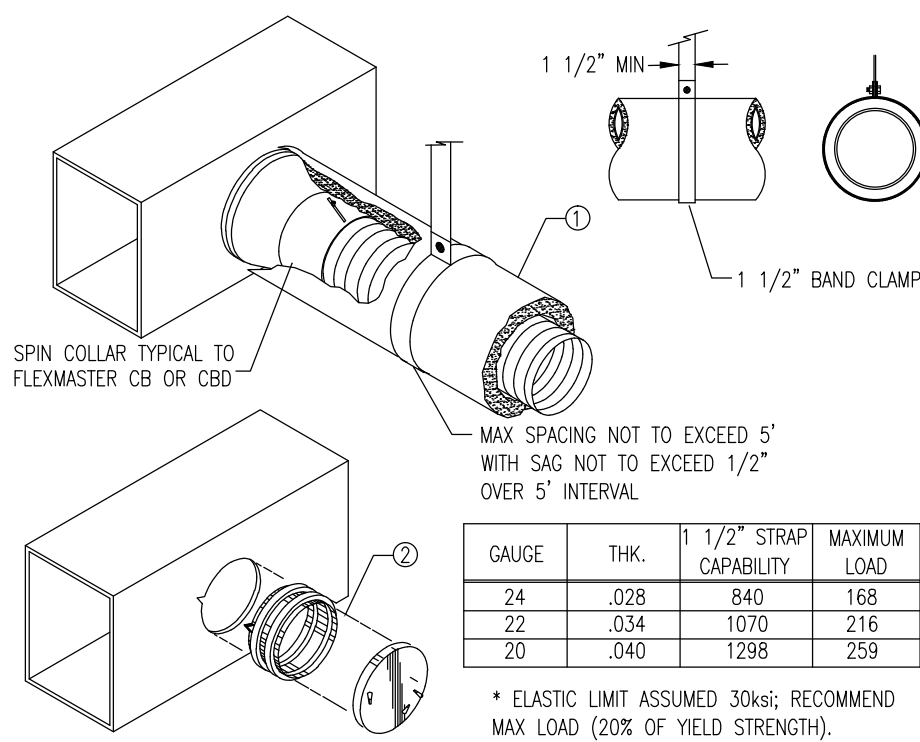


H.V.A.C. GENERAL NOTES:

- ALL WORK SHALL BE DONE IN ACCORDANCE WITH FBC-2014, 2012 NFPA-101, 2012 NFPA-1, 2011 NFPA-70.
- ALL WORK SHALL BE PERFORMED BY A LICENSED CONTRACTOR IN A FIRST CLASS WORKMANLIKE MANNER. THE COMPLETE SYSTEM SHALL BE FULLY OPERATIVE AND ACCEPTANCE BY THE OWNER AND/OR ARCHITECT MUST BE CONDITION OF THE CONTRACT. SUBMIT SHOP DRAWINGS ON ALL EQUIPMENT, FOR REVIEW PRIOR TO PURCHASING.
 - THE CONTRACTOR SHALL COORDINATE HIS WORK WITH ALL TRADES IN ORDER TO AVOID CONFLICTS. NO CHARGES WILL BE ACCEPTED UNLESS A PRIOR WRITTEN APPROVAL HAS BEEN ISSUED BY THE OWNER/ARCHITECT.
 - THE CONTRACTOR SHALL VISIT THE JOB SITE AND THOROUGHLY FAMILIARIZE WITH EXISTING CONDITIONS. PRIOR TO INSTALLING EQUIPMENT AND/OR FABRICATING DUCTWORK, A.C. CONTRACTOR SHALL CHECK THAT THERE IS SUFFICIENT CLEARANCES FOR EQUIPMENT, DUCTWORK, ETC. AND ALSO TO AVOID ANY INTERFERENCE WITH THE PROCESS OF CONSTRUCTION.
 - DRAWINGS ARE DIAGRAMMATIC ILLUSTRATIONS. DO NOT SCALE DRAWINGS FOR THE EXACT LOCATION OF EQUIPMENT, PIPING, DUCTWORK, ETC. THESE DRAWINGS ARE NOT INTENDED TO SHOW EVERY MINOR DETAIL OF CONSTRUCTION. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL ITEMS REQUIRED FOR A COMPLETE ACCEPTABLE WORKING SYSTEM.
 - CONTRACTOR WILL PAY FOR ALL PERMITS, FEES, INSPECTIONS, AND TESTS.
 - INSTALLATION SHALL BE IN STRICT ACCORDANCE WITH THE RECOMMENDATIONS SET FORTH IN THE LATEST ASHRAE GUIDE. ALL MATERIALS SHALL BE NEW AND SHALL BEAR UNDERWRITER'S LABEL WHERE APPLICABLE.
 - AIR FILTERS SHALL BE INSTALLED ON ALL RETURN AIR EQUIPMENT INLETS. PROVIDE AN EXTRA FILTER, INSTALL AT END OF CONSTRUCTION.
 - ALL REQUIRED INSURANCE SHALL BE PROVIDED BY THE CONTRACTOR FOR PROTECTION AGAINST PUBLIC LIABILITY AND PROPERTY DAMAGE FOR THE DURATION OF THE WORK. ALL WORKMANSHIP AND MATERIALS SHALL BE IN STRICT ACCORDANCE WITH THE APPLICABLE NATIONAL, STATE, AND LOCAL CODES, RULES, AND ORDINANCES.
 - PROVIDE MAIN CONDENSATE DRAIN AND AUXILIARY DRAIN PAN. AUXILIARY DRAIN PAN SHALL BE EQUIPPED WITH A WATER-LEVEL DETECTION DEVICE THAT WILL SHUT OFF THE EQUIPMENT SERVED PRIOR TO OVERFLOW OF THE PAN AS PER FMC 2014 SECTION 307.2.3 FOR ALL AIR CONDITIONING UNITS AND DRAIN TO EXTERIOR PERMEABLE SOIL OR AS SHOWN ON THE PLANS.
 - AIR CONDITIONING CONDENSATE PIPING AND FITTINGS SHALL BE PVC OR DWV (ASTM-D2662). COPPER IN PLENUM AREAS. ALL INTERIOR CONDENSATE PIPING IN UNCONDITIONED SPACES SHALL BE WRAPPED WITH A MINIMUM 1/2" SELF SEALING INSULATING FOAM JACKET. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY CONTROLS FOR THE OPERATION OF THE HVAC SYSTEM.
 - MAINTAIN 4" MINIMUM CLEARANCE AROUND ALL AIR HANDLING UNITS.
 - THERMOSTAT MUST BE PROGRAMMABLE TO BE ABLE TO SET THE TEMPERATURE BACK (OR OFF) WHEN SPACE IS UNOCCUPIED OR AT OTHER TIMES AS NEEDED BY USER.
 - ALL MATERIAL EXPOSED WITHIN PLENUM MUST BE NON COMBUSTIBLE OR RATED 25/50 FLAME SPREAD.
 - ALL AIR CONDITIONING AND VENTILATION DUCTS MUST CONFORM WITH SMACNA STANDARDS AND ALL LOCAL CODES. DUCT DROPS TO CEILINGS MAY BE INSULATED FLEXIBLE DUCT AS INDICATED ON THE HVAC PLAN. "FLEX" DUCTS SHALL BE FULLY EXTENDED AND OPEN. FIBERGLASS DUCT INSULATION VALUE SHALL BE MIN. R-6 IN ATTICS AND MIN. R-4.2 IN AIR CONDITIONED SPACE.
 - ALL VENTILATION DUCTWORK SHALL BE GALVANIZED SHEET METAL.
 - DUCT SIZES SHOWN OR INDICATED ON DRAWINGS ARE INSIDE CLEAR DIMENSIONS.
 - HANGERS SHALL BE PROVIDED IN ACCORDANCE WITH S.M.A.C.N.A. RECOMMENDATIONS.
 - AIR DISTRIBUTION ACCESSORIES SHALL BE AIR GUIDE, ANEMOSTAT, TITUS, OR APPROVED EQUAL. ALL SUPPLY A.C. DUCT ELBOWS MUST BE FURNISHED WITH APPROVED TURNING VANES. BRANCH TAKEOFFS MUST BE PROPORTIONAL SPLITS.
 - THE OWNER SHALL APPROVE THE FINISH COLOR OF ALL EXPOSED AIR DISTRIBUTION DEVICES.
 - PROVIDE FIRE DAMPERS IN ALL DUCTS PASSING THROUGH FIRE DIVISION ASSEMBLIES. FIRE DAMPERS MUST HAVE FIRE RATING EQUAL TO OR GREATER THAN THE PENETRATED ASSEMBLY RATING. FIRE DAMPER INSTALLATIONS SHALL COMPLY WITH ALL LOCAL CODES. PROVIDE ACCESS PANEL TO ALL FIRE DAMPERS.
 - ELECTRIC STRIP HEATERS SHALL BE BLAST COIL TYPE WITH NICKEL CHROMIUM WIRE AND INSULATING BUSHINGS FACTORY MOUNTED AND WIRED INCLUDING ALL HEAT LIMITERS, HIGH LIMIT SWITCHES, AND CONTRACTORS IN ACCORDANCE WITH THE "NATIONAL ELECTRIC CODE".
 - EXHAUST FANS SHALL HAVE THE CAPACITIES AS STATED ON THE DRAWINGS AND BE PROVIDED WITH BACK DRAFT DAMPER, BIRD SCREEN.
 - THE CONTRACTOR SHALL GUARANTEE ALL MATERIALS AND WORKMANSHIP FREE FROM DEFECTS FOR A PERIOD NOT LESS THAN 1 YEAR FROM THE DATE OF ACCEPTANCE, UNLESS OTHERWISE NOTED. CORRECTION OF ANY DEFECTS SHALL BE COMPLETED WITHOUT ADDITIONAL CHARGE AND SHALL INCLUDE REPLACEMENTS OR REPAIRS OF ANY OTHER PHASE OF THE INSTALLATION WHICH MAY HAVE BEEN DAMAGED OR IS NOT OPERATING PROPERLY.
 - ARCHITECTURAL AND/OR ENGINEERING EXPENSES THAT ARE INCURRED DUE TO REVISIONS FOR SUBSTITUTIONS BY THE CONTRACTOR SHALL BE PAID FOR BY THE CONTRACTOR.
 - AIR DISTRIBUTION SYSTEM TESTING, ADJUSTING AND BALANCING. A WRITTEN BALANCE REPORT SHALL BE PROVIDED TO THE OWNER OR THE DESIGNATED REPRESENTATIVE OF THE BUILDING OWNER FOR HVAC SYSTEMS SERVING ZONES WITH A TOTAL CONDITIONED AREA EXCEEDING 5000 SQUARE FEET. AIR DISTRIBUTION SYSTEMS SHALL BE TESTED, ADJUSTED, AND BALANCED BY AN ENGINEER LICENSED IN THIS STATE OR A COMPANY OR INDIVIDUAL HOLDING A CURRENT CERTIFICATION FROM A RECOGNIZED TESTING AND BALANCING AGENCY ORGANIZATION IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING STANDARDS.
 - BUILDINGS WITH COOLING OR HEATING SYSTEM CAPACITIES OF 15 TONS OR LESS PER SYSTEM MAY BE TESTED AND BALANCED BY A MECHANICAL CONTRACTOR LICENSED TO DESIGN AND INSTALL SUCH SYSTEMS.
 - BUILDINGS WITH COOLING OR HEATING SYSTEM CAPACITIES OF 65,000 BTU/H OR LESS PER SYSTEM ARE EXEMPT FROM THE REQUIREMENTS OF THIS SECTION.
 AIR SYSTEM BALANCING SHALL COMPLY WITH FBC 2014 ENERGY CONSERVATION SECTION 503.2.9.1
 - AS PER FBC 2014 ENERGY CONSERVATION SECTION 503.2.9.3, AN OPERATING AND MAINTENANCE MANUAL SHALL BE PROVIDED TO THE BUILDING OWNER BY THE MECHANICAL CONTRACTOR. THE MANUAL SHALL INCLUDE, AT LEAST, THE FOLLOWING:
 - EQUIPMENT CAPACITY (INPUT AND OUTPUT) AND REQUIRED MAINTENANCE ACTIONS.
 - EQUIPMENT OPERATION AND MAINTENANCE MANUALS.
 - HVAC SYSTEM CONTROL MAINTENANCE AND CALIBRATION INFORMATION, INCLUDING WIRING DIAGRAMS, SCHEMATICS, AND CONTROL SEQUENCE DESCRIPTIONS. DESIRED OR FIELD-DETERMINED SET POINTS SHALL BE PERMANENTLY RECORDED ON CONTROL DRAWINGS, AT CONTROL DEVICES OR, FOR DIGITAL CONTROL SYSTEMS, IN PROGRAMMING COMMENTS.
 - A COMPLETE WRITTEN NARRATIVE OF HOW EACH SYSTEM IS INTENDED TO OPERATE.
 - ALL PIPING SERVING AS PART OF A HEATING OR COOLING SYSTEM SHALL BE THERMALLY INSULATED IN ACCORDANCE WITH FBC 2014 ENERGY CONSERVATION TABLE 503.2.8.
 - IF THERE ARE ANY CHANGES IN ENGINEER'S DRAWINGS, IN DESIGN OR IN EQUIPMENT, WITHOUT ENGINEER'S CONSENT, THE A.C. CONTRACTOR SHALL ASSUME ALL RESPONSIBILITIES FOR THE PROJECT.
 - SMOKE DETECTORS ARE REQUIRED ON ALL PRIMARY AIR CONDITIONING SYSTEMS WHERE TOTAL AIR VOLUME EXCEEDS 2,000 C.F.M. (FBC-MECHANICAL 2014, SECTION 606.2.1) A DUCT ACCESS DOOR IS REQUIRED TO ACCESS THE DETECTOR. 606.4 CONTROLS OPERATION. UPON ACTIVATION, THE SMOKE DETECTORS SHALL SHUT DOWN THE AIR DISTRIBUTION SYSTEM. AIR DISTRIBUTION SYSTEMS THAT ARE PART OF A SMOKE CONTROL SYSTEM SHALL SWITCH TO THE SMOKE CONTROL MODE UPON ACTIVATION OF A DETECTOR.
 - 608.4.1 SUPERVISION. THE DUCT SMOKE DETECTORS SHALL BE CONNECTED TO A FIRE ALARM SYSTEM WHERE A FIRE ALARM SYSTEM IS REQUIRED BY THE FLORIDA FIRE PREVENTION CODE. THE ACTIVATION OF A DUCT SMOKE DETECTOR SHALL ACTIVATE A VISIBLE AND AUDIBLE SUPERVISORY SIGNAL AT A CONSTANTLY ATTENDED LOCATION.
 - THE SUPERVISORY SIGNAL AT A CONSTANTLY ATTENDED LOCATION IS NOT REQUIRED WHERE THE DUCT SMOKE DETECTOR ACTIVATES THE BUILDING'S ALARM-INDICATING APPLIANCES.
 - IN OCCUPANCIES NOT REQUIRED TO BE EQUIPPED WITH A FIRE ALARM SYSTEM, ACTIVATION OF A SMOKE DETECTOR SHALL ACTIVATE A VISIBLE AND AUDIBLE SIGNAL IN AN APPROVED LOCATION. DUCT SMOKE DETECTOR TROUBLE CONDITIONS SHALL ACTIVATE A VISIBLE OR AUDIBLE SIGNAL IN AN APPROVED LOCATION AND SHALL BE IDENTIFIED AS AIR DUCT DETECTOR TROUBLE.
 - AS PER FBC 2014 ENERGY CONSERVATION SECTION 503.2.5.4 (SHUTOFF DAMPER CONTROLS) PROVIDE MOTORIZED DAMPERS FOR O/A INTAKE FOR AHU. CONNECT MOTORIZED DAMPER TO TIME CLOCK TO CLOSE OUTSIDE AIR INTAKE AUTOMATICALLY WHEN THE SPACE SERVED IS NOT IN USE (OFF BUSINESS HOURS).
 - GRAVITY HOODS, VENTS, AND VENTILATORS. ALL OUTDOOR AIR SUPPLY AND EXHAUST HOODS, VENTS, AND VENTILATORS SHALL BE EQUIPPED WITH DAMPERS THAT WILL AUTOMATICALLY SHUT WHEN THE SPACES SERVED ARE NOT IN USE. EXCEPTION: VENTILATION SYSTEMS SERVING UNCONDITIONED SPACES.
 - MINIMUM DUCT INSULATION R-VALUES, HEATING AND COOLING SUPPLY AND RETURN DUCTS SHALL BE PER FBC 2014 ENERGY CONSERVATION TABLE 503.2.7.1
 - AS PER FBC-301.4 ALL APPLIANCES REGULATED BY THIS CODE SHALL BE LISTED AND LABELED UNLESS OTHERWISE APPROVED IN ACCORDANCE WITH SECTIONS 301.4.1 THROUGH 301.4.4.
 - AS PER FMC-304.10 GUARDS SHALL BE PROVIDED WHERE APPLIANCES, EQUIPMENT, FANS OR OTHER COMPONENTS THAT REQUIRE SERVICE AND ROOF HATCH OPENINGS ARE LOCATED WITHIN 10 FT. OF ROOF EDGE OR OPEN SIDE OF A WALKING SURFACE AND SUCH EDGE OR OPEN SIDE IS LOCATED MORE THAN 30" ABOVE THE FLOOR, ROOF OR GRADE BELOW.
 - AS PER 306.5.1 SLOPED ROOFS. WHERE APPLIANCES, EQUIPMENT, FANS OR OTHER COMPONENTS THAT REQUIRE SERVICE ARE INSTALLED ON A ROOF HAVING A SLOPE OF THREE UNITS VERTICAL IN 12 UNITS HORIZONTAL OR GREATER AND HAVING AN EDGE MORE THAN 30" ABOVE GRADE AT SUCH EDGE A LEVEL PLATFORM SHALL BE PROVIDED ON EACH SIDE OF THE APPLIANCE TO WHICH ACCESS IS REQUIRED FOR SERVICE, REPAIR OR MAINTENANCE. THE PLATFORM SHALL BE NOT LESS THAN 30" IN ANY DIMENSION AND SHALL BE PROVIDED WITH GUARDS. THE GUARDS SHALL EXTEND NOT LESS THAN 42" ABOVE THE PLATFORM. SHALL BE CONSTRUCTED SO AS TO PREVENT THE PASSAGE OF A 21" DIAMETER SPHERE AND SHALL COMPLY WITH THE LOADING REQUIREMENTS FOR GUARDS SPECIFIED IN THE FBC.
 - ANY INTAKE OPENINGS SHALL BE LOCATED A MINIMUM OF 10FT. FROM ANY HAZARDOUS OR NOXIOUS CONTAMINANT SOURCE.
 - ALL COOKING APPLIANCES THAT ARE DESIGNED FOR PERMANENT INSTALLATION SHALL BE LISTED, LABELED AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTION.
 - ROOF MOUNTED MECHANICAL UNITS SHALL BE MOUNTED ON CURBS RAISED A MINIMUM OF 8 INCHES (203 MM) ABOVE THE ROOF SURFACE, OR WHERE ROOFING MATERIALS EXTEND BENEATH THE UNIT, ON RAISED EQUIPMENT SUPPORTS PROVIDING A MINIMUM CLEARANCE HEIGHT IN ACCORDANCE WITH TABLE 1509.7. TABLE 1509.7 CLEARANCE BELOW RAISED ROOF MOUNTED MECHANICAL UNITS.

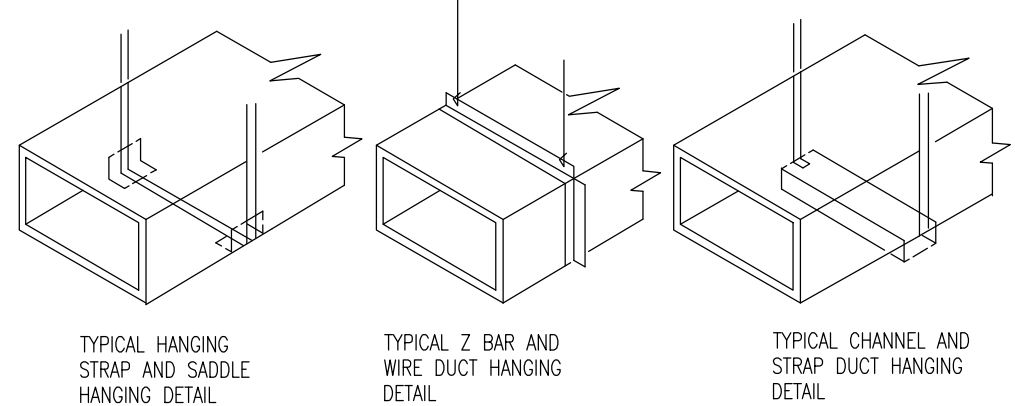
WIDTH OF MECHANICAL UNIT (INCHES)	
< 24	> 24
14"	18"
24"	30"
48"	48"
 - ROOF TOP A/C UNIT CURB SHALL BE MINIMUM 14 GAUGE (HURRICANE RATED CURB).
 - THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS AND INFORM THE PROJECT ENGINEER AND ARCHITECT OF ANY DISCREPANCY BETWEEN THESE PLANS AND THE EXISTING CONDITIONS. THE CONTRACTOR SHALL INCLUDE IN HIS BID TO CORRECT SUCH CONDITION AS DIRECTED. THE ENGINEER AND ARCHITECT ARE NOT RESPONSIBLE FOR ANY ADDITIONAL COSTS RESULTING FROM VERIFIABLE EXISTING CONDITIONS DISCOVERED AFTER CONTRACT HAS BEEN AWARDED.
 - ROOF PENETRATION FLASHING SHALL COMPLY WITH FBC. 1514.2.5.



NOTES:
1. FLEX DUCT WITH EXTERNAL INSULATION AND VAPOR BARRIER JACKETING TYPICAL TO "FABRIFLEX".
2. "INSPECTOR SERIES" SPIN DOORS.

DUCT SUPPORT DETAIL (FOR FLEX DUCT)

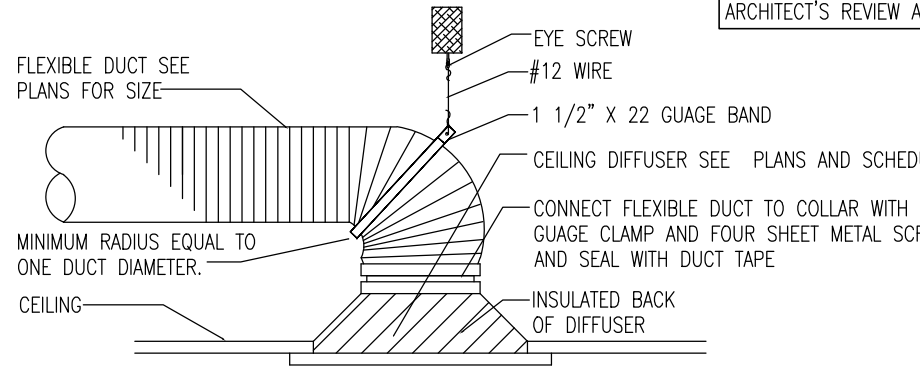
NTSC V1 061026



NOTES:
1. HANG DUCTS ACCORDING TO SMACNA STANDARDS
2. ALL STRAP SHALL BE A MINIMUM OF 1 1/2", 22 GA GALVANIZED STEEL, WITH A 6 FT MAXIMUM SPACING.

METHODS OF HANGING DUCTS

NTSC V1 061026



TYPICAL DIFFUSER DETAIL

NTSC V1 061026

Ventilation per Table 403.3

Ventilation Zone Name	AHU#1
1) Minimum O/A required at Supply Outlet Voz:	
a) People Outdoor Air Flow Rate	Rp = 5
Area Outdoor Air Flow Rate	Ra = 0.06
b) Zone PoPulation	Pz = 12
c) Zone Net Occupiable Floor Area	Az = 1434
d) O/A required in Breathing Zone: Vbz =RpPz + RaAz	Vbz = 146
e) Zone Air Distribution Effectiveness	Ez = 1
f) Zone outdoor Air Flow Rate: Voz = Vbz/Ez	Voz = 146

SET O/A INTAKE FOR EXIST AHU#1: 200CFM

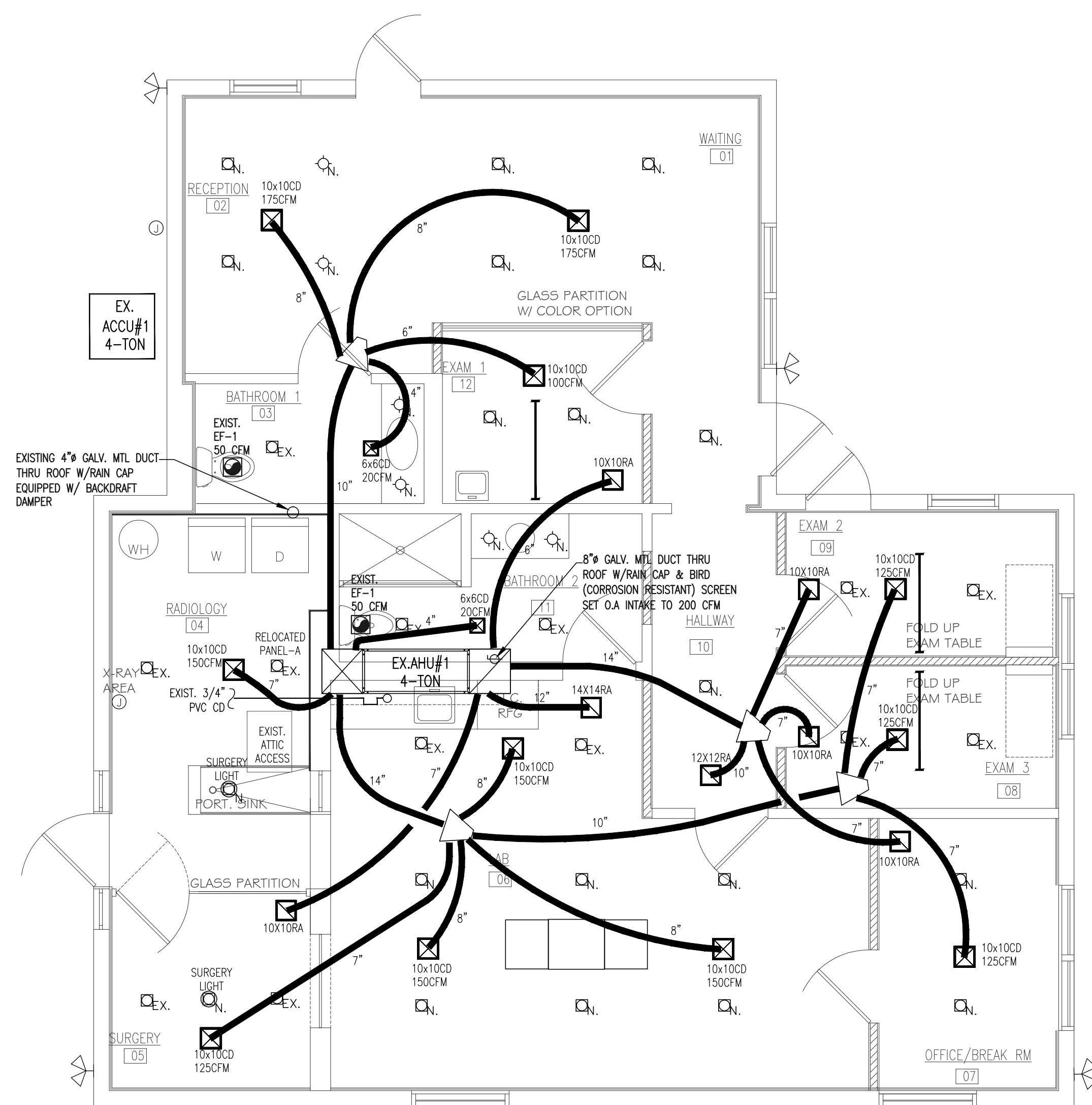
NOTES:
PER FBC 2014 (5th Edition) ENERGY CONSERVATION SECTION C402.4.5.2 (SHUTOFF DAMPER CONTROLS)
PROVIDE MOTORIZED DAMPERS FOR O/A INTAKE FOR RTU'S. CONNECT MOTORIZED DAMPER TO TIME CLOCK TO CLOSE OUTSIDE AIR INTAKE AUTOMATICALLY WHEN THE SPACE SERVED IS NOT IN USE (OFF BUSINESS HOURS).

NOTE: THE PREVIOUS AND CURRENT SPACE OCCUPANCIES ARE SAME (OFFICES). ALSO, THE ENVELOPE COMPONENTS OF THE BLDG. AC SYSTEM, WATER HEATER, ARE EXISTING TO REMAIN, THEREFORE THE AC AND ENERGY CALCS ARE NOT PROVIDED.

SCOPE OF WORK:
- AC SYSTEM, BATHROOM EXHAUST AND DRYER VENT ARE EXISTING TO REMAIN
- INSTALL NEW DUCTWORK AND SUPPLY/RETURN AC GRILLS AS SHOWN ON THIS PLAN
- ADJUST OUTSIDE AIR CFM AS PER SHOWN CALCS.

MECHANICAL LEGEND

(S)	SMOKE DETECTOR
(T)	PROGRAMMABLE THERMOSTAT
(TST)	TESTER
(MVD)	MANUAL VOLUME DAMPER W/SCOOP
(FD)	FIRE DAMPER
(SAD)	SUPPLY AIR DIFFUSER
(RAD)	RETURN AIR DIFFUSER
(LWB)	SUPPLY FIBERGLASS DUCTBOARD R-6
(FD)	FLEX DUCT R-6
(EF)	EXHAUST FAN
(OA)	OUTSIDE AIR
(RTU)	ROOF TOP UNIT
(CFM)	CUBIC FEET PER MINUTE
(D)	DUCT SIZE REDUCED



MECHANICAL PLAN

SCALE: 1/4"=1'-0"

TENANT IMPROVEMENT FOR:

Oceanside Veterinary Center
836 SE 5th Avenue
Delray Beach Florida, 33483

WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALE DIMENSIONS. CONTRACTOR SHALL VERIFY AND BE RESPONSIBLE FOR ALL DIMENSIONS AND CONDITIONS ON THE JOB, AND THIS OFFICE MUST BE NOTIFIED OF ANY VARIATION FROM THE DIMENSIONS. COPYRIGHT STEVE SIEBERT ARCHITECTURE - UNAUTHORIZED REPRODUCTION OR OTHER USE OF THIS DRAWING IS PROHIBITED.

PROJECT NO.: 16-093

DATE: 6.10.16

DRAWN BY: S.W.S.

CHECKED BY: B.K.

REVISIONS:

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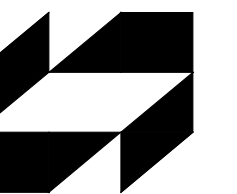
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SHEET NO.

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