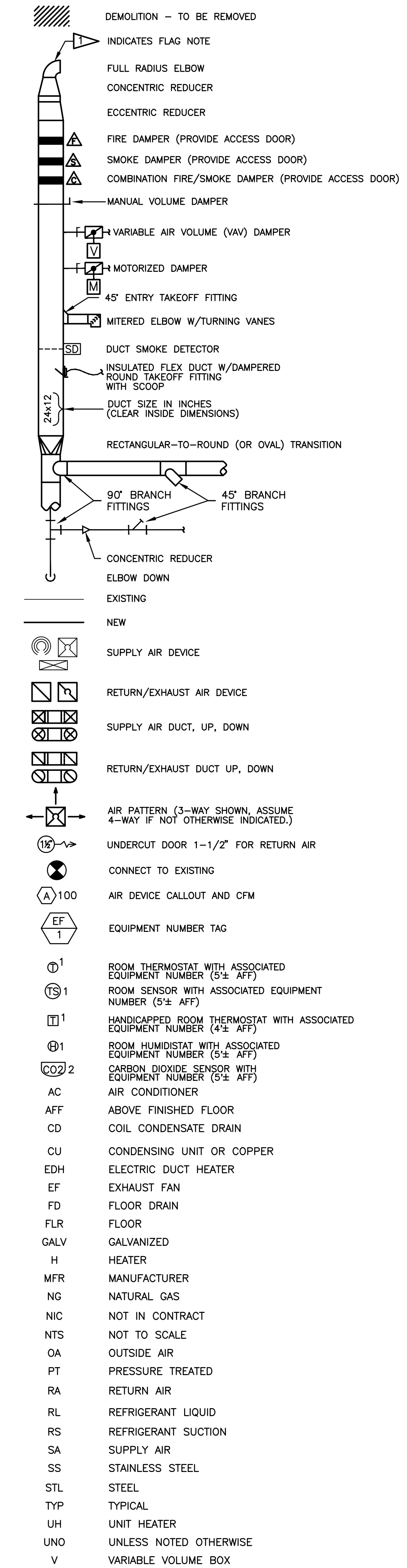


**MECHANICAL LEGEND**



**MECHANICAL NOTES**

- THESE DRAWINGS HAVE BEEN DEVELOPED FROM THE BEST AVAILABLE INFORMATION. CONTRACTOR SHALL FIELD VERIFY ALL FIELD CONDITIONS, DIMENSIONS, CLEARANCES, LOCATION OF EXISTING UTILITIES, ETC. PRIOR TO BIDDING, FABRICATION, OR INSTALLATION. DO NOT SCALE FROM THESE DRAWINGS.
- COORDINATE INSTALLATION AMONG TRADES TO AVOID INTERFERENCES. WHERE PIPING AND DUCTWORK ARE ROUTED TOGETHER, INSTALL PIPING BELOW DUCTWORK FOR MAINTENANCE ACCESSIBILITY. INSTALL ALL MECHANICAL SYSTEM COMPONENTS TO PERMIT INSTALLATION OF CEILING AT HEIGHTS INDICATED ON THE ARCHITECTURAL DRAWINGS.
- INSTALL ALL HVAC EQUIPMENT PER MANUFACTURER RECOMMENDATIONS, INCLUDING REQUIRED MAINTENANCE CLEARANCES. PIPING, DUCTWORK, AND CONDUIT ROUTING SHALL NOT BLOCK REQUIRED ACCESS TO EQUIPMENT DOORS OR PANELS.
- DESIGN BASIS FOR HVAC SYSTEMS, INCLUDING ASSOCIATED PIPING AND ELECTRICAL WORK, IS THE SCHEDULED EQUIPMENT. SUBSTITUTION OF OTHER EQUIPMENT MAY REQUIRE CHANGES IN PIPING, ELECTRICAL POWER SUPPLY, MAINTENANCE CLEARANCES, STRUCTURAL SUPPORTS, ETC. ALL SUCH CHANGES SHALL BE COORDINATED THROUGHOUT ALL TRADES, AND SHALL BE PERFORMED WITH NO EXTENSION OF SCHEDULE, AND AT NO ADDITIONAL COST TO THE OWNER.
- INSTALL ROOF MOUNTED EQUIPMENT IN ACCORDANCE WITH THE LOCAL CODE REQUIREMENTS FOR CLEARANCE TO EDGE OF BUILDING.
- MOUNT OUTDOOR EQUIPMENT INSTALLED AT GRADE ON 4" THICK REINFORCED CONCRETE PADS.
- PROVIDE LOUVERED CONDENSER COIL GUARDS FOR ALL EXTERIOR MOUNTED AC EQUIPMENT.
- FABRICATE NEW DUCTWORK FROM MILL GALVANIZED STEEL SHEET. MATERIAL GAGES, FABRICATION DETAILS, INSTALLATION AND DUCT SUPPORT SHALL BE IN ACCORDANCE WITH SMACNA DUCT CONSTRUCTION STANDARDS. SEAL ALL JOINTS PER SMACNA STANDARDS.
- THE INDICATED DUCT ROUTING AND SIZES ARE DIAGRAMMATIC. DO NOT FABRICATE FROM THESE DRAWINGS. FIELD VERIFY ROUTING AND AVAILABLE CLEARANCES. WHERE REQUIRED BY FIELD CONDITIONS, DUCTWORK MAY BE RE-SIZED UTILIZING ASHRAE/SMACNA EQUIVALENT SIZES. NOTIFY ENGINEER AND OBTAIN APPROVAL FOR REQUIRED ROUTING AND SIZE CHANGES PRIOR TO BEGINNING FABRICATION.
- SMACNA EQUIVALENT ROUND DUCT OR RECTANGULAR DUCT SIZES MAY BE SUBSTITUTED FOR THE DUCT SIZES INDICATED ON THE PLANS. RECTANGULAR SUBSTITUTIONS SHALL MAINTAIN A MAXIMUM OF 3:1 ASPECT RATIO.
- RIGID DUCTWORK SHALL BE EXTERNALLY INSULATED WITH 2 INCH THICK FLEXIBLE FIBERGLASS, MINIMUM R-6 INSIDE CONDITIONED BUILDING ENVELOPE. DUCTWORK OUTSIDE BUILDING ENVELOPE SHALL BE PROVIDED WITH 2-1/2 INCH THICK INSULATION, MINIMUM R-8. INSULATION SHALL BE PROVIDED WITH FACTORY APPLIED REINFORCED FOIL VAPOR BARRIER. INSULATION AND VAPOR BARRIER SHALL HAVE A FIRE SMOKE RATING OF 25/50. APPLY INSULATION PER SMACNA STANDARDS.
- PROVIDE DOUBLE THICKNESS TURNING VANES IN ALL MITERED ELBOWS AND TEES.
- INSULATED FLEXIBLE DUCT SHALL BE UL LISTED, CONSTRUCTED OF A CPE INNER LINER, COATED SPRING STEEL WIRE HELIX WITH FIBERGLASS BLANKET, AND VAPOR BARRIER EQUAL TO THERMAFLEX G-KM BY FLEXIBLE TECHNOLOGIES. INSULATION SHALL HAVE A FIRE SMOKE RATING OF 25/50.
- MAXIMUM LENGTH OF FLEXIBLE DUCT SHALL BE FIVE FEET, UNLESS OTHERWISE INDICATED.
- SECURE FLEXIBLE DUCT CONNECTIONS WITH STAINLESS STEEL WORM GEAR CLAMPS AND DUCT TAPE.
- INSTALL INDOOR FURNACES/AIR HANDLERS SUSPENDED FROM STRUCTURE WITH VIBRATION ISOLATION AT EACH SUSPENSION POINT. PROVIDE AUXILIARY DRAIN PAN WITH FLOAT SWITCH FOR UNIT SHUT-DOWN. CONFIGURE UNITS FOR UPFLOW/HORIZONTAL AIRFLOW. CONTRACTOR SHALL REMOVE EXISTING DUCTWORK, FANS, ETC. COMPLETE THROUGHOUT WORK AREA. CONTRACTOR SHALL PROVIDE AND INSTALL NEW UNIT AND INSTALL NEW DUCTWORK, FANS, ETC. AS INDICATED.
- SEE REFLECTED CEILING PLAN FOR FINAL LIGHT FIXTURE LOCATIONS AND DIMENSIONS. ADJUST DUCTWORK/DIFFUSER LOCATIONS AS REQUIRED TO SUIT LIGHTING ARRANGEMENT.
- PIPING MATERIALS AND FITTINGS SHALL BE AS FOLLOWS:  
REFRIGERANT PIPING SHALL BE TYPE L, HARD DRAWN, COPPER TUBING PER ASTM B88; CLEANED, DEHYDRATED, AND SEALED PER ASTM B280, WITH WROUGHT COPPER SOCKET-JOINT FITTINGS AND SILVER SOLDER.  
COIL AND FURNACE CONDENSATE DRAIN PIPING SHALL BE SCHEDULE 40 PVC WITH SOLVENT WELD FITTINGS.
- INSULATE COIL CONDENSATE DRAIN AND REFRIGERANT SUCTION PIPING WITH 1/2 INCH CLOSED CELL FOAM, "ARMAFLEX" OR EQUAL.
- PITCH CONDENSATE PIPING TO DRAIN A MINIMUM OF 1/8th INCH PER FOOT. PROVIDE P-TRAPS PER A/C UNIT MANUFACTURER INSTALLATION MANUAL. ROUTE CONDENSATE FROM RTU TO NEAREST ROOF DRAIN/GUTTER, ROUTE CONDENSATE PIPING FROM SUSPENDED FURNACE UNITS TO MOP SINK IN SHOP WITH AIR GAP.
- ROUTE CONDENSATE PIPING TO NEAREST FLOOR DRAIN IN THE MECHANICAL EQUIPMENT ROOM.
- SUPPORT HORIZONTAL PIPING FROM STRUCTURE WITHIN 1 FOOT OF ELBOWS AND AT THE MAXIMUM INTERVALS SPECIFIED BELOW:  
NOMINAL PIPE SIZE                      DISTANCE BETWEEN SUPPORTS  
1/2 TO 1-1/4 INCH                      6'-0"  
1-1/2 TO 2-1/2 INCH                      10'-0"  
3 TO 4 INCH                                12'-0"  
PVC    4'-0"
- SUPPORT VERTICAL PIPING WITH RISER CLAMPS WITHIN 1 FOOT OF ELBOWS AND BENDS.
- INSTALL REFRIGERANT PIPING PER ANSI B31.5 AND LOCAL MECHANICAL CODE. CLEAN, DEHYDRATE, TEST, AND CHARGE LINES PER A/C MANUFACTURER INSTALLATION SPECIFICATIONS. ROUTE PIPING FROM CONDENSING UNITS INSIDE EXTERIOR WALL AND ABOVE CEILING TO AC UNITS.
- ALL PIPING PENETRATIONS THROUGH NON-RATED CONSTRUCTION SHALL BE SLEEVED. SEAL PENETRATIONS THROUGH EXTERIOR WALL WEATERTIGHT WITH SILICONE SEALANT. PROVIDE ESCUTCHEONS AT EXPOSED INTERIOR LOCATIONS. ALL PIPING PENETRATIONS THROUGH RATED CONSTRUCTION SHALL BE SEALED PER DETAIL. SEE ARCHITECTURAL FOR LOCATIONS OF RATED CONSTRUCTION.
- NEW PROGRAMMABLE THERMOSTATS SHALL BE HONEYWELL VISION PRO 8000/TB8220 SERIES (NO SUBSTITUTIONS) AND SHALL BE PROGRAMMED TO PERFORM THE FOLLOWING SEQUENCES OF OPERATION:  
UN-OCCUPIED MODE: SYSTEM SHALL CYCLE TO MAINTAIN SET-POINTS OF 80 DEGREES F COOLING AND 65 DEGREES F HEATING. WHERE MOTORIZED OR MODULATING OUTSIDE AIR DAMPERS ARE PROVIDED, DAMPER SHALL CLOSE.  
OCCUPIED MODE: FAN SHALL RUN CONTINUOUSLY TO PROVIDE REQUIRED VENTILATION. SYSTEM COOLING AND HEATING SHALL CYCLE AS REQUIRED TO MAINTAIN SET-POINTS OF 74 DEGREES F COOLING AND 70 DEGREES F HEATING. WHERE MOTORIZED OR MODULATING OUTSIDE AIR DAMPERS ARE PROVIDED, DAMPER SHALL MODULATE TO MINIMUM AIRFLOW POSITION OR ECONOMIZER AS EQUIPPED.  
ECONOMIZER CYCLE: UNITS WITH ECONOMIZERS SHALL ENTER ECONOMIZER MODE ON A CALL FOR COOLING, WHEN THE OUTDOOR AIR TEMPERATURE FALLS BELOW 55 DEGREES F. COMPRESSORS SHALL BE DISABLED, AND ECONOMIZER OUTDOOR AIR AND RETURN AIR DAMPERS SHALL MODULATE AS REQUIRED TO MATCH THE LOAD. IF 100 PERCENT OUTDOOR AIR CANNOT SATISFY THE THERMOSTAT, UNIT COMPRESSORS SHALL BE ENABLED TO PROVIDE SUPPLEMENTAL COOLING.  
WHERE EQUIPPED WITH DEHUMIDIFICATION: WITH UNIT IN OCCUPIED COOLING MODE, THE UNIT SHALL ENTER DEHUMIDIFICATION MODE IF THE RELATIVE HUMIDITY IN THE SPACE RISES TO 55%. THE INACTIVE COMPRESSOR SHALL START AND RUN. HOT GAS REHEAT SHALL OPERATE AS REQUIRED TO MAINTAIN SPACE TEMPERATURE SET-POINT. WHEN THE SPACE RELATIVE HUMIDITY FALLS BELOW 50%, THE UNIT SHALL RETURN TO STANDARD COOLING MODE.
- COMPLETE HVAC SYSTEMS SHALL BE BALANCED BY AN INDEPENDENT, TESTING, ADJUSTING, AND BALANCING (TAB), AABC CERTIFIED CONTRACTOR AS APPLICABLE. TAB CONTRACTOR SHALL BE CONTRACTED BY THE MECHANICAL CONTRACTOR AND SHALL REPORT TO THE ENGINEER/ARCHITECT ON BEHALF OF THE OWNER. CONTRACTOR SHALL PROVIDE AABC NATIONAL PERFORMANCE GUARANTEE. MECHANICAL CONTRACTOR SHALL PROVIDE AND INSTALL ADDITIONAL SHEAVES, DAMPERS, ETC. AS REQUIRED FOR TAB CONTRACTOR TO COMPLETE AND PROVIDE BALANCED SYSTEM.
- NEW MECHANICAL EQUIPMENT SHALL NOT BE UTILIZED FOR SPACE CONDITIONING DURING CONSTRUCTION. EQUIPMENT SHALL BE OPERATED ONLY AS REQUIRED TO PROVIDE PROPER START-UP, CHECK-OUT, BALANCE, ETC. IN ORDER TO MEET "SUBSTANTIAL COMPLETION" GOALS AND PROVIDE A COMPLETE WORKING SYSTEM TO TURN OVER TO OWNER.
- MECHANICAL EQUIPMENT SHALL BE AS INDICATED ON THE DRAWINGS. EQUIPMENT OTHER THAN SCHEDULED BRAND AND MODEL MAY BE CONSIDERED PER FULL COMPLIANCE WITH SCHEDULE AND SPECIFICATIONS. MECHANICAL CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY CHANGES AND/OR COSTS ASSOCIATED WITH USING PRODUCTS OTHER THAN THOSE SCHEDULED. HVAC SUPPLIER SHALL HAVE AVAILABLE FACTORY SERVICE TECHNICIANS WITHIN 100 MILE RADIUS OF JOBSITE AND OFFER 24 HR/7 DAY SERVICE, MAINTENANCE AND REPAIRS.  
EQUIPMENT SUBMITTED, INCLUDING THE SPECIFIED EQUIPMENT SHALL BE FACTORY DIRECT FROM THE MANUFACTURER'S COMMERCIAL SALES OFFICE, INCLUDING FACTORY DIRECT WARRANTY AND SUPPORT. EQUIPMENT SUBMITTED FOR APPROVAL DURING THE SUBMITTAL PROCESS SHALL BE SUBMITTED COMPLETE WITH MANUFACTURER PERFORMANCE DATA AT THE DESIGN CONDITIONS. SUBMITTAL DATA SHALL BE PROVIDED FROM FACTORY AUTHORIZED REPRESENTATIVES. MANUFACTURER CATALOG STANDARD CUT SHEETS ARE NOT ACCEPTABLE. MANUFACTURERS' DESIGNATED DEALERS AND/OR WHOLESALERS ARE NOT A SUBSTITUTE FOR FACTORY SERVICE AND SUPPORT.
- CONTRACTOR SHALL REMOVE EXISTING RTU, DUCTWORK, FANS, ETC. COMPLETE THROUGHOUT WORK AREA. CONTRACTOR SHALL PROVIDE AND INSTALL NEW RTU WITH INSULATED CURB OR ADAPTER CURB AS REQUIRED AND INSTALL NEW DUCTWORK, FANS, ETC. AS INDICATED.
- MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PENETRATIONS AND SEALING PENETRATIONS AS REQUIRED TO MAINTAIN BUILDING ENVELOPE INTEGRITY.
- MECHANICAL CONTRACTOR SHALL REMOVE, RELOCATE, AND RECONNECT EXISTING UNIT HEATERS AS REQUIRED TO CLEAR NEW AC UNITS AND DUCTWORK.



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Existing Terminal Renovation for:  
**OLD DOMINION FREIGHT LINE**  
**ODEL PORTLAND, ME**  
185 RAND ROAD,  
PORTLAND, ME 04102

FOR PERMIT 2/14/14

Project No. 13061.00  
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HVAC LEGEND & NOTES

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