

# LEGEND

	NOTES ON DRAWINGS & SCHEDULES		VOLUME DAMPER (WITH OR WITHOUT MD)
	REVISIONS		TURNING VANES (NUMBER OF VANES SHALL BE BASED ON ACTUAL DUCT SIZE AND NOT ON SCHEMATIC SYMBOL ON DRAWING - SEE SMACNA)
	ACCESS DOOR (DUCT)		RETURN OR OUTSIDE AIR DUCT
	ACCESS PANEL (CEILING MOUNTED)		DISCHARGE OR SUPPLY DUCT
AFF	ELEVATION/ABOVE FINISHED FLOOR		EXHAUST FAN OR GRILLE
TE	TOP ELEVATION		
BE	BOTTOM ELEVATION		
BOD	BOTTOM OF DUCT		
CE	CENTERLINE ELEVATION		
SA	SUPPLY AIR		FIRE DAMPER (F.DPR) WITH ACCESS DOOR
RA	RETURN AIR		SMOKE DAMPER (S.DPR) WITH ACCESS DOOR
EA	EXHAUST AIR		COMBINATION FIRE/SMOKE DAMPER WITH ACCESS DOOR
RB JW	RUN BETWEEN JOIST WEB		
OA	OUTDOOR AIR		
RBJ	RUN BETWEEN JOISTS		
P.D.	PRESSURE DROP		
N.E.C.	NATIONAL ELECTRICAL CODE		
TAB	TEST AND BALANCE		
MH	MANHOLE		FLEXIBLE AIR DUCT
CB	CATCH BASIN		SPIN COLLAR WITH MANUAL DAMPER
FH	FIRE HYDRANT		AUTOMATIC MOTORIZED DAMPER
— C —	CONDENSATE DRAIN LINE		GRAVITY BACKDRAFT DAMPER
	UNION JOINT		
	FLANGE JOINT		
	TEE UP - BRANCH OUT OF TOP		
	TEE DOWN - BRANCH OUT OF BOTTOM		
	ELBOW - UP		
	ELBOW - DOWN		
	DIRECTION OF FLOW		
	FLEXIBLE PIPE CONNECTION		
	THERMOMETER		
	PRESSURE GAUGE WITH GAUGE COCK (DIAL RANGE)		
	CEILING SUPPLY AIR DEVICE		
	ARROW DENOTES DIRECTION OF THROW		
	CONTINUOUS WELDED ALUMINUM OR STAINLESS STEEL 304 DUCT		
	NEW SUPPLY, RETURN, EXHAUST OR OUTSIDE AIR DUCTWORK		
	FIRST DESIGNATION IS SIDE SHOWN, FREE AREA DIMENSION.		
	DOUBLE WALL INSULATED DUCT, UNITED MCGILL K-27, FIRST DESIGNATION IS SIDE SHOWN, FREE AREA DIMENSION.		
	FLEXIBLE DUCT CONNECTION		
— CHWS —	CHILLED WATER SUPPLY		
— CHWR —	CHILLED WATER RETURN		
— CWS —	CONDENSER WATER SUPPLY		
— CWR —	CONDENSER WATER RETURN		
D.O.E	DEPARTMENT OF EDUCATION		
FT.	FOOT		
HD.	HEAD		
	STATIC PRESSURE SENSOR IN DUCT		
	TRANSITIONS:		
	F. O. T. = FLAT ON TOP OR F. O. B. = FLAT ON BOTTOM		
	SQUARE TO ROUND TRANSITION		

GENERAL MECHANICAL NOTES	
1.	<p>WORK SHALL BE DONE IN ACCORDANCE WITH THE FOLLOWING CODES AND STANDARDS:</p> <ul style="list-style-type: none"> <li>A. FLORIDA BUILDING CODE (FBC-B) - BUILDING, 7TH EDITION, 2020</li> <li>B. FLORIDA BUILDING CODE - ENERGY CONSERVATION (FBC-EC), 7TH EDITION, 2020</li> <li>C. FLORIDA BUILDING CODE - MECHANICAL (FBC-M), 7TH EDITION, 2020</li> <li>D. NFPA 90A - 2019</li> <li>E. NFPA 90B - 2018</li> <li>F. NFPA 101 - 2018</li> <li>G. ASHRAE 15 - 2019</li> <li>H. ASHRAE 62.1 - 2016</li> <li>I. ASHRAE 90.1 - 2016</li> <li>J. ANSI, ASTM, AND SMACNA STANDARDS</li> </ul>
2.	<p>THE CONTRACTOR SHALL THOROUGHLY VERSE THEMSELVES WITH THE ENTIRE MECHANICAL SYSTEM AND SCOPE OF WORK. THE CONTRACTOR SHALL OBTAIN A COMPLETE SET OF CONSTRUCTION DRAWINGS AND SPECIFICATIONS, AND REVIEW TO ENSURE ALL ITEMS INDICATED ON THE DRAWINGS ARE INCLUDED IN THE CONTRACTORS BASE BID. ALL ITEMS REQUIRING A MECHANICAL CONNECTION (DUCTWORK, PIPING, ETC.) SHALL BE HOOKED-UP TO PROVIDE A FULLY OPERATIONAL AND FUNCTIONAL SYSTEM AND INCLUDED IN THE BASE BID.</p>
3.	<p>THE DRAWINGS ARE SCHEMATIC IN NATURE AND INTENDED TO SHOW ONLY THE GENERAL ARRANGEMENT OF EQUIPMENT, PIPING AND DUCTWORK. THEY MAY INDICATE ELBOW, OFFSET, BEND, OR FITTING OF DUCTWORK AND PIPING THAT MAY BE REQUIRED FOR INSTALLATION BUT SHALL BE INCLUDED IN THE CONTRACTOR'S BASE BID PRICE AT NO ADDITIONAL COST.</p>
4.	<p>THE CONTRACTOR SHALL THOROUGHLY COORDINATE WORK TO BE PERFORMED WITH ALL TRADES AND DISCIPLINES AND FURNISH PRODUCT DATA, SHOP DRAWINGS, AND SIMILAR ITEMS WHERE REQUIRED FOR USE BY OTHER TRADES FOR COORDINATION PURPOSES.</p>
5.	<p>THE CONTRACTOR SHALL SUBMIT DUCTWORK AND PIPING SHOP DRAWINGS FOR ENGINEER REVIEW PRIOR TO ANY INSTALLATION OR ORDERING OF MATERIALS.</p>
6.	<p>IN THE CASE OF CONFLICT BETWEEN DRAWINGS AND SPECIFICATIONS, IT SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT/ENGINEER FOR RESOLUTION. THE MORE STRINGENT REQUIREMENT AS DETERMINED BY THE ARCHITECT/ENGINEER SHALL TAKE PRECEDENCE.</p>
7.	<p>THE EXACT EQUIPMENT SIZE, CONFIGURATION, MAINTENANCE SERVICE AREAS, PIPING, DUCTWORK, AND ELECTRICAL CONNECTIONS VARY BY MANUFACTURER, THE COORDINATION OF WHICH SHALL BE THE EXCLUSIVE RESPONSIBILITY OF THE CONTRACTOR. THE LAYOUT SHOWN ON THE DRAWINGS IS BASED UPON THE REQUIREMENTS OF A PARTICULAR MANUFACTURER AS SELECTED BY THE ENGINEER AS THE BASIS OF DESIGN. THE CONNECTION DRAWINGS INDICATE THE ACTUAL SIZE AND CONFIGURATION OF PROPOSED EQUIPMENT, DRAWN TO SCALE, INCLUDING THE MANUFACTURER'S RECOMMENDED MAINTENANCE SERVICE AREAS AND MECHANICAL/ELECTRICAL INTERFACE REQUIREMENTS AT THE TIME OF THE EQUIPMENT SHOP DRAWING SUBMITTAL.</p>
8.	<p>ELEVATIONS GIVEN: B.E. = BOTTOM ELEVATION; T.E. = TOP ELEVATION; C.E. = CENTERLINE ELEVATION. ELEVATIONS ARE TAKEN FROM THE CONCRETE FLOOR SLAB, ARE APPROXIMATE, AND PROVIDED FOR THE CONTRACTOR'S CONVENIENCE. ALL ELEVATIONS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO FABRICATION OR INSTALLATION OF THE WORK.</p>
9.	<p>EXACT LOCATION OF EQUIPMENT, DUCTWORK, CONDENSATE PIPING, AND REFRIGERANT PIPING SHALL BE COORDINATED WITH ELECTRICAL EQUIPMENT INCLUDING, BUT NOT LIMITED TO, POWER AND SYSTEMS PANELS TO MAINTAIN CLEARANCES AS REQUIRED BY N.E.C. 110.26.</p>
10.	<p>DUCTWORK, PIPING, ETC. SHALL NOT BE ROUTED OVER SWITCHGEAR OR PANELBOARDS OR WITHIN ELECTRICAL SPACES IN ACCORDANCE WITH N.E.C. 110.26.</p>
11.	<p>EXACT LOCATION OF AIR DISTRIBUTION DEVICES SHALL BE COORDINATED WITH LIGHTS, SPRINKLERS, ALL OTHER CEILING MOUNTED DEVICES, AND THE SELECTED CEILING PLAN. SUPPLY AIR DEVICE THROW PATTERNS SHALL BE COORDINATED WITH THE INSTALLED LOCATION.</p>
12.	<p>LOCATIONS FOR TEMPERATURE AND HUMIDITY SENSORS ARE APPROXIMATE IN NATURE AND SHALL NOT BE SCALED FROM THE DRAWINGS. COORDINATE EXACT LOCATIONS WITH ROOM FURNITURE LAYOUT AND CONFIRM PROPOSED LOCATION WITH THE OWNER'S REPRESENTATIVE PRIOR TO ROUGH-IN. LOCATE OPERABLE THERMOSTATS 52" AFF IN ACCORDANCE WITH ADA REQUIREMENTS UNLESS OTHERWISE NOTED.</p>
13.	<p>COORDINATE THE LOCATIONS OF ALL FIRE DAMPERS, SMOKE DAMPERS, AND COMBINATION FIRE/SMOKE DAMPERS WITH THE ARCHITECTURAL FIRE SAFETY PLAN. THE MECHANICAL CONTRACTOR SHALL OBTAIN A COPY OF THE PERMITTED LIFE SAFETY PLANS FOR COORDINATION, MAINTAIN RATING AT ALL PENETRATIONS, MAINTAIN A MINIMUM CLEARANCE OF 6-INCHES BETWEEN DUCTWORK, PIPING, EQUIPMENT, ETC., AND ALL FIRE RATED PARTITIONS TO ALLOW FOR INSPECTIONS OF RATED WALLS AND PENETRATIONS.</p>
14.	<p>PROVIDE DUCT ACCESS DOORS AT ALL SMOKE DETECTORS, FIRE DAMPERS, SMOKE DAMPERS, FIRE/SMOKE DAMPERS, CONTROL DAMPERS, DUCT HEATERS, AND AUTOMATIC TEMPERATURE CONTROL DEVICES WITH MAXIMUM ALLOWABLE STANDARD SIZE PERMITTED BY DUCT DIMENSIONS. PROVIDE ACCESS PANELS IN CEILINGS WHERE REQUIRED TO PROVIDE ACCESS TO THESE AND SIMILAR DEVICES.</p>
15.	<p>PROVIDE CEILING ACCESS PANELS WHERE REQUIRED FOR ACCESS TO ALL DUCT DAMPERS AND OTHER APPURTENANCES, PIPING VALVES AND OTHER APPURTENANCES, AND EQUIPMENT IN SPECIALTY OR HARD CEILINGS.</p>
16.	<p>PROVIDE MINIMUM 18x18 HINGED ALUMINUM CEILING ACCESS PANELS TO PROVIDE ACCESS TO ALL MANUAL VOLUME DAMPERS LOCATED ABOVE NON-ACCESSIBLE OR HARD CEILINGS. ALTERNATIVELY, PROVIDE A REMOTE CABLE OPERATED DAMPER ACTUATOR ASSEMBLY MOUNTED IN THE CEILING, EQUAL TO "YOUNG REGULATOR".</p>
17.	<p>REFER TO SPECIFICATIONS FOR INSULATION REQUIREMENTS OF DUCTWORK AND REFRIGERANT PIPING.</p>
18.	<p>ALL DUCT SIZES ARE INSIDE CLEAR FREE AREA DIMENSIONS.</p>
19.	<p>ALL SUPPLY, RETURN, EXHAUST, AND OUTSIDE AIR DUCTWORK SHALL BE CONSTRUCTED OF GALVANIZED SHEET METAL EXCEPT WHERE STAINLESS STEEL CONSTRUCTION IS INDICATED OR SHOWN TO BE FLEXIBLE DUCT ON PLANS. DUCTS SHALL BE FABRICATED IN COMPLIANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS METAL AND FLEXIBLE 4TH EDITION - 2016. REFER TO THE PROJECT SPECIFICATIONS FOR PRESSURE CLASSIFICATION AND SEALING REQUIREMENTS.</p>
20.	<p>DOUBLE WALL DUCT SHALL BE PROVIDED FOR ALL SUPPLY AND RETURN DUCT WORK WITHIN THE MECHANICAL ROOMS AND THE EXHAUST AND OUTSIDE AIR DUCTWORK. THE DOUBLE WALL DUCT SHALL BE DUAL WALL TYPE WITH A PERFORATED GALVANIZED STEEL INNER WALL, 1" THICK MYLAR ENCAPSULATED DUCT INSULATION/LINER, AND GALVANIZED STEEL OUTER WALL EQUAL TO UNITED MCGILL K-27.</p>
21.	<p>PROVIDE RADIUS TYPE ELBOWS WITH R/D=1.5 OR SQUARE ELBOWS AS INDICATED ON THE FLOOR PLANS. PROVIDE SINGLE THICKNESS METAL TURNING VANES IN ALL SQUARE ELBOWS INCLUDING SUPPLY, RETURN, EXHAUST, AND OUTSIDE AIR DUCTS. WHERE UNEQUAL SQUARE ELBOWS ARE SHOWN, TURNING VANES WITH TRAILING EDGES SHALL BE USED.</p>
22.	<p>SPIN COLLARS SHALL BE OF THE INTEGRAL DAMPER TYPE WITH LOCKING WING NUT EQUAL TO CROWN 3300-DS. ALL SPIN COLLARS SHALL BE ATTACHED TO THE SIDE OF DUCT WITH THE CONNECTION SEALED WITH MASTIC.</p>
23.	<p>FLEXIBLE AIR DUCT SHALL BE USED FOR RUN OUTS BETWEEN THE SUPPLY, AND RETURN AIR DUCTS AND AIR DISTRIBUTION DEVICES WHERE INDICATED. FLEXIBLE DUCT SHALL BE A MINIMUM OF FIVE AND A MAXIMUM OF EIGHT FEET IN LENGTH. ATTACH FLEXIBLE AIR DUCT TO DIFFUSERS AND SPIN COLLARS WITH PLASTIC OR METAL DRAW BANDS AND SEAL THE ENDS WITH TAPE AND MASTIC TO MAINTAIN THE VAPOR BARRIER. FLEXIBLE DUCT AND SPIN COLLAR SIZE SHALL BE THE SAME NOMINAL DIAMETER AS THE NECK OF THE AIR DISTRIBUTION DEVICE IT IS CONNECTED TO. FLEXIBLE DUCT SHALL BE ONE-PIECE AND NOT BE SPLICED TOGETHER.</p>
24.	<p>ALL OUTDOOR AIR AND RELIEF AIR MOTORIZED DAMPERS SHALL HAVE A DOUBLE FLANGED FRAME FOR MOUNTING TO DUCTWORK, ALLOWING THE LINKAGE AND ACTUATOR TO BE POSITIONED OUTSIDE OF THE AIRSTREAM. SUPPORT THE DUCTWORK ON BOTH SIDES OF THESE DAMPERS ALLOWING THESE DAMPERS TO BE REMOVED WHILE THE DUCTWORK REMAINS IN PLACE.</p>
25.	<p>CLEAN, PRIME, AND PAINT THE INSIDE SURFACES OF ALL SHEET METAL BOXES ABOVE RETURN, EXHAUST, OR TRANSFER GRILLES FLAT BLACK.</p>
26.	<p>CLEAN, PRIME, AND PAINT THE INSIDE SURFACES OF ALL DUCTWORK, AND PLENUMS THAT ARE VISIBLE THROUGH ANY GRILLE OR LOUVER FLAT BLACK.</p>
27.	<p>IN ALL FINISHED ROOMS WITH NO SUSPENDED CEILINGS, EXPOSED SUPPLY AND RETURN AIR DUCTWORK SHALL BE DOUBLE WALL. ALL DUCTWORK SHALL BE CLEANED, PRIMED AND PAINTED WITH TWO COATS OF GLIDDEN ICI SPRAY MASTER, UNIGRIP, PITTSBURGH G9514, OR APPROVED EQUAL.</p>
28.	<p>LOUVERS ARE SPECIFIED BY THE ARCHITECT. ONLY THE MINIMUM FREE AREA REQUIREMENT IS SHOWN ON DRAWINGS.</p>
29.	<p>COIL PIPING ON LARGE SCALE PLANS ONLY INDICATES MAJOR VALVING, REFER TO THE COIL PIPING SCHEMATIC FOR DETAILED REQUIREMENTS.</p>
30.	<p>EQUIPMENT SHALL BE SUPPLIED AND INSTALLED WITH PROVISION FOR IN-PLACE CLEANING AND SIMILAR MAINTENANCE TASKS IN ACCORDANCE WITH THE REQUIREMENTS OF ASHRAE 62.1.</p>
31.	<p>LOCATE ALL OUTSIDE AIR INTAKES A MINIMUM OF TEN (10) FEET CLEAR FROM ALL PLUMBING VENTS, EXHAUST AND RELIEF DISCHARGE LOCATIONS. FOR ROOF MOUNTED OA INTAKES, COORDINATE THE ROOF CURB HEIGHTS SO LOWEST POINT OF INTAKE IS 18" MINIMUM ABOVE THE FINISHED ROOF SURFACE OR MATERIAL.</p>
32.	<p>ALL EXHAUST AIR ROOF FANS SHALL HAVE A GRAVITY OR MOTORIZED BACKDRIFT DAMPER INSTALLED AT THE ROOF PENETRATION LEVEL AS INDICATED ON THE FAN SCHEDULE AND PROVIDED WITH ACCESS MEANS, UNLESS NOTED OTHERWISE.</p>
33.	<p>ANY REQUIRED OPTIONAL EQUIPMENT OR ACCESSORY SHALL BE SUPPLIED BY THE ORIGINAL EQUIPMENT MANUFACTURER (OEM). IF NOT AVAILABLE FROM THE OEM, IT SHALL BE SPECIFICALLY APPROVED BY THE OEM WHO WILL ASSUME FULL SINGLE SOURCE RESPONSIBILITY FOR QUALITY, FIT, PERFORMANCE, SUITABILITY, AND COMPATIBILITY OF SUCH ITEM WITH ASSOCIATED MAIN EQUIPMENT.</p>
34.	<p>DIVISION 25 WIRING FOR MOTORS IN FCT LOCATIONS (E.G., DRAW THRU FANS IN ROOF MOUNTED UNITS, ETC.) SHALL BE TERMINATED INSIDE THE SEALED MOTOR TERMINAL BOXES WITH SILICONE FILLED WIRE NUTS.</p>
35.	<p>PROVIDE MISCELLANEOUS STRUCTURAL STEEL TO SPAN ACROSS JOISTS WHERE REQUIRED FOR INTERMEDIATE SUPPORT.</p>
36.	<p>EXTERIOR MOUNTED EQUIPMENT SHALL BE DESIGNED, MANUFACTURED, AND INSTALLED TO WITHSTAND THE APPLICABLE DESIGN WIND LOAD. THE WIND LOAD SHALL BE AS DETERMINED IN ACCORDANCE WITH THE FLORIDA BUILDING CODE CHAPTER 16. A "SPECIALTY ENGINEER" LICENSED TO PRACTICE IN FLORIDA SHALL DETERMINE THE WIND LOAD AND CERTIFY THE PROPOSED EQUIPMENT CONSTRUCTION, MOUNTING AND FASTENING METHODS MEET THE WIND LOAD REQUIREMENTS WITH SUITABLE DOCUMENTATION PROVIDED TO THE PERMITTING AUTHORITIES. WHERE THE MANUFACTURER HAS INDEPENDENT DOCUMENTATION OF EQUIPMENT WIND LOAD RATINGS, THE MANUFACTURER'S MOUNTING AND FASTENING REQUIREMENTS SHALL BE STRICTLY FOLLOWED. DETAILS ON DRAWINGS ARE GENERAL IN NATURE FOR BIDDING PURPOSES ONLY.</p>
37.	<p>EXTERIOR MOUNTED EQUIPMENT SHALL BE SELECTED WITH AN ACTIVE MIAMI-DADE NOA NUMBER AND FLORIDA APPROVAL TO WITHSTAND THE APPLICABLE WIND LOAD.</p>
38.	<p>THE HVAC SYSTEM SHALL NOT BE OPERATED FOR ANY PURPOSE UNTIL FILTERS ARE IN PLACE AND THE CONTROL SYSTEM IS FULLY FUNCTIONING. IF OPERATED DURING DUST GENERATING ACTIVITIES ALL RETURN AIR GRILLE/OPENINGS SHALL BE PROTECTED WITH FILTER MEDIA.</p>
39.	<p>DURING CONSTRUCTION, OPEN ENDS OF DUCTWORK AND PIPING SHALL BE KEPT SEALED FROM CONSTRUCTION DUST AND DEBRIS USING PLASTIC SHEETING, CAPS AND AN ADEQUATE PROTECTIVE ELEMENT FASTENING METHOD DURING.</p>

WEST PALM BEACH DESIGN CONDITIONS								
OUTDOOR EQUIPMENT RATINGS		OUTDOOR AIR		INDOOR OCCUPIED			INDOOR UNOCCUPIED	
AIR COOLED	EVAP. COOLED	COOLING	HEATING	COOLING-SPACE	HEATING-SPACE	CO2-SPACE	COOLING-SPACE	HEATING-SPACE
DRY BULB (DEG. F)	WET BULB (DEG. F)	DRY/WET BULB (DEG. F)	DRY BULB (DEG. F)	DRY/WET BULB (DEG. F)	DRY BULB (DEG. F)	PARTS PER MILLION	DB/RH (DEG. F/%RH)	DRY BULB (DEG. F)
95.0	79.0	91.8/77.8	44.6	75.0/62.56	68.0	1100	90.0/65.0	60.0

① OUTDOOR EQUIPMENT RATING DESIGN CONDITIONS SHALL BE UTILIZED FOR EQUIPMENT SIZING PURPOSES ONLY.

② OUTDOOR AIR DESIGN CONDITIONS PER 2021 ASHRAE FUNDAMENTALS HANDBOOK FOR 0.4% CLG. / 99.6% HTG OCCURRENCE.

③ INDOOR SPACE DESIGN CONDITIONS PER 2020 FLORIDA BUILDING CODE—ENERGY CONSERVATION C302.1

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DIFFUSER MARK DESIGNATION		
CD	CEILING DIFFUSER	
EC	EXHAUST GRILLE	
RG	RETURN GRILLE	
SG	SIDEWALL GRILLE	
TG	TRANSFER GRILLE	
		UNIT NUMBER
		AIR QUANTITY IN CFM (CUBIC FEET PER MINUTE)

# PLAN MARK DESIGNATION

RTU = ROOFTOP UNIT  
CU = CONDENSING UNIT  
EF = EXHAUST FAN

EXISTING EQUIPMENT

EX-RTU
1

RTU  
1

UNIT NUMBER