SPECIFICATIONS

GAS FURNACE:

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

QUALITY ASSURANCE
UNIT WILL BE DESIGNED, TESTED AND CONSTRUCTED TO THE CURRENT ANSI Z 21.47/CSA 2.3 DESIGN STANDARD FOR GAS--FIRED CENTRAL FURNACES.
UNIT WILL BE 3RD PARTY CERTIFIED BY CSA TO THE CURRENT ANSI Z 21.47/CSA 2.3 DESIGN STANDARD FOR GAS--FIRED CENTRAL FURNACES.
UNIT WILL CARRY THE CSA BLUE STARR AND BLUE FLAMER 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 GAMA CONSUMER'S DIRECTORY OF CERTIFIED EFFICIENCY RATINGS.
UNIT SHALL CARRY THE CURRENT FEDERAL TRADE COMMISSION ENERGY GUIDE EFFICIENCY LABEL.

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

EQUIPMENT
COMPONENTS SHALL INCLUDE: SLOW--OPENING GAS VALVE TO REDUCE IGNITION NOISE, REGULATE GAS FLOW, WITH ELECTRIC SWITCH GAS SHUT--OFF; FLAME PROVING SENSOR, HOT SURFACE IGNITER, PRESSURE SWITCH ASSEMBLY, FLAME ROLLOUT SWITCH, BLOWER AND INDUCER ASSEMBLY, 40VA TRANSFORMER; DIGITAL LOW--VOLTAGE HEATING/COOLING THERMOSTAT.

BLOWERWHEEL AND BLOWERMOTOR
GALVANIZED BLOWER WHEEL SHALL BE CENTRIFUGAL TYPE, STATICALLY AND DYNAMICALLY BALANCED. BLOWER MOTOR OF PSC TYPE SHALL BE PERMANENTLY LUBRICATED WITH SEALED BEARINGS, AND 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, PROPELLER--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 C--UL--US APPROVAL.
— UNIT CABINET WILL BE CAPABLE OF WITHSTANDING FEDERAL TEST METHOD STANDARD NO. 141 (METHOD 6061) 500--HR SALT SPRAY TEST.
— AIR--COOLED CONDENSER COILS WILL BE LEAK TESTED AT 150 PSIG AND PRESSURE TESTED AT 450 PSIG.
— UNIT CONSTRUCTED IN ISO9001 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 (A) GRILLE OPTION.

FANS
— CONDENSER FAN WILL BE DIRECT--DRIVE PROPELLER 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, LOW PRESSURE SWITCH AND FILTER DRIER FOR PURON REFRIGERANT.

SPECIFICATIONS

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, LOCKFORMING QUALITY, WITH ASTM A525 G90 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 DETAIL) AS COMPOUNDED AND RECOMMENDED BY THE MANUFACTURER SPECIFICALLY FOR SEALING JOINTS AND SEAMS IN DUCTWORK.

DUCTWORK SUPPORT MATERIALS: EXCEPT AS OTHERWISE INDICATED, PROVIDE UPPER ATTACHMENT, HANGERS OF GALVANIZED STEEL STRAPS, OR STEEL RODS AND LOWER 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. ALL EXPOSED DUCTWORK SHALL BE LINED IN LIEU OF WRAPPED. DUCT LINER THERMAL RESISTANCE SHALL MEET THE MINIMUM VALUES SPECIFIED IN PARAGRAPH 'DUCT INSULATION' BELOW.

DUCTWORK LOCATED OUTSIDE OF THE BUILDING ENVELOPE SHALL BE THERMADUCT PRODUCTS OR COVERED WITH 3M VENTURECLAD JACKETING, OR EQUAL PRODUCT, AND SEALED WEATHER-TIGHT.

DUCT INSULATION:

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

CEILING FAN:

CEILING MOUNTED EXHAUST FANS SHALL BE OF THE CENTRIFUGAL DIRECT DRIVE TYPE. THE FAN HOUSING SHALL BE CONSTRUCTED OF STEEL. THE PLASTIC DUCT COLLAR SHALL BE A TAPERED SLEEVE FOR EASE OF CONNECTION TO 3 IN AND 4 IN ROUND DUCTWORK AND SHALL INCLUDE A BACKDRAFT DAMPER. THE GRILLE SHALL BE CONSTRUCTED OF NON-YELLOWING HIGH STRENGTH POLYMER AND ATTACHED TO THE HOUSING WITH TORSION SPRINGS. THE WHEELS SHALL BE CONSTRUCTED OF HIGH STRENGTH POLYMER. THE ACCESS FOR WIRING SHALL BE EXTERNAL. THE MOTOR DISCONNECT SHALL BE INTERNAL AND OF THE PLUG IN TYPE.

ALL FANS SHALL BEAR THE AMCA CERTIFIED RATINGS SEALS FOR SOUND AND AIR PERFORMANCE AND SHALL BE U.L. LISTED.

DUCTLESS SPLIT SYSTEM

WALL-MOUNTED INDOOR UNIT
STANDARD PREFILTER IS INCLUDED WITH INDOOR UNIT
CHOICE OF FAN SPEEDS: LOW, MEDIUM, HIGH
INDOOR UNIT POWERED FROM OUTDOOR UNIT
AUTO RESTART FOLLOWING A POWER OUTAGE
BASE HEATER
LIMITED WARRANTY: FIVE YEARS ON PARTS AND DEFECTS AND SEVEN YEARS ON THE COMPRESSOR

SEE SCHEDULE FOR LIST OF ACCEPTABLE MANUFACTURERS.

ELECTRIC WALL HEATER:

ELECTRIC WALL HEATERS SHALL BE QMARK MODEL AWH OR EQUAL.

THE HEATER ASSEMBLY WHICH FITS INTO THE BACK BOX SHALL CONSIST OF A FAN PANEL UPON WHICH IS MOUNTED ALL OF THE OPERATIONAL PARTS OF THE HEATER.

THE HEATING ELEMENT SHALL BE OF NON-GLOWING DESIGN CONSISTING OF AN 80/20 NICKEL-CHROMIUM RESISTANCE WIRE ENCLOSED IN A STEEL SHEATH TO WHICH PLATE FINS ARE COPPER BRAZED. IT SHALL BE WARRANTED FOR 5 YEARS.

THE FAN SHALL BE FIVE-BLADED ALUMINUM. THE FAN MOTOR SHALL BE TOTAL ENCLOSED.

FAN CONTROL SHALL BE OF BI-METALLIC, SNAP-ACTION TYPE AND SHALL ACTIVATE FAN AFTER HEATING ELEMENT REACHES OPERATING TEMPERATURE. THE FAN SHALL CONTINUE TO OPERATE AFTER THE THERMOSTAT IS SATISFIED AND UNTIL THE HEATING ELEMENT IS COOL.

THE TAMPER-PROOF THERMOSTAT SHALL BE OF BI-METALLIC, SNAP-ACTION TYPE WITH ENCLOSED CONTACTS. IT SHALL BE COMPLETELY CONCEALED BEHIND THE FRONT COVER TO BECOME TAMPER PROOF.

A THERMAL CUTOUT SHALL BE BUILT INTO THE SYSTEM TO SHUT OFF THE HEATER IN THE EVENT OF OVERHEATING.

A DOUBLE-POLE SINGLE THROW DISCONNECT SWITCH SHALL BE MOUNTED ON THE BACK BOX FOR POSITIVE DISCONNECT OF POWER SUPPLY. IT WILL BE COMPLETELY CONCEALED BEHIND THE FRONT GRID PANEL.

WHERE SCHEDULED, NORMALLY OPEN 24-VOLT AND 120-VOLT LOW VOLTAGE HOLDING COIL RELAYS SHALL BE AVAILABLE TO CONTROL HEATERS IN CONJUNCTION WITH CENTRAL ENERGY CONTROL SYSTEMS. THE BUILT-IN THERMOSTAT CAN THEN BE USED AS ONE OF THE THERMOSTATS IN AN AUTOMATIC NIGHT SET BACK OPERATION.

THE BACK BOX SHALL BE DESIGNED FOR DUTY AS RECESSED ROUGH-IN BOX IN EITHER MASONRY OR FRAME INSTALLATIONS AND IS ALSO USED WITH THE SURFACE MOUNTING FRAME IN SURFACE MOUNTING INSTALLATIONS. THE BACK BOX SHALL BE 20-GAUGE GALVANIZED STEEL AND SHALL CONTAIN KNOCKOUTS THROUGH WHICH POWER LEADS ARE BROUGHT.

THE FRONT PANEL SHALL BE OF THE BAR GRILLE TYPE AND SHALL BE CONSTRUCTED OF 16-GAUGE COLD-ROLLED STEEL, WELDED INTO A UNIFORM GRILLE AND FINISHED IN BAKED ENAMEL TO DIRECT THE WARMED AIR TOWARD THE FLOOR. THE FRONT GRILLE SHALL BE SURROUNDED BY A DECORATIVE SATIN-FINISH ALUMINUM FRAME.

THE HEATER SHALL BE MADE OF A BACK BOX, A HEATER ASSEMBLY, AND A FRONT PANEL.

REFER TO EQUIPMENT SCHEDULE FOR BASIS OF DESIGN AND ACCEPTABLE ALTERNATES.

WALL LOUVERS:

THE WALL LOUVER SHALL BE AMCA CERTIFIED. THE WALL LOUVER SHALL BE A STATIONARY, DRAINABLE BLADE TYPE. THE LOUVER SHALL INCORPORATE DRAIN GUTTERS IN THE HEAD MEMBER AND HORIZONTAL BLADES TO CHANNEL WATER TO THE JAMBS WHERE WATER IS FURTHER CHANNELED THROUGH VERTICAL DOWNSPOUTS AND OUT A SLOPED SILL.

THE FRAME AND BLADES SHALL BE CONSTRUCTED FROM HEAVY GAUGE, EXTRUDED, ALUMINUM. THE LOUVER SHALL BE OF MECHANICALLY FASTENED CONSTRUCTION.

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

SPECIFICATIONS

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 BLACK 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 TYPE.

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" APART AND AT LEAST 12" AWAY FROM CURBS, WALLS, AND DRAIN SUMPS TO PROVIDE ROOFING CONTRACTOR WITH SUFFICIENT ACCESS FOR FLASHING EACH 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 THIS PROJECT. ANY DISCREPANCIES OR LACK OF CLARITY IN THE DOCUMENTS SHALL BE IDENTIFIED TO THE ARCHITECT OR ENGINEER PRIOR TO THE SUBMISSION OF PRICING BIDS. WITH A SUBMITTED BID, CONTRACTOR IS ACCEPTING THESE DOCUMENTS AS SUFFICIENT DEFINITION OF THE SCOPE OF WORK, AND ANY ADDITIONAL COSTS BASED ON UNCLARITY OF CONTRACT DOCUMENTS WILL NOT BE CONSIDERED.

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

DIFFUSERS, GRILLES, & REGISTERS:

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 HB TO H. THE PAINT MUST PASS A 100-HOUR ASTM B117 CORROSIVE ENVIRONMENTS SALT SPRAY TEST WITHOUT CREEPAGE, BLISTERING OR DETERIORATION OF FILM. THE PAINT MUST PASS A 250-HOUR ASTM D870 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 SECTORIZING BAFFLES 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.

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 BORDERS SHALL BE CONSTRUCTED OF HEAVY EXTRUDED ALUMINUM WITH A THICKNESS OF 0.040-0.050 INCH AND SHALL HAVE COUNTERSUNK SCREW HOLES FOR A NEAT APPEARANCE. BORDER WIDTH SHALL BE 1¼ INCHES ON ALL SIDES AND SHALL BE INTERLOCKED AT THE FOUR CORNERS AND MECHANICALLY STAKED TO FORM A RIGID FRAME. CHOICE OF THREE SIZES OF ALUMINUM GRID: ½ X ½ X ½ INCH, ½ X ½ X 1 INCH, OR 1 X 1 X 1 INCH SHALL BE AVAILABLE.

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

DOUBLE DEFLECTION REGISTERS:

ALUMINUM SUPPLY GRILLES SHALL BE OF THE SIZES AND MOUNTING TYPES SHOWN ON THE PLANS AND OUTLET SCHEDULE. THE DEFLECTION BLADES SHALL BE AVAILABLE PARALLEL TO THE LONG OR SHORT DIMENSION OF THE GRILLE OR REGISTER. CONSTRUCTION SHALL BE OF ALUMINUM WITH A 1¼-INCH WIDE BORDER ON ALL SIDES. SIZES 24 X 24 INCHES AND BELOW SHALL HAVE ROLL-FORMED BORDERS WITH A MINIMUM THICKNESS OF 0.032 INCH. LARGER SIZES SHALL BE CONSTRUCTED USING CONTINUOUS ALUMINUM EXTRUSIONS WITH A NOMINAL THICKNESS OF 0.040 THROUGH 0.050 INCH AND SHALL BE INTERLOCKED AT THE FOUR CORNERS AND MECHANICALLY STAKED TO FORM A RIGID FRAME. SCREW HOLES SHALL BE COUNTERSUNK FOR A NEAT APPEARANCE.

DEFLECTION BLADES SHALL BE CONTOURED TO A SPECIFICALLY DESIGNED AND TESTED CROSS-SECTION TO MEET PUBLISHED TEST PERFORMANCE DATA. BLADES SHALL BE SPACED ON ¾-INCH CENTERS. BLADES SHALL HAVE FRICTION PIVOTS ON BOTH SIDES TO ALLOW INDIVIDUAL BLADE ADJUSTMENT WITHOUT LOOSENING OR RATTLING OR BE INSERTED THROUGH THE FRAME AND HELD TIGHT WITH STEEL FRICTION WIRE INTERLOCKED TO THE FRAME ON BOTH ENDS OF EACH SIDE. PLASTIC BLADE PIVOTS ARE NOT ACCEPTABLE.

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

THE GRILLE 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 HB TO H. THE PAINT MUST PASS A 100-HOUR ASTM B117 CORROSIVE ENVIRONMENTS SALT SPRAY TEST WITHOUT CREEPAGE, BLISTERING OR DETERIORATION OF FILM. THE PAINT MUST PASS A 250-HOUR ASTM D870 WATER IMMERSION TEST. THE PAINT MUST ALSO PASS THE ASTM D2794 REVERSE IMPACT CRACKING TEST WITH A 50-INCH POUND FORCE APPLIED.

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

PLAQUE DIFFUSERS:

ARCHITECTURAL SQUARE PANEL CEILING DIFFUSERS SHALL BE OF THE SIZES AND MOUNTING TYPES SHOWN ON THE PLANS AND OUTLET SCHEDULE. THE FACE PANEL IS REMOVABLE BY MEANS OF FOUR HANGER BRACKETS. THE EXPOSED SURFACE OF THE FACE PANEL SHALL BE SMOOTH, FLAT, AND FREE OF VISIBLE FASTENERS.
THE BACK OF THE FACE PANEL SHALL HAVE AN AERODYNAMICALLY SHAPED, ROLLED EDGE TO ENSURE A TIGHT HORIZONTAL DISCHARGE PATTERN. CEILING DIFFUSERS WITH A 24 X 24-INCH FULL FACE SHALL HAVE NO LESS THAN AN 18 X 18-INCH FACE PANEL SIZE. CEILING DIFFUSERS WITH A 12 X 12-INCH FULL FACE SHALL HAVE NO LESS THAN A 9 X 9-INCH FACE PANEL SIZE.

THE BACKPAN SHALL BE ONE PIECE PRECISION DIE-STAMPED AND SHALL INCLUDE AN INTEGRALLY DRAWN INLET. THE DIFFUSER NECK SHALL HAVE A MINIMUM OF 1¼-INCH DEPTH AVAILABLE FOR DUCT CONNECTION.

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 HB TO H.

THE PAINT MUST PASS A 100-HOUR ASTM B117 CORROSIVE ENVIRONMENTS SALT SPRAY TEST WITHOUT CREEPAGE, BLISTERING OR DETERIORATION OF FILM. THE PAINT MUST PASS A 250-HOUR ASTM D870 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 DIRECTIONAL BLOW CLIPS 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 PROVIDE AN ADDITIONAL 1-INCH GAP AROUND THE NECK TO INSTALL INSULATED FLEX DUCT.

THE MANUFACTURER SHALL PROVIDE PUBLISHED PERFORMANCE DATA FOR THE SQUARE PANEL DIFFUSER. THE DIFFUSER SHALL BE TESTED IN ACCORDANCE WITH ANSI/ASHRAE STANDARD 70-1991.

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)
⏢	BACKDRAFT DAMPER (BDD)
FD	VERTICAL (TYP. WALL) FIRE DAMPER
FSD	VERTICAL (TYP. WALL) COMBINATION FIRE/SMOKE DAMPER
FD	HORIZONTAL (TYP. FLOOR/CEILING) FIRE DAMPER
FSD	HORIZONTAL (TYP. FLOOR/CEILING) COMBINATION FIRE/SMOKE DAMPER
Ⓣ	THERMOSTAT
Ⓗ	HUMIDISTAT
Ⓢ	REMOTE TEMPERATURE SENSOR
⏢	INTERNALLY LINED DUCT
◐	DUCT UP
☒	DUCT UP
⧄	DUCT DOWN
⏢	SUPPLY DUCT
UNIT #	EQUIPMENT TYPE EQUIPMENT NUMBER. WHERE A LETTER IS USED, THERE ARE MULTIPLE INSTANCES.

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR	MA	MAKE-UP AIR
BDD	BACKDRAFT DAMPER	MAU	MAKE-UP AIR UNIT
AHU	AIR HANDLING UNIT	MAV	MANUAL AIR VENT
CO2	CARBON DIOXIDE	MBH	1,000 BTU PER HR
D	CONDENSATE DRAIN	MFCU	MINI FAN COIL UNIT
DB	DRY BULB	MHP	MINI HEAT PUMP
EA	EXHAUST AIR	MVD	MANUAL VOLUME DAMPER
EAT	ENTERING AIR TEMPERATURE	NC	NORMALLY CLOSED
EDH	ELECTRIC DUCT HEATER	NO	NORMALLY OPEN
EF	EXHAUST FAN	OA	OUTSIDE AIR
ESP	EXTERNAL STATIC PRESSURE	OBD	OPPOSED BLADE DAMPER
EWH	ELECTRIC WALL HEATER	PIU	POWER INDUCTION UNIT
F	DEGREES FAHRENHEIT	RA	RETURN AIR
FCU	FAN COIL UNIT	RH	RELIEF HOOD
FD	FIRE DAMPER	RTU	ROOFTOP UNIT
FSD	COMBINATION FIRE/SMOKE DAMPER	SA	SUPPLY AIR
H	HUMIDISTAT	SP	STATIC PRESSURE
IH	INTAKE HOOD	UC	UNDER CUT DOOR
LAT	LEAVING AIR TEMPERATURE	VAV	VARIABLE AIR VOLUME
LWT	LEAVING WATER TEMPERATURE	WB	WET BULB
M	MOTOR	WL	WALL LOUVER

SPECIFICATIONS

SHOP DRAWINGS:

SUBMIT SHOP DRAWINGS FOR REVIEW. PDF FILES PREFERRED. SHOP DRAWINGS SHALL BE BOUND INTO VOLUMES (FILES), WITH EACH VOLUME (FILE) 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, ARRANGEMENT, 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 HAVE A CERTIFIED MEMBER OF THE NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB).

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

P-TAB.COM OR EQUIVALENT.

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 FAULTY 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.

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Life Storage #230
Self Storage Phase II

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ISSUE: FOR CONSTRUCTION
REVISIONS:

PROJECT NUMBER
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