

MECHANICAL SPECIFICATIONS

PROVIDE EQUIPMENT INDICATED ON THE DRAWINGS, AND AS REQUIRED FOR A COMPLETE FUNCTIONING SYSTEM.

DEFINITIONS: FURNISH MEANS TO SUPPLY AND DELIVER TO PROJECT SITE, READY FOR INSTALLATION. INSTALL MEANS TO PLACE IN POSITION AND MAKE CONNECTIONS FOR SERVICE OR USE. PROVIDE MEANS TO FURNISH AND INSTALL, COMPLETE AND READY FOR INTENDED USE.

WARRANTY: PROVIDE LABOR AND MATERIALS TO REPAIR OR REPLACE DEFECTIVE PARTS AND MATERIALS AS REQUIRED FOR ONE YEAR AFTER SUBSTANTIAL COMPLETION OR OWNER ACCEPTANCE OF THE COMPLETED PROJECT. PROVIDE A SEPARATE LINE ITEM DEDUCT AMOUNT ON THE PROPOSAL FORM TO DELETE WARRANTY SERVICE, AT THE OWNER'S OPTION.

COORDINATION: COORDINATE WITH THE WORK OF OTHER TRADES, EQUIPMENT FURNISHED BY OTHERS, REQUIREMENTS OF THE OWNER, AND WITH THE CONSTRAINTS OF THE EXISTING CONDITIONS OF THE PROJECT SITE.

DUCT DIMENSIONS: UNLESS OTHERWISE NOTED, DUCT DIMENSIONS ON THE DRAWINGS ARE INSIDE CLEAR DIMENSIONS.

SHEETMETAL DUCTWORK: PROVIDE SHEETMETAL DUCTWORK FABRICATED AND INSTALLED IN ACCORDANCE WITH ASHRAE AND SMACNA STANDARDS. GALVANIZED SHEET STEEL OF LOCK FORMING QUALITY, WITH G60 ZINC COATING. SHEET STEEL SHALL COMPLY WITH ASTM A653 STANDARD SPECIFICATION FOR STEEL SHEETMETAL, ZINC COATED (GALVANIZED) OR ZINC-IRON ALLOY-COATED (GALVANNEAL) BY THE HOT DIP PROCESS, AND A924 STANDARD SPECIFICATION FOR GENERAL REQUIREMENTS FOR SHEET, METALLIC-COATED BY THE HOT DIP PROCESS. ALL ANGLE IRON USED FOR SUPPORT SHALL BE GALVANIZED. CONNECTIONS TO WALLS OR FLOOR SHALL BE AIR TIGHT WITH ANGLE IRON AND GALVANIZED ANGULAR DUCT SEAMS, TRANSVERSE AND LONGITUDINAL. AIR TIGHT. PROVIDE TURNING VANES AT ALL 90° ELBOWS.

REFRIGERANT PIPING: TYPE ACR HARD DRAWN COPPER TUBING MEETING THE REQUIREMENTS OF ASTM B280, WITH WROUGHT COPPER FITTINGS MEETING REQUIREMENTS OF ANSI B16.22, WITH BRAZED JOINTS MEETING REQUIREMENTS OF AWS A 5.8, USING BAg-1 (SILVER) FILLER MATERIAL. INSULATE PIPING WITH 1" THICK ARMAFLEX TYPE AP OR AS OTHERWISE REQUIRED BY MANUFACTURER.

ROUND SHEETMETAL DUCT: PROVIDE SPIRAL SEAM (ALL SIZES) OR SNAP LOCK (DUCT SIZES UP TO 10") GALVANIZED STEEL, COMPLYING WITH SMACNA STANDARDS. SPIRAL SEAM DUCTWORK SHALL HAVE SMACNA SEAM TYPE RL-1.

FLEXIBLE DUCT: PROVIDE FACTORY ASSEMBLED CLASS 1 AIR DUCT (UL 181) WITH THICK 1" PCF FIBERGLASS INSULATION AND REINFORCED OUTER PROTECTIVE COVER/VAPOR BARRIER. FLEXIBLE DUCT SHALL MEET NFPA 90A WITH FLAME SPREAD UNDER 25, SMOKE DEVELOPED UNDER 50, AND SHALL BE RATED FOR MINIMUM 2" H₂O PRESSURE, AND 10 TO 250°F TEMPERATURE. PROVIDE SCREW-OPERATED METAL ADJUSTABLE CLAMPING DEVICES. USE TWIST-LOCK TAP COLLARS AT CONNECTIONS INTO SHEETMETAL DUCTWORK. MAXIMUM EXTENDED LENGTH OF FLEXIBLE DUCT SHALL NOT EXCEED 6 FEET.

EXPOSED DUCTWORK: EXPOSED DUCTWORK SHALL BE CLEANED OF DERRIS AND OIL, THEN WIPE DOWN WITH VINEGAR OR OTHER SURFACE PREPARING CHEMICAL TO PREPARE DUCT FOR PAINT.

DUCT SEALANT: PROVIDE POLYMERIC RUBBER TYPE SEALANT FOR USE ON BOTH INTERIOR LOCATED DUCTWORK AND DUCTWORK EXPOSED TO OUTDOOR CONDITIONS. SEALER SHALL HAVE HIGH BONDING STRENGTH FOR SURE, FIRST TIME SEALING OF JOINTS IN LOW, MEDIUM, AND HIGH PRESSURE DUCT SYSTEMS. SEALER SHALL BE HIGH IN SOLID CONTENT. PROVIDE A TWO PART TAPE SEALING SYSTEM, CONSISTING OF WOVEN FIBER TAPE IMPREGNATED WITH A GYPSUM MINERAL COMPOUND, AND A MODIFIED ACRYLIC/SILICONE ACTIVATOR THAT REACTS EXOTHERMICALLY WITH THE TAPE. TWO PART TAPE SEALING SYSTEM MUST BE RATED FOR BOTH INTERIOR AND OUTDOOR APPLICATION. TAPE SHALL NOT CONTAIN ASBESTOS.

DUCT INSULATION (OUTSIDE AIR DUCT): PROVIDE MINIMUM 1-1/2" THICK BLANKET TYPE FIBERGLASS INSULATION COMPLYING WITH ASTM C-553, TYPE II, WITH FACTORY APPLIED KRAFT BONDED TO ALUMINUM FOIL. REINFORCED WITH FIBERGLASS VAPOR BARRIER/JACKET. JACKET SHALL CONFORM TO ASTM C-1136, TYPE II.

RECTANGULAR INSULATED LINER (ALL RECTANGULAR RETURN, EXHAUST DUCT, AND ALL NON-EXPOSED RECTANGULAR SUPPLY DUCT WITHIN 10 FEET OF THE MECHANICAL UNIT): PROVIDE MINIMUM 1" THICK, 3 PCF DENSITY, NEOPRENE COATED LONG TEXTILE FIBER TYPE DUCT LINER, WITH COATING ON THE AIR STREAM SIDE CONFORMING TO NFPA 90A. DUCT LINER ADHESIVE SHALL BE AS RECOMMENDED BY DUCT LINER MANUFACTURER, AND SHALL COMPLY WITH ASTM C-916. DUCT LINER FASTENERS SHALL COMPLY WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS' LATEST EDITION.

ROUND DUCT LINER (ROUND SUPPLY DUCTWORK): PROVIDE 1" THICK JOINS MANVILLE SPIRACOUSTIC PLUS DUCT LINER, SPIRACOUSTIC LINER TYPE SHALL BE BASED ON DUCT DIMENSIONS RECOMMENDED BY MANUFACTURER (VSD, SD). APPLY SUPERSEAL COATING PRODUCT TO RETAIN ALL THE PERFORMANCE CHARACTERISTICS OF DUCT LINER.

ROUND VOLUME DAMPERS: PROVIDE MINIMUM 20 GAUGE GALVANIZED STEEL FRAME AND BLADES, MINIMUM 3/8" SQUARE STEEL AXLE, MOLDED SYNTHETIC BEARINGS, WITH LOCKING POSITION REGULATOR. REGULATOR SHALL BE POSITIONED WITH SHEETMETAL BRACKET BEYOND DUCT COVERING, WHERE POSITIONING REGULATOR IS NOT ACCESSIBLE, PROVIDE COUPLING AND EXTENSION ROD WITH REGULATOR FOR CEILING OR WALL INSTALLATION, AS REQUIRED.

RECTANGULAR VOLUME DAMPERS: PROVIDE MINIMUM 16 GAUGE GALVANIZED STEEL CHANNEL FRAME, 16 GAUGE GALVANIZED STEEL BLADES, MINIMUM 3/8" HEXAGONAL AXLE, MOLDED SYNTHETIC BEARINGS, WITH 3/8" SQUARE PLATED STEEL CONTROL SHAFT. LINKAGES SHALL BE CONCEALED IN THE FRAME. OPERATING SHAFT SHALL EXTEND BEYOND FRAME AND DUCT TO A LOCKING QUADRANT WITH ADJUSTABLE LEVER. MAXIMUM BLADE WIDTH SHALL NOT EXCEED 6".

DUCT TURNING VANES: PROVIDE FABRICATED TURNING VANES AND VANE RUNNERS, CONSTRUCTED IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS. PROVIDE TURNING VANES CONSTRUCTED OF CURVED BLADES, SUPPORTED WITH BARS PERPENDICULAR TO BLADES, AND SET INTO SIDE STRIPS SUITABLE FOR MOUNTING IN DUCTWORK. FOLLOW SMACNA GUIDELINES FOR SPACING SUPPORT, AND CONSTRUCTION. ALL BLADES SHALL BE DOUBLE THICKNESS AIRFLOW TYPE.

FLEXIBLE DUCT CONNECTORS: PROVIDE U.L. LABELED 30 GUNCE NEOPRENE COATED FIBERGLASS FABRIC DUCT CONNECTORS AT DUCT CONNECTIONS TO ALL VIBRATING EQUIPMENT.

DUCT ACCESS DOORS: PROVIDE HINGED ACCESS DOORS IN DUCTWORK WHERE REQUIRED FOR ACCESS TO EQUIPMENT, PROVIDE INSULATED ACCESS DOORS FOR INSULATED DUCTWORK. CONSTRUCT OF SAME OR THICKER GAUGE SHEETMETAL AS DUCT IN WHICH IT IS INSTALLED. PROVIDE FLUSH FRAMES FOR UNINSULATED DUCTS, AND EXTENDED FRAMES FOR EXTERNALLY INSULATED DUCTS. PROVIDE CONTINUOUS HINGE ON ONE SIDE, WITH ONE HANDLE-TYPE LATCH FOR ACCESS DOORS 12" HIGH AND SMALLER, AND TWO HANDLE-TYPE LATCHES FOR LARGER ACCESS DOORS.

TYPE I EXHAUST DUCTWORK: FABRICATE TYPE I EXHAUST DUCTS OF MINIMUM 16 GAUGE CARBON STEEL, WHERE CONCEALED, AND OF MINIMUM 16 GAUGE STAINLESS STEEL WHERE EXPOSED. JOINTS AND SEAMS SHALL BE CONTINUOUSLY WELDED LIQUID TIGHT ON THE EXTERNAL SIDE OF THE DUCT SYSTEM. PROVIDE THE "PENETRATOR" GREASE DUCT CLEAN-OUT ACCESS DOORS MANUFACTURED BY FLAME GARD, INC. (OR EQUIVALENT) AT EVERY CHANGE OF DIRECTION IN THE DUCT AND/OR EVERY 10 FEET WITH MINIMUM OF 3 FEET OF CLEARANCE IN FRONT OF CLEAN-OUT.

TYPE II EXHAUST DUCTWORK: FABRICATE TYPE II EXHAUST DUCTS OF ALUMINUM OR STAINLESS STEEL. SEAMS SHALL BE CONTINUOUSLY WELDED LIQUID TIGHT.

COMPOSITE GREASE DUCT ENCLOSURE ASSEMBLIES: PROVIDE FLEXIBLE BLANKET-TYPE INSULATION COMPOSED OF FIBER BLANKET ENCAPSULATED IN AN ALUMINUM FOIL SCRM, PROVIDING A NONCOMBUSTIBLE VAPOR BARRIER. PROVIDE A VAPOR AND DUST BARRIER. DUCT WRAP SYSTEM SHALL HAVE FLAME SPREAD INDEX OF NOT MORE THAN 5 AND SMOKE DEVELOPED INDEX NOT EXCEEDING 5, WHEN TESTED PER ASTM E-84 METHOD. INSULATION AND JACKET SHALL BE RATED FOR OPERATING TEMPERATURES UP TO 2000°F. DUCT WRAP SYSTEM MUST COMPLY WITH ALL FIVE FIRE TESTS OF STANDARD ASTM E2338. GREASE DUCT ENCLOSURE SYSTEM, AND THE DUCT FIRESTOP SYSTEM SHALL BE ASTM E 814 CLASSIFIED. FABRICATE DUCT WRAP ENCLOSURE WITH (2) LAYERS OF DUCT WRAP TO PROVIDE 2-HOUR FIRE RATING. PROVIDE COMPOSITE GREASE DUCT FIRE PROTECTION INSULATION FROM ONE OF THE FOLLOWING: THERMAL CERAMICS FIREMASTER FASTWRAP XL, UNIFRAX FIREWRAP 2.0 MAX.

VARIABLE REFRIGERANT VOLUME SPLIT SYSTEM: THE VARIABLE CAPACITY, HEAT PUMP AIR CONDITIONING SYSTEM SHALL BE A SPLIT SYSTEM BY MANUFACTURER SPECIFIED OR APPROVED EQUAL. THE SYSTEM SHALL CONSIST OF MULTIPLE INDOOR UNITS AND A SINGLE COMMON OUTDOOR HEAT PUMP CONDENSING UNIT.

OUTDOOR UNIT: THE OUTDOOR HEAT PUMP CONDENSING UNIT SHALL BE FACTORY ASSEMBLED AND PRE-WIRED WITH ALL THE NECESSARY ELECTRONIC AND REFRIGERANT CONTROLS. THE REFRIGERANT CIRCUIT SHALL CONSIST OF VARIABLE SPEED INVERTER DRIVEN SCROLL COMPRESSORS USING R410A REFRIGERANT, FANS, CONDENSER COIL, ELECTRONIC EXPANSION VALVE, SOLENOID VALVES, 4 WAY VALVES, DISTRIBUTION HEADERS, CAPILLARIES, FILTERS, SHUT OFF VALVES, OIL SEPARATORS, SERVICE PORTS AND REFRIGERANT REGULATOR. THE UNIT SHALL BE CAPABLE OF OPERATING IN COOLING FROM AN AMBIENT TEMPERATURE RANGE OF 23°F DB TO 110°F DB. THE UNIT SHALL BE CAPABLE OF OPERATING IN HEATING FROM AN AMBIENT TEMPERATURE RANGE OF 0°F DB TO 77°F DB/-4°F WB TO 60°F WB.

INDOOR UNIT: THE INDOOR SHALL BE FACTORY ASSEMBLED, COMPLETE WITH FACTORY WIRING, PIPING, ELECTRONIC EXPANSION VALVE, CONTROL CIRCUIT BOARD, FAN MOTOR THERMAL PROTECTOR, CONDENSATE DRAIN PAN, SELF-DIAGNOSTICS, AUTO-RESTART FUNCTIONS, 3 MINUTE FUSED TIME DELAY, AND TEST RUN SWITCH.

TESTING AND BALANCING: TEST AND ADJUST ALL MECHANICAL SYSTEMS AND EQUIPMENT TO ASSURE PROPER BALANCE AND OPERATION. PERFORM TESTS IN ACCORDANCE WITH THE MOST CURRENT NEBB OR AABC, AND ASHRAE STANDARDS. ELIMINATE OBJECTIONABLE NOISE AND VIBRATION, AND ASSURE PROPER FUNCTION OF CONTROLS. BALANCING CONTRACTOR SHALL BE AN INDEPENDENT CERTIFIED TEST AND BALANCE CONTRACTOR, WITH NEBB OR AABC CERTIFICATION. SUBMIT COMPLETED AND CERTIFIED TEST AND BALANCE REPORT TO OWNER'S REPRESENTATIVE. BALANCE ALL SYSTEMS TO WITHIN 5% OF AIR FLOWS INDICATED ON THE DRAWINGS, AND REPORT ALL DISCREPANCIES TO HVAC INSTALLER FOR CORRECTION. MARK FINAL BALANCE POSITIONS ON DAMPERS WITH PERMANENT MARKER.

ANSUL SYSTEM ACTIVATION: UPON ACTIVATION OF ANSUL SYSTEM, SHUT DOWN MAU-1, SF-1, ALL AIR HANDLING UNITS, AND ALL POWER AND GAS APPLIANCES LOCATED UNDER THE KITCHEN HOOD. PROVIDE RELAYS CONTACTS, INTERLOCKS, TRANSFORMERS, AND ALL ASSOCIATED WIRING TO ACCOMPLISH SEQUENCE.

A SMOKE DETECTOR SHALL DEENERGIZE ALL AIR HANDLING UNITS AND SUPPLY FAN IN BOTH THE OCCUPIED AND UNOCCUPIED MODES. WHENEVER SMOKE IS SENSSED BY SMOKE DETECTORS, REFER THE M3 FOR CENTRAL CONTROLLER INFORMATION.

GENERAL NOTES

A. CONTRACTORS AND SUB-CONTRACTORS SHALL CAREFULLY REVIEW THE CONSTRUCTION DOCUMENTS. INFORMATION REGARDING THE COMPLETE WORK IS DISPERSED THROUGHOUT THE DOCUMENT SET AND CANNOT BE ACCURATELY DETERMINED WITHOUT REFERENCE TO THE COMPLETE DOCUMENT SET.

B. COORDINATE WITH THE WORK OF OTHER SECTIONS, EQUIPMENT FURNISHED BY OTHERS, REQUIREMENTS OF THE OWNER, AND WITH THE CONSTRAINTS OF THE EXISTING CONDITIONS OF THE PROJECT SITE. PROVIDE DUCT RISERS AND DROPS AS REQUIRED FOR FIELD INSTALLATION AND TRADES COORDINATION. NOTIFY ARCHITECT OF ANY DISCREPANCIES BEFORE STARTING WORK.

C. DRAWINGS FOR HVAC WORK ARE DIAGRAMMATIC, SHOWING THE GENERAL LOCATION, TYPE, LAYOUT, AND EQUIPMENT REQUIRED, THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENT. REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS. REFER TO MANUFACTURER'S STANDARD INSTALLATION DRAWINGS FOR EQUIPMENT CONNECTIONS AND INSTALLATION REQUIREMENTS. PROVIDE DUCTWORK, CONNECTIONS, ACCESSORIES, OFFSETS, AND MATERIALS NECESSARY FOR A COMPLETE SYSTEM.

D. ALL WORK SHALL COMPLY WITH STATE AND LOCAL CODE REQUIREMENTS AS APPROVED AND AMENDED BY THE GOVERNING CITY. PURCHASE ALL PERMITS ASSOCIATED WITH THE WORK. OBTAIN ALL INSPECTIONS REQUIRED BY CODE.

E. USE OF COMBUSTIBLE MATERIALS IS NOT ALLOWED IN THE RETURN AIR PLENUM. MATERIALS USED IN THE PLENUM SHALL HAVE FLAME SPREAD RATING NOT TO EXCEED 25, AND SMOKE DEVELOPED RATING NOT TO EXCEED 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84. ALL EXPOSED WIRING IN THE PLENUM SHALL BE PLENUM RATED.

F. CONTRACT LABOR/ APPROVED ROOFING CONTRACTOR FOR ANY ROOF WORK TO MAINTAIN ROOFING WARRANTY.

G. INSTALL ALL EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS AND MAINTAIN MANUFACTURER'S REQUIRED CLEARANCES.

H. OUTSIDE AIR INTAKE OPENINGS SHALL BE LOCATED AT LEAST A MINIMUM OF 10 FT FROM EXIST OR RELIEF OPENINGS.

I. VERIFY EXISTING CONDITIONS PRIOR TO BID.

REFRIGERANT PIPING NOTE

PROPOSED REFRIGERANT PIPING ROUTE. DEVIATIONS FROM THIS PROPOSED ROUTE SHALL REQUIRE APPROVAL BY THE OWNER AND THE MANUFACTURER OR THE MANUFACTURER'S REPRESENTATIVE. PRIOR TO ANY WORK, REFRIGERANT PIPE(S) SIZES SHALL BE DETERMINED BY THE COMPRESSED EQUIPMENT MANUFACTURER OR THEIR REPRESENTATIVE, WHO SHALL ALSO DETERMINE THE NEED FOR DOUBLE SUCTION PIPE RISERS, ACCUMULATORS AND OTHER APPURTENANCES REQUIRED FOR PROPER LONG TERM OPERATION OF THE EQUIPMENT. REFRIGERANT PIPE(S) SIZING AND ROUTING SHALL MEET ALL SYSTEM OPERATING CONDITIONS. THE CONTRACTOR SHALL PROVIDE TO THE OWNER AND ENGINEER LETTERS AND DRAWINGS THAT ADEQUATELY DEPICT THE REFRIGERANT PIPING AND COMPONENTS, AND INDICATE THE RECOMMENDATIONS PROVIDED TO THEM BY THE MANUFACTURER OR THEIR REPRESENTATIVE.

HVAC CONTROLS SEQUENCE

PROVIDE ALL NECESSARY ELECTRONIC TEMPERATURE SENSORS, DAMPER ACTUATORS, MIXED AIR TEMPERATURE CONTROLLERS, OUTDOOR AIR TEMPERATURE SENSORS, MIXED AIR TEMPERATURE SENSORS, CONTROL TRANSFORMERS WITH SECONDARY OVERLOAD PROTECTION, CONTROL CABINETS, WIRING AND CONDUIT TO ACCOMPLISH THE FOLLOWING SEQUENCE OF OPERATION:

UNOCCUPIED MODE:
THE SUPPLY FAN SF-1 SHALL BE DEACTIVATED.
THE AIR HANDLING UNIT SUPPLY FANS SHALL ONLY RUN WHEN THERE IS A REQUIREMENT FOR COOLING OR HEATING.
BRANCH CIRCUIT SELECTORS SHALL ADJUST THE REFRIGERANT FLOW TO AIR HANDLING UNITS DEPENDING ON THE ZONE COOLING OR HEATING REQUIREMENTS.

THERMOSTAT SETPOINTS:
OCCUPIED COOLING SETPOINT: 75 DEGREES
OCCUPIED HEATING SETPOINT: 70 DEGREES
UNOCCUPIED COOLING SETPOINT: 85 DEGREES
UNOCCUPIED HEATING SETPOINT: 60 DEGREES

THE CONTRACTOR SHALL PROGRAM ALL THERMOSTATS AT PROJECT COMPLETION. COORDINATE WITH TENANT FOR PROGRAM SETTINGS.

ANSUL SYSTEM ACTIVATION:
UPON ACTIVATION OF ANSUL SYSTEM, SHUT DOWN MAU-1, SF-1, ALL AIR HANDLING UNITS, AND ALL POWER AND GAS APPLIANCES LOCATED UNDER THE KITCHEN HOOD. PROVIDE RELAYS CONTACTS, INTERLOCKS, TRANSFORMERS, AND ALL ASSOCIATED WIRING TO ACCOMPLISH SEQUENCE.

A SMOKE DETECTOR SHALL DEENERGIZE ALL AIR HANDLING UNITS AND SUPPLY FAN IN BOTH THE OCCUPIED AND UNOCCUPIED MODES. WHENEVER SMOKE IS SENSSED BY SMOKE DETECTORS, REFER THE M3 FOR CENTRAL CONTROLLER INFORMATION.

AIR HANDLING UNIT SCHEDULE

MARK	1	2	3	4.5	8
MANUFACTURER	DAIKIN	DAIKIN	DAIKIN	DAIKIN	DAIKIN
MODEL	FXM28BVAJU	FXM48BVAJU	FXM72BVAJU	FXM92BVAJU	FXM127BVAJU
AIR FLOW (CFM)	2,400	4,000	6,000	9,000	12,000
OA FLOW (CFM)	700	700	700	700	700
EXT. SP. (IN W.C.)	0.5	0.5	0.5	0.5	0.5
EX COOLING COIL	16,468.8	16,468.8	16,468.8	16,468.8	16,468.8
EAT (BTU/HR)	70,020	38,078	52,814	70,548	54,790
SENSIBLE (BTU/HR)	18,498	20,037	24,211	31,142	34,478
HEAT OUTPUT	106,174	53,087	79,530	106,174	79,630
OUTPUT (BTU/HR)	106,174	53,087	79,530	106,174	79,630
ELECTRICAL					
VOLTS/PH/Hz	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60
MCA (AMPS)	10.1	4.4	9	10.7	9
NOISE (dB)	15	15	15	15	15
APPROX. WEIGHT (LBS)	310	150	310	310	310
NOTES	1	1	1	1	1

AIR BALANCE SCHEDULE

	AHJ1	AHJ2	AHJ3	AHJ4	AHJ5	AHJ6	EF-1	EF-2	EF-3	MAU-1	TOTALS
OUTSIDE AIR FLOW (CFM)	700	400	800	800	800	600	0	0	0	0	5,100
RETURN AIR FLOW (CFM)	1,700	600	1,400	1,900	1,400	0	0	0	0	0	9,200
SUPPLY AIR FLOW (CFM)	2,400	1,000	2,200	2,400	2,400	2,400	0	0	0	0	17,710
EXHAUST AIR FLOW (CFM)	0	0	0	0	0	0	6,400	950	500	0	7,850
BUILDING PRESSURE (CFM)	700	400	800	800	800	600	-6,400	-950	-500	0	120
REBUILDING BUILDING PRESSURIZATION (CFM)											870

GRILLE, REGISTER, AND DIFFUSER SCHEDULE

MARK	A	B	C	D	E
MANUFACTURER	TITUS	TITUS	TITUS	TITUS	TITUS
MODEL	5300PL	5300PL	TDCAAA	TUCA	53F
TYPE	SUPPLY GRILLE	SUPPLY GRILLE	SQUARE CEILING	SQUARE CEILING	EGGCRATE RETURN
NECK SIZE (LxW")	14"X6"	12"X4"	16"X16"SEE PLAN	9"X9"SEE PLAN	DIFFUSER GRILLE
FACE SIZE (LxW")	15.34"X7.12"	13.34"X5.12"	24"X24"	12"X12"	24"X24"
FRAME TYPE	DUCT MOUNT	DUCT MOUNT	LAY-IN	LAY-IN	LAY-IN
FINISH	RAW METAL	RAW METAL	RAW METAL	WHITE	WHITE
NOISE CRITERIA LEVEL	<30	<30	<30	<30	<30
ACCESSORIES	ASD	ASD	ALL	TRM, OBD, STR	
NOTES				3.5	

ACCESSORIES:
OBD-OPPOSED BLADE DAMPER ASD - AIR SCOOP DAMPER TRM - RAMP MOUNT FRAME, STR-SQUARE TO ROUND ADAPTER
MP-INSULATED LINEAR SLOT PLENUM

NOTES:
1) PROVIDE WITH A 3WAY OR 3WAY THROW IF INDICATED ON MECHANICAL PLAN.
2) ADJUST DISCHARGE PATTERN TO VERTICAL THROW.
3) PAINT DIFFUSER AND/OR GRILLE TO MATCH CEILING COLOR.

EXHAUST AND VENTILATION FAN SCHEDULE

MARK	1	2	3
MANUFACTURER	BUZZCARM	BUZZCARM	BUZZCARM
MODEL	ISDQ-12	ISDQ-12	ISDQ-12
TYPE	CENTRIFUGAL UTILITY	INLINE	INLINE
DRIVE TYPE	BELT	DIRECT	DIRECT
PERFORMANCE			
AIR FLOW (CFM)	4,000	3,000	3,000
EXT. STATIC (IN W.C.)	2.5	0.75	0.375
FAN SPEED (RPM)	1,300	1,400	1,400
ELECTRICAL			
VOLTS/PH/Hz	480/3/60	120/1/60	120/1/60
FAN MOTOR HP	1.5	1.0	1.0
ACCESSORIES	WP, GDC, RC	BD, DS, SC	BD, DS, SC
APPROX. WEIGHT (LBS)	430	230	100
SERIES	HOC01.2.3	HOC01.4	RESTROOM
NOTES	ALL	2	

ACCESSORIES:
BD-BACKDRIFT DAMPER, DS-DISCONNECT SWITCH, GDC-GRASS DRAIN AND GUP
WP-NEMA 3R DISCONNECT SWITCH, RC-ROOF RAILS, SC-SPEED CONTROLLER

NOTES:
1) FAN FURNISHED WITH UNIT MOUNTED NEMA 3R DISCONNECT.
2) PROVIDE MOTOR STARTERS WITH CONTACTORS TO INTERLOCK WITH HOOD CONTROL PANEL.
3) FURNISH WITH GROUND GUARD SYSTEM.
4) MOTOR STARTER IS TO BE FURNISHED BY MECHANICAL CONTRACTOR AND INSTALLED BY ELECTRICAL CONTRACTOR.

CONTROL NOTES:
A) EF-1 AND EF-2 SHALL BE CONTROLLED BY SWITCH LOCATED IN THE KITCHEN. INTERLOCK EF-1, SF-1, AND MAU-1. AIR HANDLING UNITS SHALL OPERATE IN OCCUPIED MODE WHILE EF-1 AND EF-2 ARE ENERGIZED.
B) EF-3 AND SF-1 SHALL BE CONTROLLED BY A TIME CLOCK. KITCHEN CONTROL SWITCH SHALL OVERRIDE TIME CLOCK TO CONTROL SF-1.

MAKE-UP AIR UNIT SCHEDULE

MARK	1
MANUFACTURER	CAPTIVE AIR
MODEL	INLINE-3-018
CONFIGURATION	INLINE
DRIVE TYPE	BELT
PERFORMANCE	
AIR FLOW (CFM)	5,100
EXTERNAL STATIC (IN W.C.)	1.2
FAN SPEED (RPM)	1,200
ELECTRICAL	
VOLTS/PH/Hz	480/3/60
FAN MOTOR HP	3
MCA (AMPS)	5.74
MOCIP (AMPS)	15
APPROX. WEIGHT (LBS)	325
ACCESSORIES	DS
NOTES	1

ACCESSORIES:
DS-DISCONNECT SWITCH

NOTES:
1) INTERLOCK MAU-1 WITH HOOD CONTROL PANEL TO ENERGIZE WHEN EF-1 AND EF-2 ARE ENERGIZED.
2) MOTOR STARTER IS TO BE FURNISHED BY MECHANICAL CONTRACTOR AND INSTALLED BY ELECTRICAL CONTRACTOR.

HEAT PUMP CONDENSING UNIT SCHEDULE

MARK	1	2
MANUFACTURER	DAIKIN	DAIKIN
MODEL	REYQ24DPTJU	REYQ24DPTJU
CONFIGURATION	OUTDOOR UNIT	OUTDOOR UNIT
DRIVE TYPE	BELT	BELT
PERFORMANCE		
AIR FLOW (CFM)	1,200	1,200
EXTERNAL STATIC (IN W.C.)	1.2	1.2
FAN SPEED (RPM)	1,200	1,200
ELECTRICAL		
VOLTS/PH/Hz	480/3/60	480/3/60
FAN MOTOR HP	3	3
MCA (AMPS)	5.74	5.74
MOCIP (AMPS)	15	15
APPROX. WEIGHT (LBS)	325	325
ACCESSORIES	DS	DS
NOTES	1	1

ACCESSORIES:
DS-DISCONNECT SWITCH

NOTES:
1) PROVIDE LIQUID LINE SIGHT GLASS, MOISTURE INDICATOR, AND FILTER DRYER FOR EACH CIRCUIT.
2) EER = 11.0

LOUVER SCHEDULE

MARK	1	2
MANUFACTURER	GREENBROOK	GREENBROOK
MODEL	ESD-205	ESD-205
TYPE	STATIONARY	STATIONARY
CONFIGURATION	DRAINABLE BLADE	DRAINABLE BLADE
SIZE (W" X H")	60"X30"	42"X30"
FREE AREA (SQ FT)	6.32	1.42
MAX. FACE VELOCITY (FPM)	1,200	1,200
FINISH	PER ARCHITECT	PER ARCHITECT
ACCESSORIES	BE BS FF	BE BS FF
NOTES	1	1

ACCESSORIES:
PE-FLANGED FRAME, BE-BAKED ENAMEL FINISH, BS-BIRD SCREEN
DS-DISCONNECT DAMPER

NOTES:
1) COORDINATE LOUVER COLOR WITH ARCHITECT.

THIS SHEET IS PART OF THE CONSTRUCTION DOCUMENTS. OTHER SHEETS INCLUDING SPECIFICATIONS APPLY. THAT SHOWN HEREIN IS SCHEMATIC IN NATURE AND NOT TO BE USED AS A SHOP DRAWING. THEREFORE, INCLUDE ALL MODIFICATIONS REQUIRED TO CONFORM TO SITE CONDITIONS, AND THE EQUIPMENT AND MATERIAL USED. VERIFY LOCATIONS AND

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MECHANICAL SYMBOLS LEGEND

ABBREVIATIONS:

AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
BDD	BACKDRAFT DAMPER
BTU	BRITISH THERMAL UNIT
CFM	CUBIC FEET PER MINUTE
DB	DRY BULB
EAT	ENTERING AIR TEMPERATURE
ERU	ENERGY RECOVERY UNIT
ESP	EXTERNAL STATIC PRESSURE
HZ	FREQUENCY
LAT	LEAVING AIR TEMPERATURE
NC	NOISE CRITERIA
OA	OUTSIDE AIR
PSI	POUNDS PER SQUARE INCH
TYP	TYPICAL
WB	WET BULB

DOUBLE LINE DUCT SYMBOLS:

	NEW SHEET METAL DUCTWORK & SIZE
	SUPPLY OR OUTSIDE AIR DUCT
	RETURN AIR DUCT
	EXHAUST AIR DUCT
	DUCTWORK TRANSITION
	SUPPLY DUCT ELBOW UP OR DOWN
	RETURN DUCT ELBOW UP OR DOWN
	EXHAUST DUCT ELBOW UP OR DOWN
	DUCT ELBOW WITH FIXED TURNING VANES
	DUCT BRANCH TAKE-OFF
	ROUND SPIN-IN WITH DAMPER
	FLEXIBLE DUCT CONNECTION
	VOLUME DAMPER
	BACKDRAFT DAMPER
	FLEXIBLE DUCTWORK

EQUIPMENT:

	AIR HANDLING UNIT
	HEAT PUMP CONDENSING UNIT
	INLINE FAN
	DAIKIN THERMOSTAT
	DAIKIN TEMPERATURE SENSOR
	REFRIGERANT PIPING BRANCH CIRCUIT SELECTOR
	DUCT MOUNTED SMOKE DETECTOR

GENERAL REFERENCES/NOTATIONS:

	NOTE DESIGNATION
	REVISION DESIGNATION
	MECHANICAL EQUIPMENT DESIGNATION
	DIFFUSER DESIGNATION AND CFM

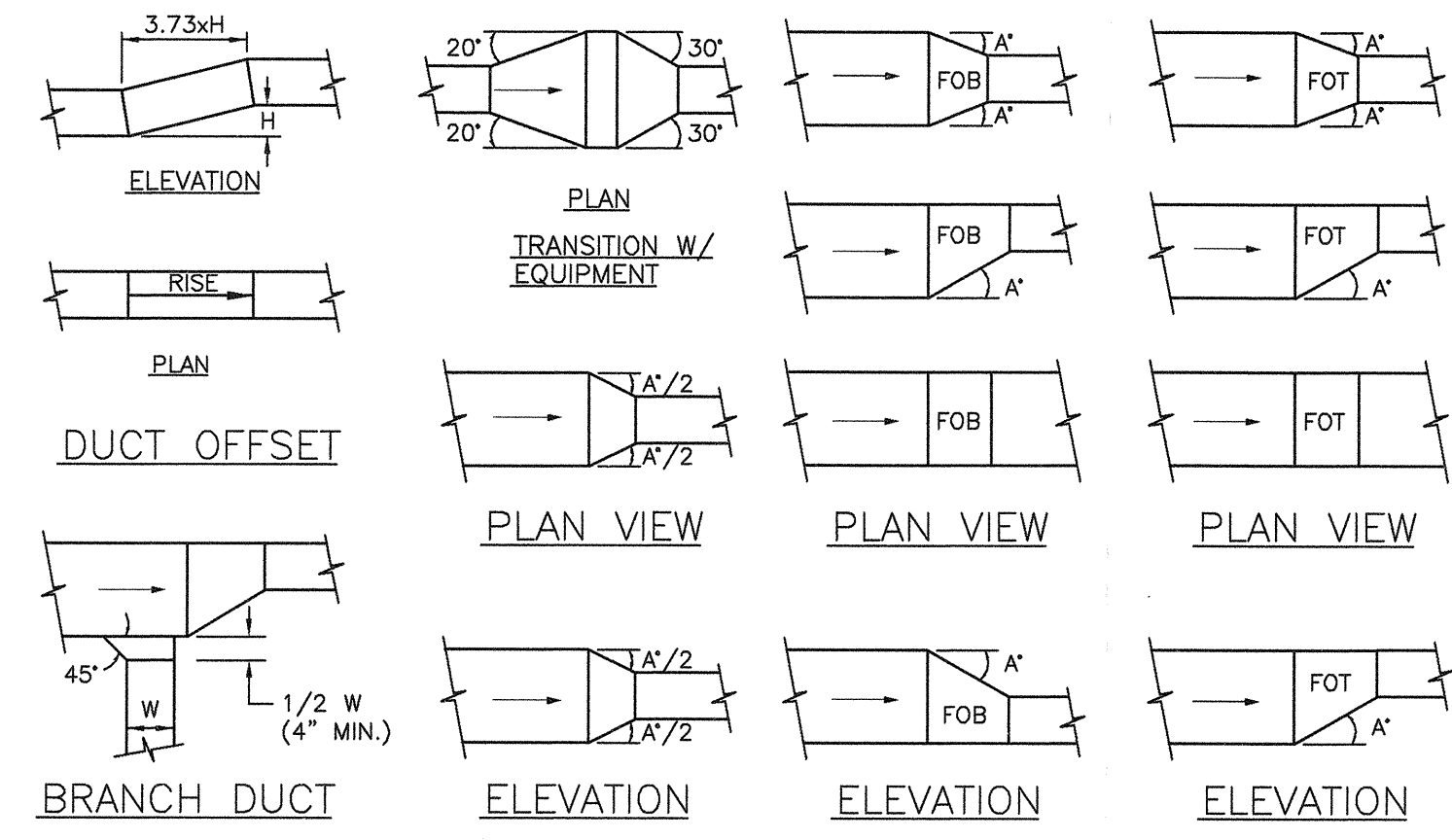
LINETYPES:

	REFRIGERANT SUCTION LINE
	REFRIGERANT LIQUID
	REFRIGERANT HOT GAS

GRILLES/DIFFUSERS:

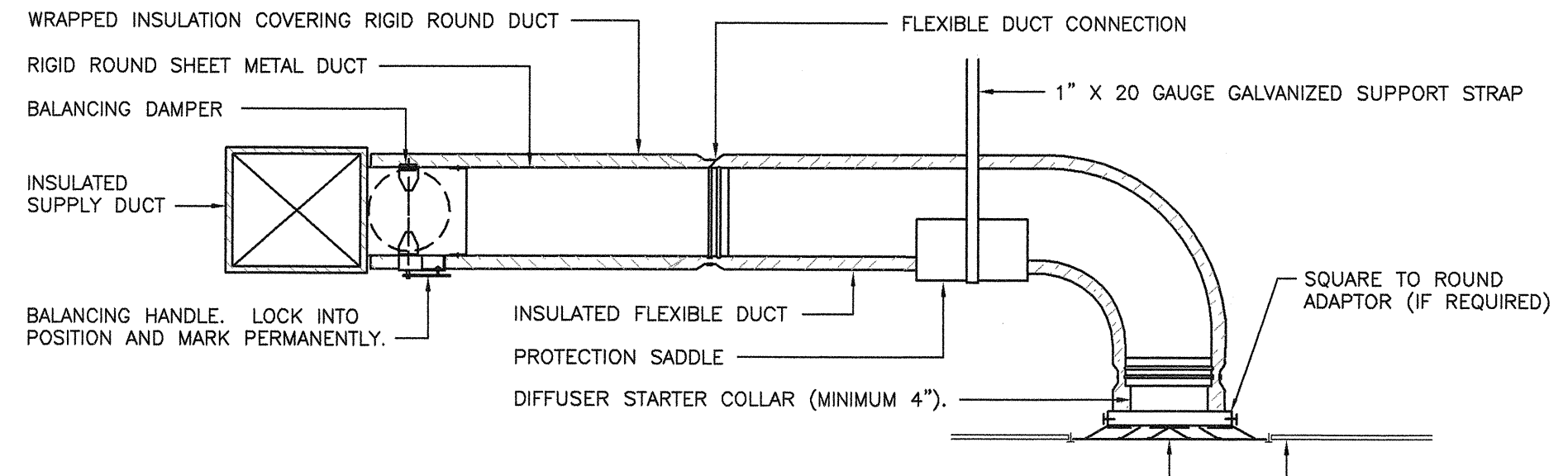
	SUPPLY DIFFUSER
	RETURN GRILLE
	EXHAUST GRILLE

SYMBOLS LEGEND NOTES:
REFER TO SPECIFICATIONS AND PLAN NOTES FOR DETAILED DESCRIPTION OF ALL DEVICES SHOWN IN THIS SCHEDULE, PROVIDED BY THIS CONTRACTOR.



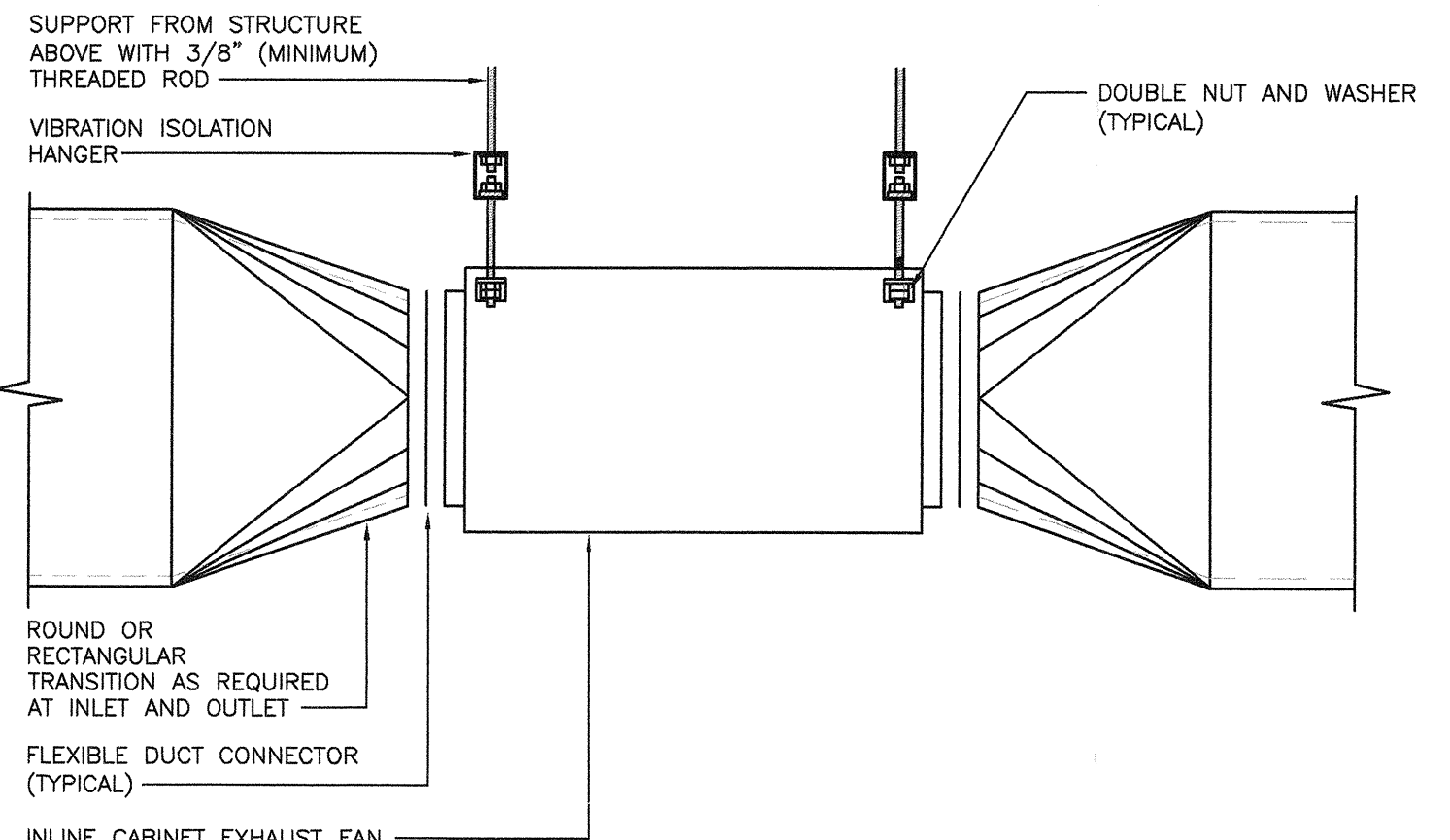
NOTES: 1) ANGLE A = 30° WHEN AIR FLOWS IN DIRECTION OF ARROW (SUPPLY AIR).
2) ANGLE A = 20° WHEN AIR FLOWS IN OPPOSITE DIRECTION OF ARROW (RETURN OR EXHAUST).

06 LOW VELOCITY DUCT FITTINGS DETAIL
NOT TO SCALE

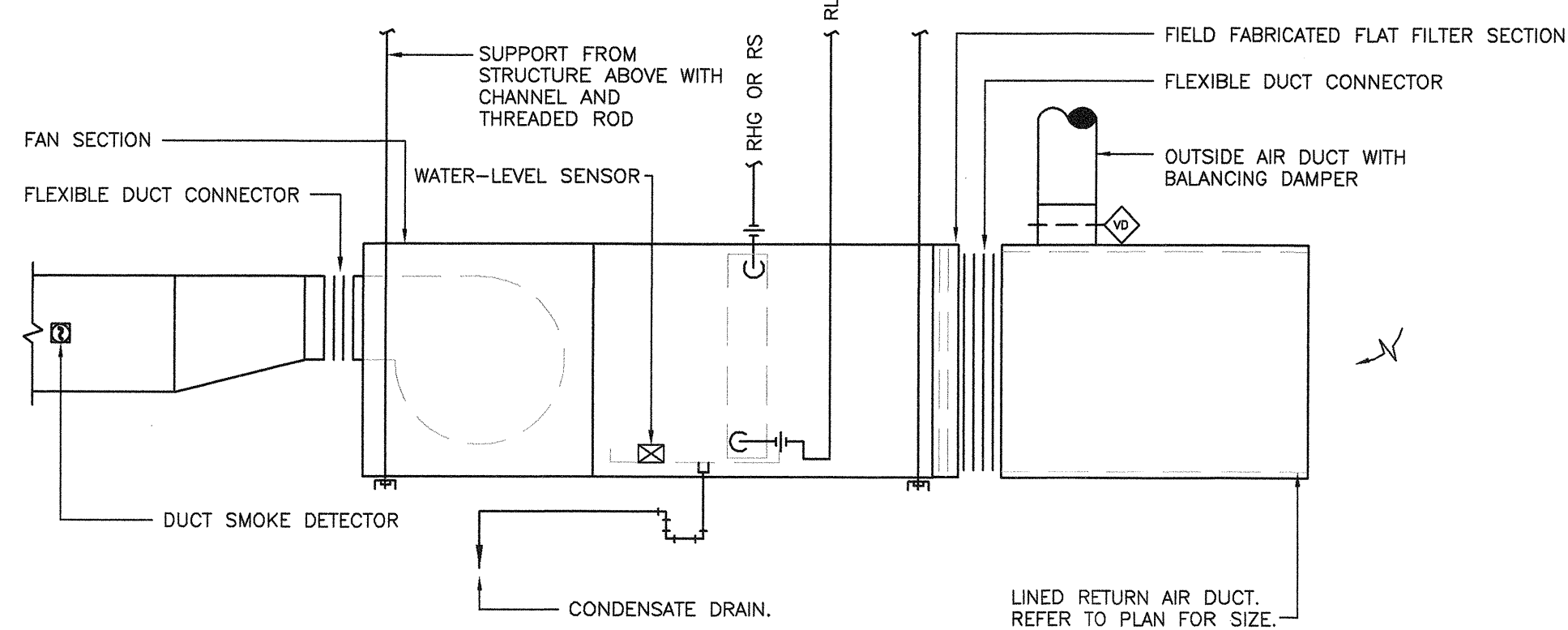


NOTES: 1) PROVIDE AT FLEXIBLE DUCT CONNECTION METAL OR "PANDUIT" DRAWBAND ON THE INTERIOR FLEXIBLE DUCT HELIX. SECURE THE INSULATION OVER THE DRAW BAND WITH AN ADDITIONAL DRAWBAND.
2) PROVIDE BEADING ON ROUND METAL DUCT 12" OR LARGER IN DIAMETER.
3) PROVIDE MINIMUM 4" COLLARS FOR ATTACHMENT OF THE FLEXIBLE DUCT TO ROUND DUCT, DAMPERS AND DIFFUSERS.
4) BAND RIGID ROUND DUCT INSULATION TO DUCT AND PROVIDE TAPE FOR INSULATION OVERLAP.

01 DIFFUSER CONNECTION DETAIL- FLEX DUCT
NOT TO SCALE

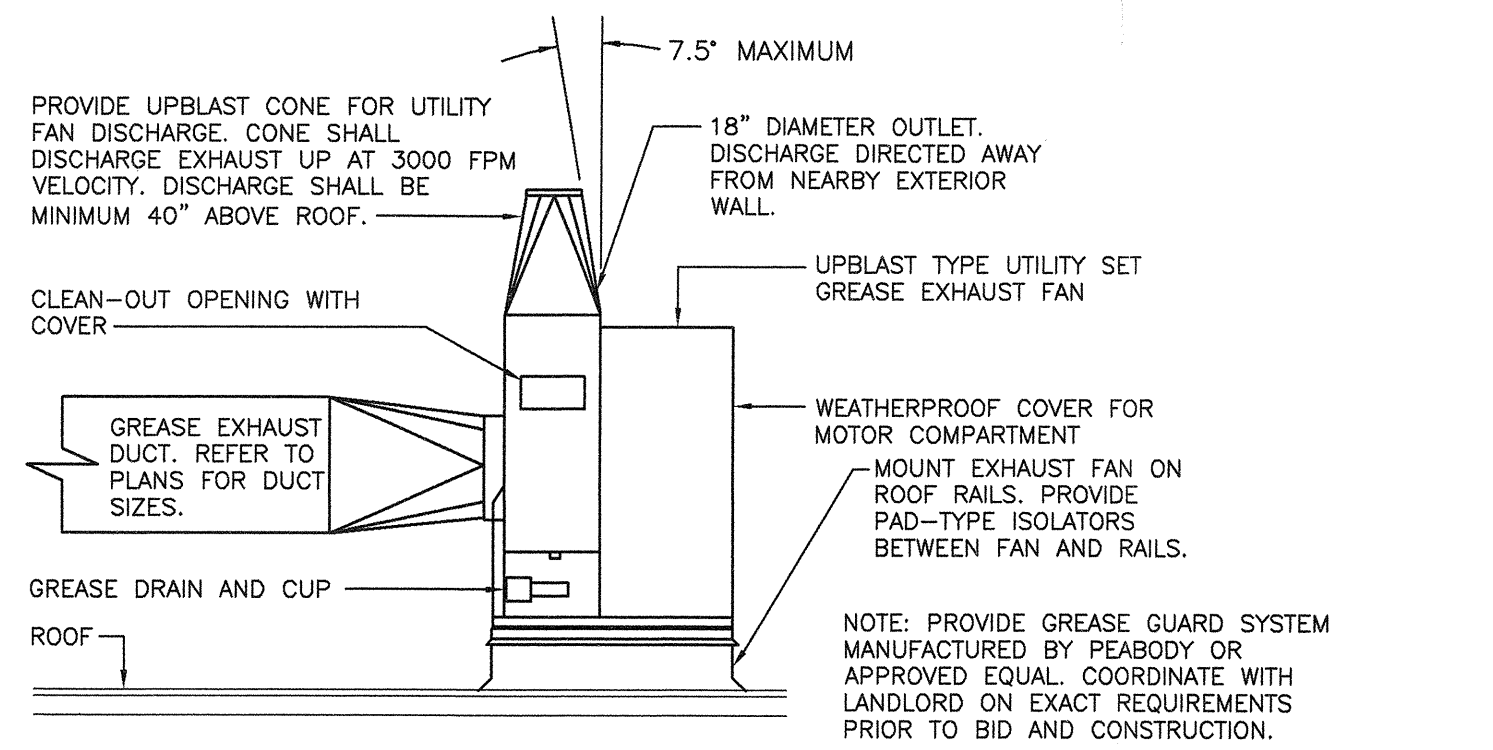


07 INLINE CABINET FAN DETAIL
NOT TO SCALE

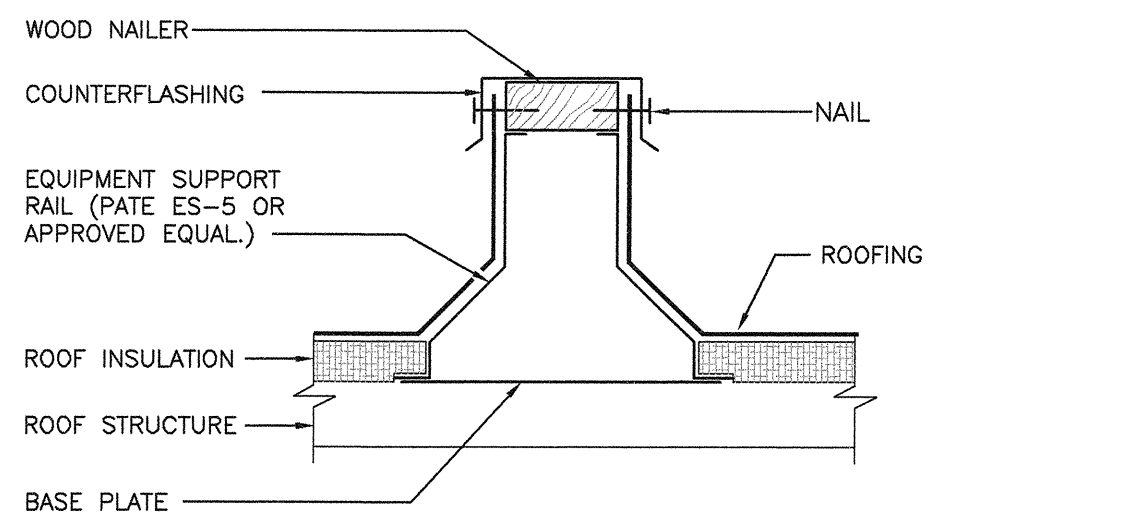


NOTES: 1) INSULATE REFRIGERANT LINES PER MANUFACTURER'S RECOMMENDATIONS.
2) PROVIDE A WATER-LEVEL MONITORING DEVICE. INSTALL DEVICE INSIDE THE PRIMARY DRAIN PAN. THIS DEVICE SHALL SHUT OFF THE UNIT IN THE EVENT THAT THE PRIMARY DRAIN BECOMES RESTRICTED. EXTERNALLY INSTALLED DEVICES AND DEVICES INSTALLED IN THE DRAIN LINE ARE NOT PERMITTED.

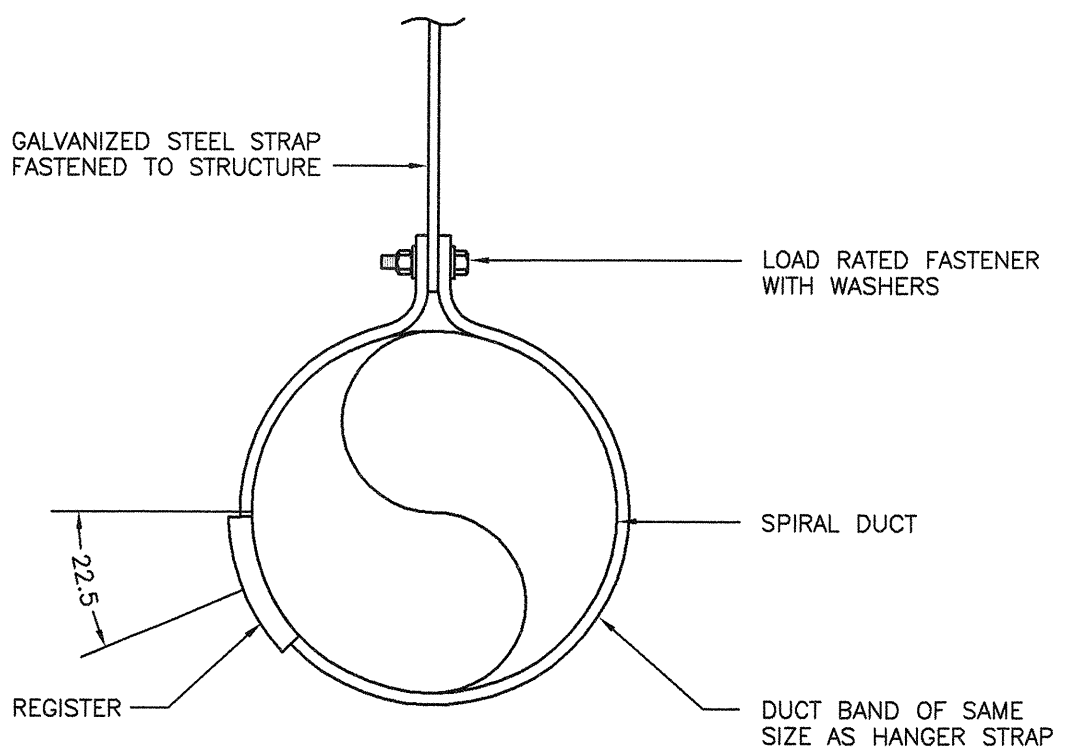
02 AIR HANDLING UNIT INSTALLATION DETAIL
NOT TO SCALE



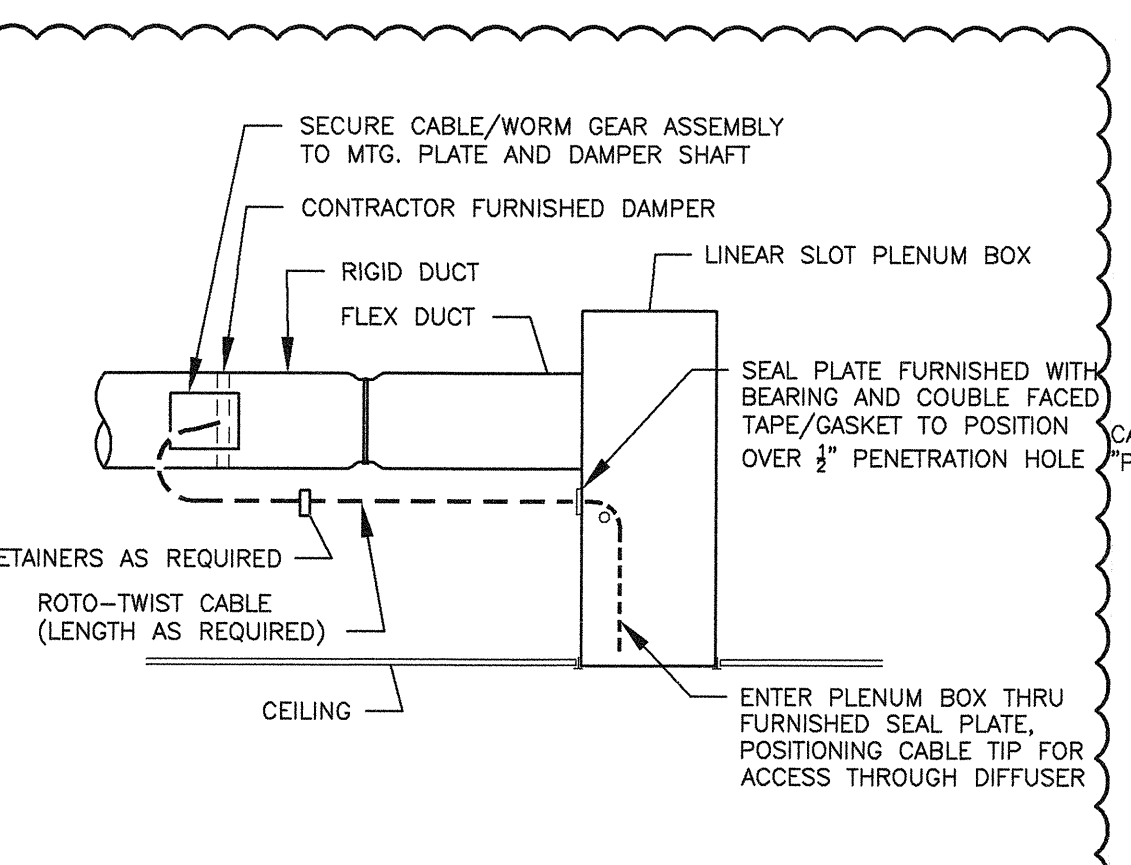
08 GREASE EXHAUST FAN DETAIL
NOT TO SCALE



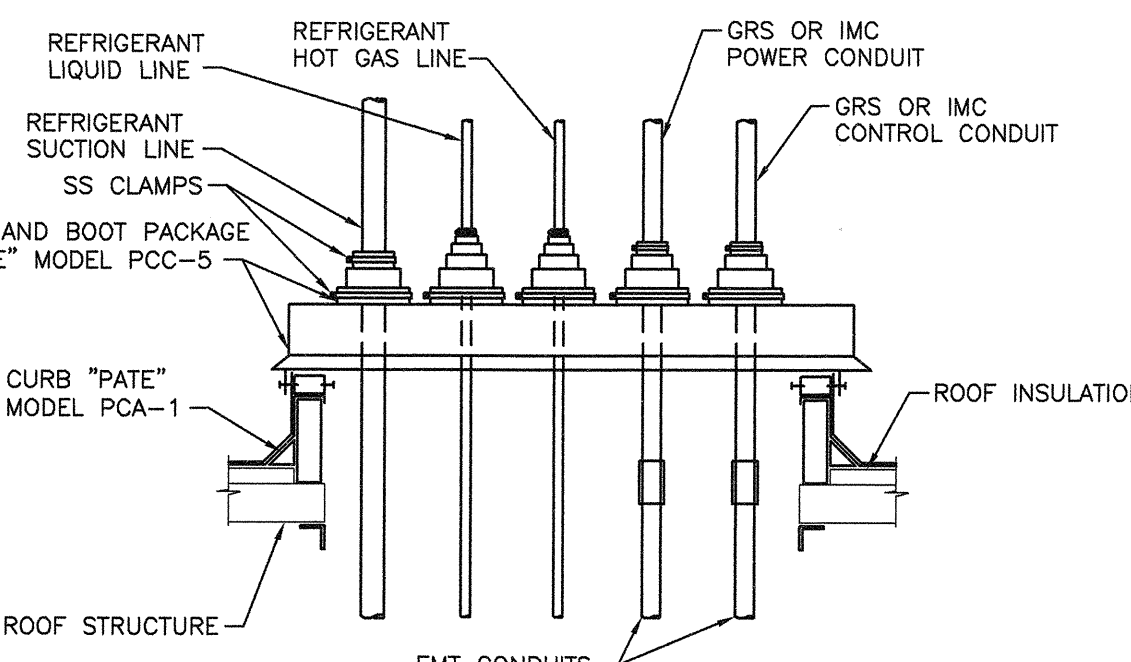
04 EQUIPMENT SUPPORT RAIL DETAIL
NOT TO SCALE



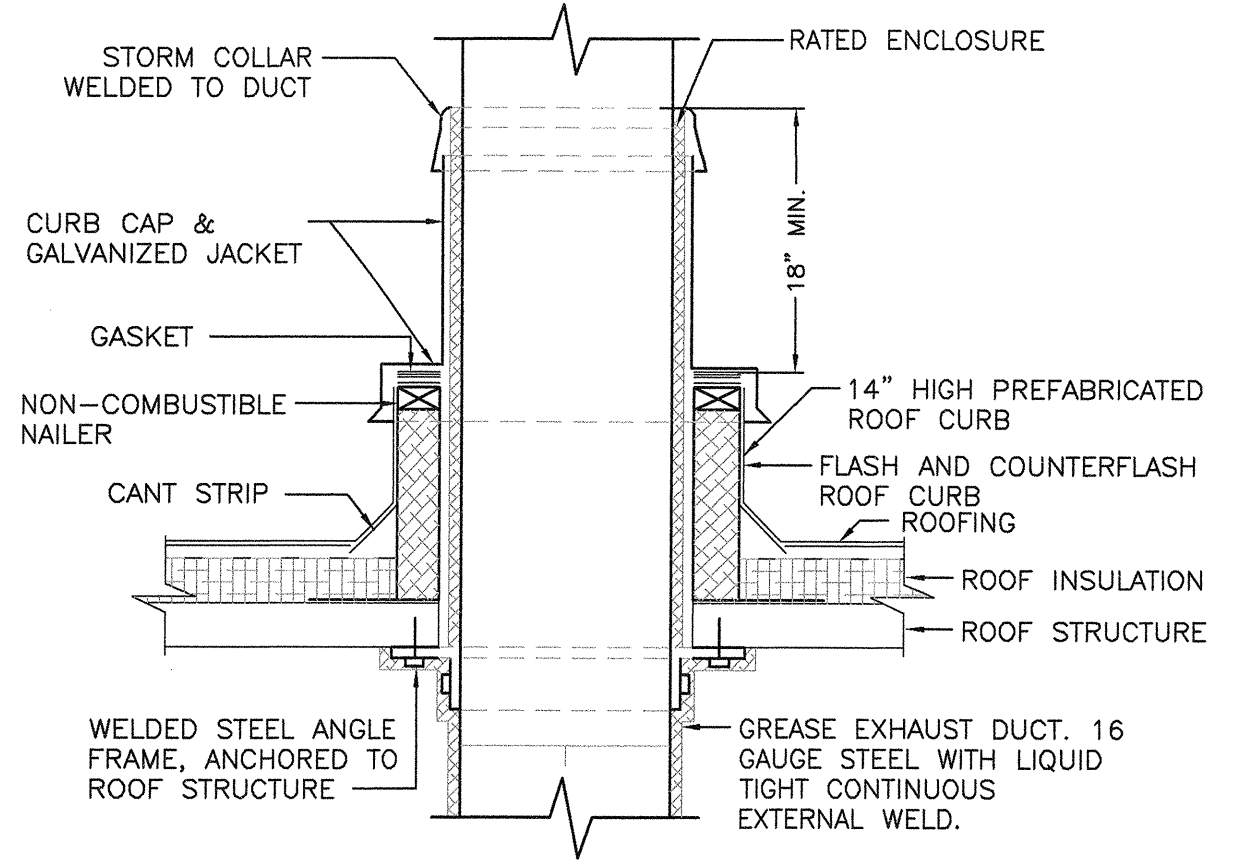
03 SPIRAL DUCT INSTALLATION DETAIL
NOT TO SCALE



10 ROTO-TWIST DETAIL
NOT TO SCALE



09 PIPE ROOF PENETRATION DETAIL
NOT TO SCALE



05 EXHAUST DUCT THROUGH ROOF DETAIL
NOT TO SCALE

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True Food kitchen

Santa Monica Place
395 Santa Monica Place, Space No. 172
Santa Monica, California 90401

MECHANICAL DETAILS

CONSULTING ENGINEER
REVISIONS
1. 11.01.10
CHANGES

AAD:FITCH dba

FITCH

Kevin T. Everham RA AIA
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www.FITCH.com

BID SET 11.01.10

DATE: 09.23.2010 SHEET: M300

SCALE: AS NOTED

DRAWN BY: OMA

PROJECT NO: FRC09001

MECHANICAL MANDATORY MEASURES

EQUIPMENT AND SYSTEMS EFFICIENCY
ANY APPLIANCE FOR WHICH THERE IS A CALIFORNIA STANDARD ESTABLISHED IN THE APPLIANCE EFFICIENCY STANDARDS MAY BE INSTALLED ONLY IF THE MANUFACTURER HAS CERTIFIED TO THE COMMISSION...

CERTIFICATE OF COMPLIANCE and FIELD INSPECTION ENERGY CHECKLIST (Part 3 of 5) MECH-1C
Project Name: True Food Kitchen Date: 09/23/2010
Required Acceptance Tests
Designer:
Enforcement Agency:

2008 Nonresidential Compliance Forms August 2009

CERTIFICATE OF COMPLIANCE and FIELD INSPECTION ENERGY CHECKLIST (Part 4 of 5) MECH-1C
Project Name: True Food Kitchen Date: 09/23/2010
Test Description table with columns MECH-12A through MECH-15A

2008 Nonresidential Compliance Forms August 2009

MECHANICAL VENTILATION AND REHEAT MECH-3C
PROJECT NAME: True Food Kitchen DATE: 09/23/2010
MECHANICAL VENTILATION §121(b)(2)
REHEAT LIMITATION §144(d)
Table with columns A through N for area basis and occupancy basis

2008 Nonresidential Compliance Forms August 2009

CERTIFICATE OF COMPLIANCE and FIELD INSPECTION ENERGY CHECKLIST (Page 2 of 5) MECH-1C
Project Name: True Food Kitchen Date: 09/23/2010
SPECIAL FEATURES INSPECTION CHECKLIST
Discrepancies:

2008 Nonresidential Compliance Forms August 2009

AIR SYSTEM REQUIREMENTS (Part 1 of 3) MECH-2C
PROJECT NAME: True Food Kitchen DATE: 09/23/2010
MANDATORY MEASURES
PRESCRIPTIVE MEASURES

2008 Nonresidential Compliance Forms August 2009

CERTIFICATE OF COMPLIANCE and FIELD INSPECTION ENERGY CHECKLIST (Page 1 of 5) MECH-1C
Project Name: True Food Kitchen Date: 09/23/2010 Climate Zone: 8
General Information
HVAC SYSTEM DETAILS
FIELD INSPECTION ENERGY CHECKLIST

FIELD INSPECTION ENERGY CHECKLIST (continued)
Equipment table with columns Item or System Tags, Inspection Criteria, Special Features, Pass, Fail, Describe Reason

2008 Nonresidential Compliance Forms August 2009

CERTIFICATE OF COMPLIANCE and FIELD INSPECTION ENERGY CHECKLIST (Part 5 of 5) MECH-1C
Project Name: True Food Kitchen Date: 09/23/2010
Documentation Author's Declaration Statement
Principal Mechanical Designer's Declaration Statement
Mandatory Measures

2008 Nonresidential Compliance Forms August 2009

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MECHANICAL TITLE 24

CONSULTING ENGINEER
REVISIONS
1. 11.01.10

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FITCH
Kevin T. Everham RA AIA
Donald J. Hesluk RA AIA

BID SET 11.01.10
DATE: 09.23.2010 SHEET:
SCALE: AS NOTED M400
DRAWN BY: OMA
PROJECT NO: FRC09001 REV:
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MECHANICAL & ELECTRICAL ROOF PLAN

CONSULTING ENGINEER	
DESIGNER	
DATE	
REVISIONS	
1.	

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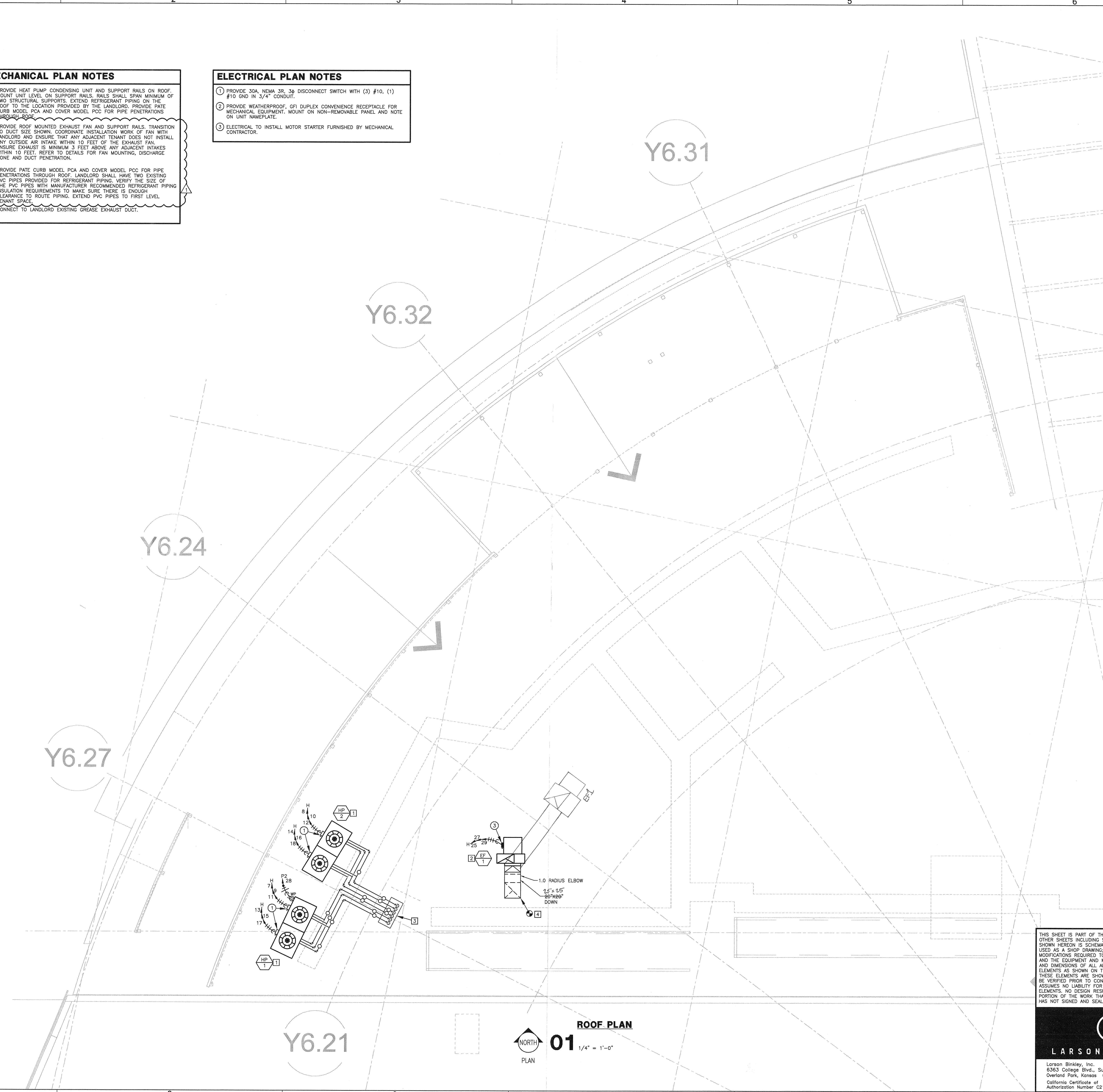
DATE: 09.23.2010 SHEET:
SCALE: AS NOTED **ME100**
DRAWN BY: OMA
PROJECT NO: FRC09001 REV:

MECHANICAL PLAN NOTES

1. PROVIDE HEAT PUMP CONDENSING UNIT AND SUPPORT RAILS ON ROOF. MOUNT UNIT LEVEL ON SUPPORT RAILS. RAILS SHALL SPAN MINIMUM OF TWO STRUCTURAL SUPPORTS. EXTEND REFRIGERANT PIPING ON THE ROOF TO THE LOCATION PROVIDED BY THE LANDLORD. PROVIDE PATE CURB MODEL PCA AND COVER MODEL PCC FOR PIPE PENETRATIONS THROUGH ROOF.
2. PROVIDE ROOF MOUNTED EXHAUST FAN AND SUPPORT RAILS. TRANSITION TO DUCT SIZE SHOWN. COORDINATE INSTALLATION WORK OF FAN WITH LANDLORD AND ENSURE THAT ANY ADJACENT TENANT DOES NOT INSTALL ANY OUTSIDE AIR INTAKE WITHIN 10 FEET OF THE EXHAUST FAN. ENSURE EXHAUST IS MINIMUM 3 FEET ABOVE ANY ADJACENT INTAKES WITHIN 10 FEET. REFER TO DETAILS FOR FAN MOUNTING, DISCHARGE CONE AND DUCT PENETRATION.
3. PROVIDE PATE CURB MODEL PCA AND COVER MODEL PCC FOR PIPE PENETRATIONS THROUGH ROOF. LANDLORD SHALL HAVE TWO EXISTING PVC PIPES PROVIDED FOR REFRIGERANT PIPING. VERIFY THE SIZE OF THE PVC PIPES WITH MANUFACTURER RECOMMENDED REFRIGERANT PIPING INSULATION REQUIREMENTS TO MAKE SURE THERE IS ENOUGH CLEARANCE TO ROUTE PIPING. EXTEND PVC PIPES TO FIRST LEVEL TENANT SPACE.
4. CONNECT TO LANDLORD EXISTING GREASE EXHAUST DUCT.

ELECTRICAL PLAN NOTES

1. PROVIDE 30A, NEMA 3R, 3 ϕ DISCONNECT SWITCH WITH (3) #10, (1) #10 GND IN 3/4" CONDUIT.
2. PROVIDE WEATHERPROOF, GFI DUPLEX CONVENIENCE RECEPTACLE FOR MECHANICAL EQUIPMENT. MOUNT ON NON-REMOVABLE PANEL AND NOTE ON UNIT NAMEPLATE.
3. ELECTRICAL TO INSTALL MOTOR STARTER FURNISHED BY MECHANICAL CONTRACTOR.



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