

ABBREVIATIONS

ABV	ABOVE
ADJ	ADJUSTABLE
AFJ	ABOVE FINISHED FLOOR
AC	AIR CONDITIONER
AHU	AIR HANDLING UNIT
BAS	BUILDING AUTOMATION SYSTEM
BI	BACKWARD INCLINE
BLDG	BUILDING
BHP	BRAKE HORSEPOWER
BTUH	BRITISH THERMAL UNIT PER HOUR
CD	CONDENSATE DRAIN
CFM	CUBIC FEET PER MINUTE
CW	CHILLED WATER
CWR	CHILLED WATER RETURN
CWS	CHILLED WATER SUPPLY
COND	CONDENSATE
CO	CARBON MONOXIDE
COP	COEFFICIENT OF PERFORMANCE
CU	CONDENSING UNIT
DB	DRYBULB
DWGS	DRAWINGS
DX	DIRECT EXPANSION
EF	EXHAUST FAN
EXH	EXHAUST
EA	EACH
EAT	ENTERING AIR TEMPERATURE
EER	ENERGY EFFICIENCY RATIO
ENT	ENTERING
ENT	ENTERING WATER TEMPERATURE
FC	FORWARD CURVED
FCU	FAN COIL UNIT
FD	FIRE DAMPER
FL	FLOOR
FLEX	FLEXIBLE CONNECTOR OR DUCT
PFM	FEET PER MINUTE
FIS	COMBINATION FIRE AND SMOKE DAMPER
FT. H <sub>2</sub> O	FEET WATER GAUGE
F	DEGREES FAHRENHEIT
GA	GAUGE
GALV	GALVANIZED
GPM	GALLONS PER MINUTE
HP	HORSEPOWER
HHWR	HIGH HOT WATER RETURN
HHWS	HIGH HOT WATER SUPPLY
HW	HOT WATER
HVAC	HEATING VENTILATING AND AIR CONDITIONING
IN. WG	INCHES WATER GAGE
KW	KILOWATTS
LAT	LEAVING AIR TEMPERATURE
LWT	LEAVING WATER TEMPERATURE
MAX	MAXIMUM
MBH	1000 X BTUH
MIN	MINIMUM
MVD	MANUAL VOLUME DAMPER
MZ	MULTI-ZONE
N.T.S.	NOT TO SCALE
OA	OUTSIDE AIR
OPD	OPEN DRIP PROOF
PROP	PROPELLER
PD	PRESSURE DROP
PLBG	PLUMBING
PSIA	POUNDS PER SQUARE INCH ABSOLUTE
PSIG	POUNDS PER SQUARE INCH GAUGE
RA	RETURN AIR
RD	RADIATION DAMPER
REQD	REQUIRED
RH	RELATIVE HUMIDITY
RPM	REVOLUTIONS PER MINUTE
RTU	ROOFTOP UNIT
SA	SUPPLY AIR
SF	SUPPLY FAN
SD	SMOKE DETECTOR
SDMP	SMOKE DAMPER
SQ.FT.	SQUARE FOOT
SZ	SINGLE ZONE
TEFC	TOTALLY ENCLOSED FAN COOLED
TEMP	TEMPERATURE
TG	TRANSFER GRILLE
TO	TRANSFER OPENING ABOVE CEILING
TSTAT	THERMOSTAT
TYP	TYPICAL
VFD	VARIABLE FREQUENCY DRIVE
VAV	VARIABLE AIR VOLUME
W	WATTS
WI	WITH
WO	WITHOUT
WB	WETBULB
ZD	ZONE DAMPER

GENERAL LEGEND

	SUPPLY DIFFUSER (4-WAY)		WALL MOUNTED DDC TEMPERATURE SENSOR MOUNT 4'-0" ABOVE FINISHED FLOOR		TEE (PLAN, UP, DOWN)
	RETURN OR OUTDOOR AIR GRILLE		WALL MOUNTED THERMOSTAT MOUNT 4'-0" ABOVE FINISHED FLOOR		ELBOW (PLAN, UP, DOWN)
	EXHAUST GRILLE		WALL MOUNTED CO SENSOR MOUNT 4'-0" ABOVE FINISHED FLOOR		VALVE
	SUPPLY DUCT UP SECTION (RECTANGULAR)		WALL MOUNTED DDC HUMIDITY SENSOR MOUNT 4'-0" ABOVE FINISHED FLOOR		TWO WAY MOTORIZED CONTROL VALVE
	RETURN DUCT UP SECTION (RECTANGULAR)		WALL MOUNTED HUMIDISTAT SENSOR MOUNT 4'-0" ABOVE FINISHED FLOOR		THREE WAY MOTORIZED CONTROL VALVE
	EXHAUST DUCT UP SECTION (RECTANGULAR)		PHOTO DETAIL OR SECTION IDENTIFICATION TARGET A = DETAIL NUMBER B = SHEET NUMBER ON WHICH DETAIL IS LOCATED		PRESSURE REDUCING VALVE
	SUPPLY DUCT DOWN SECTION (RECTANGULAR)		RADIATION DAMPER INSTALLED IN AIR DEVICE		FLOW CONTROL VALVE
	RETURN DUCT DOWN SECTION (RECTANGULAR)		RADIATION DAMPER INSTALLED IN DUCT		BALL VALVE FOR PIPING 2-INCHES AND SMALLER BUTTERFLY VALVE FOR PIPING 2-1/2 INCHES AND LARGER
	EXHAUST DUCT DOWN SECTION (RECTANGULAR)		ELBOW WITH TURNING VANES		BUTTERFLY VALVE
	SUPPLY DUCT UP SECTION (ROUND)		REFERENCE NOTES		CHECK VALVE
	SUPPLY DUCT DOWN SECTION (ROUND)		REFERENCE NOTE - MULTI-DISCIPLINE SHEETS		STRAINER
	LINEAR SLOT DIFFUSER		FLOW DIRECTION		BALANCE VALVE WITH INTEGRAL TAPS FOR CONNECTION OF DIFFERENTIAL PRESSURE METER. VALVE SHALL HAVE NAMEPLATE INDICATING WATER FLOW RATE VERSUS VALVE PRESSURE DROP
	EXISTING LINEAR SLOT DIFFUSER (LIGHT LINETYPE)		INDICATES POINT OF CONNECTION BETWEEN NEW AND EXISTING		AUTOMATIC FLOW CONTROL VALVE WITH INTEGRAL TEMPERATURE AND PRESSURE TEST PORTS
	RECTANGULAR DUCTWORK WITH TAKE-OFF, BALANCING DAMPER AND INSULATED FLEXIBLE ROUND DUCT. SAME SIZE AS DIFFUSER INLET UNLESS NOTED OTHERWISE. FIRST DIMENSION IS THAT OF SIDE SHOWN		POINT OF DISCONNECT		UNION
	ROUND DUCTWORK		CWS	CONDENSER WATER SUPPLY PIPING	CONDENSER WATER SUPPLY PIPING
	CONICAL FITTING WITH DAMPER ON BRANCH CONNECTION TO RECTANGULAR MAIN (PROVIDE DAMPER IN LOW PRESSURE DUCTWORK ONLY)		CWR	CONDENSER WATER RETURN PIPING	CONDENSER WATER RETURN PIPING
	EXISTING DUCTWORK TO REMAIN (LIGHT LINETYPE)		BCWS	BUILDING CONDENSER WATER SUPPLY PIPING	BUILDING CONDENSER WATER SUPPLY PIPING
	BACKDRAFT DAMPER		BCWR	BUILDING CONDENSER WATER RETURN PIPING	BUILDING CONDENSER WATER RETURN PIPING
	AIR FLOW MONITORING STATION		CHWS	CHILLED WATER SUPPLY PIPING	CHILLED WATER SUPPLY PIPING
	MOTORIZED CONTROL DAMPER		CHWR	CHILLED WATER RETURN PIPING	CHILLED WATER RETURN PIPING
	MANUAL DAMPER		HWS	HEATING WATER SUPPLY PIPING	HEATING WATER SUPPLY PIPING
	FLEXIBLE DUCT CONNECTION		HWR	HEATING WATER RETURN PIPING	HEATING WATER RETURN PIPING
	FIRE DAMPER WITH ACCESS PANEL		CD	CONDENSATE DRAIN PIPING	CONDENSATE DRAIN PIPING
	COMBINATION FIRE/SMOKE DAMPER WITH ACCESS PANEL		R	REFRIGERANT PIPING	REFRIGERANT PIPING
	EXISTING DUCTWORK TO BE REMOVED (DASHED LINETYPE)		FS	FLOW SENSOR	FLOW SENSOR
	DUCT MOUNTED SMOKE DETECTOR PROVIDED AND WIRED BY MECHANICAL CONTRACTOR AND INSTALLED IN DUCT BY MECHANICAL CONTRACTOR. REFER TO SPECIFICATIONS FOR CONTROL REQUIREMENTS.		SP	STATIC PRESSURE TRANSMITTER ASSEMBLY	STATIC PRESSURE TRANSMITTER ASSEMBLY
	AIR DEVICE TAG MARK			RECTANGULAR BRANCH DUCT CONNECTION. (PROVIDE BALANCING DAMPER AT ALL BRANCH CONNECTIONS)	
	SIDEWALL TRANSFER GRILLE				
	SIDEWALL SUPPLY REGISTER				
	SIDEWALL RETURN GRILLE OR OUTSIDE AIR LOUVER				
	SIDEWALL EXHAUST GRILLE				

GENERAL NOTES

- INSTALL EQUIPMENT AND MATERIALS IN COMPLIANCE WITH MANUFACTURER'S MINIMUM CLEARANCE REQUIREMENTS AND RECOMMENDATIONS.
- ALL EQUIPMENT AND INSTALLATION SHALL COMPLY WITH THE LATEST EDITIONS OF NFPA AND THE LATEST ADOPTED EDITION OF THE INTERPLAN BUILDING CODE (MECHANICAL, PLUMBING AND GAS).
- ALL MATERIALS SHALL FIT THE SPACE AVAILABLE. VERIFY DIMENSIONS AND CLEARANCES ON BUILDING PLANS PRIOR TO COMMENCING WORK.
- CONTRACTOR SHALL PERFORM TESTING AND BALANCING OF AIR SYSTEMS IN ACCORDANCE WITH ABC GUIDELINES. A TEST AND BALANCE REPORT SHALL BE SUBMITTED TO THE ARCHITECT/ENGINEER FOR APPROVAL.
- PROVIDE 45 DEGREE BRANCH TAKE-OFF PER SMACNA FIG. 2-8 ON ALL RECTANGULAR DUCT TAKE-OFFS.
- ALL DUCTWORK TAKE-OFFS AND/OR BRANCH DUCTWORK SHALL BE PROVIDED WITH A BALANCING DAMPER.
- PROVIDE AND INSTALL DUCT MOUNTED HINGED ACCESS DOORS FOR ALL SMOKE AND/OR FIRE DAMPERS, NOT OTHERWISE ACCESSIBLE.
- CONTRACTOR SHALL COORDINATE VOLTAGE AND PHASE OF EACH PIECE OF EQUIPMENT WITH THE ELECTRICAL CONTRACTOR PRIOR TO ORDERING AND SHALL COORDINATE WITH ALL OTHER TRADES PRIOR TO OR INSTALLING EQUIPMENT AND MATERIALS.
- COORDINATE ALL HVAC SYSTEM DRAWINGS WITH THE BUILDING AND ROOF STRUCTURE TO AVOID INTERFERENCE BETWEEN MECHANICAL SYSTEMS AND ROOF STRUCTURE. DUCT SIZES MAY BE REVISED, BASED ON ENGINEER APPROVAL, TO FIT TRUSS SYSTEM SO LONG AS THE EQUIVALENT INSIDE CROSS SECTIONAL AREA IS NOT DECREASED.
- GAUGES AND CONSTRUCTION FOR DUCTWORK SHALL CONFORM TO THE LATEST EDITION OF SMACNA'S HVAC DUCT CONSTRUCTION STANDARDS.
- TRANSITION RECTANGULAR DUCTWORK ON BOTTOM AND SIDES. MAINTAIN TOP OF DUCTWORK LEVEL AND HIGH AS POSSIBLE. FLEXIBLE DUCT RUN-OUTS TO CEILING DIFFUSERS SHALL BE AS STRAIGHT AS POSSIBLE AND FREE OF SAGS & KINKS. FLEX DUCT SHALL BE THE SAME SIZE AS THE DIFFUSER NECK IT SERVES.
- ALL DUCT TRANSITIONS FROM SQUARE TO ROUND SHALL BE SMOOTH SQUARE TO ROUND TRANSITIONS. SPIN-IN FITTINGS AT THE END OF CAPPED DUCTS ARE NOT ACCEPTABLE. DUCT DIMENSIONS SHOWN ARE INSIDE CLEAR DIMENSIONS.
- THE CONTRACTOR SHALL FULFILL ALL REQUIREMENTS OF THE CONTRACT DOCUMENTS AND SHALL COMPLETE THE WORK SHOWN ON THESE DRAWINGS. ALL SYSTEMS SHALL BE FINISHED, TESTED AND BALANCED, ADJUSTED, AND PROVEN TO BE FULLY OPERATIONAL AND USEABLE.
- ADJUST ALL DIFFUSERS IN CORRIDORS OR WITHIN THREE (3) FEET OF A WALL TO PROVIDE 2-WAY OR 3-WAY BLOW AWAY FROM OR DIRECTLY INTO WALLS. ALL DIFFUSERS SHALL HAVE 4-WAY BLOW UNLESS NOTED OTHERWISE.
- PORTIONS OF DUCTWORK VISIBLE THROUGH GRILLES AND REGISTERS IN FINISHED AREAS SHALL BE PAINTED FLAT BLACK.
- ALL DAMPERS IN AND ABOVE CEILINGS SHALL BE ACCESSIBLE. CONTRACTOR SHALL COORDINATE ALL ACCESS PANELS IN CEILINGS OR WALLS WITH ARCHITECTURAL REFLECTED CEILING PLANS AND/OR INTERIOR DRAWINGS FOR PROPER LOCATION.
- MOUNT THERMOSTATS WHERE INDICATED ON PLANS 48" A.F.F. UNLESS NOTED OTHERWISE. COORDINATE ALL THERMOSTAT LOCATION TO NOT BE MOUNTING WHERE MILLWORK, ARTWORK AND/OR ANY HEAT PRODUCING EQUIPMENT WILL BE PLACED.
- COORDINATE DUCTWORK AND PIPING WITH PLUMBING, FIRE PROTECTION AND ELECTRICAL. MAKE OFFSETS AND TRANSITIONS TO COORDINATE WITH OTHER TRADES WITHOUT ANY ADDITIONAL EXPENSE TO THE CONTRACT.
- SEAL ALL TRANSVERSE JOINTS AND FITTINGS WITH DUCT SEALER.
- TRAP AND ROUTE CONDENSATE DRAINS LINES, FULL SIZE OF UNIT CONNECTION, AS INDICATED. SLOPE 1/8" PER FOOT.
- ALTERNATE MANUFACTURERS AND MODELS WILL BE REVIEWED. THERE MAY BE ARCHITECTURAL, STRUCTURAL AND ELECTRICAL CHANGES RESULTING FROM THE ALTERNATES. THE COST OF IMPLEMENTING AND ENGINEERING THESE CHANGES SHALL BE BORNE BY THE MECHANICAL SUBCONTRACTOR.
- PIPE AND DUCT ROUTING SHOWN IS SCHEMATIC. PROVIDE ANY ADDITIONAL OFFSETS AND FITTINGS, INCLUDING DIVIDED DUCTS, REQUIRED FOR PROPER INSTALLATION AND TO MAINTAIN CLEARANCES AS ENCOUNTERED IN THE FIELD.
- COORDINATE CEILING MOUNTED AIR DEVICE LOCATION WITH THE ARCHITECTURAL REFLECTED CEILING PLAN AND OTHER TRADES.
- ALL CONTROL WIRING AND CONDUIT SHALL COMPLY WITH NEC DIVISION 16 SPECIFICATIONS.
- PROVIDE MATERIALS WHICH HAVE A FLAME SPREAD RATING OF 25 OR LESS AND A SMOKE DEVELOPED RATING OF 50 OR LESS WHEN TESTED IN ACCORD WITH ASTM E84.
- SLEEVE AND FIRE STOP PENETRATIONS THROUGH FIRE RATED SYSTEMS TO MAINTAIN RATING OF SYSTEM. USE MINIMUM GALVANIZED STEEL GAUGE DUCT AS REQUIRED TO MAINTAIN RATING OF SYSTEM.
- WHERE THE EXHAUST DUCT IS CONCEALED WITHIN THE BUILDING CONSTRUCTION, THE EQUIVALENT LENGTH OF THE DUCT SHALL BE IDENTIFIED ON A PERMANENT LABEL OR TAG. THE LABEL OR TAG SHALL BE LOCATED WITHIN 6 FEET OF THE EXHAUST DUCT CONNECTION.
- CONTRACTOR TO ORDER ALL FIRE/SMOKE DAMPERS WITH INTEGRAL SMOKE DETECTORS AND END STOP INDICATOR OPTIONS. VERIFY VOLTAGE WITH ELECTRICAL DRAWINGS. IF BUILDING IS EQUIPPED WITH FIRE ALARM SYSTEM ALL FIRE/SMOKE DAMPERS WILL BE CONNECTED TO BUILDING FIRE ALARM SYSTEM.
- ALL MECHANICAL EQUIPMENT SHALL BE THOROUGHLY CLEANED OF ALL DIRT, OIL, CONCRETE, ETC. ANY DENTS, SCRATCHES OR OTHER VISIBLE BLEMISHES SHALL BE CORRECTED AND THE APPEARANCE OF THE EQUIPMENT MADE "LIKE NEW" AND TO THE SATISFACTION OF THE ARCHITECT/ENGINEER. UPON COMPLETION, AND BEFORE FINAL ACCEPTANCE OF THE WORK, ALL DEBRIS, RUBBISH, LEFTOVER MATERIALS, TOOLS AND EQUIPMENT SHALL BE REMOVED FROM THE SITE. PROTECTION OF WORK UNTIL FINAL ACCEPTANCE. PROTECT ALL MATERIALS AND EQUIPMENT FROM DAMAGE. ENTRANCE OF DIRT AND CONSTRUCTION DEBRIS FROM THE TIME OF INSTALLATION UNTIL FINAL ACCEPTANCE. ANY MATERIALS AND EQUIPMENT WHICH ARE DAMAGED SHALL BE REPAIRED TO "AS NEW" CONDITION OR REPLACED AT THE DIRECTION OF THE ARCHITECT/ENGINEER. WHERE FACTORY FINISHES OCCUR AND DAMAGE IS MINOR, FINISHES MAY BE TOUCHED UP. IF, IN THE OPINION OF THE ARCHITECT/ENGINEER, THE DAMAGE IS EXCESSIVE, FACTORY FINISH SHALL BE REPLACED TO "NEW" CONDITION.
- DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENT AND EXTENT OF WORK. EXACT LOCATIONS AND ARRANGEMENT OF MATERIALS AND EQUIPMENT SHALL BE DETERMINED, WITH THE ACCEPTANCE OF THE ARCHITECT/ENGINEER, AS WORK PROGRESSES TO CONFORM IN THE BEST POSSIBLE MANNER WITH THE SURROUNDINGS AND WITH THE ADJOINING WORK OF OTHER TRADES. WHERE LOCATIONS OF EQUIPMENT, DEVICES OR FIXTURES ARE CONTROLLED BY ARCHITECTURAL FEATURES, ESTABLISH SUCH LOCATIONS BY REFERRING TO DIMENSIONS ON ARCHITECTURAL DRAWINGS AND NOT BY SCALING DRAWINGS.
- IN CASE OF DIFFERENCES BETWEEN DRAWINGS AND SPECIFICATIONS, OR WHERE DRAWINGS AND SPECIFICATIONS ARE NOT CLEAR OR DEFINITE, THE SUBJECT SHALL BE REFERRED TO ARCHITECT/ENGINEER FOR CLARIFICATION AND INSTRUCTIONS.
- ANY INTERRUPTION OF EXISTING MECHANICAL AND ELECTRICAL SERVICES SHALL BE COORDINATED IN ADVANCE WITH THE OWNER'S REPRESENTATIVE. THIS INCLUDES, BUT IS NOT LIMITED TO, SERVICES PROVIDING CHILLED WATER, ELECTRICITY, OR OTHER CRITICAL SYSTEMS AS MAY BE PERTINENT TO THIS PARTICULAR PROJECT. SERVICE INTERRUPTION TIMES AND DURATION OF INTERRUPTION OF SERVICES SHALL BE DECIDED BY THE OWNER. PROVIDE APPROPRIATE PROVISIONS (E.G., ISOLATION SHUT-OFF VALVES, DAMPERS, END CAPS, AND SIMILAR ITEMS) AS NECESSARY TO ACCOMMODATE THE REQUIRED SERVICE INTERRUPTIONS. IF SHUTDOWNS CANNOT BE ACCOMMODATED, PROVIDE MEANS FOR "WET" TAPPING OR "HOT" TAPPING OF PIPING SYSTEMS.
- ALL ELECTRICAL DEVICES SHALL BE U.L. APPROVED.

NOTE: GENERAL NOTES, ABBREVIATIONS AND SYMBOLS ON THIS MECHANICAL SHEET ARE FOR GENERAL REFERENCE PURPOSES ONLY. ALL OF THESE MAY NOT BE USED FOR THIS PROJECT.

NO DATE	REMARKS
REVISIONS	

WOODHOUSE DAY SPA  
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MARKET STREET  
9595 SIX PINES DRIVE  
THE WOODLANDS, TEXAS 77680

PROJECT NO: 2019.0172  
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