.0**		Max zone temperature deviation	**0.2** °F
Water flow @ 10.0 °F rise	**N/A**			

Central Heating Coil Sizing Data

Max coil load	**43.8**	MBH	Load occurs at	**Des Htg**
Coil CFM at Des Htg	**2601**	CFM	BTU/(hr-ft²)	**28.6**
Max coil CFM	**2601**	CFM	Ent. DB / Lvg DB	**61.8 / 77.8** °F
Water flow @ 20.0 °F drop	**N/A**			

Supply Fan Sizing Data

Actual max CFM	**2601**	CFM	Fan motor BHP	**0.57** BHP
Standard CFM	**2542**	CFM	Fan motor kW	**0.45** kW
Actual max CFM/ft²	**1.70**	CFM/ft²	Fan static	**0.80** in wg

Outdoor Ventilation Air Data

Design airflow CFM	**299**	CFM	CFM/person	**13.60** CFM/person
CFM/ft²	**0.20**	CFM/ft²		

COMcheck Software Version COMcheckWeb

Mechanical Compliance Certificate

Project Information

Energy Code:	2021 IECC
Project Title:	WP - LIBERTY CENTER
Location:	Liberty Center, Ohio
Climate Zone:	5a
Project Type:	Alteration

Construction Site:
7139 Foundry Row
Liberty Township, Ohio 45069

Owner/Agent:
Warby Parker, INC
233 East Spring Street
New York, New York 10013
646-517-5223

Designer/Contractor:
EEA Consulting Engineers
6615 Vaught Ranch Road #200
Austin, Texas 78730
512-744-4400
www.eeace.com

Mechanical Systems List

Quantity System Type & Description

1 HVAC System (Single Zone):
Heating: 1 each - Central Furnace, Electric, Capacity = 103 kBtu/h
No minimum efficiency requirement applies
Cooling: 1 each - Single Package DX Unit, Capacity = 81 kBtu/h, Air-Cooled Condenser, Air Economizer
Proposed Efficiency = 11.20 EER, Required Efficiency = 11.20 EER
Proposed Part Load Efficiency = 15.20 IEER, Required Part Load Efficiency = 14.80 IEER
Fan System: FAN -- Compliance (Brake HP and fan efficiency method) : Passes

Fans:
FAN 1 Supply, Constant Volume, 2600 CFM, 3.0 motor nameplate hp, 1.5 design brake hp (1.5 max. BHP), 0.00 fan energy index , fan exception: 3rd party air/energy performance certified

Mechanical Compliance Statement

Compliance Statement: The proposed mechanical alteration project represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 2021 IECC requirements in *COMcheck* Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Selene Licon - Mechanical Designer — Name - Title
Signature
06-05-2024 — Date

LOAD DETAIL REPORT.

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Aug 1400			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 91.7 °F / 74.4 °F			HEATING OA DB / WB 3.0 °F / 1.0 °F		
ZONE LOADS	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	294 ft²	7092	-	294 ft²	-	-
Wall Transmission	862 ft²	1810	-	862 ft²	4563	-
Roof Transmission	1530 ft²	1093	-	1530 ft²	3321	-
Window Transmission	294 ft²	2347	-	294 ft²	9849	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	52 ft²	1704	-	52 ft²	3832	-
Floor Transmission	1486 ft²	0	-	1486 ft²	0	-
Partitions	248 ft²	1101	-	248 ft²	745	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	0 W	0	-	0	0	-
Task Lighting	1909 W	6513	-	0	0	-
Electric Equipment	2467 W	8264	-	0	0	-
People	22	5500	4400	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	6245	0	-	0	0
Safety Factor	10% / 0%	4167	0	10%	2231	0
>> Total Zone Loads	-	**45835**	**4400**	-	**24541**	**0**
Zone Conditioning	-	51465	4400	-	24345	0
Plenum Wall Load	0%	0	-	0	0	-
Plenum Roof Load	70%	2550	-	0	0	-
Plenum Lighting Load	30%	0	-	0	0	-
Return Fan Load	2601 CFM	0	-	2601 CFM	0	-
Ventilation Load	299 CFM	5371	8172	299 CFM	21000	0
Supply Fan Load	2601 CFM	1542	-	2601 CFM	-1542	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	**60928**	**12572**	-	**43802**	**0**
Central Cooling Coil	-	60928	12581	-	0	0
Central Heating Coil	-	0	-	-	43802	-
>> Total Conditioning	-	**60928**	**12581**	-	**43802**	**0**
Key:	**Positive values are clg loads Negative values are htg loads**			**Positive values are htg loads Negative values are clg loads**		

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DRAWING NO.

M-501

MECHANICAL CALCULATIONS

JEREMY T. SMITH

EEA CONSULTING ENGINEERS

PROJECT NO: 240238
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