

DUCTWORK SYMBOLS

Table with columns: DESIGNATION, DESCRIPTION, SINGLE LINE, DOUBLE LINE. Includes symbols for Access Door, Backdraft Damper, Fire Damper, Smoke Damper, Flexible Connection, Motorized Damper, Control Damper, Volume Damper, Static Pressure Measuring Station, Duct Elbow, Duct Section (Supply Air, Exhaust Air, Return/Outside/Relief Air), Duct Inclined Drop/Rise, Flexible Duct, Duct Transition, Rectangular Round Duct, Round Duct, Air Flow Direction, 45° Branch Take-Offs, Conical Lateral Branch Take-Offs, Ceiling Supply Diffusers, Ceiling Return/Exhaust Grille/Registers, Sidewall Supply Grille/Registers, Sidewall Return/Exhaust Grille/Registers, Extractor, Duct Tee with Splitter Damper, Door Undercut, Door Louver.

PIPING SYMBOLS

Table with columns: SYMBOL, DESCRIPTION. Includes symbols for Combination Chill/Hot Water Supply, Chilled Water Supply, Chilled Water Return, Condenser Supply, Condenser Return, Hot Water Supply, Hot Water Return, High Pressure Steam, Medium Pressure Steam, Low Pressure Steam, High Pressure Condensate, Medium Pressure Condensate, Low Pressure Condensate, Pumped Condensate, Low Pressure Gas, Vent, Boiler Feed Water, Boiler Blow Down, Refrigerant Gas, Refrigerant Liquid, Refrigerant Suction, Glycol Supply, Glycol Return, Fuel Oil Supply, Fuel Oil Return, Fuel Oil Vent, Electric Heat Trace, Fluid Flow Direction, Domestic Cold Water, Domestic Hot Water, Domestic Hot Water Return, Sectional Valve, Gate Valve, Check Valve, Throttling Valve, Globe Valve, Butterfly Valve, Calibrated Balancing Valve, Ball Valve, Pressure Reducing Valve, Pressure Relief or Safety Valve, Vacuum Relief or Safety Valve, Angle Valve, Solenoid Valve, Motor Operated Control Valve, 3-Way Control Valve, Triple Duty Valve, Flow Control Valve, Plug Valve, Sight Glass, Test Cock, Plugged Tee, Automatic Air Vent, Pressure-Temperature Test Plug, Flow Meter, Strap-On Sensor, Flow Element, Flow Switch, Pressure Gauge with Cock, Thermometer, Steam Trap, Strainer, Strainer with Blowdown Valve, Expansion Joint and Alignment Guides, Anchor, Concentric Reducer, Eccentric Reducer, Union, Flexible Hose (Flanged Ends), Flexible Hose (Screwed Ends), Flexible Pipe Connector, Reduced Pressure Zone Backflow Preventer, Capped Pipe/Outlet, Plugged Pipe/Outlet, Weld Cap.

PIPING SYMBOLS

Table with columns: SYMBOL, DESCRIPTION. Includes symbols for Valve and Blind Flange, Pipe Header with Blind Flange, Pipe Turning Up, Pipe Turning Down, Pipe Branch Bottom Connection, Pipe Branch Top Connection, Pump.

MISCELLANEOUS SYMBOLS

Table with columns: SYMBOL, DESCRIPTION. Includes symbols for Duct Smoke Detector, Point of Connection to Work by Other Trades, Humidistat, Thermostat or Temperature Sensor, Night Thermostat, Diffuser/Grille or Register Mark, Equipment Mark, Section or Detail Locator/Descriptor, Hatching Designates Demolition Work.

AIRFLOW DIAGRAM SYMBOLS

Table with columns: SYMBOL, DESCRIPTION. Includes symbols for Filter, Humidifier, Cooling Coil, Motorized Parallel Blade Damper, Heating Coil, Motorized Opposed Blade Damper, Electric Heating Coil, Propeller Fan, Louver, Fan Starter, Backdraft Damper, Fan, Fire/Smoke Damper, Fan with Adjustable Frequency Motor Controller, Air Flow Measuring Station, Unit Heater.

GENERAL ABBREVIATIONS

Table with columns: ABBREVIATION, DESCRIPTION. Includes AF, AFW, BOD, BOP, BOS, CFM, CL, °F, DN, EL, EXA, FWL, GPM, HP, MA, NTS, OA, RA, SA, SS, TDD, TDP, TOS, VFD, VTR, Horsepower, Mixed Air, Not to Scale, Outside Air, Return Air, Supply Air, Stainless Steel, Top of Duct, Top of Pipe, Top of Steel, Variable Frequency Drive, Vent Through Roof.

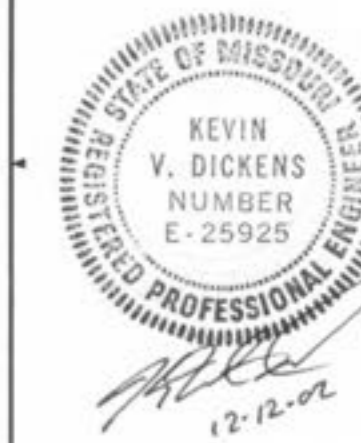
GENERAL NOTES

- 1. FOR SIZES AND DETAILS OF FIXTURES AND EQUIPMENT, SEE SPECIFICATIONS AND OTHER DRAWINGS.
2. ALL SYMBOLS AND ABBREVIATIONS SHOWN ON THIS SHEET ARE NOT NECESSARILY USED ON THIS PROJECT.
3. ALL DUCT SIZES ARE CLEAR INSIDE DIMENSIONS.
4. REFERENCE ARCHITECTURAL REFLECTED CEILING PLANS FOR ACTUAL LOCATION AND ORIENTATION OF CEILING MOUNTED DEVICES.
5. ALL DUCT ELBOWS SHALL BE WAVED PER SPECIFICATIONS UNLESS OTHERWISE NOTED.
6. ALL ROUND DUCT ELBOWS SHALL BE LONG RADIUS PER SPECIFICATIONS UNLESS OTHERWISE NOTED.
7. REFERENCE ARCHITECTURAL PLANS FOR ACTUAL LOCATIONS OF ALL EXTERIOR PENETRATIONS OF ROOF AND WALLS.
8. REFERENCE STRUCTURAL PLANS FOR ACTUAL LOCATIONS OF ALL CONCRETE EQUIPMENT PADS PROVIDED BY DIVISION 3.
9. ALL EXPOSED DUCTWORK SHALL BE PAINTED IN THE FIELD BY DIVISION 9.
10. REFER TO DUCT APPLICATION SCHEDULES IN DIVISION 15 SPECIFICATION SECTION "METAL DUCTS" FOR DUCT MATERIALS AND INSULATION REQUIREMENTS.
11. IF CONFLICTS ARE IDENTIFIED, OR IF SUBSTITUTIONS ARE MADE FOR MAJOR EQUIPMENT THAT IS BASIS OF DESIGN, SUBMIT DETAILED SHOP DRAWINGS AS NOTED IN SUBMITTAL SECTIONS OF DIVISION 15 SPECIFICATIONS.
12. REFERENCE ARCHITECTURAL PLANS FOR ACTUAL LOCATIONS OF ALL EXPOSED DUCTWORK AND WALL GRILLES.
13. DUCT MOUNTED SMOKE DETECTORS SHALL BE FURNISHED AND INSTALLED BY DIVISION 15. CONNECTION TO FIRE ALARM SYSTEM SHALL BE BY DIVISION 15. INTERLOCK WITH MECHANICAL EQUIPMENT SHALL BE BY DIVISION 15.

HVAC DESIGN CRITERIA

DESIGN CONDITIONS
OUTDOOR DESIGN CONDITIONS SHALL BE BASED ON ASHRAE WEATHER DATA FOR THE ST. LOUIS INTERNATIONAL AIRPORT AT LAMBERT FIELD. THE CLIMATIC CONDITIONS USED SHALL BE THE ASHRAE 98.6 WINTER DESIGN DRY-BULB AND THE 4.8% SUMMER DESIGN DRY BULB AND WET BULB. CLIMATIC CONDITIONS ARE SUMMARIZED BELOW.
ELEVATION = 564 FT; HEATING DRY-BULB = 2° F; COOLING DRY-BULB = 95° F; DESIGN WET-BULB = 76° F
INDOOR DESIGN CONDITIONS SHALL BE BASED ON ASHRAE STANDARDS AND GOOD DESIGN PRACTICE. INDOOR DESIGN CONDITIONS ARE SUMMARIZED BELOW.
PUBLIC AREAS AND ADMINISTRATIVE: 70° F DB AT 20-30% RH (WINTER); 75° F DB AT 50-60% RH (SUMMER)
NATORIUM: 85° F DB AT 50-60% RH
FITNESS AREAS AND GYMNASIUM: 70° F DB AT 20-30% RH (WINTER); 75° F DB AT 50-55% RH (SUMMER)
LOCKERS AND SHOWERS: 75° F DB
MECHANICAL AND STORAGE: 65° F DB (WINTER); 85° F DB (SUMMER)
IMAC DESIGN SUMMARY
PUBLIC, ADMINISTRATIVE AND FITNESS AREAS - THESE AREAS SHALL BE SERVED BY TWO SYSTEMS OPERATING IN UNISON. EACH UNIT SHALL DELIVER AIR TO THE SPACES VIA INDIVIDUAL DUCTWORK SYSTEMS. THE WEST WING AHU SHALL SERVE PRIMARILY THE OFFICE AND PUBLIC AREAS AND SHALL BE EQUIPPED WITH A VARIABLE SPEED SUPPLY FAN, SIX COOLING COILS WITH MATCHED CONDENSING UNITS, CONSTANT VOLUME ENERGY RECOVERY WHEEL AND A CONSTANT VOLUME EXHAUST FAN. SUPPLY FAN VFD SHALL BE CONTROLLED VIA A SUPPLY DUCT PRESSURE SENSOR, MAINTAINING A CONSTANT DUCT PRESSURE. ENERGY SHALL BE RECOVERED FROM LOCKER CORE EXHAUST AIR.
THE EAST WING AHU SHALL SERVE PRIMARILY THE GYMNASIUM AND FITNESS AREAS AND SHALL BE EQUIPPED WITH A VARIABLE SPEED FAN SUPPLY FAN, FULLY MODULATING ENTHALPY-CONTROLLED ECONOMIZER AND A MODULATING RELIEF FAN. A DIFFERENTIAL PRESSURE TRANSDUCER REFERENCED TO THE OUTDOORS, TO MAINTAIN A NET POSITIVE BUILDING PRESSURE, SHALL CONTROL THE RELIEF FAN. THE VENTILATOR RATE SHALL BE MODULATED BASED ON CO2 LEVELS WITHIN THE SPACE. THE UNIT WILL HAVE SUFFICIENT CAPACITY TO SERVE A FUTURE GYMNASIUM AND FITNESS ADDITION.
INDIVIDUAL SPACES SHALL BE SERVED BY SERIES TYPE FAN TERMINAL UNITS (FTU) AND VARIABLE VOLUME UNITS (VU) WITH ELECTRIC REHEAT.
LOCKERS AND STORAGE AREAS - RESTROOMS, STORAGE AREAS AND LOCKER ROOMS SHALL BE CONDITIONED BY AIR TRANSFERRED FROM OCCUPIED SPACES AND EXHAUSTED AT SUFFICIENT QUANTITIES TO MEET CODE AND SPACE CONDITIONS INDICATED. THE WEST WING AHU SHALL HANDLE MOST EXHAUST AND THE ENERGY IN THE EXHAUST AIR STREAM SHALL BE RECOVERED VIA AN ENERGY WHEEL.
IT IS NOT OUR INTENTION TO RE-CIRCULATE ANY EXHAUST FROM THE TOILET ROOMS, STORAGE ROOMS OR THE LOCKER ROOMS. HOWEVER, IT IS OUR INTENT TO TAKE THIS AIR THROUGH AN ENERGY RECOVERY VENTILATOR TO RECOVER THE THERMAL ENERGY OTHERWISE WASTED IN THIS EXHAUST STREAM.
NATORIUM - THE ENVIRONMENT WITHIN THE POOL AREA IS VERY CRITICAL, ESPECIALLY AS IT PERTAINS TO HUMIDITY. TO ADDRESS THESE SPECIAL CONDITIONS, A POOL DEHUMIDIFICATION AND ENERGY RECOVERY SYSTEM BY POOLFAN SHALL BE PROVIDED. THIS SYSTEM SHALL DEHUMIDIFY THE AIR, HEAT AND COOL AS REQUIRED, AND RECLAIM ENERGY FROM THE DEHUMIDIFICATION PROCESS TO HEAT THE POOL WATER AS NEEDED. MOST DUCTWORK SHALL BE BELOW GRADE, DIRECTING WARM DRY AIR ONTO THE CEILING. SOME DUCTWORK SHALL BE PROVIDED HIGH TO AVOID STAGNATION AND CONDENSATION AT THE CEILING, AND RETURN AIR SHALL BE TAKEN AT THE DECK TO AVOID CHLORAMINE BUILDUP AT THE WATER LEVEL, AND RETURN TO FEET ABOVE THE DECK TO DE-STABILIZE THE AIR OVER THE POOL. THE UNIT SHALL RUN CONTINUOUSLY.
ADJACENT STORAGE AREAS AND THE POOL MECHANICAL SPACE SHALL BE CONDITIONED BY CONDITIONED AIR AND AIR TRANSFERRED FROM THE NATORIUM AND EXHAUSTED AT SUFFICIENT QUANTITIES TO MEET CODE AND SPACE CONDITIONS INDICATED. TO AVOID ODOOR MIGRATION, ALL AIR FROM THESE SPACES SHALL BE EXHAUSTED, AND THESE SPACES SHALL BE UNDER NEGATIVE PRESSURE.

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RENAUD SPIRIT CENTER
For the City of O'Fallon - Missouri



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