

HVAC SPECIFICATIONS

CODES AND PERMITS: ALL WORK TO BE DONE IN ACCORDANCE WITH APPLICABLE LOCAL AND STATE CODES. PERMIT AND CONNECTION FEES TO BE PAID BY CONTRACTORS AS REQUIRED.

WARRANTY: WORK AND MATERIALS TO BE WARRANTED FOR ONE (1) YEAR AFTER PROJECT COMPLETION.

HYDRONIC (HEATING WATER) PIPING:
TYPE L HARD-DRAWN COPPER WITH SOLDERED JOINTS OR SCH 40 BLACK STEEL WITH THREADED JOINTS.

DUCTWORK:
RIGID - GALVANIZED SHEET METAL (ALUMINUM AT MRI AREAS). CONSTRUCT DUCTWORK IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE", 1985 EDITION. FOLLOW THESE STANDARDS IN ALL CASES WHERE DRAWINGS ARE UNCLEAR OR DO NOT REFLECT EXACT FIELD CONDITIONS.

FLEXIBLE DUCT RUNOUTS:
CONSTRUCT DUCT OF AIRTIGHT POLYESTER CORE WITH GALVANIZED WIRE HELIX, FACTORY INSULATED WITH 0.75 POUND DENSITY FIBERGLASS BLANKET WITH WOVEN GLASS METALLIZED SCRIM AND SEAMLESS VAPOR BARRIER JACKET. DUCT TO BE U.L. LABELED CLASS 1 AIR DUCT. FLEXIBLE DUCT TO BE RATED THROUGH SIZE 16" AT 6" W.G. POSITIVE WORKING PRESSURE, AND 0.5" W.G. NEGATIVE WORKING PRESSURE.

DUCT INSTALLED INSIDE BUILDING THERMAL ENVELOPE TO HAVE MINIMUM R-VALUE OF 6.0. DUCT INSTALLED OUTSIDE BUILDING THERMAL ENVELOPE TO HAVE MINIMUM R-VALUE OF 8.0.

DUCT INSTALLATION:
SEAL ALL DUCT JOINTS (LONGITUDINAL AND TRAVERSE) WITH MASTIC SEALANT PRIOR TO INSTALLING INSULATION. PAINT DUCTWORK VISIBLE THROUGH GRILLES AND DIFFUSERS FLAT BLACK. OPEN DUCTS TO HAVE HEMMED TERMINATIONS ON ALL SIDES.

AIR DISTRIBUTION DEVICES: INSTALL DEVICES FLUSH, LEVEL, AND TIGHT AGAINST WALL OR CEILING, WITH GASKET BEHIND EACH DEVICE. DEVICES IN CEILING TO BE COORDINATED WITH LIGHTING FIXTURES, AND BE LOCATED SYMMETRICALLY WITH THE CEILING GRID.

TEST AND BALANCE:
WORK INCLUDE PROVIDING TESTING, ADJUSTING AND BALANCING OF ENVIRONMENTAL SYSTEMS INCLUDING BUT NOT LIMITED TO HYDRONIC AND AIR DISTRIBUTION SYSTEMS AND EQUIPMENT AND APPARATUS CONNECTED THERETO.

WHEN POSSIBLE, TAB WORK TO BE DONE DURING PEAK LOAD CONDITIONS. WORK TO BE ACCOMPLISHED, AND REPORTS SUBMITTED, PRIOR TO PROJECT FINAL INSPECTION BY ARCHITECT.

AIR DISTRIBUTION SYSTEM TO BE ADJUSTED TO QUANTITIES INDICATED AND AS REQUIRED TO ELIMINATE ANY TEMPERATURE GRADIENTS BETWEEN ROOMS OR WITHIN ANY ROOMS GREATER THAN 3 F.

WORK TO BE PERFORMED BY A FIRM CERTIFIED BY NATIONAL ENVIRONMENTAL BALANCING BUREAU, OR EQUIVALENT.

INSULATION:
HYDRONIC LINES (HEATING WATER) - 3/4" THICK FLEXIBLE FOAMED PLASTIC (ARMAFLEX) WITH JOINTS SEALED WITH SUITABLE ADHESIVE.

DUCTWORK, SUPPLY (RECTANGULAR) - 1" THICK DUCT LINER. DUCT SIZES NOTED ARE NET INTERNAL.

DUCTWORK, SUPPLY (ROUND) - 2" THICK 1.0 LB. DENSITY FIBERGLASS BLANKET WITH VAPOR BARRIER, SECURED WITH STAPLES 2" O.C.

DUCTWORK, RETURN - SAME AS SUPPLY DUCTWORK.

DUCTWORK, EXHAUST - NO INSULATION IS REQUIRED.

DUCT LINER, ELASTOMERIC (LOW PRESSURE SYSTEMS)
GENERAL: DUCT LINER TO BE CLOSED-CELL ELASTOMERIC FLAT SHEET TYPE, MEETING ASTM C-534, TYPE II, WITH "K" FACTOR OF .25 OR BETTER AT 75 F MEAN TEMPERATURE. LINER TO BE FIBER-FREE, NON-PARTICULATING, FORMALDEHYDE-FREE, AND FREE OF POBE FLAME RETARDANTS. LINER SHALL HAVE A FACTORY APPLIED COATING WITH EPA-REGISTERED ANTI-MICROBIAL AGENT.

DUCT LINER SHALL HAVE COMPOSITE FIRE AND SMOKE RATINGS NOT EXCEEDING 25 FOR FLAME SPREAD AND 50 FOR SMOKE CONTRIBUTED AND DEVELOPED.

THICKNESS: VALUES SPECIFIED BELOW ARE MINIMUM, AND MAY NEED TO BE INCREASED TO MEET ENERGY CODES OR CRITERIA OF LOCAL AUTHORITIES.

INTERIOR LOCATIONS (WITHIN THERMAL ENVELOPE): 1" THICK, R-VALUE 4.2, NOISE REDUCTION CRITERIA (NRC) OF 0.40

BRICK VENTS: ARCHITECTURAL STYLE, EXTRUDED OR CAST ALUMINUM CONSTRUCTION. UNITS SHALL HAVE INSECT SCREEN AND WATER STOP, KYNAR FINISH COLOR COATING, EQUAL TO RUSKIN MDL. BV100.

FIRE DAMPERS: FOLDING BLADE TYPE, CONSTRUCTED AND TESTED IN ACCORDANCE WITH UL SAFETY STANDARD 555. EACH FIRE DAMPER SHALL HAVE A 1 1/2 HOUR FIRE PROTECTION RATING, 212 F FUSIBLE LINK, AND SHALL INCLUDE A UL LABEL IN ACCORDANCE WITH ESTABLISHED UL LABELING PROCEDURES, EQUAL TO RUSKIN TYPE 1B02.

DAMPERS INSTALLED IN SUPPLY DUCTS TO BE OF THE LOW RESISTANCE TYPE WITH BLADES FOLDED SO AS TO RETAIN THE FREE AREA OF THE DUCT, WITH SUITABLE FRAME STYLE FOR ROUND, OVAL OR RECTANGULAR DUCTS.

FIRESTOPPING AND FIRE/SMOKE CAULKING:
PENETRATIONS OF FIRE-RATED BUILDING COMPONENTS BY PIPES, TUBING, DUCTWORK, RACEWAYS, AND WIRING/CABLING SHALL BE PROVIDED WITH APPROPRIATE FIRE BARRIERS. METHODS AND MATERIALS SHALL BE UL LISTED AND SHALL CONFORM TO THE REQUIREMENTS OF ASTM-E814/UL1479.

VOIDS AND OPENINGS SHALL BE SEALED WITH INTUMESCENT CAULK/SEALANT, EQUAL TO STI "SEALANT" 3M #CP-25, OR DOW CORNING #2000. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

WHERE PLASTIC PIPES OR TUBING PENETRATE RATED ASSEMBLIES, PROVIDE INTUMESCENT COLLARS, EQUAL TO STI "SERIES SSC OR LCC FIRESTOP COLLARS".

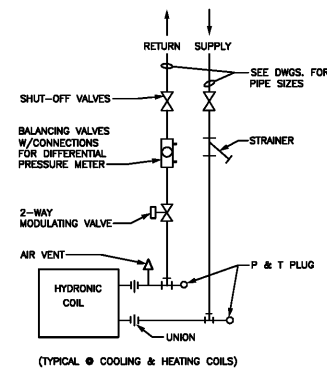
WHERE ELECTRICAL BOXES ARE INSTALLED IN STUD WALL RATED ASSEMBLIES, PROVIDE INTUMESCENT PUTTY PADS AROUND EXTERIOR OF BOX, EQUAL TO STI "SSP PUTTY PADS".

WHERE UL LISTED SYSTEMS (XHEZ THROUGH-PENETRATION FIRESTOP SYSTEMS) ARE REQUIRED, USE COMPONENTS AS MANUFACTURED BY: 3M, DOW CORNING, HILTI, MEMPRES, STI, HEVI-DUTY NELSON, OR JOHNS-MANVILLE.

PENETRATIONS OF SMOKE-TIGHT BUILDING COMPONENTS BY PIPES, TUBING, DUCTWORK, RACEWAYS, AND WIRING/CABLING SHALL BE PROVIDED WITH APPROPRIATE SMOKE-TIGHT CAULKING. METHODS AND MATERIALS SHALL BE UL LISTED AND SHALL CONFORM TO THE REQUIREMENTS OF APPLICABLE ASTM/UL STANDARDS.

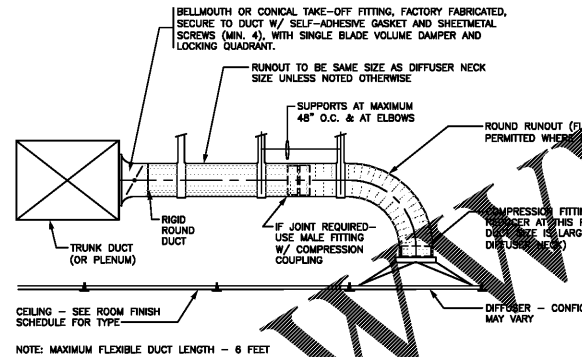
HVAC EQUIPMENT: AS SCHEDULED, WITH CONTROLS AND ACCESSORIES FOR A COMPLETE, FUNCTIONAL SYSTEM. INTERLOCK VAV TERMINALS WITH ASSOCIATED VAV UNIT AND WITH BUILDING AUTOMATION SYSTEM. NOTE: EXISTING CONTROLS ARE NEUTRAL.

SEISMIC RESTRAINTS: PROVIDE SNUBBERS AT 45 DEGREES FOR SUSPENDED EQUIPMENT. RIGIDLY SECURE AND RESTRAIN ROOF-MOUNTED EQUIPMENT. PROVIDE SNUBBERS AS REQUIRED.



DETAIL - HYDRONIC COIL CONNECTION (2-WAY VALVE)

NO SCALE (APPLICATION: FCU, HEAT PUMP) M8022



DETAIL - ROUND DUCT BRANCH TAKEOFF

NO SCALE MA006

VARIABLE AIR VOLUME (VAV) BOX SCHEDULE

MARK	HEAT MBH	HEAT GPM	SET CFM	MIN CFM MAX CFM	INLET SIZE	REMARKS
VAV-A1	29.5	2.0	800	500 1400	10" RD	VAV BOX WITH HW HEAT, PNEUMATIC CONTROLS, TITUS PESV
VAV-A2	17.6	1.0	650	320 900	8" RD	VAV BOX WITH HW HEAT, PNEUMATIC CONTROLS, TITUS PESV
VAV-A3	12.9	1.0	400	200 500	6" RD	VAV BOX WITH HW HEAT, PNEUMATIC CONTROLS, TITUS PESV
VAV-A4	17.6	1.0	680	320 900	8" RD	VAV BOX WITH HW HEAT, PNEUMATIC CONTROLS, TITUS PESV
VAV-A5	17.6	1.0	705	320 900	8" RD	VAV BOX WITH HW HEAT, PNEUMATIC CONTROLS, TITUS PESV
VAV-A6	29.5	2.0	900	500 1400	10" RD	VAV BOX WITH HW HEAT, PNEUMATIC CONTROLS, TITUS PESV
VAV-A7	29.5	2.0	1200	500 1400	10" RD	VAV BOX WITH HW HEAT, PNEUMATIC CONTROLS, TITUS PESV

- NOTES:
1. VAV BOXES TO BE CONTROLLED BY BUILDING ENERGY MANAGEMENT SYSTEM (BEMS). PRE-ORDERING, CONTRACTOR TO VERIFY COMMUNICATIONS PLATFORM WITH CONTROLS CONTRACTOR.
2. HEATING CAPACITIES BASED ON 2-ROW COIL, 180 DEG ENT.
3. PROVIDE SUITABLE PRINTED LABEL FOR VAV BOXES INSTALLED ON BOTTOM OF UNIT.

AIR DISTRIBUTION DEVICE SCHEDULE

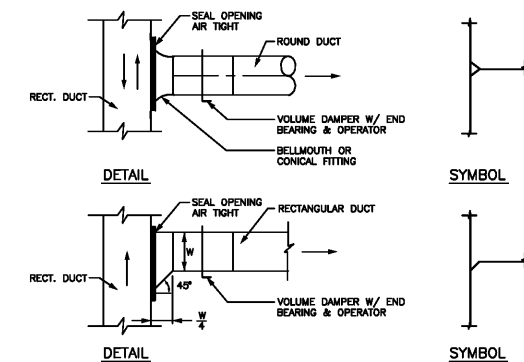
TYPE	DESCRIPTION	FINISHING	MANUFACTURER AND CATALOG NO.	MATERIAL	FINISH	ACCESSORIES AND REMARKS
D1	SUPPLY DIFFUSER SQ. PLAQUE FACE, NECK 24" X 24" FACE	CEILING	TITUS "OMNI" W/ D-100	STEEL	WHITE ENAMEL	SQ. PLAQUE FACE CONFIGURATION, TYPE 3 BORDER FOR T-BAR LAYIN, ROUND NECK
D2	SUPPLY DIFFUSER CONCENTRIC LOUVER FACE, RD. NECK 12" FACE	CEILING	TITUS TMS W/ D-100	STEEL	WHITE ENAMEL	CONCENTRIC LOUVER CONFIGURATION, OB VOLUME DAMPER, TYPE 1 BORDER FOR SURFACE INSTALLATION
G1	RETURN/EXH GRILLE EGGRATE GRID	CEILING	TITUS 50F	ALUMINUM	WHITE ENAMEL	1/2" X 1/2" X 1/2" GRID, TYPE 3 BORDER, TRM FRAME AT SURFACE LOCATIONS

- NOTES:
1. ACCEPTABLE MFR'S: TITUS, TUTTLE & BAILEY, KRUEGER, METALAIR, ANEMOSTAT, PRICE, NAILOR
2. PROVIDE TRANSITION FROM DIFFUSER NECK TO ROUND DUCT RUNOUT SIZE IF REQUIRED.

VENTILATING FAN SCHEDULE

MARK	DESCRIPTION	CFM	EXT. S.P.	HP	RPM DRIVE	SONES	VOLTS PHASE	MANUFACTURER & CATALOG NO.	ACCESSORIES/REMARKS
EF-A1	CENTRIFUGAL CEILING EXHAUST	75	0.250"	50W	800 DIRECT	2.5	115 1	GREENHECK SP-890	W/ AUTO. BACKDRAFT DAMPER, DISCONNECT SWITCH, INTEGRAL GRILLE, SOFFIT VENT, NOTE 2

- NOTES:
1. ACCEPTABLE MFR'S: ACME, COOK, GREENHECK, PENN, TWIN CITY
2. EXTEND 6" RD. EXHAUST DUCT TO SOFFIT/WALL VENT (OR EXISTING EXHAUST DUCT IF SUITABLE, AS DIRECTED).



DETAIL - BRANCH DUCT TAKE-OFFS

NO SCALE MA005A



EXPIRATION DATE:

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RENOVATION + PET/CT PROJECT

CHATTANOOGA OUTPATIENT CENTER
1301 MCCALLIE AVE, CHATTANOOGA TN 37404

Rev. #	Rev. Date	Revision Description

Release Date: 5.3.2019

Project No.: 19010

HVAC SCHEDULES & DETAILS

M2.01

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