

SPECIFICATIONS

APPLICABLE CODES:

INTERNATIONAL FIRE CODE (IFC), 2012 EDITION
2014 IFC GA AMENDMENTS
INTERNATIONAL PLUMBING CODE (IPC), 2012 EDITION
2014 & 2015 IPC GA AMENDMENTS
INTERNATIONAL MECHANICAL CODE (IMC), 2012 EDITION
2014 & 2015 IMC GA AMENDMENTS
INTERNATIONAL FUEL GAS CODE (IFGC), 2012 EDITION
2014 & 2015 IFGC GA AMENDMENTS
INTERNATIONAL ENERGY CONSERVATION CODE (IECC), 2009 EDITION
2011 SUPPLEMENTS AND AMENDMENTS
2012 SUPPLEMENTS AND AMENDMENTS

EXISTING CONDITIONS:

CONTRACTOR SHALL VISIT THE SITE AND UNDERSTAND JOB CONDITIONS BEFORE SUBMITTING A PROPOSAL. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY LOCATIONS AND SIZES OF ALL EXISTING UTILITY SERVICES PRIOR TO SUBMITTING HIS PROPOSAL. NO CONSIDERATION WILL BE GIVEN TO CLAIMS FOR EXTRA COST ARISING FROM CONTRACTOR'S FAILURE TO BE FULLY COGNIZANT OF JOB OR SITE CONDITIONS EXISTING AT TIME OF ACCEPTANCE OF BID.

ACTIVE SERVICES: WHEN ENCOUNTERED IN WORK, PROTECT, BRACE, SUPPORT EXISTING ACTIVE SEWERS, GAS AND OTHER SERVICES REQUIRED FOR PROPER EXECUTION OF WORK. IF EXISTING ACTIVE SERVICES ARE ENCOUNTERED THAT REQUIRE RELOCATION, RELOCATE AS APPROVED. DO NOT PREVENT OR DISTURB OPERATION OF ACTIVE SERVICES THAT ARE TO REMAIN.

INACTIVE SERVICES: WHEN ENCOUNTERED IN WORK, REMOVE, CAP OR PLUG INACTIVE SERVICES, AS INDICATED.

INTERRUPTION OF SERVICES: WHERE WORK MAY BE TEMPORARY SHUT-DOWNS OF SERVICES UNAVOIDABLE, SHUT DOWN AT NIGHT, OR AT SUCH TIMES AS APPROVED BY OWNER, WHICH WILL CAUSE LEAST INTERFERENCE WITH ESTABLISHED OPERATING ROUTINE. ARRANGE WORK TO ASSURE THAT SERVICES WILL BE SHUT DOWN ONLY DURING TIME ACTUALLY REQUIRED TO MAKE NECESSARY CONNECTION TO EXISTING WORK.

WHERE EXISTING WALLS, CEILINGS, FLOORS, ETC., ARE CUT OR OTHERWISE DAMAGED DURING CONSTRUCTION, REPAIR ALL SURFACES TO THEIR ORIGINAL CONDITION.

SHOP DRAWINGS:

SUBMIT SHOP DRAWINGS FOR REVIEW. PDF FILES PREFERRED. SHOP DRAWINGS SHALL BE BOUND INTO VOLUMES (IFES), WITH EACH VOLUME (IFES) CONTAINING ONE COPY OF ALL SHOP DRAWINGS. ALL SHOP DRAWINGS SHALL BE SUBMITTED SIMULTANEOUSLY. NO SHOP DRAWINGS WILL BE CHECKED UNTIL ALL HAVE BEEN SUBMITTED.

SUBMITTALS SHALL BE SUPPORTED BY DESCRIPTIVE MATERIAL, SUCH AS CATALOG CUTS, DIAGRAMS, PERFORMANCE CURVES AND CHARTS PUBLISHED BY THE MANUFACTURER, TO SHOW CONFORMANCE TO SPECIFICATION AND DRAWING REQUIREMENTS. MODEL NUMBERS ALONE WILL NOT BE ACCEPTABLE. ALL LITERATURE SHALL CLEARLY INDICATE THE SPECIFIED MODEL NUMBER, DIMENSIONS, APPROPRIATE RATING AND CHARACTERISTICS OF THE PROPOSED EQUIPMENT. CAPACITIES AND RATINGS SHALL BE BASED ON CONDITIONS INDICATED OR SPECIFIED HEREIN. ANY DEVIATIONS FROM SPECIFIED EQUIPMENT (PARTICULARLY THOSE WHICH REQUIRE COORDINATION WITH OTHER TRADES) SHALL BE CLEARLY NOTED IN A CONCISE LIST ON A SEPARATE SHEET.

TEST AND BALANCE:

THE CONTRACTOR SHALL RETAIN THE SERVICES OF AN INDEPENDENT TEST AND BALANCE AGENCY THAT IS INDEPENDENT OF ANY CONTRACTOR, SUB CONTRACTOR, OR MANUFACTURER TO PERFORM THE TESTING AND BALANCING AND PREPARE REPORTS TO THE GENERAL CONTRACTOR. THE INDEPENDENT TEST AND BALANCE AGENCY SHALL BE A CERTIFIED MEMBER OF THE ASSOCIATED AIR BALANCE COUNCIL OR THE NATIONAL ENVIRONMENTAL BALANCING BUREAU.

TEST AND BALANCE SHALL ALSO PROVIDE QUOTE TO PERFORM BALANCING FOR COMFORT SIX MONTHS AFTER THE SPACE IS OCCUPIED.

GUARANTEE:

GUARANTEE THAT EACH PIECE OF APPARATUS SHALL BE OF THE CUSTOMARY STANDARD AND QUALITY FURNISHED BY THE DESIGNED MANUFACTURER FOR THAT CATALOG NUMBER.

GUARANTEE THAT THE AIR SYSTEMS SHALL OPERATE WITHOUT AERODYNAMIC NOISE GENERATED FROM THE FACILITY INSTALLATION OF DUCT WORK OR ANY COMPONENT OF THE AIR DISTRIBUTION SYSTEM.

GUARANTEE THAT ALL SYSTEMS AND COMPONENTS SHALL BE PROVIDED WITH A ONE YEAR WARRANTY FROM THE TIME OF DATE OF SUBSTANTIAL COMPLETION. THE WARRANTY SHALL COVER ALL MATERIALS AND WORKMANSHIP. DURING THIS WARRANTY PERIOD, ALL DEFECTS IN MATERIALS AND WORKMANSHIP SHALL BE CORRECTED BY REPAIR OR REPLACEMENT WITHOUT INCURRING ADDITIONS TO THE CONTRACT.

GENERAL NOTES:

REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATION OF ALL CEILING MOUNTED EQUIPMENT.

ALL DUCT DIMENSIONS INDICATED IN THESE DOCUMENTS ARE INSIDE CLEAR DIMENSIONS.

PORTIONS OF DUCTWORK OR PIPING VISIBLE THROUGH GRILLES AND REGISTERS IN FINISHED AREAS SHALL BE PAINTED FLAT BLACK, PAINT BACK BEHIND ALL GRILLES.

ALL WIRING IN THE CEILING PLENUM SHALL BE PLENUM RATED CABLE.

MOUNTING FRAME OF CEILING MOUNTED AIR DISTRIBUTION DEVICES SHALL BE COMPATIBLE WITH CEILING TYPE. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING.

ALL FIRE SEPARATIONS MUST BE PROTECTED WHEN APPLICABLE.

PROVIDE NEW FILTERS (MERV 7 OR BETTER PER OWNER) FOR ALL APPLICABLE HVAC EQUIPMENT AT THE END OF CONSTRUCTION.

ALL MATERIAL IN PLENUM MUST MEET FIRE AND SMOKE SPREAD AS REQUIRED BY NFPA 90A.

ALL ROOF PENETRATIONS TO BE 12" AFFIDED AT LEAST 12" AWAY FROM CURBS, WALLS, AND DRAIN SURFACES TO PROVIDE SLOPING TO CONTRACTOR WITH SUFFICIENT ACCESS FOR FLASHING AND ROOF PENETRATION.

SUBSTITUTIONS MUST BE APPROVED IN WRITING BY ARCHITECT PRIOR TO BID SUBMISSION.

CONTRACTOR SHALL REVIEW ALL CONTRACT DOCUMENTS AND SHALL BE FAMILIAR WITH THE SCOPE AND REQUIREMENTS OF THE PROJECT. ANY DISCREPANCIES OR LACK OF CLARITY IN THE DOCUMENTS SHALL BE IDENTIFIED WITH THE ARCHITECT OR ENGINEER PRIOR TO THE SUBMITTAL OF PROPOSAL. WITH A SUBMITTED BID, CONTRACTOR IS ACCEPTING THESE ELEMENTS AS SUFFICIENT DEFINITION OF THE SCOPE OF WORK, AND ANY ADDITIONAL ITEMS BASED ON OMISSIONS OF CONTRACT DOCUMENTS WILL NOT BE CONSIDERED.

THE CONTRACTOR SHALL REFERENCE THE FULL SET OF CONSTRUCTION DOCUMENTS DURING FIELD AND CONSTRUCTION FOR COORDINATION BETWEEN DISCIPLINES RELATIVE TO THE MECHANICAL SCOPE.

SPECIFICATIONS

DIFFUSERS, GRILLES, & REGISTERS:

EGGCRATE GRILLE:

RETURN GRILLES SHALL BE TITUS MODEL 50F FOR THE SIZES AND MOUNTING TYPES AS SHOWN ON THE PLANS AND OUTLET SCHEDULE. RETURN GRILLES MUST PROVIDE A FREE AREA OF AT LEAST 90% OUTER BORDER SHALL BE CONSTRUCTED OF HEAVY EXTRUDED ALUMINUM WITH A THICKNESS OF 0.040-0.050 INCH AND SHALL HAVE COUNTERSUNK 100-HOUR ASTM B-17 CORROSIVE ENVIRONMENT SALT SPRAY TEST WITHOUT COFFRING, BLISTERING OR DETACHMENT OF FILM. THE PAINT MUST PASS A 250-HOUR ASTM D670 WATER IMMERSION TEST. THE PAINT MUST ALSO PASS THE ASTM D2794 REVERSE IMPACT CRACKING TEST WITH A 50-INCH POUND FORCE APPLIED.

OPTIONAL OPPOSED BLADE VOLUME DAMPER SHALL BE CONSTRUCTED OF HEAVY GAUGE STEEL OR ALUMINUM. DAMPER MUST BE OPERABLE FROM THE FACE OF THE GRILLE.

LOUVERED FACE DIFFUSERS:

CEILING DIFFUSERS SHALL BE OF THE SIZES AND MOUNTING TYPES SHOWN ON THE PLANS AND OUTLET SCHEDULE. A UNIFORM FACE SIZE AND APPEARANCE WHEN DIFFERENT NECK SIZES ARE USED IN THE SAME AREA. ALL CONES SHALL BE ONE PIECE PRECISION DIE-STAMPED. THE BACK CONE SHALL ALSO INCLUDE AN INTEGRALLY DRAWN INLET (WELDED IN INLETS AND CORNER JOINTS ARE NOT ACCEPTABLE). THE TWO INNER CONES SHALL BE CONSTRUCTED AS A SINGLE, REMOVABLE INNER CONE ASSEMBLY FOR EASY INSTALLATION AND CLEANING. THE INNER CONE ASSEMBLY MUST HAVE A HOLE WITH REMOVABLE PLUG IN THE CENTER TO ALLOW QUICK ADJUSTMENT OF AN OPTIONAL INLET DAMPER WITHOUT REMOVING THE INNER CONE ASSEMBLY. DIFFUSERS SHALL BE CONSTRUCTED OF 24-GAUGE STEEL OR 0.040 ALUMINUM.

THE FINISH SHALL BE #26 WHITE. THE FINISH SHALL BE AN ANODIC ACRYLIC PAINT, BAKED AT 315°F FOR 30 MINUTES. THE PENCIL HARDNESS MUST BE H3 TO H4. THE PAINT MUST PASS A 100-HOUR ASTM B-17 CORROSIVE ENVIRONMENT SALT SPRAY TEST WITHOUT COFFRING, BLISTERING OR DETACHMENT OF FILM. THE PAINT MUST PASS A 250-HOUR ASTM D670 WATER IMMERSION TEST. THE PAINT MUST ALSO PASS THE ASTM D2794 REVERSE IMPACT CRACKING TEST WITH A 50-INCH POUND FORCE APPLIED.

OPTIONAL ROUND DAMPER SHALL BE CONSTRUCTED OF HEAVY GAUGE STEEL. DAMPER MUST BE OPERABLE FROM THE FACE OF THE DIFFUSER. OPTIONAL SECTORING BAMPLES SHALL BE AVAILABLE TO RESTRICT THE DISCHARGE AIR IN CERTAIN DIRECTIONS.

OPTIONAL MOLDED INSULATION BLANKET SHALL BE AVAILABLE. THE INSULATION WILL BE R-6, FOIL-BACKED AND PROVIDED AN ADDITIONAL 1-INCH GAP AROUND THE NECK TO INSTALL INSULATED FLEX DUCT.

THE MANUFACTURER SHALL PROVIDE PUBLISHED PERFORMANCE DATA FOR THE SQUARE DIFFUSER. THE DIFFUSER SHALL BE TESTED IN ACCORDANCE WITH ANSI/ASHRAE STANDARD 70-2006.

DUCTWORK AND ACCESSORIES:

INDUSTRY STANDARDS: COMPLY WITH SMACNA (SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION) HVAC DUCT CONSTRUCTION STANDARDS, RECOMMENDATIONS FOR FABRICATION, GAUGES, CONSTRUCTION AND DETAILS, AND INSTALLATION PROCEDURES, EXCEPT AS OTHERWISE INDICATED.

COMPLY WITH ASHRAE (AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR CONDITIONING ENGINEERS) FUNDAMENTALS HANDBOOK RECOMMENDATIONS, EXCEPT AS OTHERWISE INDICATED.

DUCTWORK METAL AND GAUGES: EXCEPT AS OTHERWISE INDICATED, FABRICATE DUCTWORK FROM GALVANIZED SHEET STEEL COMPLYING WITH ASTM A527. LOCK-FORMING QUALITY, WITH ASTM A523 90% ZINC COATING, MILL PHOSPHATIZED. GAUGES TO COMPLY WITH SMACNA STANDARDS.

DUCT SEALANT: NON-HARDENING, NON-MIGRATING MASTIC OR LIQUID ELASTIC SEALANT (TYPE APPLICABLE FOR THE FABRICATION/INSTALLATION DETAILS AS COMPOUNDED AND RECOMMENDED BY THE MANUFACTURER SPECIFICALLY FOR SEALING JOINTS AND SEAM IN DUCTWORK).

DUCTWORK SUPPORT MATERIALS: EXCEPT AS OTHERWISE INDICATED, PROVIDE SUPPORT ATTACHMENT, HANGERS OF GALVANIZED STEEL STRIPS, OR STEEL RODS AND BRACKETS. ATTACHMENT FOR SUPPORT OF DUCTWORK, HANGING/SUPPORT SYSTEMS SHALL BE IN ACCORDANCE WITH SMACNA REQUIREMENTS.

EXPOSED DUCTWORK SHALL BE DOUBLE-WALL SPIRAL PIPE WITH PAINT GRIP UNLESS OTHERWISE NOTED OR SUBSTITUTION APPROVED BY OWNER.

VOLUNTARY ALTERNATE EXPOSED DUCTWORK SHALL BE SINGLE-WALL SPIRAL PIPE UNLESS OTHERWISE NOTED OR SUBSTITUTION APPROVED BY OWNER. AN EXPOSED DUCTWORK SHALL BE LINED IN LIEU OF WRAPPING. DUCT LINES THROUGH WALL PENETRATIONS SHALL MEET THE MINIMUM VALUES SPECIFIED IN PARAGRAPH DUCT INSULATION BELOW.

DUCT INSULATION:

R-6 SUPPLY, OUTSIDE AND RETURN AIR DUCTS IN UNCONDITIONED SPACES
R-8 SUPPLY AND RETURN AIR DUCT INSULATION OUTSIDE THE BUILDING
R-8 INSULATION BETWEEN DUCTS AND THROUGH BUILDING EXTERIOR WHEN DUCTS ARE PART OF A BUILDING ASSEMBLY

INDOOR CENTRIFUGAL EXHAUST FAN:

INDOOR EXHAUST FAN SHALL BE CENTRIFUGAL DIRECT DRIVE TYPE. THE FAN WHEEL SHALL BE CENTRIFUGAL, DIRECTLY MOUNTED, CONSTRUCTED OF ALUMINUM AND SHALL INCLUDE A WHITE CONE. CONE MUST BE MATCHED TO THE INLET CONE FOR PRECISE RUNNING TOLERANCES. THE CONE SHALL BE STATICALLY AND DYNAMICALLY BALANCED. THE FAN HOUSING AND SHROUD SHALL BE CONSTRUCTED OF HEAVY GAUGE ALUMINUM AND SHALL INCLUDE A WHITE CONE. CONE MUST BE MATCHED TO THE INLET CONE FOR PRECISE RUNNING TOLERANCES. THE CONE SHALL BE STATICALLY AND DYNAMICALLY BALANCED.

THE FAN HOUSING AND SHROUD SHALL BE CONSTRUCTED OF HEAVY GAUGE ALUMINUM WITH A RIGID INTERNAL SUPPORT STRUCTURE. THE FAN SHROUD SHALL HAVE A ROLLED SEAM FOR ADDED STRENGTH. MOTORS SHALL BE MOUNTED OUT OF THE AIRSTREAM ON VIBRATION ISOLATORS. FRESH AIR FOR MOTOR COOLING SHALL BE DRAWN INTO THE MOTOR COMPARTMENT FROM AN AREA FREE OF DISCHARGE CONTAMINANTS. MOTORS SHALL BE READILY ACCESSIBLE FOR MAINTENANCE. A DISCONNECT SWITCH SHALL BE FACTORY INSTALLED AND WIRED FROM THE MOTOR COMPARTMENT FOR EASE OF ELECTRICAL WIRING.

ALL FANS SHALL BEAR THE AMCA CERTIFIED RATINGS SEAL FOR SOUND AND AIR PERFORMANCE.

EACH FAN SHALL BEAR A PERMANENTLY AFFIXED MANUFACTURER'S NAMEPLATE CONTAINING THE MODEL NUMBER AND INDIVIDUAL SERIAL NUMBER FOR FUTURE IDENTIFICATION.

SPECIFICATIONS

GRAVITY HOOD:

THE HOOD SHALL BE CONSTRUCTED OF ALUMINUM. THE INTERNAL STRUCTURE SHALL BE GALVANIZED STEEL.

THE CURB CAP SHALL BE NON-HINGED. THE HOUSING SHALL BE CONSTRUCTED OF ALUMINUM AND IN THE WINDBAND AND CURB CAP. THE WINDBAND SHALL BE ONE PIECE SPUN ALUMINUM CONSTRUCTION AND SHALL MAINTAIN THE ORIGINAL MATERIAL THICKNESS THROUGHOUT THE HOUSING. THE WINDBAND SHALL INCLUDE AN INTEGRAL ROLLED BEAD. THE CURB CAP SHALL INCLUDE PREFINISHED MOUNTING HOLES TO ENSURE CORRECT ATTACHMENT TO THE ROOF.

REFER TO THE EQUIPMENT SCHEDULE FOR A FULL LISTING OF REQUIRED HOOD ACCESSORIES.

GREASE DUCT SYSTEM:

GREASE EXHAUST DUCTWORK SHALL BE FACTORY FABRICATED EQUAL TO SELKIRK METALBESTOS ZEROCLEAR MODEL IF5-Z3. INSTALL DUCTWORK IN ACCORDANCE WITH UL 197B AND UL 2221. INSTALLATION INSTRUCTIONS, COMPLETE SYSTEM, FROM HOOD OUTLETS TO FAN INLET SHALL INCLUDE TRANSITIONS TO HOOD OUTLETS, ADJUSTABLE PIPE LENGTHS, SUPPORT PIPES, GUIDE RINGS, ACCESS DOORS, AND THRU WALL FIRE STOP PENETRATIONS. MODEL IF5-C1 OR MODEL G MAY BE USED WHERE CLEARANCES PERMIT.

VOLUNTARY ALTERNATE GREASE DUCT AND WRAP SYSTEM:

INSTALL CARBON STEEL OF MINIMUM 1/8 GAUGE OR STAINLESS STEEL MINIMUM 1/8 GAGE IN STRICT ACCORDANCE WITH NFPA-96. THE ENTIRE DUCT SYSTEM, FROM HOOD OUTLETS TO FAN INLET, SHALL BE WRAPPED WITH ASTM-B14 CERTIFIED DUCT WRAP FOR ZERO CLEARANCE TO COMBUSTIBLES. FOLLOW DUCT WRAP MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION AND THROUGH WALL PENETRATIONS.

GAS FURNACE:

GENERAL SYSTEM DESCRIPTION FURNISH A SCHEDULED FIXED CAPACITY GAS-FIRED FURNACE FOR USE WITH NATURAL GAS OR PROPANE, FURNISH COLD AIR RETURN FLEXIBLE, FURNISH EXTERNAL MEDICAL CABINET USE WITH ACCESSORY MEDIA FILTER OR STANDARD FILTER.

QUALITY ASSURANCE UNIT WILL BE DESIGNED, TESTED AND CONSTRUCTED TO THE CURRENT ANSI Z39.21-47/CSA 2.3 DESIGN STANDARD FOR GAS-FIRED CENTRAL FURNACES.

UNIT WILL BE 80% EFFICIENT. UNIT WILL CARRY THE CSA BLUE STAR AND BLUE PLUMBER LABELS. UNIT EFFICIENCY TESTING WILL BE PERFORMED PER THE CURRENT DOE TEST PROCEDURE AS LISTED IN THE FEDERAL REGISTER.

UNIT WILL BE CERTIFIED FOR CAPACITY AND EFFICIENCY AND LISTED IN THE LATEST ASHRAE CONSUMER'S DIRECTORY OF CERTIFIED EFFICIENCY RATED GAS EQUIPMENT. UNIT SHALL CARRY THE CURRENT ENERGY STAR LABEL.

DELIVERY, STORAGE AND HANDLING UNIT SHALL BE SHIPPED AS SINGLE PACKAGE ONLY AND STORED AND HANDLED PER UNIT MANUFACTURER'S RECOMMENDATIONS.

EQUIPMENT SHALL INCLUDE: SLOW-OFF GAS VALVE TO REDUCE IGNITION NOISE, REGULATED FLOW WITH ELECTRIC SWITCH, SHUT-OFF FLAME PROOF SENSOR, HOT SURFACE LIGHT PROTECTIVE SWITCH ASSEMBLY, FLAME ROLL-OFF SWITCH, BLOWER AND CHECK VALVE, TRANSFORMER, DIGITAL LOW-VOLTAGE HEATING/COOLING CONTROL.

BLOWER MOTOR AND BLOWER MOTOR MOTOR SHALL BE CENTRIFUGAL TYPE, STATICALLY AND DYNAMICALLY BALANCED. MOTOR SHALL BE PERMANENTLY LUBRICATED WITH SEALED BEARINGS. MOTOR SHALL BE MULTIPLE-SPEED DIRECT DRIVE. BLOWER MOTOR SHALL BE SOFT MOUNTED TO THE BLOWER SCROLL TO REDUCE VIBRATION TRANSMISSION.

FILTERS FURNACE MAY HAVE REUSABLE TYPE FILTERS.

CASING CASING SHALL BE OF .030 IN. THICKNESS MINIMUM, PRE-PAINTED GALVANIZED STEEL.

INDUCERMOTOR INDUCER MOTOR SHALL BE SOFT MOUNTED TO REDUCE VIBRATION TRANSMISSION.

DRAFT SAFEGUARD SWITCH DRAFT SAFEGUARD SWITCH SHALL BE FACTORY INSTALLED TO REDUCE THE POSSIBILITY OF VENT GAS INFILTRATION DUE TO A BLOCKED OR RESTRICTED VENT PIPE.

HEAT EXCHANGERS HEAT EXCHANGERS SHALL BE A 4-PASS 20 GAGE ALUMINIZED STEEL OF FOLD-AND-CRIMP SECTIONAL DESIGN WHEN APPLIED OPERATING UNDER NEGATIVE PRESSURE.

CONTROLS CONTROL SHALL INCLUDE A MICRO-PROCESSOR BASED INTEGRATED ELECTRONIC CONTROL BOARD WITH AT LEAST 11 SERVICE TROUBLESHOOTING CODES DISPLAYED VIA DIAGNOSTIC FLASHING LED LIGHT ON THE CONTROL. A SELF-TEST FEATURE THAT CHECKS ALL MAJOR FUNCTIONS OF THE FURNACE WITHIN ONE MINUTE, AND A REPLACEABLE AUTOMOTIVE-TYPE CIRCUIT PROTECTION FUSE. MULTIPLE OPERATIONAL SETTINGS AVAILABLE INCLUDING, SEPARATE BLOWER SPEEDS FOR HEATING, COOLING AND CONTINUOUS FAN. CONTINUOUS FAN SPEED MAY BE ADJUSTED FROM THE THERMOSTAT. COOLING AIRFLOW WILL BE SELECTABLE BETWEEN 350 OR 400 CFM PER TON OF AIR CONDITIONING.

CONDENSER UNIT:

OUTDOOR-MOUNTED, AIR-COOLED, SPLIT-SYSTEM AIR CONDITIONER UNIT SUITABLE FOR GROUND OR ROOFTOP INSTALLATION. UNIT CONSISTS OF A HERMETIC COMPRESSOR, AN AIR-COOLED COIL, PROPPELLER-TYPE CONDENSER FAN AND A CONTROL BOX. UNIT WILL DISCHARGE SUPPLY AIR UPWARD AS SHOWN ON CONTRACT DRAWINGS. UNIT WILL BE USED IN A REFRIGERATION CIRCUIT TO MATCH UP TO A PACKAGED FAN COIL OR COIL UNIT.

QUALITY ASSURANCE UNIT WILL BE RATED IN ACCORDANCE WITH THE LATEST EDITION OF AHRI STANDARD 210. UNIT WILL BE CERTIFIED FOR CAPACITY AND EFFICIENCY, AND LISTED IN THE LATEST AHRI DIRECTORY. UNIT CONSTRUCTION WILL COMPLY WITH LATEST EDITION OF ANSI ASHRAE AND WITH NEC. UNIT WILL BE CONSTRUCTED IN ACCORDANCE WITH UL STANDARDS AND WILL CARRY THE UL LABEL OF APPROVAL. UNIT WILL HAVE CUL-ULS APPROVAL. UNIT CABINET WILL BE CAPABLE OF WITHSTANDING FEDERAL TEST METHOD STANDARD NO. 141 (METHOD 604.1) 500-PIR SALT SPRAY TEST. AIR-COOLED CONDENSER COILS WILL BE LEAK TESTED AT 150 PSIG AND PRESSURE TESTED AT 450 PSIG. UNIT CONSTRUCTED IN ISO8001 APPROVED FACILITY.

DELIVERY, STORAGE, AND HANDLING UNIT WILL BE SHIPPED AS SINGLE PACKAGE ONLY AND IS STORED AND HANDLED PER UNIT MANUFACTURER'S RECOMMENDATIONS.

PRODUCTS EQUIPMENT FACTORY ASSEMBLED, SINGLE PIECE, AIR-COOLED AIR CONDITIONER UNIT. CONTAINED WITHIN THE UNIT ENCLOSURE IS ALL FACTORY WIRING, PIPING, CONTROLS, COMPRESSOR, REFRIGERANT CHARGE R-410A, AND SPECIAL FEATURES REQUIRED PRIOR TO FIELD START-UP.

UNIT CABINET UNIT CABINET WILL BE CONSTRUCTED OF GALVANIZED STEEL, BONDERIZED, AND COATED WITH A POWDER COAT PAINT. 3 PHASE EQUIPMENT AVAILABLE WITH DENSE GRILLE ONLY. SINGLE PHASE EQUIPMENT AVAILABLE WITH WIDE (W) OR DENSE (D) GRILLE OPTION.

SPECIFICATIONS

CONDENSER UNIT (CONTINUED):

FANS CONDENSER FAN WILL BE DIRECT-DRIVE PROPPELLER TYPE, DISCHARGING AIR UPWARD. CONDENSER FAN MOTORS WILL BE TOTALLY ENCLOSED, 1-PHASE TYPE WITH CLASS B INSULATION AND PERMANENTLY LUBRICATED BEARINGS. SHAFTS WILL BE CORROSION RESISTANT. FAN BLADES WILL BE STATICALLY AND DYNAMICALLY BALANCED. CONDENSER FAN OPENINGS WILL BE EQUIPPED WITH COATED STEEL WIRE SAFETY GUARDS. COMPRESSOR COMPRESSOR WILL BE HERMETICALLY SEALED. COMPRESSOR WILL BE MOUNTED ON RUBBER VIBRATION ISOLATORS.

CONDENSER COIL CONDENSER COIL WILL BE AIR COOLED. COIL WILL BE CONSTRUCTED OF ALUMINUM FINS MECHANICALLY BONDED TO COPPER TUBES WHICH ARE THEN CLEANED, DEHYDRATED, AND SEALED.

REFRIGERATION COMPONENTS REFRIGERATION CIRCUIT COMPONENTS WILL INCLUDE LIQUID-LINE SHUTOFF VALVE WITH SWEAT CONNECTIONS, VAPOR-LINE SHUTOFF VALVE WITH SWEAT CONNECTIONS, SYSTEM CHARGE OF R-410 REFRIGERANT, AND COMPRESSOR OIL. UNIT WILL BE EQUIPPED WITH HIGH PRESSURE SWITCH AND LOW PRESSURE SWITCH. FILTER DRIER FOR FLUON REFRIGERANT.

ABBREVIATIONS

AFF	ADJUSTABLE FINISH	DOOR	M	MAKE-UP AIR
AMU	AIR MOUNTED UNIT	MAU	MAKE-UP AIR UNIT	
CO2	CARBON DIOXIDE	MAV	MANUAL AIR VENT	
D	CONDENSING DRAIN	MBH	1,000 BTU PER HR	
DB	DRY BULB	MFCU	MINI FAN COIL UNIT	
EA	EXHAUST AIR	MHP	MINI HEAT PUMP	
EAT	ENTERING AIR TEMPERATURE	MVD	MANUAL VOLUME DAMPER	
EDF	ELECTRIC DUCT HEATER	NC	NORMALLY CLOSED	
EP	EXHAUST FAN	NO	NORMALLY OPEN	
ESP	EXTERNAL STATIC PRESSURE	OA	OUTSIDE AIR	
EWV	ELECTRIC WALL HEATER	OSD	OPPOSED BLADE DAMPER	
F	DEGREES FAHRENHEIT	PIU	POWER INDUCTION UNIT	
FCU	FAN COIL UNIT	RA	RETURN AIR	
FD	FIRE DAMPER	RH	RELIEF HOOD	
PSD	COMBINATION FIRE/SMOKE DAMPER	RTU	ROOFTOP UNIT	
H	HUMIDISTAT	SA	SUPPLY AIR	
IH	INTAKE HOOD	SP	STATIC PRESSURE	
LAT	LEAVING AIR TEMPERATURE	UC	UNDER CUT DOOR	
LWT	LEAVING WATER TEMPERATURE	VAV	VARIABLE AIR VOLUME	
M	MOTOR	WB	WET BULB	

LEGEND

SYMBOLS	DESCRIPTION
X1 X2	DIFFUSER, GRILLE, REGISTER OR LOUVER TAG X1 = TYPE, X2 = CFM
⊗	POSITIVE PRESSURE (AIR GOES OUT) DIFFUSER OR REGISTER, 4-WAY AIR PATTERN (UNLESS OTHERWISE NOTED)
⊙	NEGATIVE PRESSURE (AIR GOES IN) GRILLE
→	POSITIVE PRESSURE AIRFLOW (TYP. SUPPLY)
←	NEGATIVE PRESSURE AIRFLOW (TYP. RETURN/EXHAUST)
	FLEXIBLE DUCT
⌋	MANUAL VOLUME DAMPER (MVD)
⌋	VERTICAL (TYP. WALL) FIRE DAMPER
⌋	VERTICAL (TYP. WALL) COMBINATION FIRE/SMOKE DAMPER
⌋	HORIZONTAL (TYP. FLOOR/CEILING) FIRE DAMPER
⌋	HORIZONTAL (TYP. FLOOR/CEILING) COMBINATION FIRE/SMOKE DAMPER
⊖	THERMOSTAT
⊕	HUMIDISTAT
⊕	TOXIC GAS SENSOR
⌋	INTERNALLY LINED DUCT
⊖	DUCT UP
⊗	DUCT UP
⊙	DUCT DOWN
⌋	SUPPLY DUCT



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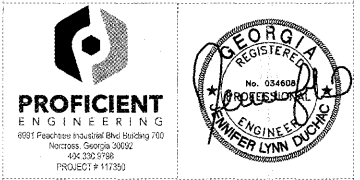
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GENERAL CONSTRUCTION NOTES:

- THE CONTRACTOR SHALL GUARANTEE TO THE OWNER ALL WORKMANSHIP AND MATERIALS. WHETHER FURNISHED BY THE CONTRACTOR OR SUB-CONTRACTORS, AGAINST DEFECTS FOR A MINIMUM PERIOD OF ONE (1) YEAR AFTER THE DATE OF FINAL ACCEPTANCE BY OWNER. FAILURE OF ANY SUCH ITEMS SHALL BE MADE GOOD BY THE CONTRACTOR AT THE CONTRACTOR'S OWN EXPENSE.
- THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT FROM DAMAGE OR DESTRUCTION ALL EXISTING MATERIALS AND FINISHES TO REMAIN IN ADJACENT OR NEARBY AREAS. THE CONTRACTOR SHALL REPLACE ANY DAMAGED OR DESTROYED ITEMS BY OPERATIONS UNDER THIS CONTRACT.
- PRODUCTS, TRADE NAMES AND/OR MANUFACTURERS NOTED WITHIN THESE DOCUMENTS ARE PROVIDED TO ESTABLISH A STANDARD OF QUALITY, UNLESS OTHERWISE INDICATED. APPROVED EQUAL PRODUCTS OF ANOTHER MANUFACTURER MAY BE USED WITH THE WRITTEN PERMISSION OF THE ARCHITECT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR AND SUPPLIER TO PROTECT TO THE ARCHITECT BEFORE THE DATE OF BID THAT THEIR PRODUCT IS EQUAL TO OR BETTER THAN THOSE PRODUCTS SPECIFIED. IF AN "OR EQUAL" PRODUCT IS USED, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO MAKE ANY NECESSARY CHANGES TO THE STRUCTURE AND INTERIOR LAYOUT AT THE CONTRACTOR'S OWN EXPENSE, AFTER OBTAINING THE ARCHITECT'S ACCEPTANCE OF SUCH CHANGES.
- THE CONTRACTOR SHALL COORDINATE WITH THE OWNER A DESIGNATED SITE OR SITES FOR STORAGE OF MATERIALS AND EQUIPMENT FOR THE DURATION OF THE CONSTRUCTION CONTRACT.
- DIMENSIONS SHOWN ON THE DRAWINGS ARE TO ROUGH SURFACES, EXCLUSIVE OF FINISH MATERIALS, EXCEPT AS NOTED OTHERWISE. DO NOT SCALE THE DRAWINGS.
- THE CONTRACTOR SHALL COMPLY WITH ALL RELEVANT AND CURRENTLY ENFORCED BUILDING CODES BY ALL GOVERNING JURISDICTIONS, INCLUDING BUT NOT LIMITED TO ALL PROVISIONS OF THE AMERICAN WITH DISABILITIES ACT.

The contractor shall be responsible for all fees and obtaining all necessary and relevant permits and approvals relating to staging and construction of this project. The contractor shall comply with all relevant building, construction and work safety codes. The contractor shall verify all dimensions and elevations in the field before starting work and immediately report to the architect any discrepancies discovered.



DOUGLAS COUNTY FIRE STATION 3

CLIENT: Owner

DRAWING TITLE: GENERAL

ISSUANCE: DATE: 08/31/17 DRAWING NO:

M-01

COMMISSION: Project Number
DRAWN BY: AS