

MECHANICAL SPECIFICATIONS

GENERAL

- PERFORM WORK IN ACCORDANCE WITH APPLICABLE STATUTES, ORDINANCES, CODES AND REGULATIONS OF GOVERNMENTAL AUTHORITIES HAVING JURISDICTION.
- OBTAIN ALL PERMITS REQUIRED.
- CONTRACT DRAWINGS ARE DIAGRAMMATIC ONLY AND DO NOT GIVE FULLY DIMENSIONED LOCATIONS OF VARIOUS ELEMENTS OF WORK. DETERMINE EXACT LOCATIONS FROM FIELD MEASUREMENTS.
- GUARANTEE WORK FOR 1 YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION OF THE PROJECT. DURING THAT PERIOD MAKE GOOD ANY FAULTS OR IMPROFECTIONS THAT MAY ARISE DUE TO DEFECTS OR OMISSIONS IN MATERIAL, EQUIPMENT OR WORKMANSHIP. AT THE OWNER'S OPTION, REPLACEMENT OF FAILED PARTS OR EQUIPMENT SHALL BE PROVIDED.
- IMMEDIATELY PRIOR TO SUBSTANTIAL COMPLETION OF THE PROJECT, REPLACE AIR FILTERS.
- PROVIDE EQUIPMENT HOUSEKEEPING PADS UNDER ALL FLOOR MOUNTED AND GROUND MOUNTED HVAC EQUIPMENT, AND AS SHOWN ON THE DRAWINGS. CONCRETE PADS ARE TO BE 4" THICK UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
- PROVIDE NAMEPLATES WITH 1/2" HIGH LETTERS AND FASTENED WITH EPOXY OR SCREWS.
- MAINTAIN QUALITY CONTROL OVER SUPERVISION, SUBCONTRACTORS, SUPPLIERS, MANUFACTURERS, PRODUCTS, SERVICES, SITE CONDITIONS AND WORKMANSHIP TO PRODUCE WORK IN ACCORDANCE WITH CONTRACT DOCUMENTS.
- COMPLY WITH INDUSTRY STANDARDS EXCEPT WHEN MORE RESTRICTIVE TOLERANCES OR SPECIFIED REQUIREMENTS INDICATE MORE RIGID STANDARDS OR MORE PRECISE WORKMANSHIP.
- PERFORM WORK BY PERSONS QUALIFIED TO PRODUCE WORKMANSHIP OF SPECIFIED QUALITY.
- SECURE PRODUCTS IN PLACE WITH POSITIVE ANCHORAGE DEVICES DESIGNED AND SIZED TO WITHSTAND STRESSES, VIBRATION, AND RACKING, UNDER NO CONDITIONS SHALL MATERIAL OR EQUIPMENT BE SUSPENDED FROM STRUCTURAL BRIDGING.
- PROVIDE FINISHES TO MATCH APPROVED SAMPLES. ALL EXPOSED FINISHES SHALL BE APPROVED BY THE ARCHITECT. SUBMIT COLOR SAMPLES AS REQUIRED.
- COMPLY WITH INSTRUCTIONS IN FULL DETAIL, INCLUDING EACH STEP IN SEQUENCE. SHOULD INSTRUCTION CONFLICT WITH CONTRACT DOCUMENTS, REQUEST CLARIFICATION FROM ARCHITECT / ENGINEER BEFORE PROCEEDING.

DUCTWORK

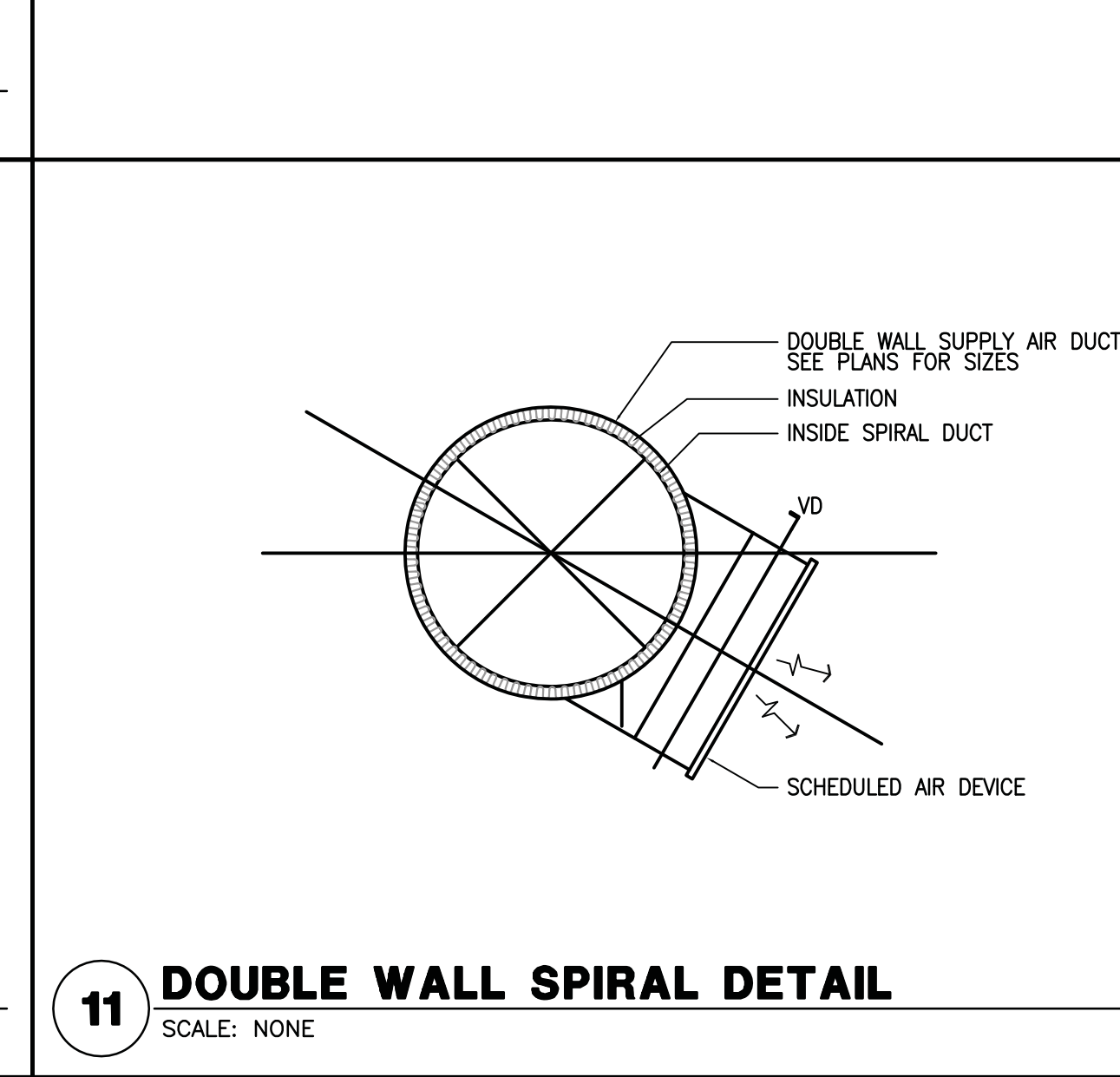
- DUCT MATERIAL AND CONSTRUCTION: USE LOCK FORMING QUALITY PRIME GALVANIZED STEEL SHEETS OR COILS UP TO 60" WIDE. STENCIL EACH SHEET WITH GAUGE AND MANUFACTURER'S NAME. STENCIL COILS OF SHEET STEEL THROUGHOUT ON 10" CENTERS WITH GAUGE AND MANUFACTURER'S NAME. PROVIDE CERTIFICATION OF DUCT GAUGE AND MANUFACTURER FOR EACH SIZE DUCT.
- RECTANGULAR LOW AND MEDIUM PRESSURE DUCT CONSTRUCTED OF SHEET METAL IN ACCORDANCE WITH THE LATEST EDITION OF SMACNA HVAC DUCT CONSTRUCTION STANDARDS.
- LOW PRESSURE ROUND DUCTS SHALL BE SHOP FABRICATED WITH SNAP LOCK LONGITUDINAL SEAMS. DUCTS SHALL BE CONSTRUCTED FOR A MINIMUM OF 2" W.G. STATIC PRESSURE. MEDIUM PRESSURE ROUND DUCTWORK SHALL BE WELDED SPIRAL SEAM SUCH AS MANUFACTURED BY UNITED SHEET METAL COMPANY. SEAMS AND JOINTS OF ALL MEDIUM PRESSURE DUCTWORK SHALL BE CONTINUOUSLY WELDED.
- KITCHEN EXHAUST DUCT: WELDED BLACK STEEL, MINIMUM 16 GAUGE. SHOWER AREA EXHAUST SYSTEMS: WELDED 304 STAINLESS STEEL.
- FLEXIBLE DUCT LOW PRESSURE SHALL BE A CONTINUOUS GALVANIZED SPRING STEEL WIRE HELIX, WITH REINFORCED METALIZED COVER, REINFORCED VAPOR BARRIER JACKET RATED FOR USE AT SYSTEM PRESSURE (6" WC MINIMUM). THERMAL CHARACTERISTICS OF 8-8 BTU/HR/50 FT.²/°F AND 2" WALL THICKNESS INSULATION WITH 1" OVERLAP. ACCEPTABLE MANUFACTURERS: FLEXMASTER, HART & COOLEY, OMNIAIR.
- FLEXIBLE DUCT MEDIUM PRESSURE SHALL BE CONSTRUCTED OF A HEAVY COATED FIBERGLASS CLOTH FABRIC SUPPORTED BY HELICAL WOUND GALVANIZED STEEL. THE INTERNAL WORKING PRESSURE RATING SHALL BE AT LEAST AS FOLLOWS WITH A BURSTING PRESSURE OF AT LEAST TWO TIMES THE WORKING PRESSURE: POSITIVE: 12" W.G., NEGATIVE: 5" W.G. THE DUCT SHALL BE RATED FOR A VELOCITY OF AT LEAST 5500 FPM. FACTORY INSULATE THE FLEXIBLE DUCT WITH FIBERGLASS INSULATION. THE R-WALVE SHALL BE AT LEAST 8-8 AT A MEAN TEMPERATURE OF 75 DEGREES Fahrenheit. ACCEPTABLE MANUFACTURERS: FLEXMASTER, OMNIAIR.
- DUCT LINING SHALL BE 1" THICK, 1 1/2 LB. DENSITY, FLEXIBLE LINING COATED ON THE AIR STREAM SIDE TO REDUCE ATTRITION. LINER SHALL BE SCHULER UMA-COUSTIC, CERTAIN TED ULTRAITE, OR EQUAL MEETING REQUIREMENTS OF NFPA 90A PROVIDE I.A.Q. RATED LINER.
- FIRE DAMPERS: FIRE DAMPERS FOR REQUIRED WALL RATINGS THAT ARE 95% MINIMUM FREE AREA. PROVIDE TYPE B OR TYPE C UL DAMPERS FOR LOW, MEDIUM AND HIGH-PRESSURE. RECTANGULAR, SQUARE OR ROUND DUCTS. DAMPERS SHALL BE ACTIVATED BY A FUSIBLE LINK DESIGNED TO REACT AT 165°F. INSTALL PER MANUFACTURER'S RECOMMENDATIONS TO PROVIDE A UL ASSEMBLY. PROVIDE SEALED SLEEVE TO MEET DESIRED LEAKAGE PERFORMANCE.
- WALL LOUVERS: REFER TO SCHEDULE ON DRAWINGS. COORDINATE WITH ARCHITECTURAL DRAWINGS. ALL LOWER FRAMES SHALL BE A MINIMUM OF 0.08" EXTRUDED ALUMINUM. ALL BLADES SHALL BE A MINIMUM OF 0.081" EXTRUDED ALUMINUM. BEGINNING POINT OF WATER PENETRATION AT 0.01 OZ/50.FT. SHALL BE A MINIMUM OF 800 FT²/MIN. PROVIDE ALL LOUVERS WITH REMOVABLE ALUMINUM BIRD SCREEN WITH 1/4" MESH.
- VOLUME DAMPERS: MANUAL BALANCING DAMPERS THAT MEET OR EXCEED THE FOLLOWING MINIMUM CONSTRUCTION STANDARDS: FRAME 16-GAUGE, BLADES 16-GAUGE, BEARINGS CORROSION RESISTANT, OPPOSED BLADE DAMPERS.
- INSTALLATION: USE CONSTRUCTION METHODS AND REQUIREMENTS AS OUTLINED IN SMACNA HVAC DUCT CONSTRUCTION STANDARDS AS WELL AS SMACNA BALANCING AND ADJUSTING PUBLICATIONS, UNLESS INDICATED OTHERWISE IN THE SPECIFICATIONS. REFER TO DETAILS ON THE DRAWINGS FOR ADDITIONAL INFORMATION. RENFORCE DUCTS IN ACCORDANCE WITH RECOMMENDED CONSTRUCTION PRACTICE OF SMACNA. PROVIDE ADDITIONAL REINFORCEMENT OF LARGE PLENUMS AS REQUIRED TO PREVENT EXCESSIVE FLEXION AND OR VIBRATION.

SMOKE DETECTORS

- ACCEPTABLE MANUFACTURERS: AUTOCALL, SIMPLEX, SIEMENS, NOTIFIER, GAMEWELL, PYROTRONICS.
- THE UNIT SHALL CONSIST OF A CLEAR MOLDED PLASTIC ENCLOSURE (OR REMOTE MOUNTED LED STATUS INDICATOR SHALL BE PROVIDED NEXT TO THE SMOKE DETECTOR) WITH INTEGRAL CONDUIT KNOCKOUTS TO PROVIDE VISUAL VIEWING OF DETECTOR/SENSOR FOR MONITORING SENSOR OPERATION AND CHAMBER CONDITION. THE DUCT HOUSING SHALL BE PROVIDED WITH GASKET SEALS TO INSURE PROPER SEATING OF THE HOUSING TO THE ASSOCIATED DUCTWORK. EACH UNIT'S SAMPLING TUBES SHALL EXTEND THE WIDTH OF THE DUCT AND BE PROVIDED WITH POROSITY FILTERS TO REDUCE SENSOR/CHAMBER CONTAMINATION.
- COMPLY WITH NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) SECTIONS NFPA 72, NFPA 90A, NFPA 101
- TO MINIMIZE NUISANCE ALARMS, DETECTORS SHALL HAVE AN INSECT SCREEN AND BE DESIGN TO IGNORE INVISIBLE AIRBORNE PARTICLES OR SMOKE DENSITIES THAT ARE BELOW THE FACTORY SET ALARM POINT. NO RADIOACTIVE MATERIAL SHALL BE USED. THE DETECTOR HEAD SHALL BE DIRECTLY INTERCHANGEABLE WITH AN IONIZATION DETECTOR TYPE.
- INSTALL AS PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE ALL NECESSARY WIRING, POWER AND OTHER DEVICES FOR INSTALLATION. INTERLOCK THE SMOKE DETECTOR WITH THE RELATED AIR HANDLING EQUIPMENT TO PROVIDE AUTOMATIC SHUT-DOWN OF THE SYSTEM WHENEVER PRODUCTS OF COMBUSTION ARE DETECTED.

SMOKE DETECTORS

- ACCEPTABLE MANUFACTURERS: AUTOCALL, SIMPLEX, SIEMENS, NOTIFIER, GAMEWELL, PYROTRONICS.
- THE UNIT SHALL CONSIST OF A CLEAR MOLDED PLASTIC ENCLOSURE (OR REMOTE MOUNTED LED STATUS INDICATOR SHALL BE PROVIDED NEXT TO THE SMOKE DETECTOR) WITH INTEGRAL CONDUIT KNOCKOUTS TO PROVIDE VISUAL VIEWING OF DETECTOR/SENSOR FOR MONITORING SENSOR OPERATION AND CHAMBER CONDITION. THE DUCT HOUSING SHALL BE PROVIDED WITH GASKET SEALS TO INSURE PROPER SEATING OF THE HOUSING TO THE ASSOCIATED DUCTWORK. EACH UNIT'S SAMPLING TUBES SHALL EXTEND THE WIDTH OF THE DUCT AND BE PROVIDED WITH POROSITY FILTERS TO REDUCE SENSOR/CHAMBER CONTAMINATION.
- COMPLY WITH NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) SECTIONS NFPA 72, NFPA 90A, NFPA 101
- TO MINIMIZE NUISANCE ALARMS, DETECTORS SHALL HAVE AN INSECT SCREEN AND BE DESIGN TO IGNORE INVISIBLE AIRBORNE PARTICLES OR SMOKE DENSITIES THAT ARE BELOW THE FACTORY SET ALARM POINT. NO RADIOACTIVE MATERIAL SHALL BE USED. THE DETECTOR HEAD SHALL BE DIRECTLY INTERCHANGEABLE WITH AN IONIZATION DETECTOR TYPE.
- INSTALL AS PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE ALL NECESSARY WIRING, POWER AND OTHER DEVICES FOR INSTALLATION. INTERLOCK THE SMOKE DETECTOR WITH THE RELATED AIR HANDLING EQUIPMENT TO PROVIDE AUTOMATIC SHUT-DOWN OF THE SYSTEM WHENEVER PRODUCTS OF COMBUSTION ARE DETECTED.



SINGLE PACKAGE ROOFTOP AIR CONDITIONERS

- PROVIDE AND INSTALL A SINGLE-PACKAGE, SINGLE-ZONE, ELECTRIC AIR CONDITIONER WITH ELECTRIC HEAT FOR ROOFTOP APPLICATION.
- PERFORMANCE: AS SCHEDULED ON DRAWINGS, WITH HEAD PRESSURE CONTROL TO ENABLE UNIT START AND OPERATE DOWN TO 2 DEGREES F AMBIENT.
- ACCEPTABLE MANUFACTURERS: CARRIER, YORK, TRANE, LENNOX
- COMPRESSOR: PROVIDE A THERMALLY PROTECTED, SERVICEABLE SEMI-HERMETIC COMPRESSOR OR HERMETIC COMPRESSOR WITH SERVICE VALVES, VIBRATION ISOLATION, ORANGE HEATERS, SLIGHT GLASS AND FILTER DRIER. PROVIDE WITH A 5-YEAR WARRANTY.
- EVAPORATOR AND CONDENSER COILS: PROVIDE COPPER TUBES WITH MECHANICALLY BONDED ALUMINUM FINS FOR EVAPORATOR AND CONDENSER COILS. PROVIDE HALL GUARDS FOR CONDENSER COILS.
- ROOF CURB: INSTALL A ROOF CURB OF THE SAME MANUFACTURE AS THE AIR CONDITIONING UNIT. CURB TO SUPPORT THE UNIT AND PROVIDE A WATER/TIGHT ENCLOSURE TO PROTECT DUCTWORK AND UTILITY SERVICES. USE A DESIGN COMPLYING WITH NATIONAL ROOFING CONTRACTORS ASSOCIATION REQUIREMENTS. LEVEL CURB ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
- THERMOSTAT ASSEMBLY: PROVIDE STAGED 7-DAY PROGRAMMABLE HEATING AND COOLING AS REQUIRED, AUTOMATIC CHANGEOVER AND FAN CONTROL.
- HEAD PRESSURE CONTROL: PROVIDE SOLID STATE OUTDOOR AIR FAN SPEED CONTROL TO PERMIT UNIT TO OPERATE DOWN TO -20°F.
- SHORT CYCLE CIRCUIT: PROVIDE CIRCUIT TO PREVENT COMPRESSOR FROM SHORT CYCLING AS A RESULT OF A RAPID CHANGE IN THERMOSTAT SETTING. CIRCUIT ALSO PREVENTS COMPRESSOR RESTART AT LEAST 5 MINUTES AFTER SHUTDOWN.
- CONVENIENCE OUTLET: PROVIDE 115V OUTLET IN UNIT CABINET.
- CONTROL WIRING: FURNISH AND INSTALL CONTROL WIRING AS REQUIRED. INSTALL CONTROL WIRING IN CONDUIT.

CONDENSATE PIPING

- TYPE "L" COPPER WITH DRAINAGE PATTERN FITTINGS IN RETURN PLENUM AREAS, PVC WITH DRAINAGE PATTERN FITTINGS IN NON-PLENUM AREAS.
- INSTALL THE SYSTEM TO FACILITATE EASY REMOVAL. USE THREADED PLUGGED TEE AT EACH CHANGE OF DIRECTION TO PERMIT CLEANING. INSTALL A CLEANOUT EVERY 50 FEET OF STRAIGHT RUN PIPING, MAINTAIN A POSITIVE SLOPE ON ALL PIPING
- INSTALL A WATER SEAL TRAP LEG BASED ON THE FAN PRESSURE. SIZE THE LENGTH OF THE TRAP LEG 1 INCH LARGER THAN THE ACTUAL SYSTEM PRESSURE.
- DO NOT INSTALL PIPING SIZE SMALLER THAN THE UNIT DRAIN CONNECTION SIZE.
- INSULATE PIPING WITH 3/4" ELASTOMERIC INSULATION FOR ALL PIPE BELOW ROOF. INSULATION TO BE 25/50 FLAME AND SMOKE RATING.

FANS

- PROVIDE FAN TYPE, ARRANGEMENT, ROTATION, CAPACITY, SIZE, MOTOR HORSEPOWER AND MOTOR VOLTAGE AS SHOWN. FAN CAPACITIES AND CHARACTERISTICS ARE SCHEDULED ON THE DRAWINGS. PROVIDE FANS CAPABLE OF ACCOMMODATING STATIC PRESSURE VARIATIONS OF +10% OF SCHEDULED DESIGN AT THE DESIGN AIR FLOW.
- ACCEPTABLE MANUFACTURERS: COOK, GREENHECK, PENN VALVE, ACME, SAFES
- SAFETY DISCONNECT SWITCH: PROVIDE A FACTORY-WIRED TO MOTOR, SAFETY DISCONNECT SWITCH ON EACH UNIT.
- PREFABRICATED ROOF CURBS: FURNISH PREFABRICATED ROOF CURBS AS DETAILED. THE MINIMUM HEIGHT IS 14" INCLUDE A RESILIENT PAD ON EACH ROOF CURB SO THE EQUIPMENT CAN BE MOUNTED ON THE TOP FLANGE FOR PROPER SEAL. COORDINATE ROOF SLOPE AND CURB TO ENSURE EQUIPMENT IS INSTALLED IN LEVEL POSITION. PROVIDE DOUBLE SHELL TO PROTECT INSULATION FROM DAMAGE.
- DAMPERS: WHERE AUTOMATIC BACKDRAFT DAMPER IS SCHEDULED: MULTI-BLADED, ROLL FORMED ALUMINUM BLADES, NYLON BEARINGS, NEOPRENE EXTENSION STRIP ON BLADE EDGE.
- KITCHEN HOOD EXHAUST: FANS WITH VENTED CURB WEATHER THAT MEETS NFPA 96, CLEANOUT PORT, GREASE TAP, CURB SEAL, DRAIN CONNECTION AND HINGE KIT.
- FURNISH SUPPLY FANS WITH 1" ALUMINUM, WASHABLE FILTER SECTION.
- ROOFTOP VENTILATION AND EXHAUST SYSTEMS: PROVIDE EACH MOTOR WITH INTERNAL OVERLOAD PROTECTION, ALUMINUM, STAINLESS STEEL OR PLASTIC COATED BIRD GUARD, SCREWS AND FASTENERS OF STAINLESS STEEL OR NONFERROUS MATERIAL. ALL ALUMINUM CONSTRUCTION UNLESS INDICATED OTHERWISE ON FAN SCHEDULE. WELDED CONSTRUCTION. CORROSION RESISTANT FASTENERS, MINIMUM 16 GAUGE MARINE ALLOY ALUMINUM. ALUMINUM BASE SHALL BE CONTINUOUSLY WELDED CURB CAP CORNERS.

DUCTWORK INSULATION

- FURNISH AND INSTALL EXTERNAL INSULATION ON SUPPLY, RETURN, EXHAUST AND FRESH AIR DUCTWORK.
- ALL DUCT INSULATION USED ON THE PROJECT INSIDE THE BUILDING MUST HAVE A FLAME SPREAD RATING NOT EXCEEDING 25 AND A SMOKE DEVELOPED RATING NOT EXCEEDING 50 AS DETERMINED BY TEST PROCEDURES ASTM E84, NFPA 255 AND UL 723.
- CONDENSATION ON ANY INSULATED SYSTEM IS NOT APPROVED.
- WHERE EXISTING INSULATED DUCTWORK OR OTHER SERVICES ARE TAPPED, REMOVE EXISTING INSULATION BACK TO UNDAAGED SECTIONS AND REPLACE WITH NEW INSULATION OF THE SAME TYPE AND THICKNESS AS EXISTING INSULATION.
- INSULATION: GLASS FIBER BLANKET DUCT INSULATION. ACCEPTABLE MANUFACTURERS ARE: MANVILLE R-SERIES MICROLITE FSKL, OWENS-CORNING ED100 RRF, KNAUF 1.0 PCF FSK.
- FIREBARD INSULATION: TOTALLY ENCAPSULATED WITH FOIL FACING, TWO HOUR RATED FIRE PROTECTION, ZERO CLEARANCE TO COMBUSTIBLE PROTECTION. ACCEPTABLE MANUFACTURERS ARE: PARTAK INSULATION, INC., PAROC FIREBOARD, THERMAL CERAMICS FIREMASTER 3M, PRIMER REFRACTORIES INTERNATIONAL, PYROSCAT.
- REINFORCED FOIL TAPE: ACCEPTABLE MANUFACTURERS ARE: VENTURE 1525CW, 3" FSK.
- KITCHEN GREASE EXHAUST DUCTWORK / KILN DUCTWORK / FLUME HOOD DUCT: SECURE FIREBARD INSULATION TO DUCT WITH IMPALING PINS AND 3" SQUARE SPEED CLIPS. IN ADDITION, PROVIDE A WIRE MESH SUPPORT SYSTEM AND ADDITIONAL SEALING OR SUPPORT AS REQUIRED BY THE CODE ENFORCING AUTHORITY. THE INSULATION SUPPORT SYSTEM SHALL INCLUDE FRAMED ACCESS TO ALLOW THE INSULATION TO BE REMOVED AND REPLACED WITHOUT DAMAGE AT THE ACCESS DOORS IN THE DUCT SYSTEM FOR INSPECTION AND CLEANING. COORDINATE LOCATION OF ACCESS OPENINGS TO CORRESPOND ACCURATELY. PROVIDE STAINLESS STEEL BANDING ON 12" CENTERS.

AIR FILTERS

- AIR FILTERS: FURNISH AND INSTALL A DISPOSAL MEDIA AND FRAME FILTER WITH RESISTANCE TO AIR FLOW OF A CLEAN FILTER NOT TO EXCEED 0.12" WG AT 300 FPM.
- INSTALL THE FILTERS AND FILTER GAUGES IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

TESTING, BALANCING AND ADJUSTING

- SECTION INCLUDES BALANCE, ADJUST AND TEST THE AIR DISTRIBUTION SYSTEM INCLUDING THE EXHAUST SYSTEM. BALANCE, ADJUST AND TEST RELATED HYDRONIC SYSTEM.
- TAB TOLERANCES: THE WATER, OUTSIDE AIR, SUPPLY AIR, RETURN AIR, AND EXHAUST AIR FOR EACH SYSTEM SHALL BE ADJUSTED TO WITHIN +/- 5% OF THE VALUE SCHEDULED ON THE DRAWINGS.
- TESTING THE SYSTEM: THE TAB AGENCY SHALL VERIFY THAT ALL DUCTWORK, DAMPERS, GRILLES, REGISTERS, AND DIFFUSERS HAVE BEEN INSTALLED PER DESIGN.
 - SUPPLY FANS:
 - FAN SPEEDS: TEST AND ADJUST FAN RPM TO ACHIEVE DESIGN CFM REQUIREMENTS.
 - CURRENT AND VOLTAGE: TEST AND RECORD MOTOR VOLTAGE AND AMPERAGE, AND COMPARE DATA WITH THE NAMEPLATE LIMITS TO ENSURE FAN MOTOR IS NOT IN OR ABOVE THE SERVICE FACTOR.
 - PITOT-TUBE TRAVERSE: PERFORM A PITOT-TUBE TRAVERSE OF THE MAIN SUPPLY AND RETURN DUCTS, AS APPLICABLE, TO OBTAIN TOTAL CFM. MEASUREMENTS MUST BE RECORDED WITH AN INCLINED MANOMETER OR AN INCLINED VERTICAL MANOMETER.
 - OUTSIDE AIR: TEST AND ADJUST THE OUTSIDE AIR ON APPLICABLE EQUIPMENT USING A PITOT-TUBE TRAVERSE.
 - STATIC PRESSURE: TEST AND RECORD SYSTEM STATIC PRESSURE, INCLUDING THE STATIC PRESSURE PROFILE OF EACH SUPPLY FAN.
- ALL OTHER FANS:
 - FAN SPEEDS: TEST AND ADJUST FAN RPM TO ACHIEVE DESIGN CFM REQUIREMENTS.
 - CURRENT AND VOLTAGE: TEST AND RECORD MOTOR VOLTAGE AND AMPERAGE, AND COMPARE DATA WITH THE NAMEPLATE LIMITS TO ENSURE FAN MOTOR IS NOT IN OR ABOVE THE SERVICE FACTOR.
- PITOT-TUBE TRAVERSE: PERFORM A PITOT-TUBE TRAVERSE OF THE MAIN RETURN DUCTS, AS APPLICABLE, TO OBTAIN TOTAL CFM. MEASUREMENTS MUST BE RECORDED WITH AN INCLINED MANOMETER OR AN INCLINED VERTICAL MANOMETER.
- STATIC PRESSURE: TEST AND RECORD SYSTEM STATIC PRESSURE, INCLUDING THE STATIC PRESSURE PROFILE OF EACH RETURN FAN.

- COILS (INCLUDING ELECTRIC COILS):
 - AIR TEMPERATURE: ONCE AIR FLOWS ARE SET TO ACCEPTABLE LIMITS, TAKE WET BULB (COOLING COIL ONLY) AND DRY BULB AIR TEMPERATURES ON EACH COIL. CALCULATE THE SENSIBLE AND LATENT (COOLING COIL ONLY) CAPACITY OF THE COIL.
 - HYDRONIC COILS:
 - TOLERANCES: TEST, ADJUST, AND BALANCE WATER COILS WITHIN 5% OF DESIGN FLOW REQUIREMENTS.
 - VERIFICATION: VERIFY THE TYPE, LOCATION, FINAL PRESSURE DROP AND WATER QUANTITY (GPM) OF EACH COIL. CALCULATE THE ACTUAL CAPACITY OF ALL COILS.
- REVIEW THE RETURN AIR PATH FOR EACH AREA SERVED BY AIR HANDLING UNITS TO ENSURE A CORRECT OPERATING SYSTEM.
- EQUIPMENT POWER READINGS (RECORD THE FOLLOWING INFORMATION FOR EACH MOTOR)
 - EQUIPMENT DESIGNATION.
 - MANUFACTURER.
 - UNIT MODEL NUMBER AND SERIAL NUMBER AND FRAME.
 - MOTOR NAMEPLATE HORSEPOWER, NAMEPLATE VOLTAGE, PHASE AND FULL LOAD AMPERES.
 - HEATER COIL IN STARTER.
 - RATING IN AMPERES.
 - MANUFACTURER'S RECOMMENDATION.
 - MOTOR RPM/DRIVEN EQUIPMENT RPM.
 - POWER READING (VOLTAGE, AMPERES OF ALL LEGS AT MOTOR TERMINALS).
- DIRECT EXPANSION EQUIPMENT (WITH EACH UNIT OPERATING AT NEAR DESIGN CONDITIONS, MEASURE AND RECORD THE FOLLOWING)
 - MANUFACTURER, MODEL NUMBER, SERIAL NUMBER AND ALL NAMEPLATE DATA.
 - AMBIENT TEMPERATURE, CONDENSER DISCHARGE TEMPERATURE.
 - AMPERAGE AND VOLTAGE FOR EACH PHASE.
 - LEAVING AND ENTERING AIR TEMPERATURES.
 - SUCTION AND DISCHARGE PRESSURES AND TEMPERATURES.
 - TONS OF COOLING.
- TAB REPORT

- THE ACTIVITIES DESCRIBED IN THIS SPECIFICATION SHALL BE RECORDED IN A REPORT FORM, NEATLY TYPED AND ARRANGE DATA, INCLUDE WITH THE DATA THE DATE TESTED, PERSONNEL PRESENT, WEATHER CONDITIONS, NAMEPLATE RECORD OF THE TEST INSTRUMENTS USED AND LIST ALL MEASUREMENTS TAKEN AFTER ALL CORRECTIONS ARE MADE TO THE SYSTEM. PROVIDE A "PREFACE" WHICH SHALL INCLUDE A GENERAL DISCUSSION OF THE SYSTEM AND ANY ABNORMALITIES OR PROBLEMS ENCOUNTERED. SUBMIT PDF ELECTRONIC COPY TO THE ARCHITECT AND ENGINEER.
- ALL MEASUREMENTS AND RECORDED READINGS OF AIR, WATER, ELECTRICITY, ETC.) THAT APPEARED IN THE REPORT MUST HAVE BEEN RECORDED ON SITE BY THE PERMANENTLY EMPLOYED TECHNICIANS OR ENGINEERS OF THE TAB FIRM.
- SUBMIT REPORTS ON FORMS APPROVED BY THE ENGINEER THAT WILL INCLUDE THE FOLLOWING DATA AS A MINIMUM: PROJECT TITLE PAGE; COMPANY NAME, COMPANY ADDRESS, COMPANY TELEPHONE NUMBER, PROJECT NAME, PROJECT LOCATION, PROJECT MANAGER, PROJECT ENGINEER, PROJECT CONTRACTOR, SUMMARY OF THE TAB REPORT DATA, INDEX
- FAN DATA: LOCATION, MANUFACTURER, MODEL, AIR FLOW, SPECIFIED AND ACTUAL, TOTAL STATIC PRESSURE (TOTAL EXTERNAL) SPECIFIED AND ACTUAL, INLET PRESSURE, DISCHARGE PRESSURE, FAN RPM
- RETURN AIR/OUTSIDE AIR DATA: IDENTIFICATION/LOCATION, DESIGN RETURN AIRFLOW, ACTUAL RETURN AIRFLOW, DESIGN OUTSIDE AIRFLOW, ACTUAL OUTSIDE AIRFLOW, RETURN AIR TEMPERATURE, OUTSIDE AIR TEMPERATURE, REQUIRED MIXED AIR TEMPERATURE, ACTUAL MIXED AIR TEMPERATURE
- ELECTRIC MOTORS: MANUFACTURER, HP/PH, PHASE, VOLTAGE, AMPERAGE, NAMEPLATE, ACTUAL, RPM, SERVICE FACTOR, STARTER SIZE, HEATER ELEMENTS, RATING
- V-BELT DRIVE: IDENTIFICATION/LOCATION, REQUIRED DRIVEN RPM, DRIVE SHEAVE, DAMPER AND RPM, BELT, SIZE AND QUANTITY, MOTOR SHEAVE, DAMPER AND RPM, CENTER-TO-CENTER DISTANCE, MAXIMUM, MINIMUM AND ACTUAL.
- DUCT TRAVERSE: SYSTEM ZONE/BRANCH, DUCT SIZE, AREA, DESIGN VELOCITY, DESIGN AIRFLOW, TEST VELOCITY, TEST AIRFLOW, DUCT STATIC PRESSURE, AIR CORRECTION FACTOR.
- COIL DATA: IDENTIFICATION/NUMBER, LOCATION, SERVICE, MANUFACTURER, ENTERING AIR DB TEMPERATURE, DESIGN AND ACTUAL, LEAVING AIR DB TEMPERATURE, DESIGN AND ACTUAL, WATER PRESSURE FLOW, DESIGN AND ACTUAL, WATER PRESSURE DROP, DESIGN AND ACTUAL, ENTERING WATER TEMPERATURE, DESIGN AND ACTUAL, LEAVING WATER TEMPERATURE, DESIGN AND ACTUAL, AIR PRESSURE DROP, DESIGN AND ACTUAL, CAPACITY
- ELECTRIC COIL DATA: IDENTIFICATION/NUMBER, LOCATION, SERVICE, MANUFACTURER, ENTERING AIR DB TEMPERATURE, DESIGN AND ACTUAL, LEAVING AIR DB TEMPERATURE, DESIGN AND ACTUAL, ELECTRICAL CHARACTERISTICS, CAPACITY

AIR DEVICES

- FURNISH AND INSTALL AIR DISTRIBUTION DEVICES, INCLUDING GRILLES, DIFFUSERS, REGISTERS, DAMPERS, AND EXTRACTORS.
- ACCEPTABLE MANUFACTURERS: TUTTLE AND BAILEY, TITUS, KRUEGER, METAL-ARE, NALOR INDUSTRIES, PRICE.

NOTE:
HVAC SYSTEM MUST BE SERVICED AND FILTERS REPLACED BY A CERTIFIED TECHNICIAN NO MORE THAN ONE (1) DAY PRIOR TO DELIVERY OF THE PREMISES TO TENANT TO ENSURE THE SYSTEM IS IN PROPER WORKING ORDER. DOCUMENTS EVIDENCING SUCH SERVICE TO BE PROVIDED TO TENANT UPON DELIVERY OF THE PREMISES.

DATE: 1/20/2015
PROJECT NO.: 08-13-06
DRAWN BY: GH

WINDLE + VOLPE ARCHITECTS
7650 98th FLD, SUITE 200 HOUSTON, TEXAS 77065
PH: 713-951-1990
HOUSTON, TEXAS 77065

SHOE DEPT. ENCORE CROSSROADS MALL GREENVILLE, TEXAS
GREENVILLE PROPERTIES LTD. GREENVILLE, TEXAS

1/20/15

MECHANICAL DETAILS
M3.01

30 OF 16
COPYRIGHT © 2013 WINDLE + VOLPE Architects