

GENERAL

THE GENERAL MECHANICAL SPECIFICATIONS APPLY TO THE WORK SPECIFIED IN THIS SECTION. PROVIDE ALL LABOR, MATERIALS, SERVICES, EQUIPMENT AND APPLIANCES REQUIRED FOR THE FABRICATION, INSTALLATION, AND/OR RENOVATION OF MECHANICAL SYSTEMS INCLUDING HEATING, VENTILATING, AIR CONDITIONING AND MISCELLANEOUS SYSTEMS AS INDICATED IN DESIGN DRAWINGS AND AS OUTLINED IN THESE SPECIFICATIONS.

SCOPE OF WORK:

FURNISH AND INSTALL COMPLETE AIR CONDITIONING SYSTEMS AS INDICATED ON THE DESIGN DRAWINGS AND AS OUTLINED WITH THESE SPECIFICATIONS. WORK SHALL INCLUDE BUT NOT BE LIMITED TO THE INSTALLATION OF THE SCHEDULED AIR CONDITIONING UNITS, EXHAUST FANS, AIR DISTRIBUTION AND DUCTWORK.

CLEANING, TESTING AND ADJUSTING:

THE MECHANICAL CONTRACTOR, AT HIS EXPENSE, SHALL CLEAN, REPAIR, ADJUST, CHECK BALANCE, AND PLACE IN SERVICE THE VARIOUS SYSTEMS HEREIN SPECIFIED WITH THEIR RESPECTIVE EQUIPMENT, ACCESSORIES AND PIPING. HE SHALL FURNISH ALL LABOR, MATERIALS, EQUIPMENT, AND TOOLS REQUIRED TO PERFORM TESTS REQUIRED BY THESE SPECIFICATIONS AND BY THE GOVERNING AUTHORITIES.

NO WORK SHALL BE COVERED OR CONCEALED UNLIT PROPERLY INSPECTED AND TESTED.

ALL STRUCTURAL IMPACT TO EXISTING OR PROPOSED BUILDING SHALL BE REVIEWED AND APPROVED BY STRUCTURAL ENGINEER OF RECORD.

TESTING:

ADJUST THE AIR CONDITIONING SYSTEMS, VENTILATING SYSTEMS, FANS, ETC., TO DELIVER NOT LESS THAN THE REQUIRED AIR QUANTITY WITH QUANTITIES IN EXCESS TO BE SUBJECT TO THE SEAL ALL JOINTS WITH GLASS FABRIC AND MASTIC. TAPE ALONE IS NOT ALLOWED. IN UNCONDITIONED SPACE. DUCTWORK SHALL BE LINED WITH ANTI-MICROBIAL COATING. SEAL ALL JOINTS WITH GLASS FABRIC AND MASTIC. TAPE ALONE IS NOT ALLOWED.

PRIOR APPROVAL BY THE ENGINEER OF TESTING AND BALANCING CONTRACTOR IS REQUIRED. THIS CONTRACTOR SHALL PROVIDE THREE (3) COPIES OF A TEST AND BALANCE REPORT TO THE ENGINEER AT TIME OF SUBSTANTIAL COMPLETION INSPECTION. THE REPORT SHALL BE PREPARED BY A CONTRACTOR CERTIFIED BY ASSOCIATED AIR BALANCE COUNCIL OR NATIONAL ENVIRONMENTAL BALANCING BUREAU.

THE TEST AND BALANCE REPORT SHALL BE TYPEWRITTEN AND CONTAIN THE FOLLOWING DATA:

- DATE, TIME, WEATHER, WHEN TEST TAKEN
- AIR CAPACITIES AT EACH UNIT INCLUDING OUTSIDE AIR, (ENTERING AND LEAVING DBWB)
- STATIC PRESSURE THROUGH UNITS AND UNIT COMPONENTS.
- MOTOR OPERATING VOLTAGE AND AMPERAGE.
- DRIVE TYPES, SIZES AND SPEED RANGE.
- IDENTIFICATION OF ALL AIR TERMINAL DEVICES WITH DESIGN CFM AND ACTUAL CFM.

ADDITIONALLY, SYSTEMS DRAWING CLEARLY MARKED TO IDENTIFY LOCATION OF EQUIPMENT AND AIR DEVICES TESTED SHALL BE PROVIDED ALONG WITH THE WRITTEN TEST AND BALANCE REPORT.

COMMERCIAL COOKING PERFORMANCE TEST

A PERFORMANCE TEST SHALL BE CONDUCTED UPON COMPLETION AND BEFORE FINAL APPROVAL OF THE INSTALLATION OF A VENTILATION SYSTEM SERVING COMMERCIAL COOKING APPLIANCES. THE TEST SHALL VERIFY THE RATE OF EXHAUST AIRFLOW REQUIRED BY SECTION 507.5 OF FBCM (6TH EDITION); MAKEUP AIR FLOW REQUIRED BY SECTION 508.11 OF FBCM (6TH EDITION); AND PROPER OPERATION AS SPECIFIED IN THIS CHAPTER(S). THE PERMIT HOLDER SHALL FURNISH THE NECESSARY TEST EQUIPMENT AND DEVICES REQUIRED TO PERFORM THE TESTS. CERTIFIED TEST AND BALANCE REPORT DONE IN LIEU OF WITNESSING THE TEST. THE MECHANICAL DEPARTMENT CAN REQUIRE ADDITIONAL TESTING AS THEY SEEM NECESSARY TO VERIFY OPERATION OF THE SYSTEM.

COMMERCIAL HOOD CAPTURE AND CONTAINMENT TEST

THE PERMIT HOLDER SHALL VERIFY CAPTURE AND CONTAINMENT PERFORMANCE OF THE EXHAUST SYSTEM. THIS FIELD TEST SHALL BE CONDUCTED WITH ALL APPLIANCES UNDER THE HOOD AT OPERATING TEMPERATURES, WITH ALL SOURCES OF OUTDOOR AIR PROVIDING MAKEUP AIR FOR THE HOOD OPERATING AND WITH ALL SOURCES OF RECIRCULATED AIR PROVIDING CONDITIONING FOR THE SPACE IN WHICH THE HOOD IS LOCATED. OPERATING, CAPTURE AND CONTAINMENT SHALL BE OBSERVED VISUALLY BY OBSERVING SMOKE OR STEAM PRODUCED BY ACTUAL, OR SIMULATED COOKING, SUCH AS WITH SMOKE CANDLES, SMOKE PUFFERS, ETC./FBCM SECTION 507.6.1 6TH EDITION 2017.

MAINTENANCE MANUALS

CONTRACTOR SHALL PROVIDE COMPLETE MAINTENANCE MANUALS TO THE OWNER (3 REQUIRED) ON ALL NEW EQUIPMENT. ORGANIZE OPERATING AND MAINTENANCE DATA INTO SUITABLE SETS OF MANAGEABLE SIZE. BIND PROPERLY INDEXED DATA INTO INDIVIDUAL, HEAVY-DUTY, 2-INCH, 5-RING VINYL COVERED BINDERS WITH POCKET FOLDERS FOR FOLDED SHEET INFORMATION. MARK APPROPRIATE IDENTIFICATION ON FRONT AND SPINE OF EACH BINDER. INCLUDE THE FOLLOWING TYPES OF INFORMATION. THE INFORMATION WILL BE TURNED OVER TO THE OWNER AT TIME OF SUBSTANTIAL COMPLETION:

- OPERATING AND MAINTENANCE INSTRUCTIONS
- SPARE PARTS LIST
- COPIES OF WARRANTIES
- WIRING DIAGRAMS
- INSPECTION REPORTS AND APPROVALS
- SHOP DRAWINGS AND PRODUCT DATA
- TEST AND BALANCE INFORMATION

TRAINING SERVICES

THOROUGHLY INSTRUCT THE OWNER'S REPRESENTATIVE IN THE OPERATION OF ALL EQUIPMENT FURNISHED AND LOCATION OF ALL VALVES AND CONTROL DEVICES.

TRAIN BUILDING OWNER'S PERSONNEL DURING NORMAL WORKING HOURS ON STARTUP AND SHUTDOWN PROCEDURES, TROUBLESHOOTING PROCEDURES, SERVICING AND PREVENTATIVE MAINTENANCE SCHEDULE AND PROCEDURES. REVIEW WITH THE OWNER'S PERSONNEL THE DATA CONTAINED IN THE OPERATING AND MAINTENANCE MANUALS. SCHEDULE TRAINING WITH OWNER, PROVIDE AT LEAST 7-DAYS PRIOR NOTICE TO ARCHITECT/ENGINEER.

HANGERS AND SUPPORTS

PROVIDE ALL NECESSARY HANGER RODS, CLAMPS AND ATTACHMENTS TO PROPERLY INSTALL AND SUPPORT DUCTWORK, PIPING AND EQUIPMENT FROM THE BUILDING STRUCTURE.

PROVIDE ANY ANGLE IRON OR UNISTRUT AND SUSPENSION RODS REQUIRED TO INSTALL EQUIPMENT, PIPING AND DUCTWORK.

ALL SUPPORTS EXPOSED TO OUTDOORS SHALL BE CLEANED, PRIMED AND PAINTED TO PREVENT RUSTING. FINISH COLOR AS SELECTED BY OWNER.

THE USE OF BALING WIRE OR PERFORATED METAL STRAPPING IS NOT ACCEPTABLE FOR SUPPORTS.

WARRANTY/GUARANTTEE

THE CONTRACTOR SHALL WARRANTY/GUARANTTEE AND MAINTAIN THE STABILITY OF WORK AND MATERIALS AND KEEP SAME IN PERFECT REPAIR AND CONDITION FOR THE PERIOD OF ONE (1) YEAR.

DEFECTS OF ANY KIND DUE TO FAULTY WORK OR MATERIALS APPEARING DURING THE ABOVE MENTIONED PERIOD MUST BE IMMEDIATELY MADE GOOD BY THE CONTRACTOR AT HIS OWN EXPENSE TO THE ENTIRE SATISFACTION OF THE OWNER AND ARCHITECT AND ENGINEER. SUCH RECONSTRUCTION AND REPAIRS SHALL INCLUDE ALL DAMAGE TO THE FINISH OR FURNISHING OF THE BUILDING RESULTING FROM THE ORIGINAL DEFECT OR REPAIRS THERETO.

SUBSTITUTIONS

EQUIPMENT MODEL NUMBER AND DESIGN OF SYSTEMS INDICATED ON THE DRAWINGS AND WITH THESE SPECIFICATIONS SHALL BE CONSIDERED AS "STANDARD QUALITY OF MANUFACTURE". EQUAL PRODUCTS, AS APPROVED BY THE ENGINEER, WILL BE ACCEPTABLE FROM OTHER MANUFACTURERS. SUBSTITUTIONS WITHOUT WRITTEN APPROVAL OF THE ENGINEER IS NOT ACCEPTABLE. ALL EQUIPMENT SHALL BE NEW UNLESS OTHERWISE NOTED, FREE OF DEFECTS, AS SHOWN ON THE DRAWINGS OR INDICATED IN SPECIFICATIONS.

DEVIATIONS FROM SPECIFIED EQUIPMENT AFFECTING ELECTRICAL REQUIREMENTS SHALL BE COORDINATED BETWEEN VENDOR, MECHANICAL CONTRACTOR, AND ELECTRICAL CONTRACTOR PRIOR TO SUBMITTING BIDS. FAILURE TO DO SO WILL NOT BE CAUSE FOR CHANGE OF BID AT A LATER TIME. IN ADDITION, THE MECHANICAL CONTRACTOR SHALL BE FINANCIALLY RESPONSIBLE FOR ANY AND ALL CHANGES TO ENGINEERING PLANS REQUIRED BY AUTHORITY HAVING JURISDICTION.

APPLICABLE CODES/STANDARDS:

- FLORIDA BUILDING CODE - BUILDING (6TH EDITION) 2017.
- FLORIDA BUILDING CODE - MECHANICAL (6TH EDITION) 2017.
- FLORIDA BUILDING CODE - PLUMBING (6TH EDITION) 2017.
- FLORIDA BUILDING CODE - ENERGY CONSERVATION (6TH EDITION) 2017.
- FLORIDA FIRE PREVENTION CODE (6TH EDITION) 2017.
- NFPA LATEST EDITION.
- SMACNA DUCT CONSTRUCTION STANDARDS.
- ASHRAE STANDARD 62.1 (2013).
- NATIONAL ELECTRIC CODE (2014)
- ASHRAE STANDARD 90.1 (2013)

THE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS, INSPECTIONS AND PAY ALL FEES.

SHOP DRAWINGS AND SUBMITTALS:

SUBMIT SHOP DRAWINGS AND MANUFACTURER'S DATA FOR ALL NEW EQUIPMENT FOR ENGINEER'S APPROVAL PRIOR TO PURCHASE AND/OR FABRICATION. SHOP DRAWINGS FOR EQUIPMENT REQUIRING ELECTRIC POWER OR CONTROL WIRING SHALL INCLUDE COMPLETE WIRING DIAGRAMS.

HVAC CONTRACTORS SHALL SUBMIT COMPLETE DUCTWORK SHOP DRAWINGS FOR REVIEW BY THE ENGINEER. SHOP DRAWINGS SHALL INCLUDE COORDINATION WITH GENERAL CONTRACTOR REGARDING EXISTING OPENINGS REQUIRED IN EXTERIOR WALLS. THE DUCTWORK SHOP DRAWINGS WILL ONLY BE REVIEWED FOR COMPLIANCE WITH DRAWINGS AND SPECIFICATIONS. DRAWINGS WILL NOT BE CHECKED FOR COORDINATION WITH OTHER TRADES OR BUILDING STRUCTURE. IT IS THE RESPONSIBILITY OF THE CONTRACTORS TO COORDINATE AND VERIFY ROUTING AND EXACT LOCATION OF SYSTEM COMPONENTS.

SYSTEM IDENTIFICATION:

PROVIDE IDENTIFICATION LABELS ON OR NEAR EACH PIECE OF MAJOR EQUIPMENT AND EACH OPERATION DEVICE AND DISCONNECT. LABELS SHALL BE CONSTRUCTED OF ENGRAVED PLASTIC LAMINATE SIGN OR PLASTIC EQUIPMENT MARKER PERMANENTLY SECURED TO EQUIPMENT. LETTERING SHALL BE A MINIMUM OF 1/2 INCH HIGH FOR EQUIPMENT NAME AND 3/8 INCH HIGH FOR EQUIPMENT INFORMATION.

VALVES SHALL BE TAGGED USING PLASTIC LAMINATE TAGS SECURED WITH BRASS CHAINS INDICATING THE VALVE SIZE, SERVICE AND FUNCTION.

EXECUTION:

ALL LOCATIONS OF EQUIPMENT, DUCTWORK, PIPING, ETC., INDICATED ON THE DRAWINGS IS DIAGRAMMATIC AND SHALL BE FOLLOWED AS CLOSELY AS POSSIBLE TO THE PLANS SUBJECT TO BUILDING CONSTRUCTION AND INTERFERENCES WITH OTHER TRADES. CONTRACTOR IS RESPONSIBLE FOR ANY FIELD MEASUREMENTS REQUIRED TO PROVIDE AN APPROVED AND FUNCTIONAL INSTALLATION.

COORDINATE WITH OTHER TRADES AND FIELD-VERIFY EXISTING CONDITIONS FOR EXACT LOCATION AND ROUTING OF SYSTEMS. PROVIDE OFFSETS, TRANSITIONS AND ADAPTORS AS REQUIRED.

NOT ALL COMPONENTS REQUIRED FOR A COMPLETE INSTALLATION ARE SHOWN ON THESE DRAWINGS. REFER TO EQUIPMENT INSTALLATION INSTRUCTION, SCHEDULES AND APPLICABLE CODES FOR ADDITIONAL INFORMATION, INCLUDING REQUIRED CONNECTION LOCATIONS, TYPES AND SIZES.

PERFORM ALL WORK NECESSARY TO PREPARE THE STRUCTURE FOR THE INSTALLATION OF THE WORK. ALL HOLES, OPENINGS AND DAMAGED MATERIALS CREATED DURING CONSTRUCTION SHALL BE REPAIRED. ALL PENETRATIONS SHALL BE SLEEVED AND SEALED SO AS TO BE WATER AND AIR TIGHT.

PIPING:

CONDENSATE DRAINS:
CONDENSATE PIPE TO BE TYPE L COPPER OR SCHEDULE 40 PVC. ROUTE AS INDICATED ON PLANS. UNITS 3 TONS AND SMALLER MAY DRAIN TO GRADE. ELSE COORDINATE WITH PLUMBER TO PROVIDE HUB DRAINS IN MECHANICAL ROOM AND DRYWELL(S). HVAC CONTRACTOR TO PROVIDE TRAP AT UNIT SIZED FOR 2" GREATER THAN UNIT STATIC PRESSURE. PROVIDE CLEANOUT AT UNIT FOR SUSPENDED HORIZONTAL AIR HANDLERS. INSULATE CONDENSATE PIPE WITH 1/2" ARMAFLEX (OR EQUAL) INSULATION RATED FOR PLENUM APPLICATION COMPLY WITH SECTION 602.2 FOR CONSTRUCTION (2017). CONDENSATE DRAIN LINE SHALL BE NOT LESS THAN THE EQUIPMENT DRAIN LINE SIZE AND IN NO CASE LESS THAN 3/4" PIPE SIZE. DRAIN LINE SHALL SLOPE A MINIMUM OF 1/8" PER FOOT TOWARDS DRAIN. TERMINATION POINT SHALL BE COMPLY WITH FBCM 6TH EDITION(2017) SECTION 307.2.1.

REFRIGERANT PIPING:
PIPING SHALL BE SEAMLESS MULLER STREAMLINE TYPE ACRIHARD OR ANNEALED), (STRAIGHT LENGTH OR COIL) COMPLY WITH ASTM B 280. WHERE APPROVED, COPPER TUBE FOR REFRIGERANT PIPING ERRECTED ON THE PREMISES SHALL BE SEAMLESS COPPER TUBE OF TYPE K, L, OR M (DRAWN OR ANNEALED), (STRAIGHT LENGTH OR COIL) IN ACCORDANCE WITH ASTM B 88. ANNEALED TEMPERED COPPER TUBE SHALL NOT BE USED IN SIZES LARGER THAN A 2 INCH NOMINAL SIZE. FITTINGS SHALL BE MUELLER OR NIBCO WROUGHT COPPER LONG RADIUS REFRIGERATION TYPE.

WORKMANSHIP ON THESE SYSTEMS MUST BE GOOD, AND CLEANLINESS OF PIPING SYSTEMS IS MANDATORY. WORK THAT DOES NOT MEET THESE CRITERIA SHALL BE REMOVED AND REPLACED AT NO COST TO THE OWNER. THE ENGINEER SHALL DETERMINE WHETHER THE WORK MEETS THESE CRITERIA.

COVER ALL EXPOSED LIQUID LINES AND ALL SUCTION PIPING (INDOORS AND OUTDOORS), FITTINGS, VALVES, ETC., CONTINUOUS THROUGH SLEEVES, HANGERS, ETC., WITH 3/4" FRAMAFLEX. INSTALLATION SHALL BE CONDENSATION FREE AND INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS. PAINT ALL INSULATION EXPOSED TO OUTDOORS WITH UV PROTECTIVE PAINT PER MANUFACTURERS RECOMMENDATIONS.

REFRIGERANT PIPING BELOW GRADE SHALL BE ROUTED THROUGH MINIMUM 4" DIAMETER PVC PIPE SLEEVES TO EACH CONDENSING UNIT. ALL UNDERGROUND REFRIGERANT PIPING SHALL BE CONTINUOUS SOFT DRAWN TUBING WITH NO UNDERGROUND JOINTS ALLOWED. REFRIGERANT PIPE SIZES SHALL BE SIZED PER MANUFACTURER'S RECOMMENDATION BASED ON LENGTH OF RUN BETWEEN CONDENSING UNITS AND AHU'S.

PIPING ROUTED ALONG BUILDING EXTERIOR WALL SHALL BE PROTECTED BY SHEET METAL HOUSING SECURELY ATTACHED TO WALL AT 8'-0" INTERVALS AND PAINTED TO MATCH BUILDING EXTERIOR.

TRAP OIL IN SUCTION LINE AT EVAPORATOR COIL. NO OTHER COIL TRAPS PERMITTED. PROVIDE SUCTION RISERS, CHECK VALVES, SOLENOID VALVES, OR OTHER DEVICES REQUIRED IN PIPING SYSTEM BY MANUFACTURER'S INSTALLATION INSTRUCTIONS.

FURNISH ALL LABOR AND MATERIALS TO REPLACE REFRIGERANT LOST DURING THE ONE YEAR WARRANTY PERIOD.

REFRIGERATION INSULATION SPECIFICATION:

- INSULATION SHALL BE A FLEXIBLE, CLOSED-CELL ELASTOMERIC PIPE INSULATION: AP ARMAFLEX, AC ACCOFLX. ADHESIVE SHALL BE ARMAFLEX 520, 520 BLACK OR 520 BLV ADHESIVE. THE INSULATION MUST CONFORM TO ASTM C534 GRADE 1, TYPE 1.
- INSULATION MATERIALS SHALL HAVE A CLOSED CELL STRUCTURE TO PREVENT MOISTURE FROM WICKING WHICH MAKES IT AN EFFICIENT INSULATION.
- INSULATION MATERIALS SHALL BE MANUFACTURED WITHOUT THE USE OF CFC'S, HFC'S OR HFO'S. IT IS ALSO FORMALDEHYDE FREE, LOW VOC'S, FIBER FREE, DUST FREE AND RESISTS MOLD AND MILDEW.
- INSULATION MATERIALS SHALL HAVE A FLAME-SPREAD INDEX OF LESS THAN 25 AND A SMOKE-DEVELOPED INDEX OF LESS THAN 50 AS TESTED IN ACCORDANCE WITH ASTM E 84. IN ADDITION, THE PRODUCTS, WHEN TESTED, SHALL NOT MELT OR DRIP, FLAMING PARTICLES, AND THE FLAME SHALL NOT BE PROGRESSIVE.
- INSULATION MATERIALS SHALL HAVE A MAXIMUM THERMAL CONDUCTIVITY OF 0.27 BTU-IN-H-F-T²/F AT A 75°F MEAN TEMPERATURE AS TESTED IN ACCORDANCE WITH ASTM C 177 OR ASTM C 618.
- INSULATION MATERIALS SHALL HAVE A MAXIMUM WATER VAPOR TRANSMISSION OF 0.08 PERM-INCHES WHEN TESTED IN ACCORDANCE WITH ASTM E 96. PROCEDURE A.
- ALL LIQUID AND SUCTION LINES SHALL BE INSULATED CONTINUOUSLY FROM A POINT 6" INSIDE THE DISPLAY CASE TO THE SUCTION SERVICE VALVE AT THE COMPRESSOR.
- ALL INSULATION MATERIAL AND CONDUCTIVITY AND THICKNESS SHALL COMPLY WITH SECTION C403.2.10 FBCM(6TH EDITION).

PIPE HANGERS AND SUPPORTS:

PIPE HANGERS, WHERE NEEDED, SHALL BE GRINNEL #280 CLEVIS TYPE, 5'-0" ON CENTER, SECURELY ATTACHED TO BUILDING CONSTRUCTION. SPACE AT MIN. 5'-0" INTERVALS.

PIPE SUPPORT:

ATTACH LINES SECURELY ALONG PAD/FLOOR/EQUIPMENT/STRUCTURE TO PREVENT MOVEMENT. SUPPORT IN A MANNER THAT LINES DO NOT HANG FROM EVAPORATOR CONNECTIONS OR BLOCK ACCESS TO FILTERS, CONTROLS, ETC.

PIPE SUPPORTS SHALL BE IN ACCORDANCE TO TABLE 305.4 OF 6TH EDITION FBCM 2017.

VIBRATION ISOLATION:

ALL BLOWER UNITS AND VIBRATING TYPE EQUIPMENT SHALL BE PROPERLY FITTED WITH MASON INDUSTRIES VIBRATION ISOLATION EQUIPMENT SIZED IN ACCORDANCE WITH EQUIPMENT WEIGHT AND DUTY.

PROVIDE FLEXIBLE CONNECTORS AT ALL SUPPLY AND RETURN CONNECTIONS TO AIR HANDLING EQUIPMENT CONSISTING OF HEAVY CANVAS OR NEOPRENE FABRIC WITH AIRTIGHT SEAMS AND CONNECTIONS TO THE EQUIPMENT.

AIR FILTERS:

FILTERS SHALL BE 1" FIBERGLASS MEDIA THROW AWAY TYPE IN A RIGID FRAME WITH A SUPPORTING MAZE ACROSS BOTH ENTERING AND LEAVING SURFACES. SUPPLY ONE COMPLETE SET OF FILTERS AFTER OWNER'S FINAL ACCEPTANCE. FARR 3030 OR EQUAL.

DUCTWORK:

ALL DIMENSIONS ARE INSIDE NET FREE AREA. SEE FLOOR PLAN FOR SPECIFIED MATERIAL.

MATERIALS:

A. LOW PRESSURE SUPPLY AND RETURN DUCTWORK AND DUCTWORK SPECIFIED ON PLANS SHALL BE DUCTBOARD (FIBERGLASS) EQUAL TO MANSVILLE FR-800 (SUPERDUCT). PROVIDE MINIMUM "R" VALUE OF 4.2 FOR DUCTS INSTALLED IN CONDITIONED SPACE AND 6.0 FOR DUCT INSTALLED IN UNCONDITIONED SPACE. DUCTWORK SHALL BE LINED WITH ANTI-MICROBIAL COATING. SEAL ALL JOINTS WITH GLASS FABRIC AND MASTIC. TAPE ALONE IS NOT ALLOWED.

B. LOW PRESSURE SUPPLY AND RETURN DUCTWORK SPECIFIED ON PLANS SHALL BE SINGLE WALL GALVANIZED SHEET METAL AND CONSTRUCTED PER SMACNA STANDARD AND DETAILS CHAPTER 3. BUILDING CONSTRUCTION AND INTERFERENCES WITH OTHER TRADES. INSULATION SECTION FOR SPECIFICATION AND R-VALUE.

C. SUPPLY AND RETURN DUCTWORK, OUTSIDE AIR AND EXHAUST DUCTS OR DUCTWORK SPECIFIED ON PLANS SHALL BE GALVANIZED SHEET METAL PER SMACNA STANDARD AND DETAILS. SEAL ALL JOINTS WITH GLASS FABRIC AND MASTIC. TAPE ALONE IS NOT ALLOWED.

WET EXHAUST DUCTS SHALL BE ALUMINUM OR STAINLESS STEEL SHEET METAL.

ADJUSTABLE SPLITTERS AND DAMPERS SHALL BE INSTALLED IN EVERY SPLIT AND BRANCH DUCT AND SHALL BE PROVIDED WITH LOCKING QUADRANTS ON EXPOSED OR IN ACCESSIBLE AREAS OF THE DUCT FOR EASE OF OPERATION. ACCESS PANELS OR YOUNG REGULATORS SHALL BE PROVIDED WHERE DAMPERS ARE INSTALLED ABOVE HARD CEILINGS OR IN SOFFITS.

ELBOWS OR CHANGES IN DUCT DIRECTION GREATER THAN 45 DEGREES SHALL BE FITTED WITH AIR TURNS CONSISTING OF CURVED AIRFOIL BLADES OR VANES WHICH WILL PERMIT THE AIR TO MAKE ABRUPT TURNS WITHOUT APPRECIABLE TURBULENCE.

FLEXIBLE DUCTWORK SHALL BE ACOUSTICAL LOW PRESSURE TYPE WITH INTERIOR LINER, METAL HELIX, FIBERGLASS INSULATION WITH AN R-VALUE OF 6.0 OR GREATER, AND COPOLYMER SEAMLESS OUTSIDE SLEEVE. THE ENTIRE FLEXIBLE ASSEMBLY SHALL BE LISTED IN ACCORDANCE WITH UL-181 CLASS 1 AIR DUCT MATERIAL. THE MAXIMUM LENGTH OF ANY FLEX DUCT SHALL BE 8'-0". FLEXIBLE DUCTWORK SHALL MEET THE FLORIDA MODEL ENERGY EFFICIENCY CODE. ALL JOINTS AT CONNECTIONS TO DIFFUSERS AND DUCTWORK SHALL BE SEALED WITH GLASS FABRIC AND MASTIC.

INSTALL DUCTWORK INDICATED ON DRAWINGS, MAKING NECESSARY CHANGES IN CROSS-SECTIONS AND OFFSETS, WHETHER OR NOT SPECIFICALLY INDICATED.

SPIRAL DUCTWORK SHALL BE SIMILAR TO "SEMCO" MODEL SL(85)P LOW PRESSURE.

PROVIDE UL LISTED FIRE SMOKE OR COMBINATION FIRE SMOKE DAMPER IN ALL PENETRATIONS OF RATED SURFACES PER PER SECTION 607 FBCM (6TH EDITION 2017) AND IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS AND THE U.L. LISTING REQUIREMENTS. INTERLOCK THE UNIT WITH FIRE ALARM SYSTEM.

INSULATION:

SHALL BE AS MANUFACTURED BY CERTAINTEEED, OWENS-CORNING, MANVILLE, PITTSBURGH CORNING, ARMSTRONG, OR APPROVED EQUAL. INSULATION SUNDRIES AND ADHESIVES SHALL BE AS MANUFACTURED BY BENJAMIN FOSTER, CHILDERS, VMASCO, OR APPROVED EQUAL. ALL INSULATION SHALL BE SUITABLE FOR INSTALLATION IN A RETURN AIR PLENUM.

INSULATE ALL SHEETMETAL DUCTWORK EXCEPT EXHAUST DUCTWORK EXTERNALLY WITH MANVILLE R SERIES MICROLITE TYPE 75 OR 100 INSULATION OR APPROVED. INSULATION TO HAVE TYPE II FSK FACINGS AND UL FIRE-RATED CLASSIFICATION OF FLAME SPREAD 25 AND SMOKE DEVELOPED 50. INSTALL INSULATION PER SMACNA FLORIDA MODEL ENERGY EFFICIENCY CODE AND MANUFACTURER'S RECOMMENDATIONS. ALL INSULATION JOINTS SHALL BE SEALED WITH GLASS FABRIC AND MASTIC.

- MINIMUM INSULATION REQUIREMENTS AS FOLLOWS:
- SUPPLY AND RETURN AIR UNCONDITIONED: 2" (R-4.2 MIN)
- OUTSIDE AIR: 2" (R-6 MIN)

PROVIDE ALL EXTERIOR INSULATION DUCTWORK OR PIPING EXPOSED TO THE OUTDOORS WITH A MINIMUM 8 MIL THICK ALUMINUM OR PVC JACKET.

CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING AND INSTALLING ADEQUATE AND PROPER INSULATION AND MOISTURE-SEAL IN A MANNER THAT WILL PERMANENTLY PREVENT THE ACCUMULATION OF ANY OBJECTIONABLE MOISTURE ON THE EXTERIOR OF AIR CONDITIONING UNITS, REFRIGERANT PIPING, CONDENSATE DRAIN PIPING, AIR DUCTS OR OTHER PARTS OF THE SYSTEM. CONTRACTOR SHALL CORRECT THE CAUSE OF ANY CONDENSATION AND FULLY REPAIR, WITHOUT COST TO THE OWNER, ANY DAMAGES TO BUILDING SURFACES, FURNISHINGS OR EQUIPMENT CAUSED BY CONDENSATION FROM THIS SYSTEM, FOR THE FULL PERIOD OF GUARANTEE.

INSULATION PROTECTION

PER FBCM SECTION C403.2.9.1.2 6TH EDITION 2017 INSULATION SHALL BE PROTECTED FROM DAMAGE, INCLUDING THAT DUE TO SUNLIGHT, MOISTURE, EQUIPMENT MAINTENANCE AND WIND, BUT NOT LIMITED TO THE FOLLOWING:

- INSULATION EXPOSED TO WEATHER SHALL BE SUITABLE FOR OUTDOOR SERVICE, E.G., PROTECTED BY ALUMINUM, SHEET METAL, PAINTED CANVAS OR PLASTIC COVER. CELLULAR FOAM INSULATION SHALL BE PROTECTED AS ABOVE OR PAINTED WITH A COATING THAT IS WATER RETARDANT AND PROVIDES SHIELDING FROM SOLAR RADIATION THAT CAN CAUSE DEGRADATION OF THE MATERIAL.
- INSULATION COVERING COOLING DUCTS LOCATED OUTSIDE THE CONDITIONED SPACE SHALL INCLUDE A VAPOR RETARDANT LOCATED OUTSIDE THE INSULATION (UNLESS THE INSULATION IS INHERENTLY VAPOR RETARDANT), ALL PENETRATIONS AND JOINTS OF WHICH SHALL BE SEALED.

CONTROLS:

FACTORY MOUNTED CONTROL SHALL BE PROVIDED TO ACCOMPLISH THE SEQUENCE OF OPERATION. ALL INTERIOR CONTROLS SHALL BE FACTORY FURNISHED AND INSTALLED.

PROVIDE ALL 24 VOLT WIRING BETWEEN CONTROL DEVICES AS NECESSARY TO MAKE COMPLETE AND OPERATION SYSTEM. PROVIDE 110/24 VAC TRANSFORMERS AS REQUIRED. COORDINATE WITH DIVISION 16 FOR 120V POWER ROUGH-IN, CONTROL, POWER AND WIRING. 24 VOLT WIRING SHALL BE PLENUM RATED CABLE.

AIR CONDITIONING UNITS (DX SPLIT):

UNITS SHALL BE SPLIT SYSTEM AIR-TO-AIR ELECTRIC AIR CONDITIONING UNITS AND HEAT PUMPS AS SCHEDULED ON DRAWINGS. UNITS WITH INTEGRAL ELECTRIC RESISTANCE HEATERS SHALL HAVE A SINGLE-POINT ELECTRIC CONNECTION.

TOTAL COOLING CAPACITY OF THE UNITS SHALL BE AS SCHEDULED ON DRAWINGS. UNIT CABINET SHALL BE CONSTRUCTED OF GALVANIZED STEEL, BONDED AND COATED WITH BAKED ENAMEL. CABINET INSULATION SHALL COMPLY WITH FLORIDA ENERGY CODE. PROVIDE E-COAT PROTECTION FOR COILS OR ANY ALTERNATIVE FOR SEA COAST PROTECTION FOR CONDENSING UNITS, PACKAGED, PTAC OR ROOM AIR CONDITIONERS LOCATED NEAR SEA COAST.

FANS AND MOTORS - THE INDOOR AIR FANS SHALL BE OF THE FORWARD-CURVED CENTRIFUGAL CLASS 1 TYPE. MOTOR AND DRIVE TO PROVIDE HIGHER FAN OUTPUT WHEN JOB REQUIREMENTS EXCEED STANDARD FAN CAPACITY SHALL BE PROVIDED.

COOLING SYSTEM SHALL BE PROTECTED BY LOSS OF CHARGE PROTECTION, HIGH AND LOW PRESSURE SENSORS, COMPRESSOR MOTOR OVERLOADS, AND A TMINING DEVICE WHICH WILL PROHIBIT THE COMPRESSOR MOTOR FROM BEING SUBJECTED TO A STARTING CURRENT MORE THAN ONCE EVERY FIVE MINUTES.

HEAT PUMP/CONDENSING UNIT INSTALLATION:
PROVIDE CONCRETE PADS FOR GRADE MOUNTED CONDENSING UNITS. PADS SHALL BE A MINIMUM OF 4" THICK, 3,000 PSI CONCRETE, AND SHALL BE 4" LARGER ON EACH SIDE THAN THE FOOTPRINT OF THE CONDENSING UNIT. VERIFY UNIT DIMENSIONS WITH APPROVED SHOP DRAWINGS PRIOR TO FABRICATION OF PADS.

EXHAUST FANS:

FURNISH EXHAUST FANS WITH PERFORMANCE AND CAPACITIES AS LISTED ON THE DESIGN DRAWINGS.

COORDINATE WITH ARCHITECT TO LOCATE EXHAUST FANS, EXHAUST GRILLES, WALL OR ROOF CAPS A MINIMUM DISTANCE OF 10'-0" FROM ANY OPERABLE WINDOW, DOOR OR FRESH AIR INTAKE.

AIR DISTRIBUTION EQUIPMENT:

FURNISH SUPPLY AIR GRILLES AND RETURN AIR REGISTERS WITH OPPOSED BLADE BALANCING DAMPERS AS SCHEDULED ON THE DESIGN DRAWINGS.

GRILLES, REGISTERS, AND CEILING DIFFUSERS SHALL BE FURNISHED AS SCHEDULED ON THE DESIGN DRAWINGS AND SHALL BE ALL ALUMINUM CONSTRUCTION UNLESS NOTED OTHERWISE. AIR DISTRIBUTION SHALL NOT EXCEED NC-30 NOISE CRITERIA AS DEFINED IN THE LATEST ASHRAE GUIDE.

ROOF TOP UNITS EQUIPMENTS:

GUARDS SHALL BE PROVIDED IN ACCORDANCE WITH SECTION 304.11 OF FBCM 6TH EDITION 2017 WHERE APPLIANCES, EQUIPMENT, FANS OR OTHER COMPONENTS THAT REQUIRE SERVICE AND ROOF HATCH OPENINGS ARE LOCATED WITHIN 10 FEET (3048 MM) OF A ROOF EDGE OR OPENING OF A WALKING SURFACE AND SUCH EDGE OR SUCH OPENING IS LOCATED MORE THAN 30 INCHES (762 MM) ABOVE THE FLOOR, ROOF OR GRADE BELOW. THE GUARD SHALL EXTEND NOT LESS THAN 30 INCHES (762 MM) BEYOND EACH END OF SUCH APPLIANCES, EQUIPMENT, FANS, COMPONENTS AND ROOF HATCH OPENINGS AND THE TOP OF THE GUARD SHALL BE LOCATED NOT LESS THAN 42 INCHES (1067 MM) ABOVE THE ELEVATED SURFACE ADJACENT TO THE GUARD. THE GUARD SHALL BE CONSTRUCTED SO AS TO PREVENT THE PASSAGE OF A 21-INCH-DIAMETER (533 MM) SPHERE AND SHALL COMPLY WITH THE LOADING REQUIREMENTS FOR GUARDS SPECIFIED IN THE FLORIDA BUILDING CODE, BUILDING.

REVISIONS

1 04/15/20 ADDENDUM #1



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PROJECT NUMBER:

MTF18144

DME SPORTS HOUSING COMPLEX

OWNER/DEVELOPER: **IME PANANGIO DIRECT MAIL EXPRESS 244 BELLEUE AVENUE, DAYTONA BEACH, FL 32114 (908) 271-3924**
PROJECT LOCATION: **280 BELLEUE AVENUE, DAYTONA BEACH, FL 32114**
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MECHANICAL SPECIFICATIONS

DATE: 05/29/19
SCALE: AS SHOWN

SHT NO. M-10

ARCHITECTS / ENGINEERS SEAL