

GENERAL MECHANICAL NOTES:

1. FOR NATURAL GAS PIPING, SEE PLUMBING DRAWINGS.
2. FOR EXACT LOCATION OF DIFFUSERS AND GRILLES, SEE ARCHITECTURAL REFLECTED CEILING PLANS.
3. FOR ROOF PENETRATION DETAILS, SEE ARCHITECTURAL AND STRUCTURAL DWGS.
4. FLEX DUCTWORK TO DIFFUSERS SHALL MATCH NECK SIZE OF DIFFUSER WHERE INDICATED.
5. PROVIDE ALL MATERIALS AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE HVAC SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED, AND AS REQUIRED BY STATE AND LOCAL CODES.
6. INSTALL ALL NEW WORK IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS, CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS.
7. THE LOCATIONS OF ALL ITEMS SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS THAT ARE NOT DEFINITELY FIXED BY DIMENSIONS ARE BEST APPROXIMATES ONLY. THE EXACT LOCATIONS NECESSARY TO SECURE THE BEST CONDITIONS AND RESULTS MUST BE DETERMINED BY THE PROJECT SITE CONDITIONS AND SHALL HAVE THE APPROVAL OF THE ENGINEER BEFORE BEING INSTALLED. DO NOT SCALE DRAWINGS.
8. COORDINATE CONSTRUCTION OF ALL HVAC WORK WITH ARCHITECTURAL, STRUCTURAL, PLUMBING, CIVIL, ELECTRICAL, TECHNOLOGY, ETC., SHOWN ON OTHER CONTRACT DOCUMENT DRAWINGS.
9. ALL HVAC WORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED. OFFSETS IN PIPING AROUND OBSTRUCTIONS SHALL BE PROVIDED AT NO ADDITIONAL COST TO OWNER.
10. WHERE TWO OR MORE ITEMS OF THE SAME TYPE OF EQUIPMENT ARE REQUIRED, THE PRODUCT OF ONE MANUFACTURER SHALL BE USED.
11. ALL MISCELLANEOUS STEEL REQUIRED TO ENSURE PROPER INSTALLATION SHALL BE FURNISHED AND INSTALLED BY THE HVAC CONTRACTOR.
12. COORDINATE ACCESS PANEL LOCATIONS FOR INSTALLATION IN WALLS AND CEILINGS, WHERE REQUIRED, TO SERVICE VALVES AND CONCEALED HVAC EQUIPMENT.
13. ALL EQUIPMENT, PIPING, ETC. SHALL BE SUPPORTED AS REQUIRED TO PROVIDE A VIBRATION FREE INSTALLATION.
14. ALL PIPING AND EQUIPMENT SUPPORTED FROM STRUCTURAL STEEL SHALL BE COORDINATED WITH GENERAL CONTRACTOR. ALL ATTACHMENTS TO STEEL BAR JOISTS, TRUSSES, OR JOIST GIRDERS SHALL BE AT PANEL POINTS. HVAC EQUIPMENT AND PIPING SHALL NOT BE SUPPORTED FROM METAL DECK.
15. CONTRACTOR TO INFORM THE STRUCTURAL ENGINEER IN WRITING OF ANY SUSPENDED LOAD IN EXCESS OF 400 POUNDS.
16. INSTALL PIPING SO THAT ALL VALVES, STRAINERS, UNIONS, TRAPS, FLANGES, AND OTHER APPURTENANCES REQUIRING ACCESS ARE ACCESSIBLE.
17. IF THERE IS ANY DEVIATION BETWEEN THE SPECIFICATIONS AND DRAWINGS THE CONTRACTOR SHALL ADHERE TO THE MORE STRINGENT CONDITION.
18. EXHAUST-ONLY ROOMS SUCH AS JANITORS CLOSETS, ELECTRICAL CLOSETS, AND STORAGE ROOMS SHALL HAVE DOOR UNDERCUTS OF 5/8" FOR MAKEUP AIR INDICATED WITH FLOW ARROW ON PLANS. COORDINATE WITH ARCHITECTURAL DRAWINGS.
19. WHERE MULTIPLE MANUFACTURERS ARE NAMED THE DRAWINGS AND SPECIFICATIONS ARE BASED ON THE REQUIREMENTS AND LAYOUTS FOR THE EQUIPMENT OF THE FIRST NAMED MANUFACTURER. ANY CHANGE REQUIRED BY THE USE OF OTHER NAMED MANUFACTURERS SUCH AS REVISIONS TO FOUNDATIONS, BASES, PIPING, CONTROLS, WIRING, OPENINGS, AND APPURTENANCES SHALL BE MADE BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

HVAC DUCTWORK LEGEND

	SUPPLY AIR DUCT
	RETURN OR OUTSIDE AIR DUCT
	EXHAUST AIR DUCT
	4-WAY CEILING DIFFUSER
	DUCT TRANSITION
	BALANCING DAMPER
	FIRE DAMPER
	MOTORIZED DAMPER
	DUCT SENSOR
	SMOKE DETECTOR (BY ELECTRICAL)
	STATIC PRESSURE SENSOR
	CO2 SENSOR
	TEMPERATURE SENSOR
	THERMOSTAT
	AIRFLOW
	RECTANGULAR DUCT BREAK
	NEW

* CERTAIN ABBREVIATIONS LISTED ABOVE MAY NOT APPLY TO THIS PROJECT.

HVAC ABBREVIATIONS

AAV	AUTOMATIC AIR VENT	F	FAHRENHEIT	OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
AC	ALTERNATING CURRENT	FDA	U.S. FOOD AND DRUG ADMINISTRATION	PD	PRESSURE DROP
ADJ	ADJUSTABLE	FF	FINISHED FLOOR	PDF	PORTABLE DOCUMENT FORMAT
AFF	ABOVE FINISHED FLOOR	FG	FINISHED GRADE	PRV	PRESSURE REDUCING VALVE
AFG	ABOVE FINISHED GRADE	FLA	FULL LOAD AMPS	PSI	POUNDS PER SQUARE INCH
AHRI	AIR-CONDITIONING, HEATING, AND REFRIGERATION INSTITUTE	FLEX	FLEXIBLE	PSIG	POUNDS PER SQUARE INCH GAUGE
		FPM	FEET PER MINUTE	PVC	POLYVINYL CHLORIDE
		G	GAS	RA	RETURN AIR
AMCA	AIR MOVEMENT AND CONTROL ASSOCIATION	GA	GAUGE	REQD	REQUIRED
		GAL	GALLON	RF	RETURN FAN
		GALV	GALVANIZED	RG	RETURN GRILLE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	GPH	GALLONS PER HOUR	RH	RELATIVE HUMIDITY
AP	ACCESS PANEL	GPM	GALLONS PER MINUTE	RL	REFRIGERANT LIQUID
APD	AIR PRESSURE DROP	HB	HOSE BIBB (CONNECTION)	RM	ROOM
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS	HP	HORSEPOWER	RPM	REVOLUTIONS PER MINUTE
		HVAC	HEATING VENTILATION AND AIR CONDITIONING	RR	RETURN REGISTER
				RS	REFRIGERANT SUCTION
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS	HZ	HERTZ	RTU	ROOF TOP UNIT
		IAQ	INDOOR AIR QUALITY	SA	SUPPLY AIR
		ID	INSIDE DIAMETER	SD	SMOKE DAMPER
BD	BACK-DRAFT DAMPER	IN	INCHES	SEN	SENSIBLE
BFF	BELOW FINISHED FLOOR	I/O	INPUT/OUTPUT	SF	SUPPLY FAN
BFG	BELOW FINISHED GRADE	KW	KILOWATT	SFD	COMBINATION FIRE AND SMOKE DAMPER
BHP	BRAKE HORSE POWER	LBS	POUNDS		
BOD	BOTTOM OF DUCT	LD	LINEAR DIFFUSER		
BTU	BRITISH THERMAL UNIT	LVR	LOUVER	SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION
BTUH	BTU PER HOUR	MA	MAKE-UP AIR OR MILLIAMPS		
C	CELSIUS	MAU	MAKE-UP AIR UNIT		
CD	CEILING DIFFUSER	MAX	MAXIMUM	SP	STATIC PRESSURE
CF	CUBIC FEET	MBH	1000 BTUH	SR	SUPPLY REGISTER
CFM	CUBIC FEET PER MINUTE	MC	MECHANICAL CONTRACTOR	SQ	SQUARE
CO	CARBON MONOXIDE OR CLEANOUT	MERV	MINIMUM EFFICIENCY REPORTING VALUE	SQ FT	SQUARE FEET
D	DRAIN			STD	STANDARD
DB	DRY BULB			T	THERMOSTAT
DC	DIRECT CURRENT	MIN	MINIMUM	TD	TRANSFER AIR DUCT
DEG	DEGREE	MPH	MILES PER HOUR	TEMP	TEMPERATURE
DIA	DIAMETER	N	NEW WORK	TG	TRANSFER GRILLE
DIM	DIMENSION	NC	NORMALLY CLOSED	TON	12,000 BTU (COOLING CAPACITY)
DN	DOWN	NEC	NATIONAL ELECTRIC CODE	TYP	TYPICAL
DWG(S)	DRAWING(S)	NEMA	NATIONAL ELECTRIC MANUFACTURERS ASSOCIATION	UC	UNDERCUT
DWH	DOMESTIC WATER HEATER			UL	UNDERWRITERS LABRATORIES
EA	EXHAUST AIR			V	VOLTS
EAT	ENTERING AIR TEMPERATURE	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION	VA	VOLT AMPS
EC	ELECTRICAL CONTRACTOR			VFD	VARIABLE FREQUENCY DRIVE
EF	EXHAUST FAN			VTR	VENT THRU ROOF
EPDM	ETHYLENE PROPYLENE DIENE MONOMER	NPS	NOMINAL PIPE SIZE	WB	WET BULB
		NPT	NATIONAL PIPE THREAD	WC	WATER COLUMN
		OA	OUTSIDE AIR	WG	WATER GAUGE
ER	EXHAUST REGISTER	OD	OUTSIDE DIAMETER		
EXH	EXHAUST				

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Mechanical Legends and Notes

GENERAL MECHANICAL REQUIREMENTS:

- A. REQUIREMENTS SPECIFIED IN DIVISION 1, INSTRUCTIONS TO BIDDERS, SUPPLEMENTAL GENERAL CONDITIONS, SPECIAL CONDITIONS, ADDENDA, ALTERNATES, CONTRACT AND PROPOSAL (AS APPLICABLE), ALONG WITH THESE SPECIFICATIONS AND ALL ITS SECTIONS, COMPRISE THE CONTRACT DOCUMENTS FOR THE MECHANICAL CONTRACT. DRAWINGS AND ALL THEIR REVISIONS UP TO THE BID SUBMITTAL DATE BECOME BINDING PART OF THE CONTRACT, ALONG WITH THESE SPECIFICATIONS AS THOUGH THEY WERE ONE, AND ANYTHING IMPLIED BY THE SPECIFICATIONS SHALL BE INTERPRETED AS ALSO IMPLIED BY THE DRAWINGS AND VICE VERSA.
- B. THE CONTRACTOR FOR THIS WORK IS REFERRED TO "INSTRUCTIONS TO BIDDERS" "GENERAL CONDITIONS" AND "SPECIAL CONDITIONS" (AS APPLICABLE) AS PART OF THIS CONTRACT.
- C. THE CONTRACTOR SHALL CAREFULLY EXAMINE THE PROJECT SITE AND SURROUNDING AND MAKE ALL NECESSARY INVESTIGATIONS REQUIRED TO INFORM THEMSELVES AS TO ALL DIFFICULTIES THAT MAY BE ENCOUNTERED IN THE EXECUTION OF THE CONTRACT DOCUMENTS.
- D. THE CONTRACTOR SHALL EXAMINE ALL DRAWINGS, SPECIFICATIONS, AND ALL OTHER DATA OR INSTRUCTIONS PERTAINING TO THE WORK REGARDLESS OF WHAT DRAWING IT MAY APPEAR OR IN WHICH SPECIFICATION IT IS DESCRIBED. THE CONTRACTOR WILL NOT BE ALLOWED EXTRA COMPENSATION RESULTING FROM THE CONTRACTOR'S FAILURE TO FULLY EXAMINE ALL THE DRAWINGS, SPECIFICATIONS, DATA, AND INSTRUCTIONS.
- E. WITH THE EXCEPTION OF SYSTEMS AND EQUIPMENT FURNISHED BY OWNER IF SPECIFIED, IT IS INTENDED THAT WORK COVERED BY THESE SPECIFICATIONS AND DRAWINGS INCLUDE EVERYTHING REQUISITE TO MAKE THE VARIOUS SYSTEMS COMPLETE AND OPERATIVE, IRRESPECTIVE OF WHETHER OR NOT EVERY ITEM IS SPECIFICALLY PROVIDED FOR. ANY OMISSION OF DIRECT REFERENCE TO ANY ESSENTIAL ITEM SHALL NOT EXCUSE THE CONTRACTOR FROM COMPLYING WITH THE ABOVE INTENT.
- F. THE MECHANICAL DRAWINGS AND SPECIFICATIONS ARE MEANT TO SUPPLEMENT EACH OTHER. IN CASE OF AN INCONSISTENCY, THE MOST STRINGENT REQUIREMENT SHALL GOVERN. FIGURED DIMENSIONS SUPERSEDE SCALED ONES. THE CONTRACTOR SHALL NOT TAKE ADVANTAGE OF ANY INCONSISTENCY IN SPECIFICATIONS AND DRAWINGS, AND SHALL PROMPTLY CALL THE OWNER'S ATTENTION TO ANY INCONSISTENCY IN THE SPECIFICATIONS AND DRAWINGS.
- G. LAYOUT OF EQUIPMENT, DUCTWORK, ACCESSORIES, SPECIALTIES AND SUSPENDED, CONCEALED OR EXPOSED PIPING SYSTEMS ARE DIAGRAMMATIC UNLESS DIMENSIONED. IN PREPARING SHOP DRAWINGS, CONTRACTOR SHALL CHECK PROJECT CONDITIONS BEFORE INSTALLING WORK. IF THERE ARE ANY INTERFERENCES OR CONFLICTS, THEY SHALL BE CALLED TO THE ATTENTION OF THE OWNER IMMEDIATELY FOR CLARIFICATION.
- H. THE MECHANICAL CONTRACTOR SHALL KEEP ON THE JOB ONE COMPLETE SET OF THE CONTRACT WORKING DRAWINGS ON WHICH HE SHALL RECORD ANY DEVIATIONS OR CHANGES FROM SUCH CONTRACT DRAWINGS MADE DURING CONSTRUCTION. THE RECORD DRAWINGS SHALL SHOW CHANGES TO SIZE, TYPE, CAPACITY, ETC. OF ANY MATERIAL. UPON COMPLETION AND FINAL ACCEPTANCE OF THE PROJECT, THE CONTRACTOR SHALL PROVIDE THE OWNER WITH TWO (2) SETS OF "AS BUILT" DRAWINGS.
- I. CONTRACTOR SHALL COORDINATE THE WORK OF THE DIFFERENT TRADES SO THAT INTERFERENCE BETWEEN DUCTWORK, PIPING, EQUIPMENT, STRUCTURAL, AND ELECTRICAL WORK WILL BE AVOIDED. ALL NECESSARY OFFSETS IN PIPING AND DUCTWORK, AND ALL FITTINGS, AND OTHER COMPONENTS, REQUIRED TO INSTALL THE WORK PROPERLY SHALL BE FURNISHED COMPLETE IN PLACE AT NO ADDITIONAL COST.
- J. PRIOR TO SUBMITTING SHOP DRAWINGS, THE CONTRACTOR SHALL CHECK FOR DIMENSIONAL CORRECTNESS, INTERFERENCES AND CONFORMANCE TO SPECIFICATIONS AND PLANS. THE CONTRACTOR IS TO SUBMIT ELECTRONIC SHOP DRAWINGS IN PDF FORMAT, CATALOG SHEETS FOR EQUIPMENT, FIXTURES, DUCTWORK LAYOUT AND WIRING DIAGRAMS TO THE ARCHITECT FOR REVIEW. EACH CONTRACTOR IS RESPONSIBLE TO DISTRIBUTE APPROVED SHOP DRAWINGS TO ALL OTHER TRADES AFFECTED BY HIS WORK AND EQUIPMENT.
- K. THE CONTRACTOR MAY OFFER SUBSTITUTIONS WITH HIS BID EXCEPT FOR CERTAIN ITEMS WHICH MAY BE INDICATED AS HAVING NO SUBSTITUTE. ONLY ONE REQUEST FOR SUBSTITUTION WILL BE CONSIDERED FOR EACH PRODUCT. WHEN THE SUBSTITUTION IS NOT ACCEPTED, THE SPECIFIED PRODUCT SHALL BE PROVIDED.
- L. THE CONTRACTOR SHALL ARRANGE AND PAY FOR ALL PERMITS, FEES AND INSPECTIONS REQUIRED IN CONNECTION WITH THIS INSTALLATION. THE CONTRACTOR MUST PRESENT THE OWNER WITH PROPERLY SIGNED CERTIFICATES OF FINAL INSPECTION BEFORE WORK WILL BE ACCEPTED.
- M. THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES AS REQUIRED BY LAW AND DETERMINE THE EXACT LOCATIONS OF EXISTING UTILITIES, PRIOR TO BEGINNING WORK. ALL ACTIVE SERVICES ENCOUNTERED SHALL BE PROTECTED AND SUPPORTED. ALL INACTIVE SERVICES SHALL BE REMOVED OR DEACTIVATED AS SHOWN OR DIRECTED BY OWNER. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER AND UTILITY COMPANIES FOR UTILITY TIE-INS FOR THIS WORK AND SHALL PAY ALL FEES AND CHARGES RELATED TO THIS WORK.
- N. THE CONTRACTOR SHALL GIVE NOTICES AND COMPLY WITH LAWS, ORDINANCES, RULES, REGULATIONS AND ORDERS OF ANY PUBLIC AUTHORITY BEARING ON THE WORK. IF THE CONTRACTOR OBSERVES THE CONTRACT DOCUMENTS ARE AT VARIANCE WITH SUCH IN ANY RESPECT, PROMPTLY NOTIFY THE OWNER. IN WRITING SUCH THAT ALL NECESSARY CHANGES CAN BE MADE. IF CONTRACTOR KNOWINGLY PERFORMS ANY WORK CONTRARY TO SUCH WITHOUT NOTICE TO THE OWNER, HE SHALL ASSUME FULL RESPONSIBILITY THEREFORE AND SHALL BEAR COST ATTRIBUTED THERETO.
- O. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN A NEAT AND WORKMANLIKE MANNER. MATERIALS SHALL BE NEW. SECONDS OR DAMAGED MATERIALS SHALL NOT BE USED. CONTRACTOR IS RESPONSIBLE FOR THE SAFETY AND GOOD CONDITION OF THE EQUIPMENT. MATERIALS AND SYSTEMS INSTALLED UNTIL FINAL ACCEPTANCE BY THE OWNER. ALL MATERIALS SHALL BE STORED IN SUCH A MANNER AS TO PREVENT ANY DAMAGE PRIOR TO INSTALLATION.
- P. THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR DAMAGE CAUSED BY HIS WORK OR THROUGH NEGLECT OF HIS WORKMEN. REPAIRING OF DAMAGED WORK SHALL BE DONE BY THE CONTRACTOR AS DIRECTED BY THE OWNER. COST OF REPAIRS SHALL BE PAID BY THE CONTRACTOR.
- Q. THE CONTRACTOR SHALL TEST ALL HIS EQUIPMENT AND WORK IN THE PRESENCE OF THE OWNER'S REPRESENTATIVE. ALL EQUIPMENT, FIXTURES, APPARATUS, ETC. SHALL COMPLY FULLY WITH THE REQUIREMENTS OF THE SPECIFICATIONS AND DRAWINGS.
- R. THE CONTRACTOR SHALL WARRANT ALL MATERIALS AND ALL WORK INSTALLED BY HIM OR HIS SUBCONTRACTORS FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE.
- S. ALL EQUIPMENT REQUIRING LUBRICATION SHALL BE LUBRICATED WITH CORRECT GRADE, TYPE AND QUANTITY OF LUBRICANT BEFORE BEING PLACED IN SERVICE. MAINTAIN ALL LUBRICATION, GASKET, AND PACKING DURING CONSTRUCTION, AND ASSURE THAT AT THE TIME OF ACCEPTANCE, ALL ARE IN FIRST CLASS OPERATING CONDITION.
- T. PRIOR TO FINAL ACCEPTANCE, THE CONTRACTOR SHALL CLEAN ALL EQUIPMENT AND SYSTEMS TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE.

HVAC GENERAL SPECIFICATIONS:

- A. THE CONTRACTOR SHALL FURNISH ALL MATERIALS MEETING AIEE, ASME, ASTM, AND NEMA SPECIFICATIONS. THE CONSTRUCTION AND INSTALLATION OF WORK SHALL CONFORM TO THE LATEST EDITION OF THE SMACNA HVAC DUCT CONSTRUCTION STANDARDS.
- B. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY MATERIALS, EQUIPMENT, TRANSPORTATION, HOISTING ETC. NECESSARY TO INSTALL A COMPLETE AND OPERABLE HEATING, VENTILATING AND AIR CONDITIONING SYSTEM.
- C. THE CONTRACTOR SHALL PAY FOR AND HAVE THE MECHANICAL SYSTEM BALANCED BY AN INDEPENDENT AIR BALANCING COMPANY. THE REPORT IS TO INCLUDE DIFFUSER, RETURN AND EXHAUST CFM WITH THREE (3) COPIES TO BE SUBMITTED TO THE OWNER PRIOR TO FINAL ACCEPTANCE.
- D. THE CONTRACTOR SHALL CAREFULLY PREPARE TWO DIAGRAMS OF ALL CONTROL SYSTEMS WITH FULL DESCRIPTION AND TWO SERVICE MANUALS FOR ENTIRE HVAC SYSTEM. THE MECHANICAL CONTRACTOR SHALL SUPERVISE ALL TEMPERATURE CONTROL INSTALLATION.
- E. THE CONTRACTOR SHALL ARRANGE FOR AND PROVIDE TRAINING ON ALL AIR HANDLING SYSTEMS, HEATING SYSTEMS, PUMPING SYSTEMS, AND CONTROL SYSTEMS AS RECOMMENDED BY THE MANUFACTURER AND TO THE SATISFACTION OF THE OWNER.

HVAC DUCT AND ACCESSORIES SPECIFICATIONS:

- A. DUCTWORK AND PLENUMS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SMACNA HVAC DUCT STANDARDS FOR 2" WG PRESSURE CLASSIFICATION AS FOLLOWS:
- ALL ABOVEGROUND DUCTWORK SHALL BE FABRICATED OF NEW GALVANIZED SHEET STEEL, OR ALUMINUM WHERE CALLED FOR ON DRAWINGS, AND SHALL BE CONSTRUCTED AND BRACED IN ACCORDANCE WITH THE STANDARDS SET FORTH IN LATEST EDITION OF THE SMACNA CONSTRUCTION STANDARDS.
 - DUCT DIMENSIONS SHOWN ARE FREE INSIDE DIMENSIONS AND SHALL BE FOLLOWED UNLESS JOB CONDITIONS REQUIRE ALTERATIONS. DUCT SIZE REVISIONS SHALL BE BASED ON THE EQUAL FRICTION METHOD.
 - ALL ELBOWS IN THE SYSTEM SHALL BE MADE WITH CENTERLINE RADIUS OF ONE AND ONE-HALF (1-1/2) TIMES THE TURNING WIDTH OF THE DUCT. WHERE SPACE PROHIBITS THE SPECIFIED MINIMUM RADIUS, SQUARE ELBOWS WITH DOUBLE RADIUS TURNING VANES SCREWED IN PLACE MAY BE USED. CHANGES IN DUCT SIZES SHALL HAVE MAXIMUM FLOW ANGLES OF 15° DIVERGING AND 60° CONTRACTING.
 - THE MECHANICAL DRAWINGS INDICATE THE GENERAL ROUTING OF DUCTWORK. WHEN JOB CONDITIONS WARRANT ALTERATIONS, THE EXACT ROUTE SHALL BE COORDINATED WILL ALL OTHER TRADES.
 - HANGERS TO BE PLACED 8 FEET ON CENTERS MAXIMUM WITH 1" X 16 GAUGE MINIMUM STRAPS FOR DUCTS. ALL DUCTWORK SHALL BE SEALED.
 - FIBERGLASS DUCTBOARD WILL NOT BE PERMITTED.
 - KITCHEN HOOD EXHAUST DUCTWORK SHALL BE CONSTRUCTED OF 16 GAUGE STAINLESS STEEL WITH CONTINUOUS LIQUID-TIGHT WELDED JOINTS AND SEAMS. (UNLESS FURNISHED BY KITCHEN EQUIPMENT SUPPLIER)
- B. BALANCING DAMPERS SHALL BE FABRICATED IN ACCORDANCE WITH THE LATEST ISSUE OF THE SMACNA DUCT MANUAL AND AS FOLLOWS:
- RECTANGULAR DAMPERS SHALL BE SINGLE BLADE TYPE IN DUCTS UP TO 11" HIGH AND SHALL BE OPPOSED BLADE TYPE IN DUCTS 12" HIGH AND ABOVE.
 - ROUND DAMPERS SHALL BE SINGLE BLADE TYPE.
 - PROVIDE END BEARINGS ON ALL DAMPERS. ON MULTIPLE BLADE DAMPERS BEARINGS SHALL BE OIL-IMPREGNATED NYLON OR SINTERED BRONZE.
 - PROVIDE LOCKING INDICATING QUADRANT REGULATORS ON ALL DAMPERS. WHERE ROD LENGTHS EXCEED 30", PROVIDE A REGULATOR AT BOTH ENDS.
 - ON INSULATED DUCTS MOUNT QUADRANT REGULATORS ON STAND-OFF MOUNTING BRACKETS, BRACES OR ADAPTORS.
- C. FLEXIBLE DUCTWORK SHALL BE AS FOLLOWS:
- INSULATED FLEXIBLE DUCT SHALL BE FACTORY ASSEMBLED CONSISTING OF GALVANIZED SPRING STEEL, HELIX, CONTINUOUS NON PERFORATED INNER AIR SEAL LINER, 1", 1#/CF GLASS FIBER INSULATION AND CLASS 1 FIRE RESISTIVE VAPOR BARRIER.
 - U.L. LISTED, CONFORMING TO NFPA CLASS 1 WITH A FLAME SPREAD RATING OF 25 OR LESS AND SMOKE DEVELOPED RATING OF 50 OR LESS AND INSTALLED FULLY EXTENDED, FREE OF SAGS AND KINKS USING 5-0" MAXIMUM LENGTH.
 - CONNECTIONS TO SHEET METAL DUCTS TO BE WITH 1/2" WIDE POSITIVE LOCKING STRAPS.
 - ACCEPTABLE MANUFACTURERS: ATCO, ARMO, WIREMOLD
- D. DUCTWORK INSULATION AND JACKETS SHALL BE AS FOLLOWS:
- ALL MATERIALS SHALL HAVE FLAME SPREAD/SMOKE DEVELOPEMENT RATING OF 25/50 IN ACCORDANCE WITH ASTM E84, NFPA 225, AND U.L. 723.
 - TYPE A: FLEXIBLE GLASS FIBER ALL SERVICE DUCT WRAP WITH A "K" VALUE OF 0.25 AT 75°F, FOIL SCRIM VAPOR BARRIER FACING AND A DENSITY OF 1.5 PCF.
 - TYPE B: RIGID FIBERGLASS DUCTBOARD INSULATION WITH A "K" VALUE OF 0.24 AT 75°F, FACTORY APPLIED ASJ WHITE VAPOR BARRIER JACKET AND A DENSITY OF 1.5 PCF.
 - TYPE C: FLEXIBLE GLASS FIBER DUCT LINER WITH A "K" VALUE OF 0.24 AT 75°F AND A DENSITY OF 1.5 PCF. LINER SHALL BE COATED AIR SIDE FOR A MAXIMUM 6000 FT./MIN. AIR VELOCITY.

- SUPPLY AND RETURN DUCTS CONCEALED ABOVE CEILINGS SHALL BE INSULATED WITH 1-1/2" THICK, R-4.2 MINIMUM, TYPE A INSULATION PROVIDING 100% COVERAGE OF ADHESIVE WITH EDGES TIGHTLY BUTTED. WHERE DUCT EXCEEDS 30" THE BOTTOM OF THE INSULATION SHALL BE ADDITIONALLY HELD IN PLACE WITH A ROW OF PINS AND CLIPS DOWN THE CENTER ON 12" CENTERS. ALL JOINTS SHALL BE SEALED BY TAPING WITH 3" WIDE VAPOR BARRIER TAPE. PATCHES OF TAPE SHALL BE APPLIED WHERE PINS PROTRUDE THROUGH THE FACING.
 - ACCEPTABLE MANUFACTURERS: OWENS-CORNING, CERTAINTeed, KNAUF
- E. KITCHEN EXHAUST GREASE DUCT
- KITCHEN HOOD EXHAUST DUCTWORK SHALL BE MINIMUM 16 GAUGE WITH FULLY WELDED JOINTS, CONSTRUCTED IN ACCORDANCE WITH 2016 CALIFORNIA MECHANICAL CODE SECTION 510.
- F. GREASE DUCT INSULATION
- PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE ONE OF THE FOLLOWING:
 - 3M FIRE BARRIER DUCT WRAP TYPE 15A
 - UNIFRAX FRYEWRAF
 - THERMAL CERAMICS FIREMASTER
 - JOINT FREE, LIGHTWEIGHT, NON-ASBESTOS, HIGH TEMPERATURE, INORGANIC FOIL ENCAPSULATED CERAMIC FIBER BLANKET DUCT WRAP FOR USE ON COMMERCIAL GREASE HOOD DUCT SYSTEMS IN ACCORDANCE WITH ASTM E2336.
 - A ZERO INCH CLEARANCE TO COMBUSTIBLE CONSTRUCTION AND TWO (2) HOUR FIRE RESISTIVE RATED ENCLOSURE SYSTEM SHALL BE ASSURED.
 - ADHESIVES: HIGH PERFORMANCE FILAMENT TAPE, ONE INCH WIDE, AND ALUMINUM FOIL TAPE TO SEAL CUT EDGES OF BLANKETS.
 - BANDING MATERIAL: TWO (2) HOUR REQUIREMENT, 3/4" WIDE, NO LESS THAN 0.015 INCHES THICK, TYPE 304 STAINLESS STEEL, (STAINLESS STEEL HOSE CLAMPS, 1/2 INCH MAY BE SUBSTITUTED FOR HANGER INSULATIONS ONLY).
 - INSULATION PINS: 10 GAGE, 4 INCHES TO 5 INCHES LONG, COPPER COATED STEEL NO LESS THAN 1-1/2 INCH BY 1-1/2 INCH OR 1-1/2 INCH DIAMETER GALVANIZED STEEL SPEED CLIP.
 - FIRE STOPPING MATERIALS: UL NO R9464 CLASSIFIED NONCOMBUSTIBLE FIBER WITH A FLAME SPREAD OF 0, SMOKE DEVELOPMENT OF 0 AND FUEL CONTRIBUTION OF 0. WATER BASED, MILD CHEMICAL RESISTANT PUTTY COMPLYING WITH ASTM E136-82 MAY BE USED.

SEQUENCE OF OPERATIONS:

- A. RTU-1 AND RTU-2
- THE BUILDING IS OCCUPIED 24/7.
 - THE ROOFTOP UNIT SUPPLY FAN OPERATES CONTINUOUSLY. THE OUTSIDE AIR DAMPER IS OPEN TO ITS MINIMUM VENTILATION POSITION. THE UNIT CYCLES GAS HEATING AND DIRECT EXPANSION (DX) COOLING IN SEQUENCE AND WITHOUT OVERLAP TO MEET THE HEATING AND COOLING SETPOINTS, A MINIMUM DEADBAND OF 5 DEGREES F SHALL EXIST BETWEEN HEATING AND COOLING SETPOINTS.
 - 2-SPEED SUPPLY FAN OPERATION: ON A CALL FOR FIRST STAGE COOLING, OR WHEN THE THERMOSTAT IS IN THE DEADBAND RAGE, THE VARIABLE SPEED SUPPLY FAN OPERATES AT 67% SPEED. WHEN SECOND STAGE COOLING IS ENGAGED, THE SUPPLY FAN INDEXES TO 100% SPEED. ON A CALL FOR HEAT, THE FAN OPERATES AT 100% SPEED.
 - WHEN THE OUTSIDE AIR DRY BULB TEMPERATURE IS BELOW 75 DEGREES F, THE ECONOMIZER SHALL BE ENABLED. WHEN ENABLED, THE OUTSIDE AIR DAMPER SHALL BE PERMITTED TO MODULATE BETWEEN VENTILATION MINIMUM AND 100% TO MEET THE MIXED AIR TEMPERATURE SETPOINT. IF THE SPACE LOAD CAN NOT BE SATISFIED WITH ENTIRELY BY ECONOMIZER, DX COOLING SHALL BE ENABLED TO OPERATE IN SEQUENCE WITH THE ECONOMIZER. WHEN THE OUTSIDE AIR TEMPERATURE RISES ABOVE 75 DEGREES F, THE ECONOMIZER IS DISABLED.
- B. EXHAUST FAN EF-1
- EF-1 OPERATES CONTINUOUSLY, 24/7.
- C. EXHAUST FAN EF-2
- EF-2 IS CONTROLLED BY A COOLING ONLY ROOM THERMOSTAT.
- D. ELECTRIC UNIT HEATER EUH-1
- WHEN THE TEMPERATURE AT THE UNIT MOUNTED THERMOSTAT DROPS BELOW THE HEATING SETPOINT, EUH-1 IS ENERGIZED.

SEISMIC DESIGN REQUIREMENTS

- A. DESIGN PARAMETERS:
- SEISMIC DESIGN CATEGORY: D
 - BUILDING RISK CATEGORY: 2
- B. PER 2016 CALIFORNIA BUILDING CODE, CHAPTER 16, AND ASCE 7-10, THE FOLLOWING MECHANICAL/ELECTRICAL COMPONENTS ARE SUBJECT TO THE SEISMIC RESTRAINT REQUIREMENTS DESCRIBED THEREIN:
- ANY COMPONENT WEIGHING 400 LBS OR MORE;
 - SUSPENDED COMPONENTS WEIGHING 20 LBS OR MORE;
 - DISTRIBUTED COMPONENTS (I.E., DUCTWORK, PIPING, ETC.) WEIGHING MORE THAN 5 LBS/FT.
- C. REFER TO SEISMIC DETAILS ON SHEET M5.00 FOR SPECIFIC RESTRAINTS.

HVAC EQUIPMENT SPECIFICATIONS:

- A. AIR CURTAIN (AC-1)
- DIMENSIONS AND CAPACITIES AS SCHEDULED.
 - ALUMINIZED STEEL WELDED CONSTRUCTION, ALUMINUM DISCHARGE GRILLE.
 - MOTORS: DIRECT DRIVE, 1600 RPM, 3 SPEED, RESILIENT MOUNTED, CONTINUOUS DUTY, WITH INTERNAL THERMAL-OVERLOAD PROTECTION AND PERMANENTLY LUBRICATED SEALED SLEEVE BEARINGS.
 - FANS: BALANCED FORWARD CURVED TYPE, DOUBLE INLET, MOUNTED IN MATCHED FAN SCROLLS WITH AERODYNAMICALLY FORMED AIR INLET VENTURIS
 - ADJUSTABLE NOZZLE VANES PLUS OR MINUS 20 DEGREES TO DEFLECT AIRFLOW
 - ELECTRIC HEATING COIL: UL-APPROVED, FACTORY-MOUNTED, FACTORY-WIRED, THERMALLY-PROTECTED, GALVANIZED STEEL FRAME. HELICAL COIL WITH POINT SUSPENSION OF ELEMENTS, THREE PHASE. THERMAL CUTOUT: LOCKS OUT ELECTRIC HEATERS WHEN PROLONGED ABNORMAL OVER-TEMPERATURE CONDITIONS EXIST.
 - SWITCHING: FACTORY-SUPPLIED REMOTE-INSTALLED MULTI-SPEED CONTROL SWITCH
- B. ELECTRIC UNIT HEATER
- CASING IS CONSTRUCTED OF 20-GAUGE STEEL, WITH COMPLETELY ENCLOSED FAN MOTOR AND INDIVIDUAL STAINLESS STEEL ADJUSTABLE LOUVERS TO DIRECT AIR FLOW. THE HEATING ELEMENT IS ALUMINUM-FINNED, COPPER-CLAD STEEL SHEATH. UNIT HEATER SHALL INCLUDE LINE VOLTAGE CONTROLS AND CAPILLARY TYPE AUTOMATIC RESET LINEAR THERMAL CUT-OUT.
 - UNIT HEATER SHALL BE QMARK MODEL MUH OR EQUAL BY BERKO OR MARKEL.
- C. EXHAUST FANS (EF-1,2)
- CENTRIFUGAL DIRECT DRIVE WITH SPUN ALUMINUM DOWNBLAST HOUSING, RESILIENT MOUNTED MOTOR, 1/2" MESH 16 GA ALUMINUM BIRDSRCEEEN
 - ELECTRONICALLY COMMUTATED (EC) MOTOR WITH
 - 13.5" HIGH INSULATED ROOF CURB
 - NON-FUSIBLE DISCONNECT SWITCH FACTORY MOUNTED AND WIRED.
 - GRAVITY BACKDRAFT DAMPER WITH ALUMINUM MULTIPLE BLADE CONSTRUCTION, FELT EDGES, AND NYLON BEARINGS
 - CAPACITY HP, AND VOLTAGE AS SCHEDULED.
- D. KITCHEN HOOD EXHAUST FAN (EF-3,4)
- FAN SHALL BE A SPUN ALUMINUM, ROOF MOUNTED, DIRECT DRIVEN, UPBLAST CENTRIFUGAL EXHAUST VENTILATOR. ENGINEERED TO DISCHARGE GREASE LADEN VAPORS, FUMES AND OTHER CONTAMINANTS VERTICALLY AWAY FROM THE BUILDING.
 - THE FAN SHALL BE ETL LISTED AND COMPLY WITH UL705 (ELECTRICAL) AND UL762 STANDARDS AND CSA STD C22.2, NO 113. FAN SHALL BEAR THE AMCA CERTIFIED RATINGS SEAL FOR SOUND AND AIR PERFORMANCE.
 - THE FAN WINDBAND SHALL BE CONSTRUCTED OF HEAVY GAUGE ALUMINUM, HORIZONTAL AND VERTICAL INTERNAL SUPPORTS SHALL BE USED TO SECURELY FASTEN THE WINDBAND TO THE DISCHARGE APRON TO PROVIDE RIGIDITY FOR HINGING AND ADDED STRENGTH TO REDUCE SHIPPING DAMAGE.
 - THE BASE SHALL BE CONSTRUCTED OF GALVANIZED STEEL. BASE CORNERS SHALL BE WELDED TO PROVIDE STRENGTH AND SUPPORT FOR HINGING AND CLEANING AND TO PREVENT LEAKAGE INTO THE BUILDING.
 - THE FAN WHEEL SHALL BE CENTRIFUGAL BACKWARD INCLINED AND NON-OVERLOADING. THE WHEEL BLADES SHALL BE WELDED TO THE WHEEL INLET CONE. THE WHEEL SHALL BE FIRMLY ATTACHED TO THE MOTOR SHAFT WITH TWO SET SCREWS AND BALANCED FOR VARIABLE SPEED OPERATION.
 - MOTORS SHALL BE TEFC HEAVY-DUTY BALL BEARING TYPE, MOUNTED OUT OF THE AIR STREAM AND FURNISHED AT THE SPECIFIED VOLTAGE, PHASE AND ENCLOSURE. MOTOR MOUNTING PLATE SHALL BE CONSTRUCTED OF HEAVY GAUGE GALVANIZED STEEL AND ISOLATED FROM THE FAN STRUCTURE WITH VIBRATION ISOLATORS. THE MOTOR COMPARTMENT SHALL BE COOLED BY OUTSIDE AIR DRAWN THROUGH AN EXTRUDED ALUMINUM CONDUIT TUBE.
 - SHAFTS SHALL BE PRECISION GROUND AND POLISHED. HEAVY DUTY, PRE-LUBRICATED BEARINGS SHALL BE SELECTED FOR A MINIMUM (L50) LIFE IN EXCESS OF 200,000 HOURS OF OPERATION AT MAXIMUM CATALOGED OPERATING SPEED.
 - A GREASE SPOUT MADE OF ALUMINUM TUBING SHALL BE WELDED TO THE FAN HOUSING.
 - ALL FASTENERS IN THE FAN HOUSING SHALL BE BACKED WITH NYLON WASHERS.
 - A SAFETY DISCONNECT SWITCH SHALL BE STANDARD. SWITCHES SHALL BE INSTALLED IN A NEMA 3R ENCLOSURE AND MOUNTED TO EXTERIOR OF WINDBAND FOR EASY ACCESS.
 - FURNISH WITH 24-INCH TALL ROOF CURB OF 20 GAUGE STEEL CONSTRUCTION.

ROOFTOP AHU SPECIFICATIONS:

- A. ROOF TOP AIR CONDITIONING UNIT
- PROVIDE DAIKIN PACKAGED ROOFTOP HVAC UNIT HAVING GAS HEATING AND ELECTRIC REFRIGERATION.
 - UNIT SHALL BE SELF-CONTAINED, PACKAGED, FACTORY ASSEMBLED AND PREWIRED, CONSISTING OF CABINET AND FRAME, SUPPLY FAN, HEATING SECTION, CONTROLS, AIR FILTERS, DX COOLING COIL, COMPRESSORS, CONDENSER COIL, CONDENSER FANS, AND ROOF CURB. SIZE, CAPACITY, VOLTAGE, AND HORSEPOWERS AS SCHEDULED.
 - UNIT SHALL BE RATED IN ACCORDANCE WITH ARI STANDARDS 210/240 AND 270 AND BE DESIGNED TO CONFORM TO ANSI/ASHRAE 15 AND UL STANDARD 1995. UNIT SHALL BE UL TESTED AND CERTIFIED IN ACCORDANCE WITH ANSI Z21.47 STANDARDS AND CSA OR CGA CERTIFIED AS A TOTAL PACKAGE. ROOF CURB SHALL BE DESIGNED TO CONFORM TO NRCA STANDARDS. INSULATION AND ADHESIVE SHALL MEET NFPA 90A REQUIREMENTS FOR FLAME SPREAD AND SMOKE GENERATION.
 - ALL UNITS SHALL BE CHARGED WITH R-410A REFRIGERANT AND RUN-TESTED AT THE FACTORY TO CHECK MODES OF OPERATION AND PROPER FAN ROTATION.
 - THE UNITS' COOLING OPERATING RANGE SHALL BE BETWEEN 115°F AND 35°F OUTDOOR AMBIENT TEMPERATURE WITHOUT MODIFICATIONS.
 - CABINET : UNIT CABINET SHALL BE CONSTRUCTED OF GALVANIZED STEEL WITH A POWDER-PAINT FINISH. SERVICE PANELS PROVIDE ACCESS TO REFRIGERATION, HEATING, BLOWER, CONTROLS AND FILTER SECTIONS. INTERIOR SURFACES IN THE INDOOR AIR SECTION SHALL BE INSULATED WITH 1/2" THICK FOIL-FACED INSULATION. CONDENSATE DRAIN PAN SHALL INCLUDE BOTH VERTICAL AND HORIZONTAL DRAIN CONNECTIONS.
 - CONTROLS: UNIT SHALL BE FACTORY-WIRED WITH COLOR-CODED WIRES WITH ALL NECESSARY 24-VOLT ELECTRO-MECHANICAL CONTROLS. UNIT HAVE SINGLE-POINT POWER ENTRY, AND BE EQUIPPED WITH A GROUNDING LUG.
 - REFRIGERATION SYSTEM: UNIT SHALL BE EQUIPPED WITH HERMETICALLY SEALED SCROLL COMPRESSORS WITH INTERNAL OVERLOAD PROTECTION. COMPRESSORS SHALL BE FACTORY-MOUNTED ON RUBBER GROMMETS. COILS SHALL BE INTERNALLY FINNED COPPER TUBE MECHANICALLY BONDED TO ALUMINUM PLATE FINS. COILS SHALL BE PRESSURE TESTED AT THE FACTORY TO ENSURE PRESSURE AND LEAK INTEGRITY. THE EVAPORATOR COIL AND CONDENSER COIL SHALL BE LEAK-TESTED TO 575 PSIG AND PRESSURE-TESTED TO 450 PSIG. EACH OF THE TWO REFRIGERANT CIRCUIT SHALL HAVE A FIXED ORIFICE-METERING DEVICE. EVAPORATOR AND CONDENSER COILS SHALL BE QUALIFIED TO UL 1995 BURST TEST TO 2,200 PSI. UNITS INCLUDE HIGH- AND LOW-PRESSURE SWITCHES, SERVICE PORTS, AND FACTORY-INSTALLED FILTER DRIERS.
 - HEATING SECTION: UNIT SHALL INCLUDE A CORROSION-RESISTANT, ALUMINIZED TUBULAR STEEL HEAT EXCHANGER WITH FORMED WIRKLE BENDS AT THE INNER DIAMETER OF EACH RADIUS. THE GAS HEATING SECTION SHALL USE AN INDUCED DRAFT COMBUSTION BLOWER AND A DIRECT SPARK IGNITION SYSTEM.
 - SUPPLY FAN: THE SUPPLY FAN SHALL BE A BELT DRIVE, DOUBLE-INLET, DYNAMICALLY BALANCED FORWARD CURVED FAN WHEELS WITH ADJUSTABLE-PITCH MOTOR PULLEYS, AND AN ADJUSTABLE BELT TENSIONING MECHANISM. THE MOTOR SHALL BE THERMALLY PROTECTED.
 - TWO-SPEED INDOOR FAN BLOWER: FURNISH UNIT WITH 2-SPEED BLOWER MOTOR COMPLYING WITH CALIFORNIA TITLE 24. ON A CALL FOR THE FIRST STAGE OF COOLING, THE FAN OPERATES AT LOW SPEED, WHICH IS 66% OF FULL SPEED. WHEN THE UNITS OPERATE ON A CALL FOR THE SECOND STAGE OF COOLING, THE FAN OPERATES AT FULL SPEED. IN HEATING OPERATION, THE FAN OPERATES AT FULL SPEED.
 - CONDENSER FANS: CONDENSER FANS SHALL BE DIRECT-DRIVE, PERMANENTLY LUBRICATED, AND CONTAIN OVERLOAD PROTECTION.
 - FILTRATION: UNIT SHALL BE FURNISHED WITH TWO-INCH FILTERS MERV 8 PLEATED MEDIA AIR FILTERS.
 - ECONOMIZER: FURNISH UNIT WITH ULTRA LOW-LEAK ECONOMIZER MEETING LOW LEAKAGE REQUIREMENTS FOR CA TITLE 24 STANDARDS (3 CFM/SF AT 1" W.C. OUTSIDE AIR, 4 CFM/SF AT 1" W.C. RETURN AIR). THE ECONOMIZER SHALL PERMIT 100% OUTDOOR AIR INLET FROM 0-100% MODULATING DAMPERS, AND SHALL INCLUDE INTEGRAL BAROMETRIC RELIEF. THE ECONOMIZER SHALL BE CONTROLLED BASED ON FIXED DRY BULB TEMPERATURE.
 - FAULT DETECTION & DIAGNOSTICS (FDD): PROVIDE DETECTION OF THE FOLLOWING FAULTS: AIR TEMPERATURE SENSOR FAILURE/FAULT, NOT ECONOMIZING WHEN IT SHOULD, ECONOMIZING WHEN IT SHOULD NOT, DAMPER NOT MODULATING, AND EXCESSIVE OUTDOOR AIR. THE FDD SYSTEM SHALL BE CERTIFIED BY THE ENERGY COMMISSION AS MEETING THE REQUIREMENTS OF CALIFORNIA TITLE 24.
 - DISCONNECT SWITCH (NON-FUSED): A DISCONNECT SWITCH CAN BE INSTALLED IN THE UNIT WITH FACTORY WIRING COMPLETE FROM THE SWITCH TO THE UNIT.
 - PHASE MONITOR: PHASE MONITOR SHALL PROVIDE PROTECTION FOR MOTORS AND COMPRESSORS AGAINST PROBLEMS CAUSED BY PHASE LOSS, PHASE SEQUENCE, AND PHASE UNBALANCE. PHASE MONITOR IS EQUIPPED WITH AN LED THAT PROVIDES AN ON OR FAULT INDICATOR.
 - HIGH-STATIC KIT: ALLOWS FOR OPERATION IN HIGHER STATIC APPLICATIONS.
 - CONDENSER HAIL GUARDS: LOUVERED METAL GUARDS HELP PROTECT THE CONDENSER COIL FROM HAIL AND DEBRIS.
 - ROOF CURB: THE ROOF CURB SHALL BE DESIGNED TO MATE WITH THE DOWNFLOW UNIT AND PROVIDE SUPPORT AND A WATER TIGHT INSTALLATION WHEN INSTALLED PROPERLY. THE ROOF CURB DESIGN SHALL ALLOW FIELD-FABRICATED RECTANGULAR SUPPLY/RETURN DUCTWORK TO BE CONNECTED DIRECTLY TO THE CURB. CURB SHALL BE SHIPPED KNOCKED DOWN FOR FIELD ASSEMBLY AND SHALL INCLUDE WOOD NAILER STRIPS.
 - WARRANTY: UNITS FEATURE A 5-YEAR PARTS AND COMPRESSOR WARRANTY. GAS HEAT EXCHANGERS IN GAS/ELECTRIC UNITS INCLUDE A 20-YEAR WARRANTY.



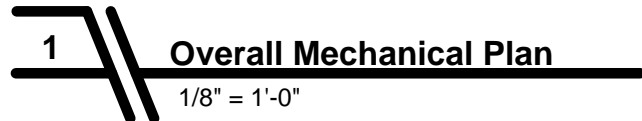
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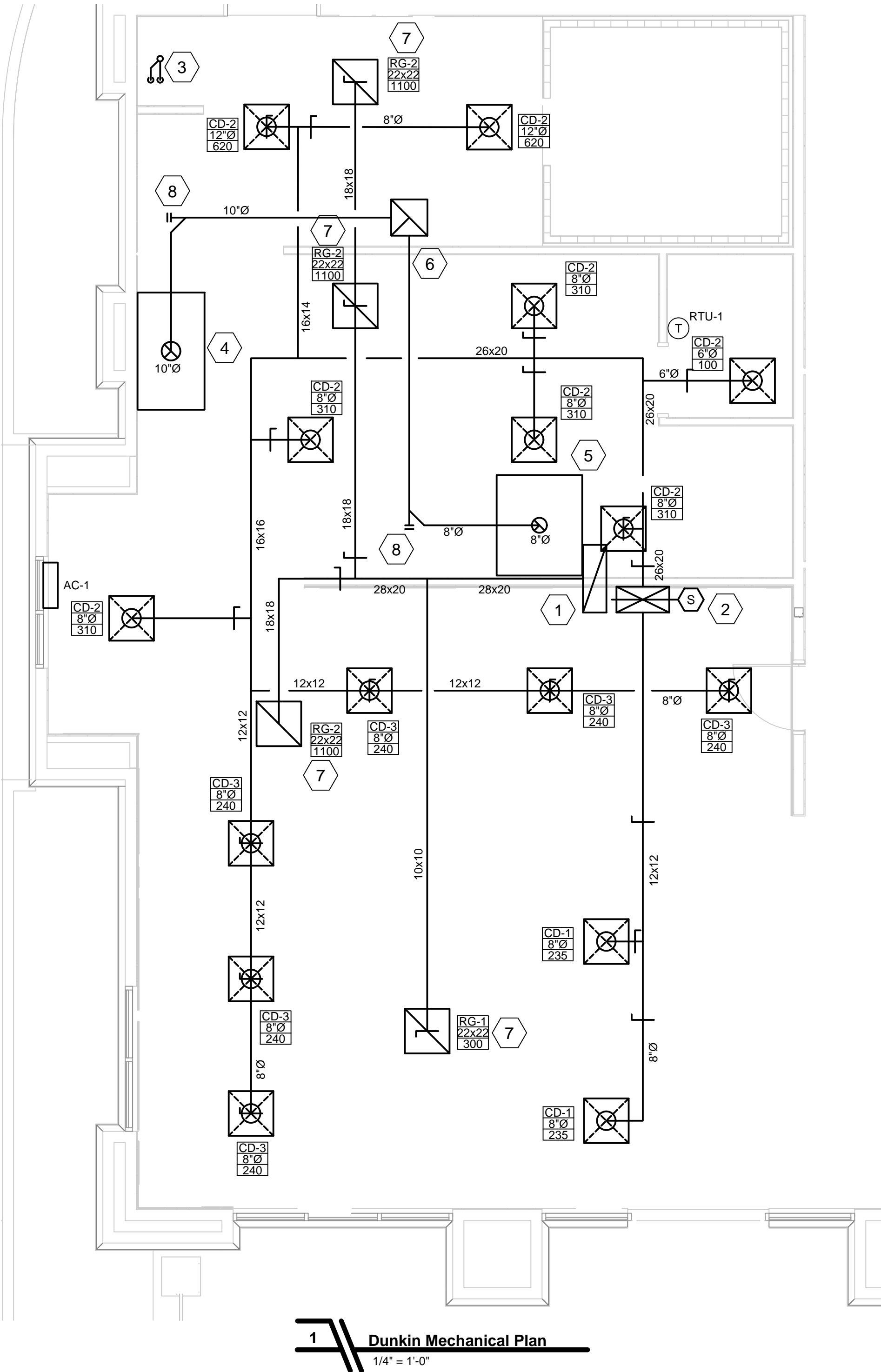
TravelCenters of America LLC
Tejon TravelCenter of America

5621 Outlets at Tejon Parkway
Wheeler Ridge, CA 93203

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MO.10





GENERAL NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION AND PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY OFFSETS AND FITTINGS WHICH MAY BE REQUIRED DUE TO SPACE CONSTRAINTS OR OTHER CONDITIONS.
2. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS.
3. THE CONTRACTOR SHALL COORDINATE FLOOR, WALL AND ROOF PENETRATIONS, LOUVER SIZES, ETC. WITH GENERAL TRADES.
4. THE CONTRACTOR SHALL VERIFY ALL CLEARANCES PRIOR TO FABRICATION OF ANY WORK.
5. THE CONTRACTOR SHALL COORDINATE THE LOCATION OF CEILING GRILLES, REGISTERS AND DIFFUSERS WITH ARCHITECTURAL REFLECTED CEILING PLANS AND ELECTRICAL PLANS.
6. DUCTWORK SHALL NOT BE LOCATED ABOVE ANY ELECTRICAL PANELS OR EQUIPMENT.
7. THE CONTRACTOR SHALL COORDINATE AND PROVIDE ACCESS DOORS IN HARD CEILINGS FOR ALL EQUIPMENT WHICH REQUIRES ACCESS.
8. ALL MECHANICAL EQUIPMENT, PIPING, VALVES, DAMPERS ETC. WHICH REQUIRE ROUTINE MAINTENANCE OR INSPECTION SHALL BE INSTALLED WITHIN 2'-0" OF THE FINISHED CEILING HEIGHT.
9. MAINTAIN OUTDOOR AIR INTAKES MINIMUM 10'-0" FROM VENTS / EQUIPMENT.
10. SEE SHEET M5.00 FOR SEISMIC BRACING OF EQUIPMENT AND DUCTWORK.
11. PROVIDE MANUAL VOLUME DAMPER FOR ALL DIFFUSERS AND GRILLES.
12. ALL RETURN DUCTS SHALL BE INSULATED.
13. RUNOUTS TO DIFFUSERS SHALL BE SAME SIZE ROUND DUCT AS DIFFUSER NECK UNLESS INDICATED OTHERWISE.

SHEET KEYNOTES

1. 36"x12" RA DUCT UP THRU ROOF TO RTU-1.
2. 28"x14" SA DUCT UP THRU ROOF TO RTU-1. SUPPLY DUCT SMOKE DETECTOR FURNISHED AND WIRED BY EC, INSTALLED BY MC.
3. CONNECT 3" CPVC COMBUSTION AIR AND 3" CPVC FLUE VENT TO DWH-1 AND EXTEND UP THRU ROOF VIA CONCENTRIC VENT TERMINATION KIT.
4. EXHAUST HOOD FOR SANDWICH STATION. SEE CAPTIVEAIRE DRAWINGS FOR MORE INFORMATION.
5. EXHAUST HOOD FOR STACKED OVENS. SEE CAPTIVEAIRE DRAWINGS FOR MORE INFORMATION.
6. 19-1/2" x 19-1/2" EA DUCT UP THRU ROOF TO EF-3.
7. PROVIDE 22"x22"x8" HIGH SHEET METAL PLENUM ABOVE RG. CONNECT RETURN DUCT TO TOP OF PLENUM.
8. PROVIDE CLEANOUT IN GREASE DUCT AT CHANGE OF DIRECTION.



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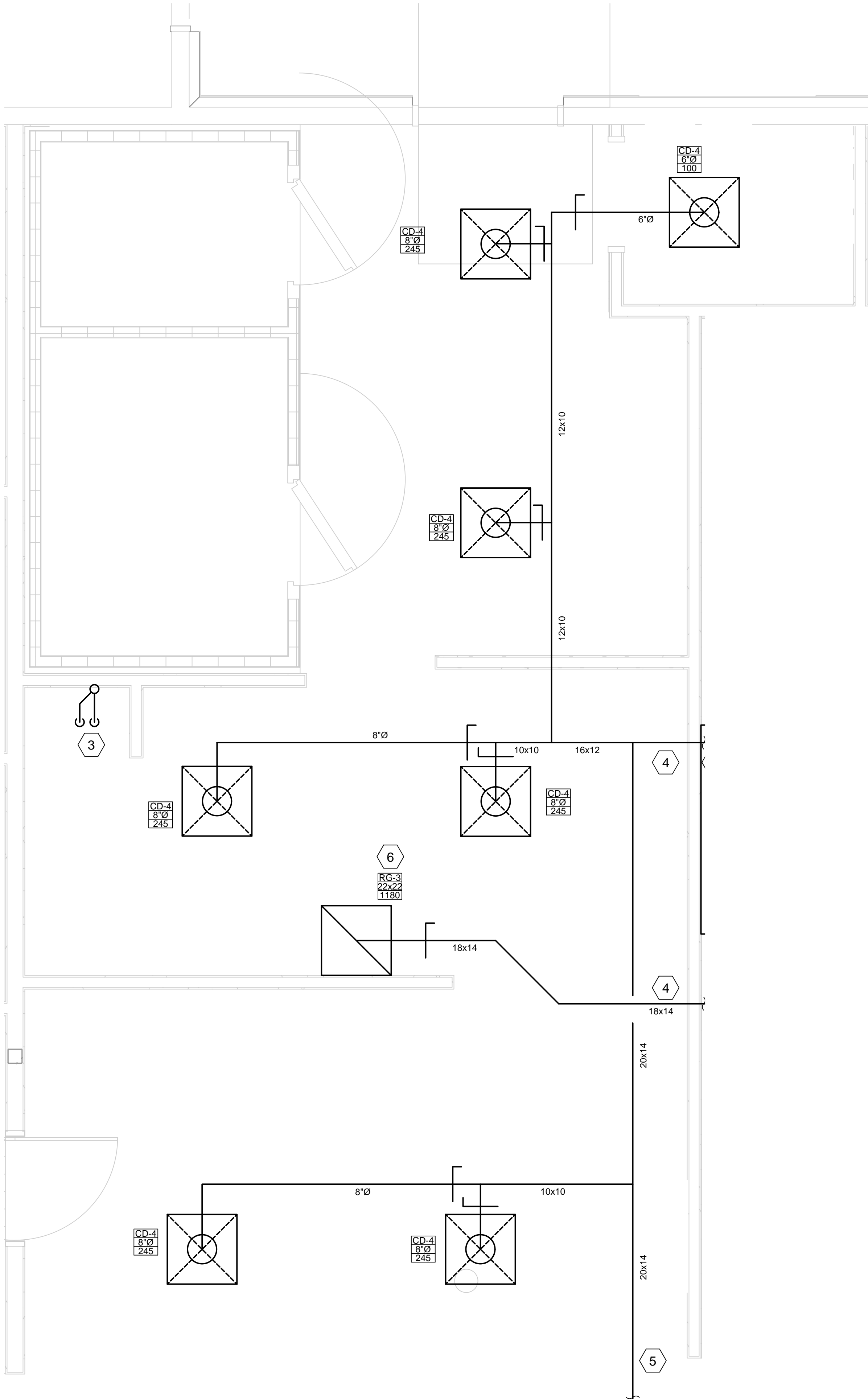
5621 Outlets at Tejon Parkway
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M4.01

Dunkin Mechanical Plan



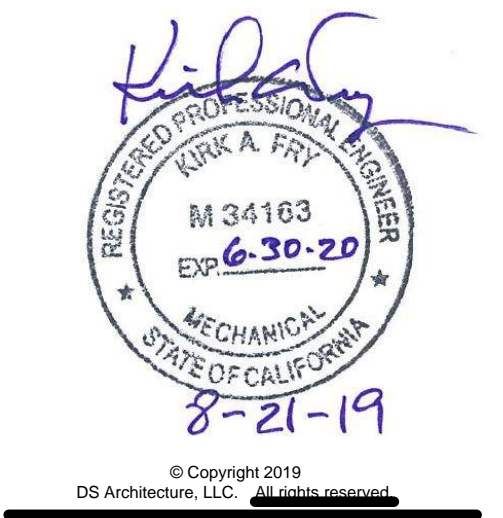
1 // **Jamba Juice Mechanical Plan**
1/2" = 1'-0"

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12. ALL RETURN DUCTS SHALL BE INSULATED.
13. RUNOUTS TO DIFFUSERS SHALL BE SAME SIZE ROUND DUCT AS DIFFUSER NECK UNLESS INDICATED OTHERWISE.

SHEET KEYNOTES

1. CONNECT 3" CPVC COMBUSTION AIR AND 3" CPVC FLUE VENT TO DW-H-2 AND EXTEND UP THRU ROOF VIA CONCENTRIC VENT TERMINATION KIT.
2. SEE SHEET M4.01 FOR CONTINUATION.
3. SEE SHEET M4.03 FOR CONTINUATION.
4. SEE SHEET M1.00 FOR CONTINUATION.
5. PROVIDE 22"x22"x8" HIGH SHEET METAL PLENUM ABOVE RG. CONNECT RETURN DUCT TO TOP OF PLENUM.
6. PROVIDE 22"x22"x8" HIGH SHEET METAL PLENUM ABOVE RG. CONNECT RETURN DUCT TO TOP OF PLENUM.



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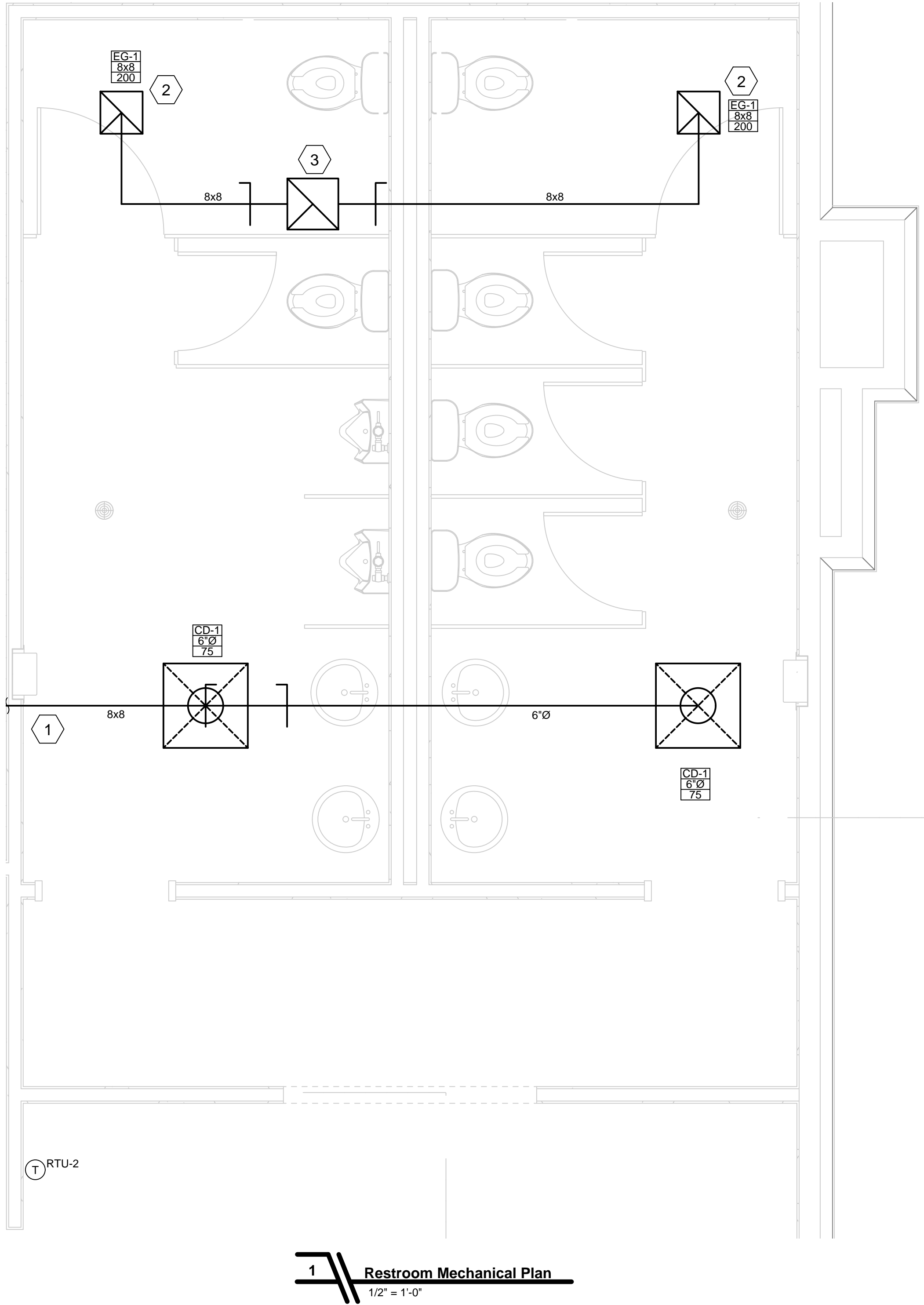
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M4.02

Jamba Juice Mechanical
Plan





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13. RUNOUTS TO DIFFUSERS SHALL BE SAME SIZE ROUND DUCT AS DIFFUSER NECK UNLESS INDICATED OTHERWISE.

SHEET KEYNOTES

1. SEE SHEET M4.03 FOR CONTINUATION.
2. PROVIDE 10"x10"x8" HIGH SHEET METAL PLENUM ABOVE EG. CONNECT EXHAUST DUCT TO TOP OF PLENUM.
3. 14-1/2" x 14-1/2" EA DUCT UP THRU ROOF TO EF-1.



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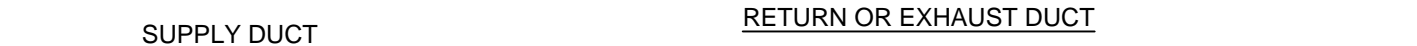
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Restroom Mechanical
Plan



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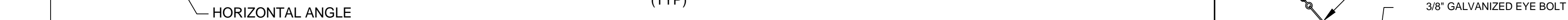
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2 NOT TO SCALE



NOT TO SCALE



SCHEDULE OF SIDE BRACING FOR RECTANGULAR DUCTS					
DUCT SIZE	VERTICAL AND LONGITUDINAL ANGLES	DIAGONAL ANGLES	HORIZONTAL ANGLES	BOLT SIZE	WEIGHT PER LINEAR FOOT
UP TO 60"	3x3x16 GA.	3x3x14 GA.	3x3x16 GA.	3/8"Ø	36
61" TO 84"	4x4x14 GA.	4x4x14 GA.	4x4x14 GA.	3/8"Ø	53
85" TO 96"	4x4x12 GA.	4x4x12 GA.	4x4x12 GA.	1/2"Ø	80

6 SEISMIC SIDE BRACING FOR HORIZONTAL DUCTS
NOT TO SCALE



4 NOT TO SCALE



7 NOT TO SCALE



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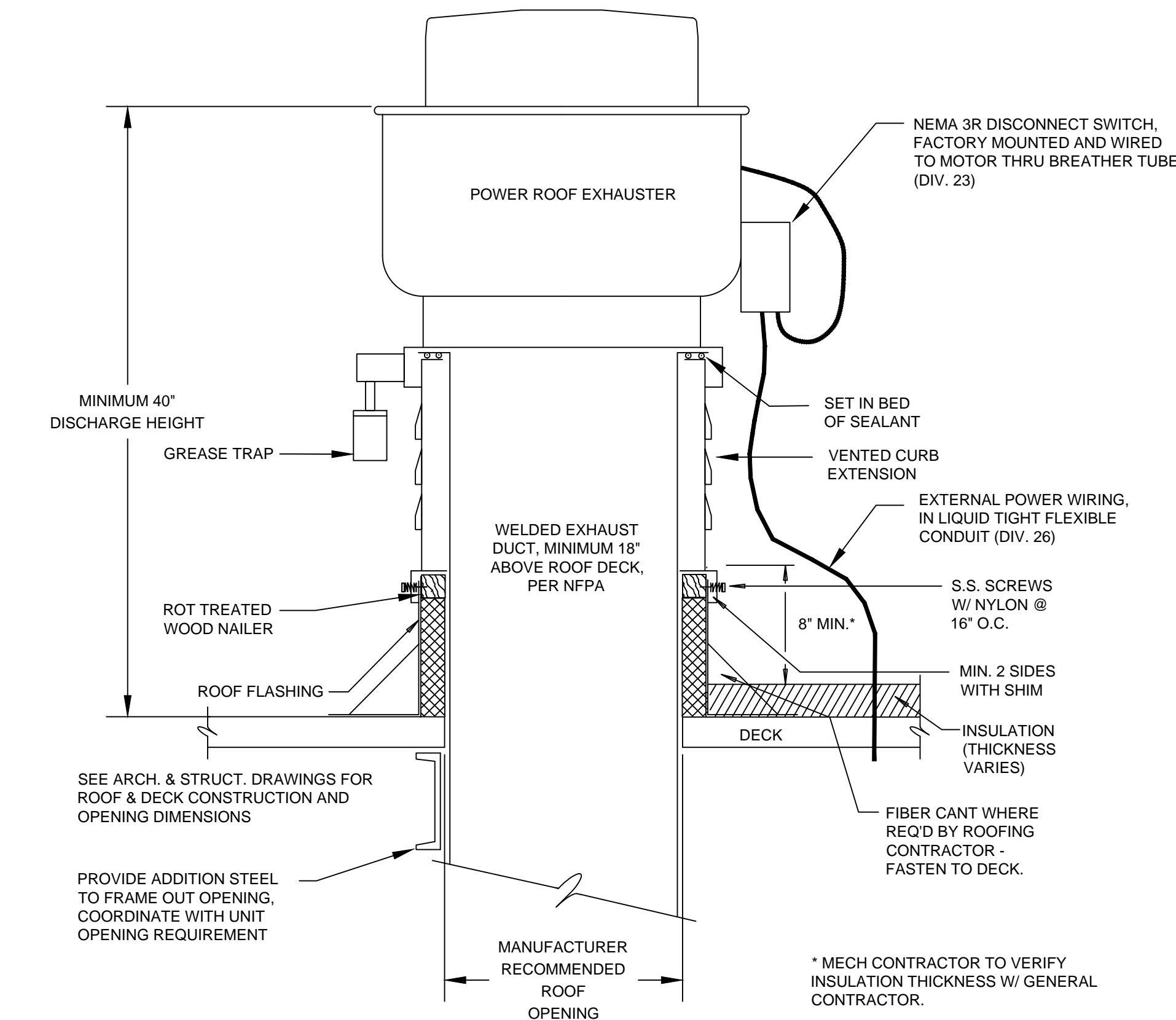
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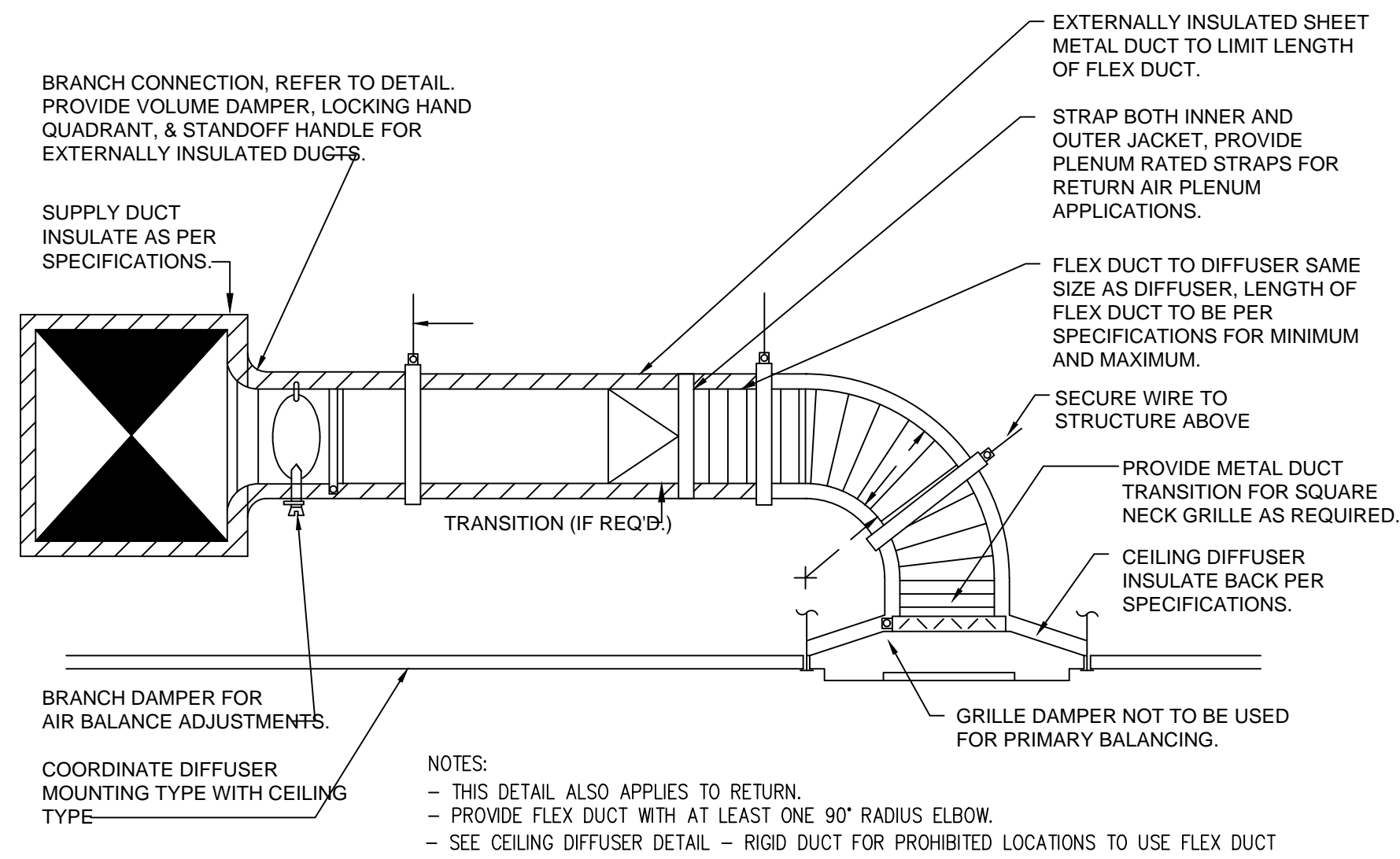
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M5.00

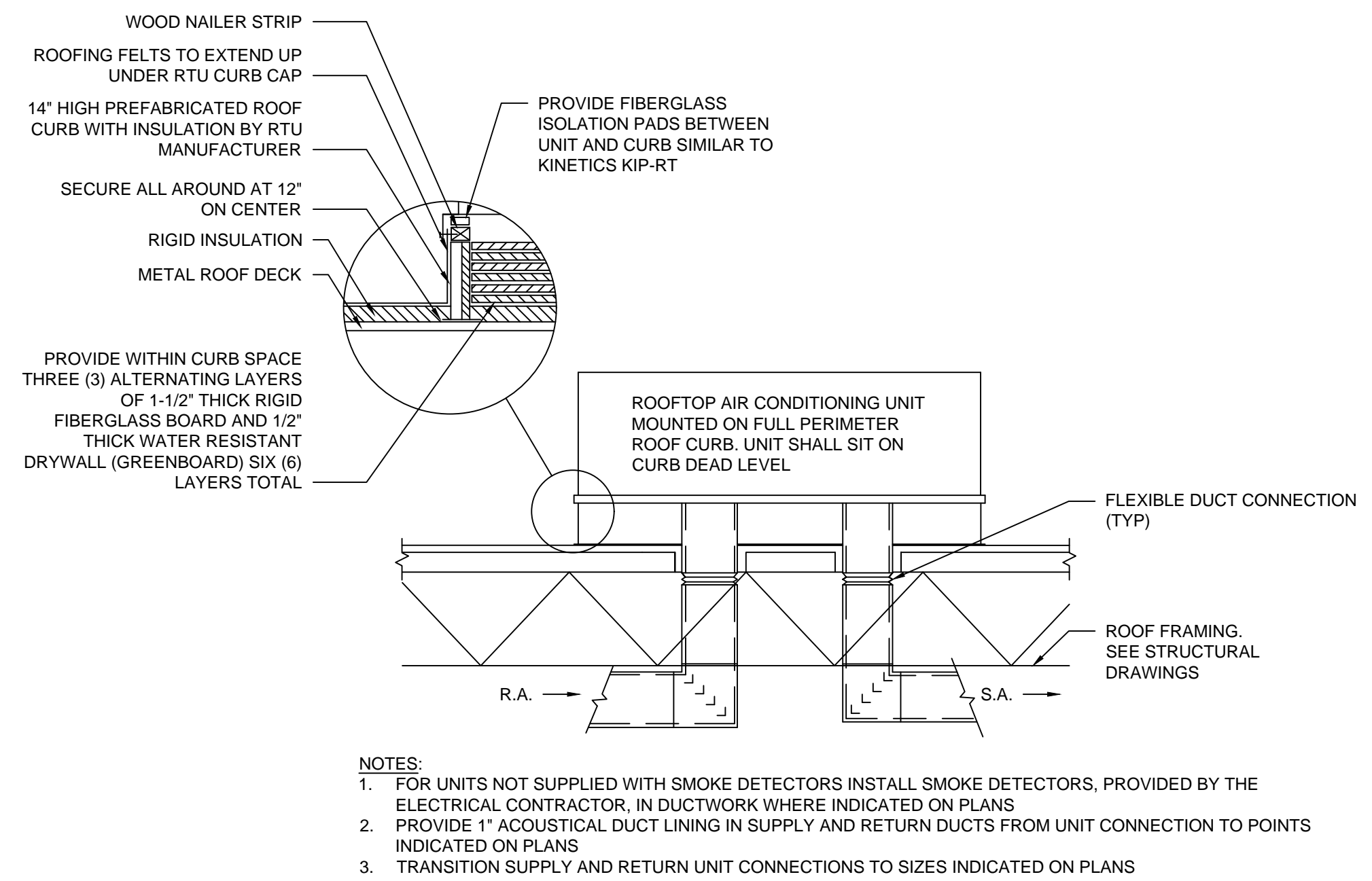
Mechanical Details



1 ROOF MOUNTED GREASE EXHAUST FAN DETAIL
NOT TO SCALE



2 CEILING DIFFUSER - FLEXIBLE DUCT POLY. TYPE LINING
NOT TO SCALE



3 ROOFTOP UNIT INSTALLATION DETAIL
NOT TO SCALE

ROOFTOP UNIT SCHEDULE																											
GENERAL				SUPPLY FAN DATA				COOLING DATA						COOLING EFFICIENCY		HEATING DATA				HEATING EFFICIENCY	UNIT ELECTRICAL DATA				WEIGHT LBS.	UNIT SELECTION BASED ON:	NOTES
MARK	NOMINAL TONS	MIN. EER	OA CFM	SUPPLY CFM	E S.P. IN. W.G.	MOTOR HP	RPM	REFRIGERANT TYPE	EAT DB/WB °F	LAT DB/WB °F	COND. AMBIENT °F	SENSIBLE MBH	TOTAL MBH	EER	IEER	GAS			NO. OF STAGES	UNIT E _i	VOLTAGE / Hz / PHASE	MCA	MOCP				
																INPUT MBH	OUTPUT MBH	PRESSURE IN. W.C.									
RTU-1	12.5	10.8	900	4800	1.00	5	1725	R-410A	82.3/64.8	59.9/55.8	110	117	131.3	10.8	12.4	210.0	168	5" - 10"	2	80%	208/60/3	63.6	80	1265	DAIKIN DCG1502103WABX	1-7	
RTU-2	12.5	10.8	900	4800	1.00	5	1725	R-410A	82.3/64.8	59.9/55.8	110	117	131.3	10.8	12.4	210.0	168	5" - 10"	2	80%	208/60/3	63.6	80	1265	DAIKIN DCG1502103WABX	1-7	
NOTES:																											
1. FURNISH WITH FACTORY MOUNTED AND WIRED DDC CONTROLLER AND BACNET COMMUNICATION INTERFACE.																											
2. FURNISH WITH 14" HIGH ROOF CURB WITH SEISMIC RESTRAINT CLIP.																											
3. PROVIDE WITH MERV-8 FILTERS.																											
4. PROVIDE WITH ULTRA LOW-LEAK DRY-BULB ECONOMIZER WITH DDC CONTROLLER AND FAULT DETECTION AND DIAGNOSTICS.																											
5. PROVIDE WITH DIRTY FILTER SWITCH.																											
6. PROVIDE WITH PHASE MONITOR.																											
7. PROVIDE WITH HAIL GUARD.																											

KITCHEN MAKEUP AIR UNIT (GAS) SCHEDULE																
GENERAL		SUPPLY FAN DATA							HEATING DATA						WEIGHT LBS.	UNIT SELECTION BASED ON:
MARK	LOCATION	AIR FLOW ARRANGEMENT	DESIGN CFM	MINIMUM CFM	E.S.P. IN. W.G.	MOTOR HP	FLA	DISCHARGE POSITION	VOLTAGE / Hz / PHASE	BURNER TYPE	GAS			TEMP RISE °F		
											INPUT MBH	OUTPUT MBH	PRESSURE IN. W.C.			
MAU-1	ROOF	CONSTANT VOLUME	1830	1000	0.40	3.00	8.6	DOWNFLOW	208/60/3	DIRECT-FIRED	83.7	77.0	7" - 14"	40	1307	CAPTIVE-AIRE A1-D.500-15D-MPU

AIR BALANCE SCHEDULE					
DESCRIPTION	SUPPLY CFM	OA CFM	RETURN CFM	EXHAUST CFM	RELIEF CFM
RTU-1	4800	900	3900	-	505
RTU-2	4800	900	3900	-	500
EF-1	-	-	-	400	-
EF-3	-	-	-	975	-
EF-4	-	-	-	2250	-
MAU-1	-	1830	-	-	-
TOTAL	9800	3630	8000	3625	1005
PRESSURIZATION = +5 CFM					

FAN SCHEDULE									
MARK	LOCATION	CFM	E.S.P. IN. W.G.	FAN RPM	MOTOR DATA			UNIT SELECTION BASED ON	NOTES
					DRIVE	MOTOR HP	V/PH		
AC-1	DRIVE-THRU	200	0.40	1045	DIRECT	1 @ 1/12, 1 @ 1/20	120/1	BERNER DTU03-2026A	1,2
EF-1	ROOF	400	0.25	1633	DIRECT	1/4	120/1	GREENHECK G-098-VG	
EF-2	ROOF	150	0.25	1623	DIRECT	1/4	120/1	GREENHECK G-097-VG	
EF-3	ROOF	975	1.00	1725	DIRECT	1/2	208/3	CAPTIVEAIRE DU50HFA	
EF-4	ROOF	2250	1.75	1260	DIRECT	2	208/3	CAPTIVEAIRE DU180HFA	
NOTES:									
1. PROVIDE WITH FACTORY DISCONNECT SWITCH.									
2. PROVIDE WITH MOUNTING BRACKET SYSTEM.									

AIR DISTRIBUTION DEVICE SCHEDULE						
MARK	TYPE	FRAME TYPE	DAMPER TYPE	FACE SIZE IN X IN	SELECTION BASED ON	NOTES
CD-1	PLAQUE	LAY-IN	OPPOSED BLADE	24"x24"	TITUS OMNI-AA	1,2,4,5,6,9
CD-2	2-CONE FACE	LAY-IN	OPPOSED BLADE	24"x24"	METALAIRE 5700-6 AL	5,7,8,9
CD-3	2-CONE FACE	SURFACE	OPPOSED BLADE	24"x24"	METALAIRE 5700-6 AL	5,7,8,9
CD-4	PERFORATED W/ DEFLECTORS	LAY-IN	OPPOSED BLADE	24"x24"	TITUS PAS-AA	1,2,5,9
CD-5	3-CONE FACE	LAY-IN	OPPOSED BLADE	24"x24"	TITUS TMS-AA	1,2,4,5,6,9
EG-1	LOUVERED FACE	LAY-IN	-	12"x12"	TITUS 350FL	3,5,6
EG-2	LOUVERED FACE	SURFACE	-	12"x12"	TITUS 350FL	3,5,6
RG-1	LOUVERED FACE	LAY-IN	-	24"x24"	TITUS 350FL	3,5,6
RG-2	LOUVERED FACE	LAY-IN	OPPOSED BLADE	24"x24"	METALAIRE RH-6	5,7
RG-3	PERFORATED	LAY-IN	-	24"x24"	TITUS PAR-AA	2,5,9
RG-4	EGGCRATE	LAY-IN	-	24"x24"	TITUS 50F	5,6,10
NOTES:						
1. PROVIDE FULL FACE DIFFUSER AND FURNISH WITH MOLDED INSULATION BLANKET. WHERE APPLICABLE PROVIDE BLANK-OFF QUADRANT WHERE INDICATED ON DRAWINGS.						
2. DIFFUSERS SHALL BE WHITE WITH ALUMINUM CONSTRUCTION. FACE SIZE IS 24"x24", UNLESS OTHERWISE NOTED.						
3. GRILLE TO BE WHITE WITH ALUMINUM BORDER AND CORE. SEE PLANS FOR DUCT CONNECTION AND DUCT BRANCH SIZE.						
4. ALL DAMPERS TO BE COMPATIBLE WITH SPECIFIED AIR DEVICE.						
5. FRAME TYPES TO BE COMPATIBLE WITH CEILING TYPE, WHERE APPLICABLE. VERIFY CEILING TYPE WITH ARCHITECTURAL DRAWINGS.						
6. COORDINATE LOCATION WITH ARCHITECTURAL CEILING PLAN.						
7. AIR DEVICE TO BE ALUMINUM WITH BAKED ENAMEL FINISH. COORDINATE DEVICE COLOR WITH ARCHITECT.						
8. DIFFUSER SHALL BE 4-WAY BLOW UNLESS OTHERWISE INDICATED ON PLANS.						
9. SEE PLANS FOR NECK SIZE. BRANCH RUNOUT TO BE SAME SIZE AS DIFFUSER CONNECTION, UNLESS OTHERWISE NOTED.						
10. GRILLE TO BE WHITE WITH ALUMINUM BORDER AND GRID.						

UNIT HEATER SCHEDULE												
MARK	TYPE	ELECTRIC COIL				MOTOR DATA			UNIT ELECTRICAL		UNIT SELECTION BASED ON:	NOTES
		KW	MBH	TEMP. RISE, °F	NO. OF CONTROL STEPS	CFM	HP	RPM	V/PH/Hz	FLA		
EUH-1	ELECTRIC	3.0	10.2	27	1	350	0.01	1600	208/1/60	14.5	QMARK MUH0381	1,2
EUH-2	ELECTRIC	3.0	10.2	27	1	350	0.01	1600	208/1/60	14.5	QMARK MUH0381	1,2
NOTES:												
1.		FURNISH WITH SINGLE POLE INTERNAL THERMOSTAT.										
2.		FURNISH WITH CEILING MOUNTING BRACKET.										

DS ARCHITECTURE

Kent, Ohio

Cleveland, Ohio

DS Architecture is a Limited Liability Company

REGISTERED PROFESSIONAL ENGINEER

KIRK A. FRY

M 34163

EXP 6-30-20

MECHANICAL

STATE OF CALIFORNIA

8-21-19

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TravelCenters of America LLC

Tejon TravelCenter of America

5621 Outlets at Tejon Parkway
Wheeler Ridge, CA 93203

Issue Description: ISSUED FOR PERMIT		
Revision Schedule		
#	DATE	DESCRIPTION

Project #:	19027
Issue Date:	08/21/2019

M7.00

Mechanical Schedules

7/23/2019 9:08:37 AM

STATE OF CALIFORNIA
MECHANICAL SYSTEMS
CEC-NRCC-MCH-01-E (Revised 01/16)

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE
Mechanical Systems
Page 1 of 3

Project Name: Tejon Travel Center of America / 5621 Outlets at Tejon Parkway Wheeler Ridge, CA

Date Prepared: August 13, 2019

A. MECHANICAL COMPLIANCE DOCUMENTS & WORKSHEETS (check box if worksheet is included)

For detailed instructions on the use of this and all Energy Efficiency Standards compliance forms, refer to the 2016 Nonresidential Manual
Note: The Enforcement Agency may require all forms to be incorporated onto the building plans.

YES	NO	Comp. Doc./Worksheet #	Title
<input checked="" type="radio"/>	<input type="radio"/>	NRCC-MCH-01-E (Part 1 of 3)	Certificate of Compliance, Declaration. Required on plans for all submittals.
<input checked="" type="radio"/>	<input type="radio"/>	NRCC-MCH-01-E (Part 2 of 3)	Certificate of Compliance, Required Acceptance Tests (MCH-02-A to 11-A). Required on plans for all submittals.
<input checked="" type="radio"/>	<input type="radio"/>	NRCC-MCH-01-E (Part 3 of 3)	Certificate of Compliance, Required Acceptance Tests (MCH-12-A to 18-A). Required on plans where applicable.
<input checked="" type="radio"/>	<input type="radio"/>	NRCC-MCH-02-E (Part 1 of 2)	Mechanical Dry Equipment Summary is required for all submittals with Central Air Systems. It is optional on plans.
<input type="radio"/>	<input checked="" type="radio"/>	NRCC-MCH-02-E (Part 2 of 2)	Mechanical Wet Equipment Summary is required for all submittals with chilled water, hot water or condenser water systems. It is optional on plans.
<input type="radio"/>	<input checked="" type="radio"/>	NRCC-MCH-03-E	Mechanical Ventilation and Reheat is required for all submittals with multiple zone heating and cooling systems. It is optional on plans.
<input checked="" type="radio"/>	<input type="radio"/>	NRCC-MCH-07-E (Part 1 of 2)	Power Consumption of Fans. Required on plans where applicable
<input checked="" type="radio"/>	<input type="radio"/>	NRCC-MCH-07-E (Part 2 of 2)	Power Consumption of Fans, Declaration. Required on plans where applicable

B. MECHANICAL HVAC ACCEPTANCE FORMS (check box for required compliance documents)

Test Performed By:

Designer:
This compliance document is to be used by the designer and attached to the plans. Listed below are all the acceptance tests for HVAC systems. The designer is required to check the applicable boxes for all acceptance tests that apply and list all equipment that requires an acceptance test. All equipment of the same type that requires a test, list the equipment description and the number of systems.

Installing Contractor:
The contractor who installed the equipment is responsible to either conduct the acceptance test themselves or have a qualified entity run the test for them. If more than one person has responsibility for the acceptance testing, each person shall sign and submit the Certificate of Acceptance applicable to the portion of the construction or installation for which they are responsible.

Enforcement Agency:
Plancheck - The NRCC-MCH-01-E compliance document is not considered a completed document and is not to be accepted by the building department unless the correct boxes are checked.
Inspector - Before occupancy permit is granted all newly installed process systems must be tested to ensure proper operations.

Test Description	MCH-02-A	MCH-03-A	MCH-04-A	MCH-05-A	MCH-06-A	MCH-07-A	MCH-08-A	MCH-09-A	MCH-10-A	MCH-11-A	
Equipment Requiring Testing or Verification	# of Units	Outdoor Air	Single Zone Unitary	Air Distribution Ducts	Economizer Controls	Demand Controlled Ventilation (DCV)	Supply Fan VAV	Valve Leakage Test	Supply Water Temp. Reset	Hydronic System Variable Flow Control	Automatic Demand Shed Control
Rooftop Units RTU-1 & RTU-2	2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Add Row	Remove Last										

CA Building Energy Efficiency Standards - 2016 Nonresidential Compliance

January 2016

STATE OF CALIFORNIA
MECHANICAL SYSTEMS
CEC-NRCC-MCH-01-E (Revised 01/16)

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE
Mechanical Systems
Page 3 of 3

Project Name: Tejon Travel Center of America / 5621 Outlets at Tejon Parkway Wheeler Ridge, CA

Date Prepared: August 13, 2019

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

1. I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Kirk A. Fry, PE, CEM, LEED AP

Documentation Author Signature: Kirk A. Fry

Company: Osborn Engineering Company

Signature Date:

Address: 1100 Superior Avenue Suite 300

City/State/Zip: Cleveland, OH 44114

Phone: 216-861-2020 X3202

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. The information provided on this Certificate of Compliance is true and correct.

2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer).

3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.

4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.

5. I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.

Responsible Designer Name: Kirk A. Fry, PE, CEM, LEED AP

Responsible Designer Signature: Kirk A. Fry

Company: Osborn Engineering Company

Date Signed:

Address: 100 Superior Avenue Suite 300

License: M 34613

City/State/Zip: Cleveland, OH 44114

Phone: 216-861-2020 X3202

CA Building Energy Efficiency Standards - 2016 Nonresidential Compliance

January 2016

STATE OF CALIFORNIA
MECHANICAL SYSTEMS
CEC-NRCC-MCH-01-E (Revised 01/16)

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE
Mechanical Systems
Page 2 of 3

Project Name: Tejon Travel Center of America / 5621 Outlets at Tejon Parkway Wheeler Ridge, CA

Date Prepared: August 13, 2019

C. MECHANICAL HVAC ACCEPTANCE FORMS (check box for required compliance documents)

Test Performed By:

Designer:
This compliance document is to be used by the designer and attached to the plans. Listed below are all the acceptance tests for HVAC systems. The designer is required to check the applicable boxes for all acceptance tests that apply and list all equipment that requires an acceptance test. All equipment of the same type that requires a test, list the equipment description and the number of systems.

Installing Contractor:
The contractor who installed the equipment is responsible to either conduct the acceptance test themselves or have a qualified entity run the test for them. If more than one person has responsibility for the acceptance testing, each person shall sign and submit the Certificate of Acceptance applicable to the portion of the construction or installation for which they are responsible.

Enforcement Agency:
Plancheck - The NRCC-MCH-01-E compliance document is not considered a completed document and is not to be accepted by the building department unless the correct boxes are checked.
Inspector - Before occupancy permit is granted all newly installed process systems must be tested to ensure proper operations.

Test Description	MCH-12-A	MCH-13-A	MCH-14-A	MCH-15-A	MCH-16-A	MCH-17-A	MCH-18-A	
Equipment Requiring Testing or Verification	# of Units	Fault Detection & Diagnostics for DX Units	Automatic Fault Detection & Diagnostics for Air & Zone	Distributed Energy Storage DX AC Systems	Thermal Energy Storage (TES) Systems	Supply Air Temperature Reset Controls	Condenser Water Reset Controls	ECMS
Rooftop Units RTU-1 & RTU-2	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Add Row	Remove Last							

CA Building Energy Efficiency Standards - 2016 Nonresidential Compliance

January 2016

STATE OF CALIFORNIA
REQUIRED ACCEPTANCE TESTS
CEC-NRCC-MCH-04-E (Revised 01/16)

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE
Required Acceptance Tests
Page 1 of 3

Project Name: Tejon Travel Center of America 5621 Outlets at Tejon Parkway Wheeler Ranch, CA 93203

Date Prepared: August 13, 2019

A. MECHANICAL COMPLIANCE FORMS & WORKSHEETS

(Indicate if worksheet is included)

For detailed instructions on the use of this and all Energy Standards compliance documents, refer to the 2016 Nonresidential Manual
Note: The Enforcement Agency may require all compliance documents to be incorporated onto the building plans. The NRCC-MCH-04-E and NRCC-MCH-05-E are alternative compliance documents to NRCC-MCH-01-E, NRCC-MCH-02-E and NRCC-MCH-03-E for projects using only single zone packaged HVAC systems.

YES	NO	Form	Title
<input checked="" type="radio"/>	<input type="radio"/>	NRCC-MCH-04-E (1 of 2)	Certificate of Compliance. Required on plans when used.
<input checked="" type="radio"/>	<input type="radio"/>	NRCC-MCH-04-E (2 of 2)	Mechanical Acceptance Tests. Required on plans when used.
<input checked="" type="radio"/>	<input type="radio"/>	NRCC-MCH-05-E (1 of 2)	HVAC Prescriptive Requirements. It is required on plans when used.
<input checked="" type="radio"/>	<input type="radio"/>	NRCC-MCH-05-E (2 of 2)	Mechanical SWH Equipment Summary is required for all submittals with service water heating, pools or spas. It is required on plans where applicable.

CA Building Energy Efficiency Standards - 2016 Nonresidential Compliance

January 2016



TravelCenters of America LLC
Tejon TravelCenter of America
5621 Outlets at Tejon Parkway
Wheeler Ridge, CA 93203

Issue Description: ISSUED FOR PERMIT		
Revision Schedule		
#	DATE	DESCRIPTION

Project #:	19027
Issue Date:	08/21/2019

M7.01

STATE OF CALIFORNIA
REQUIRED ACCEPTANCE TESTS
CEC-NRCC-MCH-04-E (Revised 01/16)

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE
NRCC-MCH-04-E
Required Acceptance Tests
Page 2 of 3

Project Name: Tejon Travel Center of America 5621 Outlets at Tejon Parkway Wheeler Ranch, CA 93203
Date Prepared: August 13, 2019

Designer:
This compliance document is to be used by the designer and attached to the plans. Listed below are all the acceptance tests for mechanical systems. The designer is required to check the applicable boxes by all acceptance tests that apply and list all equipment that requires an acceptance test. If all equipment of a certain type requires a test, list the equipment description and the number of systems. The NA number designates the Section in the Appendix of the Nonresidential Reference Appendices Manual that describes the test. Since this compliance document will be part of the plans, completion of this section will allow the responsible party to budget for the scope of work appropriately.

Enforcement Agency:
Systems Acceptance. Before occupancy permit is granted for a newly constructed building or space, or a new space-conditioning system serving a building or space is operated for normal use, all control devices serving the building or space shall be certified as meeting the Acceptance Requirements for Code Compliance.

Systems Acceptance. Before occupancy permit is granted all newly installed HVAC equipment must be tested using the Acceptance Requirements. The NRCC-MCH-04-E compliance document is not considered a completed document and is not to be accepted by the building department unless the correct boxes are checked. The equipment requiring testing, person performing the test (Example: HVAC installer, TAB contractor, controls contractor, PE in charge of project) and what Acceptance test must be conducted. The following checked-off forms are required for ALL newly installed and replaced equipment. In addition a Certificate of Acceptance compliance documents shall be submitted to the building department that certifies plans, specifications, installation certificates, and operating and maintenance information meet the requirements of Section 10-103(b) and Title 24 Part 6. The building inspector must receive the properly filled out and signed compliance documents before the building can receive final occupancy.

Test Description	MCH-02-A	MCH-03-A	MCH-04-A	MCH-05-A	MCH-06-A	MCH-07-A	MCH-11-A	MCH-12-A	MCH-14-A	MCH-18-A		
Equipment Requiring Testing or Verification	# of Units	Outdoor Air	Single Zone Unitary	Air Distribution Ducts	Economizer Controls	Demand Control Ventilation (DCV)	Supply Fan VAV	Automatic Demand Shed Control	FDD for Packaged DX Units	Distributed Energy Storage DX AC Systems	Energy Management Control System	Test Performed By:
RTU-1	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
RTU-2	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Add RowRemove Last

CA Building Energy Efficiency Standards - 2016 Nonresidential ComplianceJanuary 2016

STATE OF CALIFORNIA
REQUIREMENTS FOR PACKAGED SINGLE ZONE UNITS
CEC-NRCC-MCH-05-E (Revised 01/16)

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE
NRCC-MCH-05-E
Requirements for Packaged Single-Zone Units
Page 1 of 2

Project Name: Tejon Travel Center of America 5621 Outlets at Tejon Parkway Wheeler Ridge, CA 93203
Date Prepared: August 13, 2019

Equipment Tag(s) ¹	RTU-1	RTU-2				
MANDATORY MEASURES	Requirement²	As Scheduled³	Requirement²	As Scheduled³	Requirement²	As Scheduled³
Heating Equipment Efficiency ⁴	110.1 or 110.2(a)	Et >= 80%	Et = 80%	Et >= 80%	Et = 80%	
Cooling Equipment Efficiency ⁴	110.1 or 110.2(a)	10.8 EER/12.4 IEER	10.8 EER/12.4 IEER	0.8 EER/12.4 IEER	10.8 EER/12.4 IEER	
Thermostats ⁵	110.2(b), 110.2(c)					
Furnace Standby Loss Control ⁶	110.2(d)	N/A	N/A	N/A	N/A	
Low Leakage AHU Ventilation ⁷	110.2(f)	N/A	N/A	N/A	N/A	
Demand Control Ventilation ⁸	120.1(b)	848	1200	848	1200	
Occupant Sensor Ventilation Control ⁸	120.1(c)4	N/A	N/A	N/A	N/A	
Shutoff and Reset Controls ⁹	120.1(c)5, 120.2(e)3	N/A	N/A	N/A	N/A	
Outdoor Air and Exhaust Damper Control	120.2(e)	N/A	N/A	N/A	N/A	
Automatic Demand Shed Controls	120.2(f)	N/A	N/A	N/A	N/A	
Economizer FDD	120.2(h)	N/A	N/A	N/A	N/A	
Duct Insulation	120.2(i)	Required	Provided	Required	Provided	
	120.4	R-4.2	R-4.2	R-4.2	R-4.2	
PRESCRIPTIVE MEASURES						
Equipment is sized in conformance with 140.4 (a & b)	140.4(a & b)	Required	Yes	Required	Yes	
Economizer	140.4(e)	Required	Provided	Required	Provided	
Electric Resistance Heating ¹⁰	140.4(g)	N/A	N/A	N/A	N/A	
Duct Leakage Sealing and Testing ¹¹	140.4(i)	Not Required	Not Required	Not Required	Not Required	

Notes:

- Provide equipment tags (e.g. AC1 or AC1 to 10). Multiple units of the same make and model with the same application and accessories can be grouped together.
- Enter the following information as appropriate: Unit Manufacturer; Unit Model Number (including all accessories); Description of the unit (e.g. gas-pack or heat pump; rated heating capacity (enter "N/A" if no heating); and, rated cooling capacity (enter "N/A" if no cooling). For unit capacities include the units (e.g. kBtu/h or tons).
- For each requirement, enter the minimum requirement from the Standard in the left column (under "Standard Requirement"). In the right column (under "As Scheduled") enter the value for the units as specified.
- Where there is more than one requirement (e.g. full and part load efficiency) enter both with the appropriate labels (e.g. COP and IEER).
- In the left column identify the thermostatic requirements from the standard (e.g. programmable setback thermostat or heatpump with electric heat), . In the right column indicate the capabilities of the thermostat as scheduled.
- If the unit has a furnace which is rated at ≥ 225,000 Btu/h of capacity, indicate the rated standby loss and ignition source (e.g. iOD). If there is no furnace or the unit is rated for <225,000 Btu/h indicate "N/A".
- In the left column, enter both the required ventilation value from Table 120.1A and for the number of occupants times 15 cfm/person. In the right column enter the actual minimum ventilation as scheduled. If the space is naturally ventilated enter "N/A" in the left column and "the space is naturally ventilated" in the right column.
- If the space is required to have either DCV or Occupant Sensor Ventilation Control indicate "required" in the left column (otherwise indicate "N/A" in the left column). If either DCV or Occupant Sensor Ventilation Control is provided indicate "provided" in the right column (otherwise indicate "N/A" in the right column)
- In the left column indicate the required time controls from the standard. In the right column identify the device that provides this functionality (e.g. EMCS or programmable timer/clock).
- Enter N/A if there is no electric heating. If the system has electric heating indicate which exception to 140.4(g) applies.
- If duct leakage sealing and testing is required, a MCH-04-A compliance document must be submitted.

CA Building Energy Efficiency Standards - 2016 Nonresidential ComplianceJanuary 2016

STATE OF CALIFORNIA
REQUIRED ACCEPTANCE TESTS
CEC-NRCC-MCH-04-E (Revised 01/16)

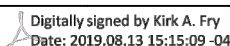
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE
NRCC-MCH-04-E
Required Acceptance Tests
Page 3 of 3

Project Name: Tejon Travel Center of America 5621 Outlets at Tejon Parkway Wheeler Ranch, CA 93203
Date Prepared: August 13, 2019

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

1. I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Kirk A. Fry	Documentation Author Signature: Kirk A. Fry		Digitally signed by Kirk A. Fry Date: 2019.08.13 15:15:09 -04'00'
Company: Osborn Engineering Company	Signature Date:		
Address: 1100 Superior Avenue Suite 300	CEA/HERS Certification Identification (if applicable):		
City/State/Zip: Cleveland, OH 44114	Phone: 216-861-2020 X3202		

RESPONSIBLE PERSON'S DECLARATION STATEMENT I certify the following under penalty of perjury, under the laws of the State of California: - The information provided on this Certificate of Compliance is true and correct. - I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer). - The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations. - The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application. - I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.			
Responsible Designer Name: Kirk A. Fry, PE	Responsible Designer Signature: Kirk A. Fry		Digitally signed by Kirk A. Fry Date: 2019.08.13 15:15:39 -04'00'
Company: Osborn Engineering Company	Date Signed:		
Address: 1100 Superior Avenue Suite 300	License: M 34163		
City/State/Zip: Cleveland, OH 44114	Phone: 216-861-2020 X3202		

CA Building Energy Efficiency Standards - 2016 Nonresidential ComplianceJanuary 2016

STATE OF CALIFORNIA
REQUIREMENTS FOR PACKAGED SINGLE ZONE UNITS
CEC-NRCC-MCH-05-E (Revised 01/16)

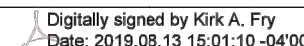
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE
NRCC-MCH-05-E
Requirements for Packaged Single-Zone Units
Page 2 of 2

Project Name: Tejon Travel Center of America 5621 Outlets at Tejon Parkway Wheeler Ridge, CA 93203
Date Prepared: August 13, 2019

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

1. I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Kirk A. Fry	Documentation Author Signature: Kirk A. Fry		Digitally signed by Kirk A. Fry Date: 2019.08.13 15:01:10 -04'00'
Company: Osborn Engineering Company	Signature Date:		
Address: 1100 Superior Avenue Suite 300	CEA/HERS Certification Identification (if applicable):		
City/State/Zip: Cleveland, OH 44114	Phone: 216-861-2020 X3202		

RESPONSIBLE PERSON'S DECLARATION STATEMENT I certify the following under penalty of perjury, under the laws of the State of California: - The information provided on this Certificate of Compliance is true and correct. - I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer). - The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations. - The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application. - I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.			
Responsible Designer Name: Kirk A. Fry, PE	Responsible Designer Signature: Kirk A. Fry		Digitally signed by Kirk A. Fry Date: 2019.08.13 15:02:30 -04'00'
Company: Osborn Engineering Company	Date Signed:		
Address: 1100 Superior Avenue Suite 1100	License: M 34163		
City/State/Zip: Cleveland, OH 44114	Phone: 216-861-2020 X3202		

CA Building Energy Efficiency Standards - 2016 Nonresidential ComplianceJanuary 2016



TravelCenters of America LLC
Tejon TravelCenter of America
5621 Outlets at Tejon Parkway
Wheeler Ridge, CA 93203

Issue Description: ISSUED FOR PERMIT		
Revision Schedule		
#	DATE	DESCRIPTION

Project #:	19027
Issue Date:	08/21/2019

M7.02

STATE OF CALIFORNIA

MECHANICAL VENTILATION AND REHEAT

CEC-NRCC-MCH-03-E (Revised 05/16)

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

NRCC-MCH-03-E

Mechanical Ventilation & Reheat

Page 1 of 2

Project Name: Tejon Travel Center of America 5621 Outlets at Tejon Parkway Wheeler Ridge, CA 93203

Date Prepared: August 20, 2019

A. Mechanical Ventilation and Reheat

In lieu of this compliance document, the required outdoor ventilation rates and airflow may be shown on the plans or the calculations can be presented in a spreadsheet. Mechanical Ventilation and Reheat worksheet available on the Energy Commission's website at: <http://www.energy.ca.gov/title24/2016standards/>.

Note: In all of the calculations that compare a supply quantity to the REQD V.A. quantity, the actual percentage of outdoor air in the supply is ignored.

Areas in buildings for which natural ventilation is used should be clearly designated. Specifications must require that building operating instructions include explanations of the natural ventilation system.

ACTUAL DESIGN (FROM EQUIPMENT SCHEDULES, ETC)						AREA BASIS		OCCUPANCY BASIS				ROOM BASIS	MINIMUM		VAV REHEATED PRIMARY AIR CFM			VAV DEADBAND PRIMARY AIR CFM		
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21
ZONE/SYSTEM/VAV BOX TAG	DESIGN PRIMARY COOLING AIRFLOW (CFM)	DESIGN PRIMARY DEADBAND AIRFLOW (CFM)	DESIGN PRIMARY HEATING AIRFLOW (CFM)	CONTROL TYPE DDC (Y/N)	TRANSFER AIRFLOW (CFM)	CONDITIONED AREA (ft ²)	MIN CFM PER AREA	MIN CFM BY AREA	NUMBER OF PEOPLE	CFM PER PERSON	MIN CFM BY OCCUPANT	MIN CFM BY ROOM	REQD VENT AIRFLOW (CFM)	COMPLIES?	BASED DESIGN PRIMARY COOLING AIR	MAXIMUM REHEAT (CFM)	COMPLIES?	PRIMARY COOLING AIR	AIRFLOW	COMPLIES?
RTU-1	4,800	3,200	4,800	No		1,500	0.15	225	37	15	555		555	PASS						
RTU-2	4,800	3,200	4,800	No	240	3,064	0.15	460	76	15	1,140		1,140	PASS						
Add Row		Remove Last																		

CA Building Energy Efficiency Standards - 2016 Nonresidential Compliance

May 2016

STATE OF CALIFORNIA

MECHANICAL VENTILATION AND REHEAT

CEC-NRCC-MCH-03-E (Revised 05/16)

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

NRCC-MCH-03-E

Mechanical Ventilation & Reheat

Page 2 of 2

Project Name: Tejon Travel Center of America 5621 Outlets at Tejon Parkway Wheeler Ridge, CA 93203

Date Prepared: August 20, 2019

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Kirk A. Fry, PE, CEM, LEED AP

Signature Date: Kirk A. Fry

Digitally signed by Kirk A. Fry
Date: 2019.08.20 17:13:03 -04'00'

Company: Osborn Engineering Company

Address: 1100 Superior Avenue Suite 300

City/State/Zip: Cleveland, OH 44114

Phone: 216-861-2020 X3202

CEA/HERS Certification Identification (if applicable):

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

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Responsible Designer Name: Kirk A. Fry, PE, CEM, LEED AP

Responsible Designer Signature: Kirk A. Fry

Digitally signed by Kirk A. Fry
Date: 2019.08.20 17:20:23 -04'00'

Company: Osborn Engineering Company

Address: 1100 Superior Avenue Suite 300

City/State/Zip: Cleveland, OH 44114

Phone: 216-861-2020 X3202

License: M 34163

CA Building Energy Efficiency Standards - 2016 Nonresidential Compliance

May 2016

STATE OF CALIFORNIA

FAN POWER CONSUMPTION

CEC-NRCC-MCH-07-E (Revised 01/16)

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

NRCC-MCH-07-E

Power Consumption of Fans Requirements

Page 1 of 2

Project Name: Tejon Travel Center of America 5621 Outlets at Tejon Pkwy Wheeler Ridge, CA

Date Prepared: August 20, 2019

A. Constant Volume Fans Systems

NOTE: Provide one copy of this worksheet for each fan system with a total fan system horsepower greater than 25 hp of Constant Volume Fan Systems when using the Prescriptive Approach. See Power Consumption of Fans §140.4(c).

If the total horsepower of all fans in the system is less than 25 hp, then this should be noted in the FAN DESCRIPTION column and the rest of this section left blank. If the total system horsepower is not obvious, such as when a VAV System has many fan-powered boxes, then this section must be completed.

Note: VAV fans and Constant Volume fans should be summarized on separate compliance documents.

01	02	03		04	05
FAN DESCRIPTION	DESIGN BRAKE HP	EFFICIENCY		NUMBER OF FANS	PEAK WATTS (A02 * A04 * 746)/ (A03a * A03b)
		MOTOR	DRIVE		
All fans total less than 25 HP					
Add Row		Remove Last			

B. Variable Air Volume Fans Systems

NOTE: Provide one copy of this worksheet for each fan system with a total fan system horsepower greater than 25 hp of Variable Air Volume (VAV) Systems when using the Prescriptive Approach. See Power Consumption of Fans §140.4(c)

01	02	03		04	05
FAN DESCRIPTION	DESIGN BRAKE HP	EFFICIENCY		NUMBER OF FANS	PEAK WATTS (B02 * B04 * 746)/ (B03a * B03b)
		MOTOR	DRIVE		
Add Row		Remove Last			

C. Totals and Adjustments

FILTER PRESSURE ADJUSTMENT Equation 140.4-A in §140.4(c) of the Building Energy Efficiency Standards.

A) If filter pressure drop (SP_f) is greater than 1 inch W.C. or 245 Pascal then enter SP_f on line 4. Enter Total Fan pressure drop across the fan (SP_t) on line 5.

B) Calculate Fan Adjustment and enter on line 6.

C) Calculate Adjusted Fan Power Index and enter on row 7

01	TOTAL FAN SYSTEM POWER (WATTS, SUM COLUMN 05)		W
02	SUPPLY DESIGN AIRFLOW		CFM
03	TOTAL FAN SYSTEM POWER INDEX (Row 1 / Row 2) ¹		W/CFM
04	SP _f		in W.C. or Pa
05	SP _t		in W.C. or Pa
06	Fan Adjustment = 1-(SP _f - 1)/SP _t		
07	ADJUSTED FAN POWER INDEX (Line 3 x Line 6)	0	W/CFM

1. TOTAL FAN SYSTEM POWER INDEX or ADJUSTED FAN POWER INDEX must not exceed 0.8 w/cfm for Constant Volume systems or 1.25 w/cfm for VAV systems.

CA Building Energy Efficiency Standards - 2016 Nonresidential Compliance

January 2016

STATE OF CALIFORNIA

FAN POWER CONSUMPTION

CEC-NRCC-MCH-07-E (Revised 01/16)

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

NRCC-MCH-07-E

Power Consumption of Fans Requirements

Page 2 of 2

Project Name: Tejon Travel Center of America 5621 Outlets at Tejon Pkwy Wheeler Ridge, CA

Date Prepared: August 20, 2019

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

1. I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Kirk A. Fry, PE, CEM, LEED AP

Signature Date: Kirk A. Fry

Digitally signed by Kirk A. Fry
Date: 2019.08.20 17:31:44 -04'00'

Company: Osborn Engineering Company

Address: 1100 Superior Avenue Suite 300

City/State/Zip: Cleveland, OH 44114

Phone: 216-861-2020 X3202

CEA/HERS Certification Identification (if applicable):

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Responsible Designer Name: Kirk A. Fry, PE, CEM, LEED AP

Responsible Designer Signature: Kirk A. Fry

Digitally signed by Kirk A. Fry
Date: 2019.08.20 17:32:02 -04'00'

Company: Osborn Engineering Company

Address: 1100 Superior Avenue Suite 300

City/State/Zip: Cleveland, OH 44114

Phone: 216-861-2020 X3202

License: M 34163

CA Building Energy Efficiency Standards - 2016 Nonresidential Compliance

January 2016

STATE OF CALIFORNIA

COMMERCIAL KITCHEN REQUIREMENTS

CEC-NRCC-PRC-03-E (Revised 01/16)

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

NRCC-PRC-03-E

Commercial Kitchen Requirements

(Page 1 of 2)

Project Name: Tejon Travel Center of America

Date Prepared: August 21, 2019

KITCHEN ROOM NUMBER:

Dunkin Donuts & Charley's

TOTAL INSTALLED TYPE I and II KITCHEN HOOD EXHAUST (CFM):

3225

TOTAL BYPASS HOOD MUA (CFM):

0

TOTAL TRANSFER AIR AIRFLOW (CFM):

1395

TOTAL MECHANICALLY HEATED OR COOLED MAKE UP AIR (CFM):

1830

TOTAL AIR NEEDED FOR HEATING OR COOLING (CFM):

N/A - Provided by RTU-1 & RTU-2

TOTAL EXHAUST AIR WITH DEMAND VENTILATION SYSTEMS:

N/A

Equipment Tags and System Description

Dunkin (EF-3/MAU-1)

Charley's (EF-4/MAU-2)

PRESCRIPTIVE MEASURES

T-24 Sections

Reference to the Requirements in the Contract Documents

Bypass Hood Exhaust and MUA

140.9(b)1A

0

0

Type I/II Hood Exhaust

140.9(b)1B, Table 140.9-A

975

2250

Mechanically Heated or Cooled Make Up Air

140.9(b)2Ai and ii

0

1830

Replacement Air/Transfer Air Exhaust

140.9(b)2Bi

975

420

Demand Ventilation Systems

140.9(b)2Bii

N/A

N/A

Energy Recovery Systems

140.9(b)2Biii

N/A

N/A

Tempered/Non Mechanical Cooling Air Systems

140.9(b)2Biv

N/A

N/A

CA Building Energy Efficiency Standards - 2016 Nonresidential Compliance

January 2016

STATE OF CALIFORNIA

COMMERCIAL KITCHEN REQUIREMENTS

CEC-NRCC-PRC-03-E (Revised 01/16)

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

NRCC-PRC-03-E

Commercial Kitchen Requirements

(Page 1 of 2)

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Dunkin (EF-3/MAU-1)

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PRESCRIPTIVE MEASURES

T-24 Sections

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Bypass Hood Exhaust and MUA

140.9(b)1A

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0

Type I/II Hood Exhaust

140.9(b)1B, Table 140.9-A

975

2250

Mechanically Heated or Cooled Make Up Air

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0

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Replacement Air/Transfer Air Exhaust

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975

420

Demand Ventilation Systems

140.9(b)2Bii

N/A

N/A

Energy Recovery Systems

140.9(b)2Biii

N/A

N/A

Tempered/Non Mechanical Cooling Air Systems

140.9(b)2Biv

N/A

N/A

CA Building Energy Efficiency Standards - 2016 Nonresidential Compliance

January 2016

TravelCenters of America LLC

Tejon TravelCenter of America

5621 Outlets at Tejon Parkway
Wheeler Ridge, CA 93203

Issue Description:

ISSUED FOR PERMIT

Revision Schedule

#	DATE	DESCRIPTION
---	------	-------------

Project #:

19027

Issue Date:

08/21/2019

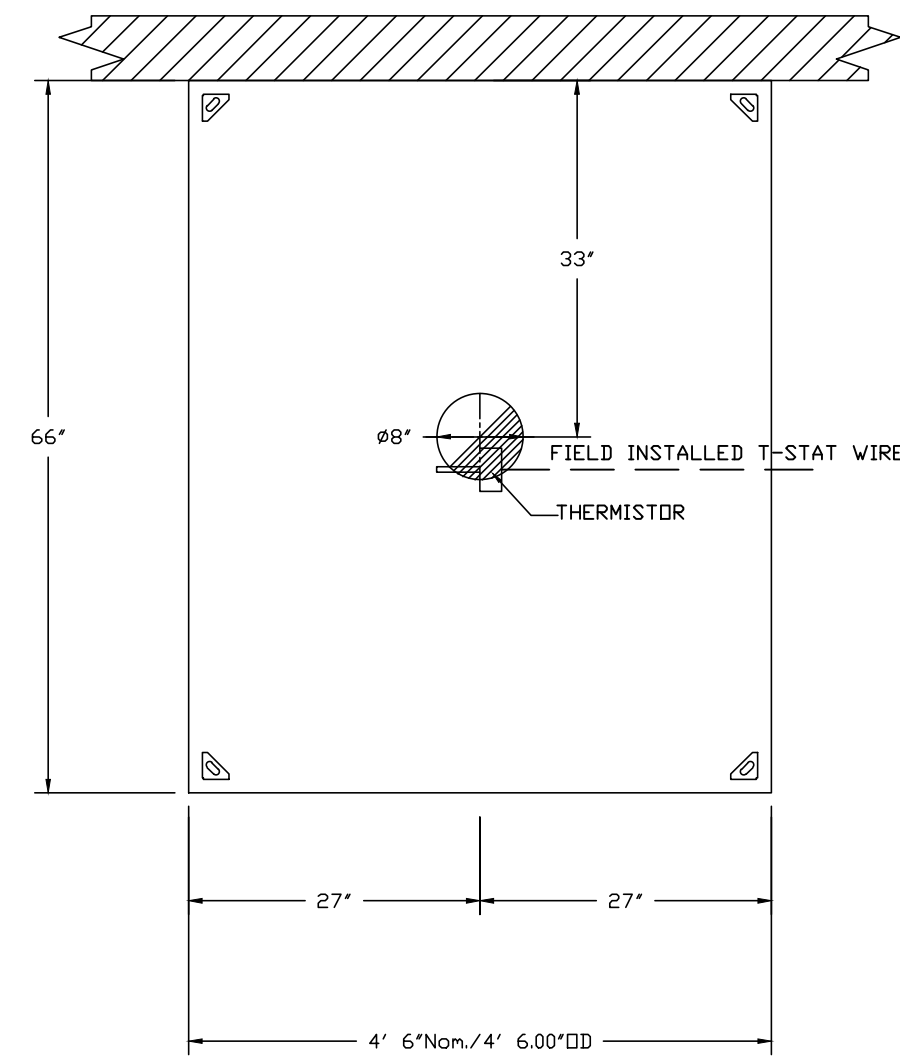
M7.03

HVAC Title 24 Forms
3 of 3

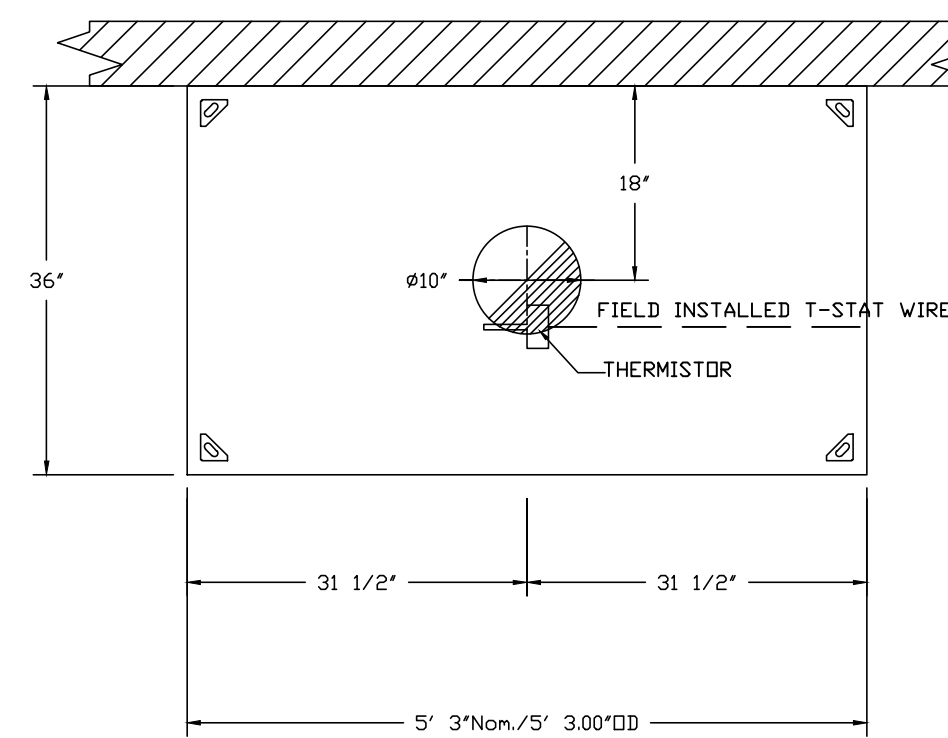
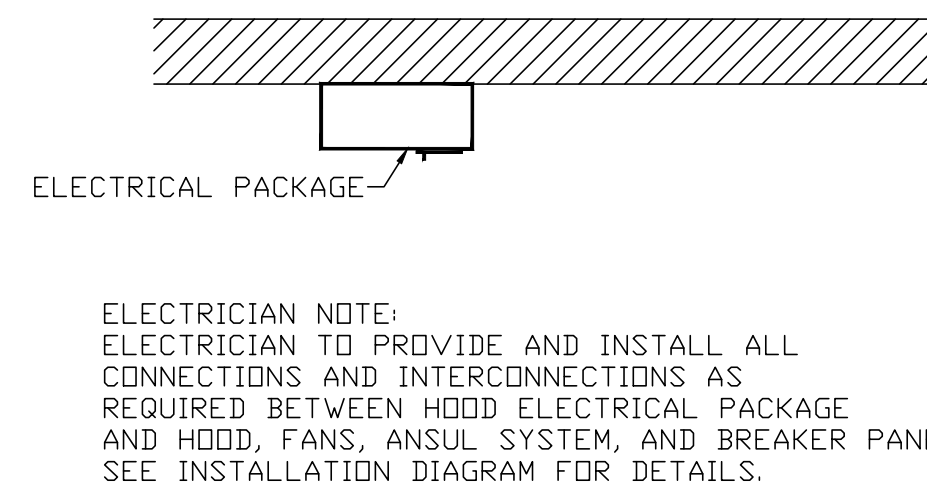
7/23/2019 9:09:37 AM

HOOD NO.	TAG	MODEL	LENGTH	MAX. COOKING TEMP.	EXHAUST PLENUM RISER(S)								HOOD CONSTRUCTION	HOOD CONFIG.		FIRE SYSTEM PIPING	HOOD HANGING WGT
					TOTAL EXH. CFM							END TO END		RDW			
						WIDTH	LENG.	HEIGHT	DIA.	CFM	VEL.				S.P.		
1	Back House Oven	6624 VHB	4' 6"	700 Deg.	450			4'	8'	450	1289	-0.077"	430 SS 100%	ALONE	ALONE	NO	237 LBS
2	Sandwich Station	3624 VHB	5' 3"	700 Deg.	525			4'	10'	525	963	-0.056"	430 SS 100%	ALONE	ALONE	NO	172 LBS

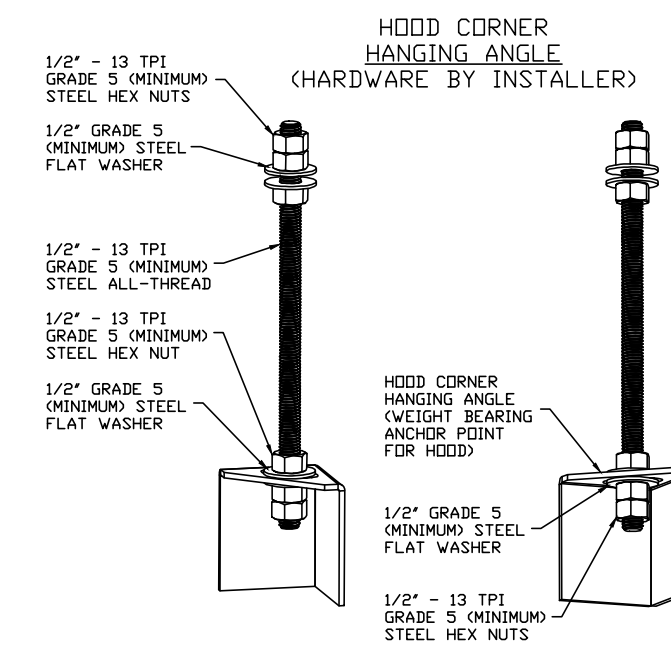
HOOD NO.	TAG	OPTION			
1	Back House Oven	FIELD WRAPPER	18.00"	High	Front, Left, Right
2	Sandwich Station	FIELD WRAPPER	18.00"	High	Front, Left, Right



PLAN VIEW - Hood #1 (Back House Oven)
4' 6.00" LONG 6624VHB

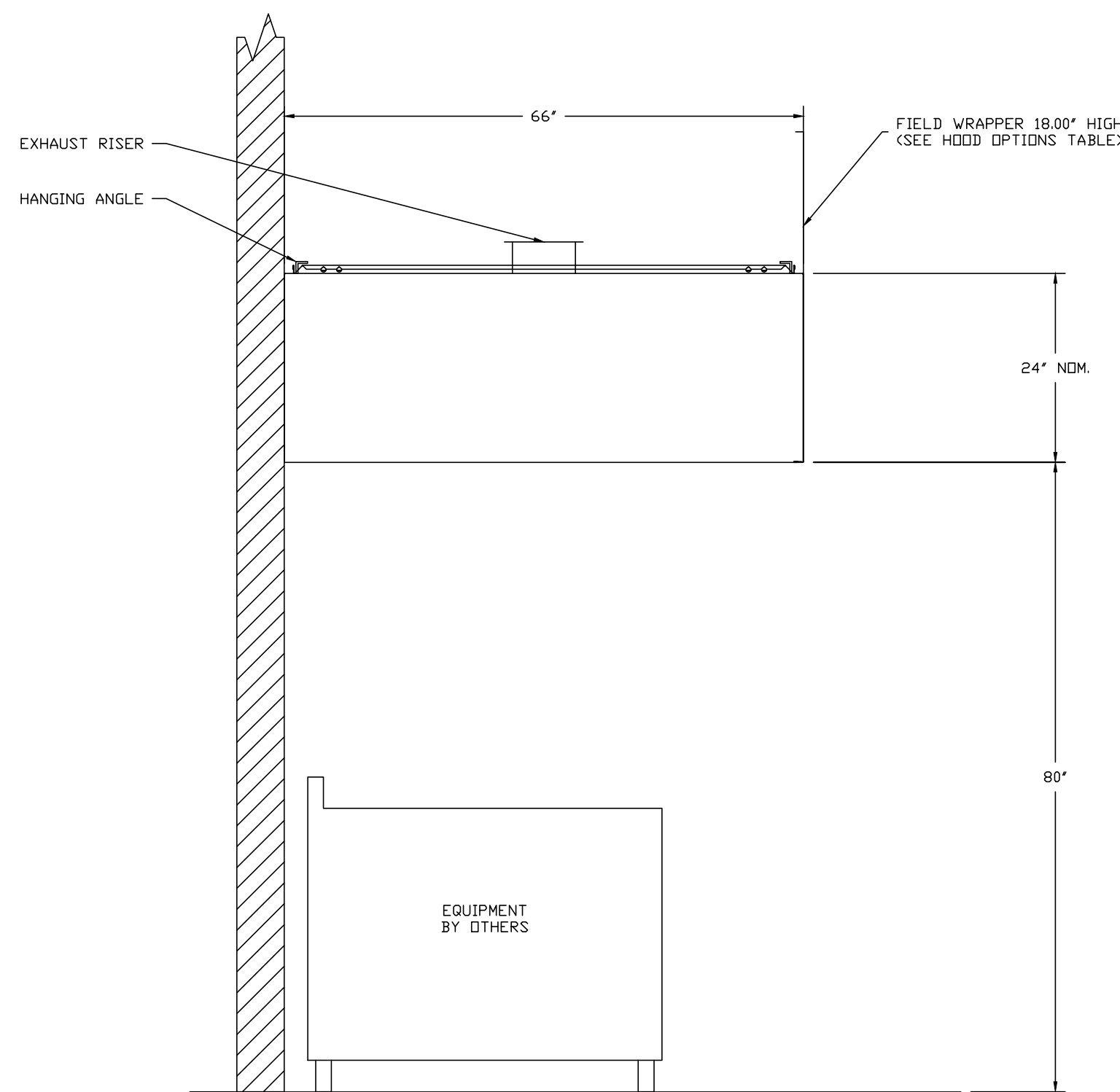


PLAN VIEW – Hood #2 (Sandwich Station)
5' 3.00" LONG 3624VHB

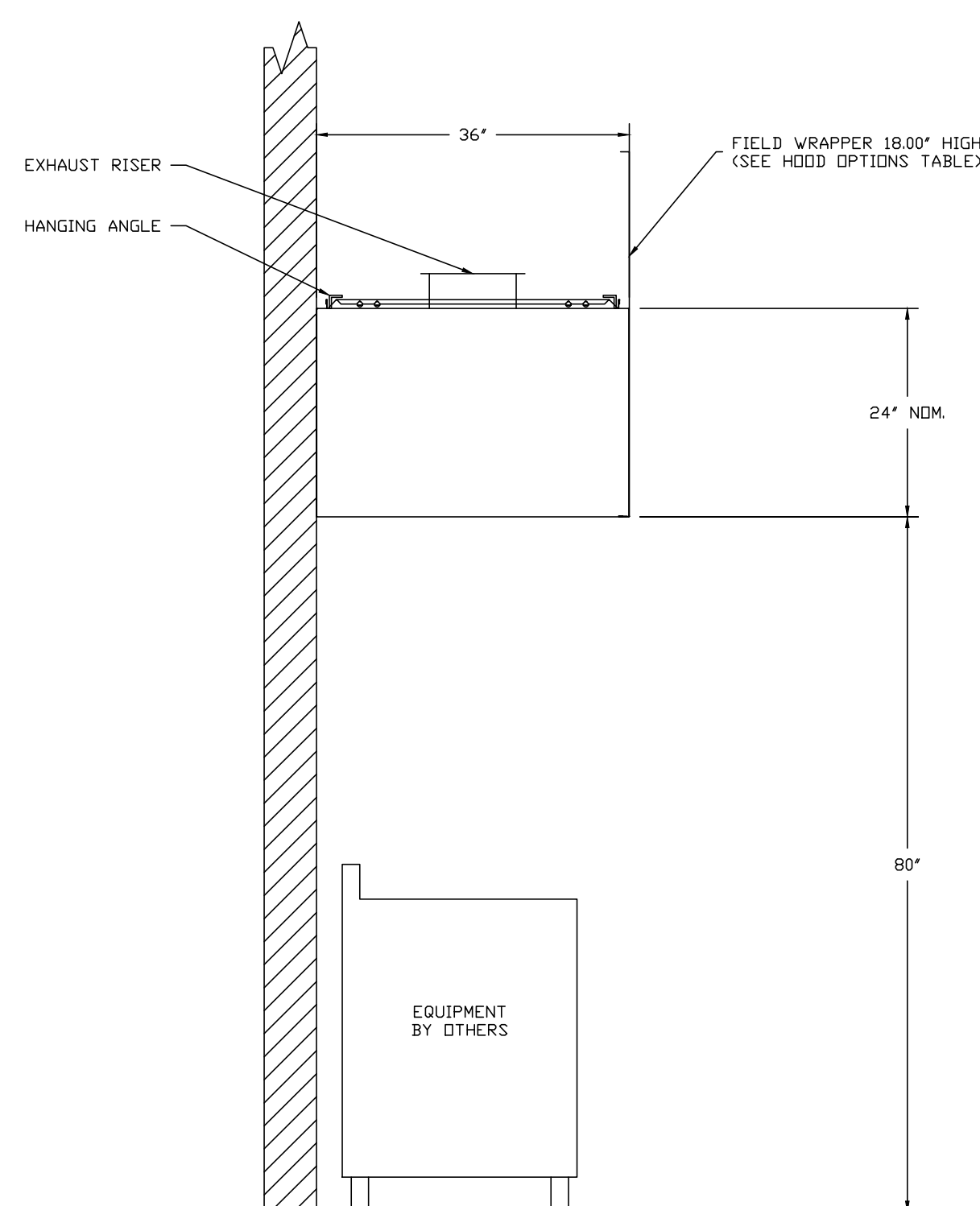


HANGING ANGLE MUST BE SUPPORTED WITH 1/2" 13 TPI
GRADE 5 (MINIMUM) ALL-THREAD, SANDWICH HANGING
ANGLES AND CEILING ANCHOR POINTS WITH 1/2" GRADE 5
(MINIMUM) STEEL FLAT WASHERS AND 1/2" - 13 TPI
GRADE 5 (MINIMUM) HEX NUTS AS SHOWN. MUST USE
DOUBLED HEX NUT CONFIGURATION BENEATH HODD HANGING
ANGLES AND ABOVE CEILING ANCHORS. MAINTAIN 1/4" OF
EXPOSED THREADS BENEATH BOTTOM HEX NUT. TORQUE
ALL HEX NUTS TO 57 FT-LBS.

VERIFY CEILING HEIGHT
10 ' _0_ "
Height required to verify that the hood
will fit and to size the enclosure panels



SECTION VIEW - MODEL 6624VHB
HOOD - #1 (Back House Oven)




SECTION VIEW - MODEL 3624VHB
HOOD - #2 (Sandwich Station)

REVISIONS	
DESCRIPTION	DATE
△	
△	
△	
△	
△	

Dunkin Donuts - Arvin, CA

24108 South Wheeler Ridge Road,

ARVIN, CA, 93203



CAPTIVE

www.captive.com

Florida Gulf Coast Office

4510 Georgia Road, Suite 150, Tampa, FL 33634 PHONE: (813) 435-3388 FAX: (813) 754-4875 EMAIL: info@gulfcoast.captive.com

DATE: 7/30/2019
DWG.#: 3924720
DRAWN BY:
SCALE: 3/4" = 1'-0"
MASTER DRAWING

SHEET NO.

1



TravelCenters of America LLC
Tejon TravelCenter of America

3021 Outlets at Lejoll Parkway
Wheeler Ridge, CA 93203

Issue Description:
ISSUED FOR PERMIT

Revision Schedule

#	DATE	DESCRIPTION
---	------	-------------

Project #: 19027
Issue Date: 08/21/2019

M7.04

CaptiveAire Drawings

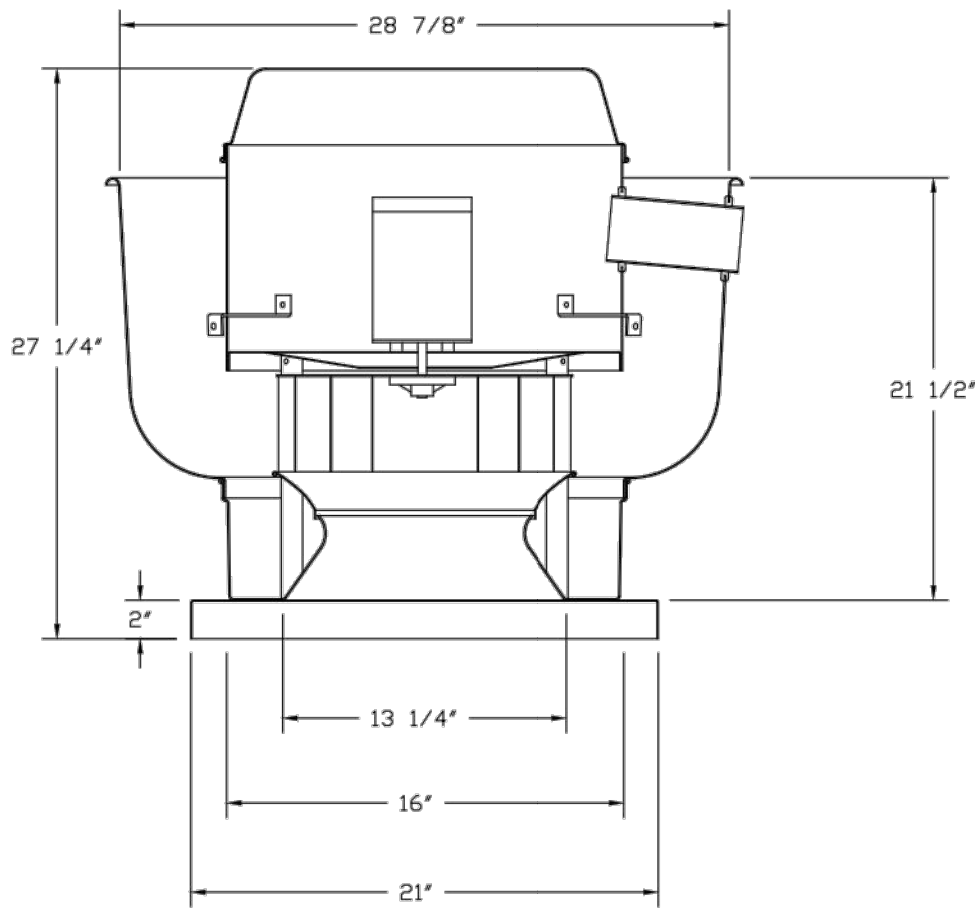
EXHAUST FAN INFORMATION - Job#3944756

FAN UNIT NO.	TAG	FAN UNIT MODEL #	CFM	ESP.	RPM	H.P.	B.H.P.	Ø	VOLT	FLA	DISCHARGE VELOCITY	WEIGHT (LBS.)	SONES
1	EF-1	DUS0HFA	975	0.750	1500	0.500	0.3760	1	115	5.6	371 FPM	74	15.9

CURB ASSEMBLIES

NO.	DN FAN	TAG	WEIGHT	ITEM	SIZE
1	# 1	EF-1	27 LBS	Curb	19.500"W x 19.500"L x 20.000"H

FAN #1 DUS0HFA - EXHAUST FAN (EF-1)

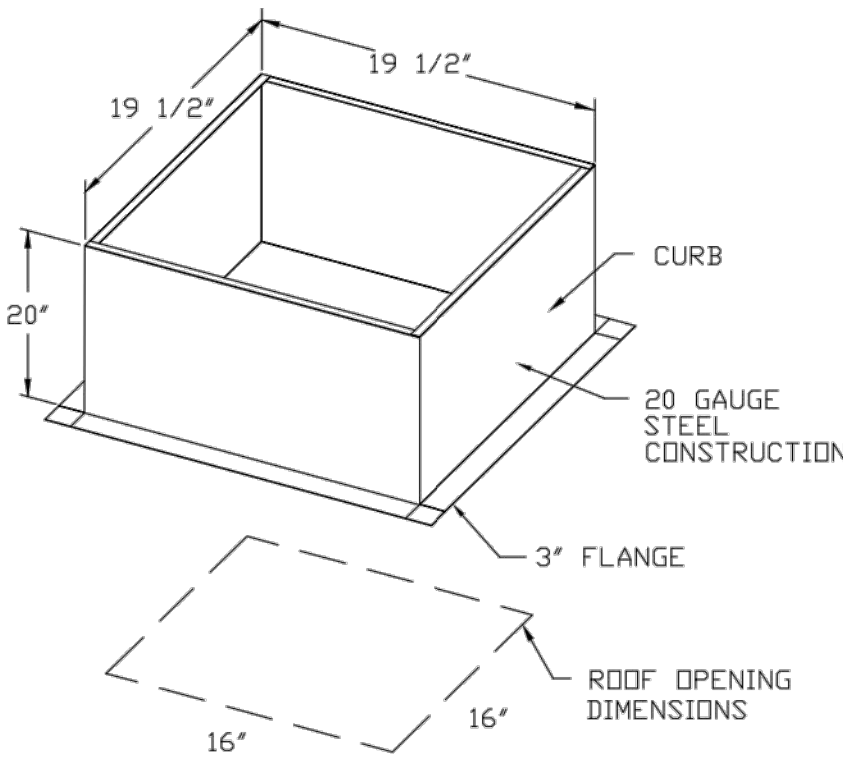


FEATURES:

- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS)
- ROOF MOUNTED FANS
- UL705
- VARIABLE SPEED CONTROL
- INTERNAL WIRING
- WEATHERPROOF DISCONNECT
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE)

OPTIONS

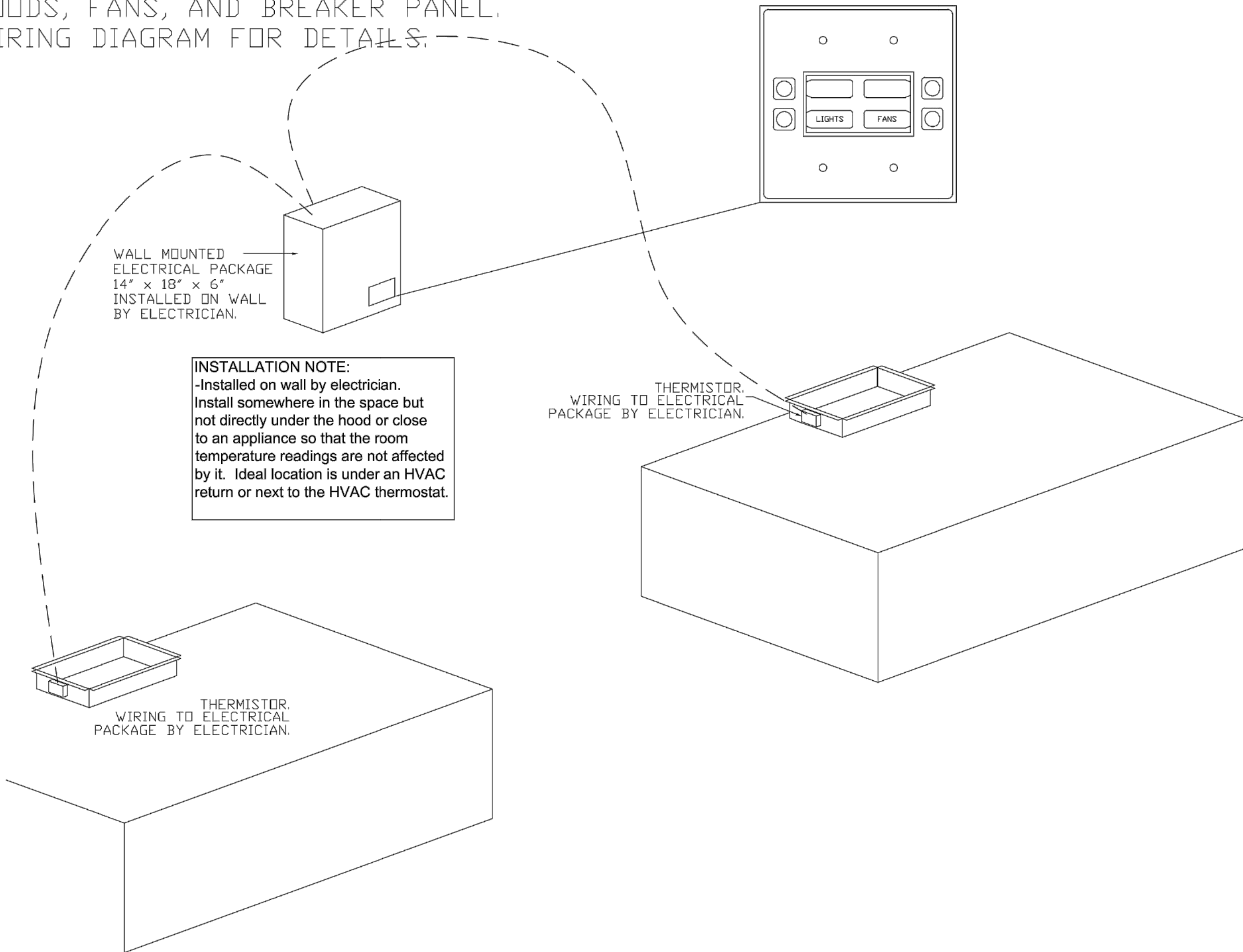
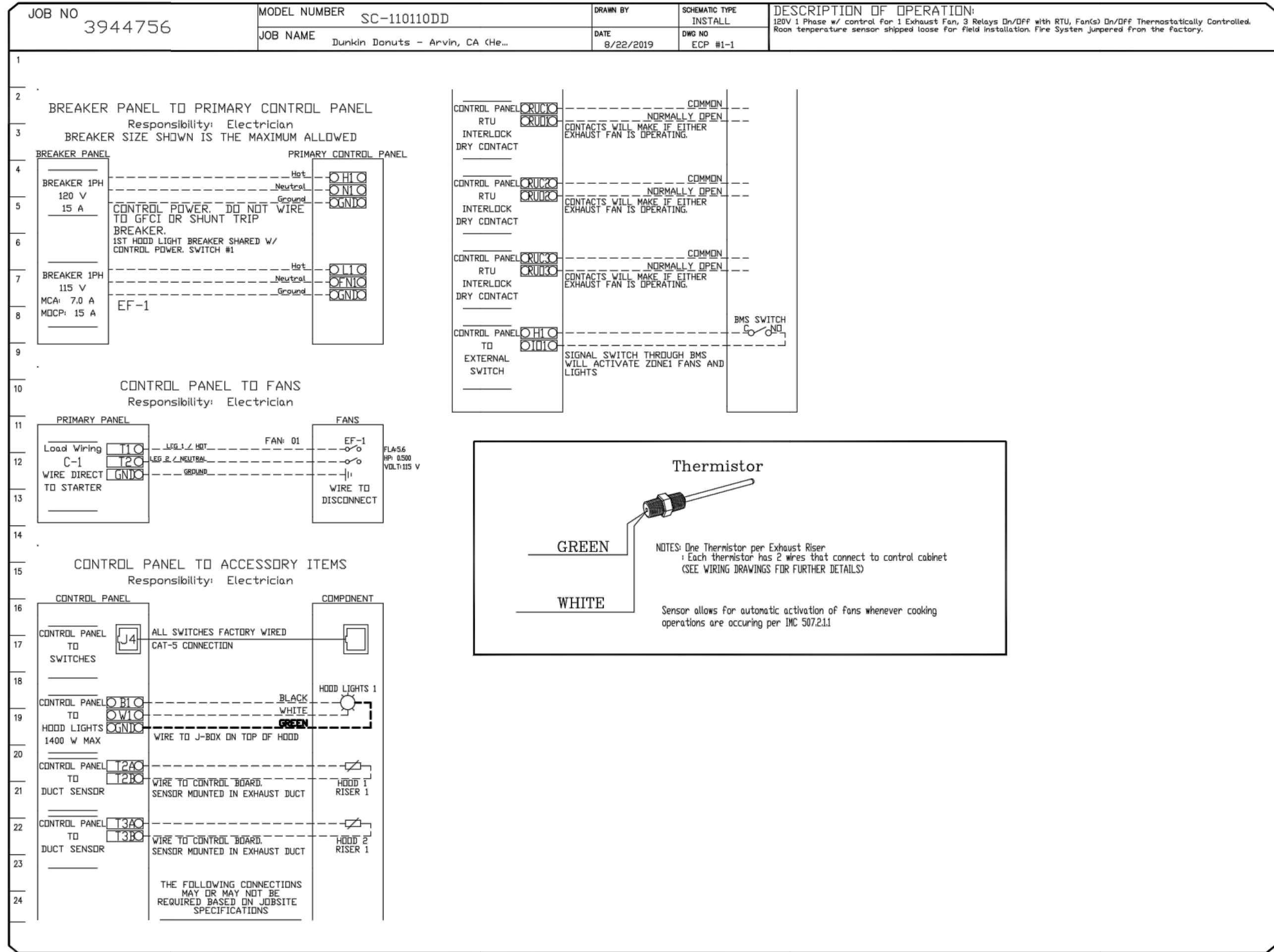
SCR-13 BIRD SCREEN.
1 15-BDD DAMPER.
ECM WIRING PACKAGE-EXHAUST - MANUAL
OR 0-10VDC REFERENCE SPEED CONTROL
(NDEC MOTOR).



ELECTRICIAN NOTE:
ELECTRICIAN TO PROVIDE AND INSTALL ALL CONNECTIONS AND INTERCONNECTIONS AS REQUIRED BETWEEN HOOD ELECTRICAL PACKAGE AND HOODS, FANS, AND BREAKER PANEL.
SEE WIRING DIAGRAM FOR DETAILS.

ELECTRICAL PACKAGE - Job#3944756

NO.	TAG	PACKAGE #	LOCATION	SWITCHES		OPTION	FANS CONTROLLED					
				LOCATION	QUANTITY		FAN TAG	TYPE	Ø	H.P.	VOLT	FLA
1		SC-110110DD	Wall Mount In SS Box	05 - SS Wall Mount Box	1 Light 1 Fan	Smart Controls Thermostatic Control	EF-1	Exhaust	1	0.500	115	5.6



REVISIONS

DESCRIPTION	DATE:

CAPTIVEAIR

Florida Gulf Coast Office

4519 George Road, Suite 150, Tampa, FL, 33634 PHONE: (813) 354-3388 FAX: (813) 354-4825 EMAIL: reg62@captiveaire.com

Dunkin Donuts - Arvin, CA (Rev3)

24108 South Wheeler Ridge Road,
ARVIN, CA, 93203

DATE: 8/22/2019

DWG.#:
3944756

DRAWN BY: W. Brink

SCALE:
3/4" = 1'-0"

MASTER DRAWING

SHEET NO.
2

SA

DS ARCHITECTURE

Kent, Ohio Cleveland, Ohio

DS Architecture is a Limited Liability Company

REGISTERED PROFESSIONAL ENGINEER
KIRK A. FRY
M 34163
EXP 6-30-20
MECHANICAL
STATE OF CALIFORNIA
8-21-19

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TravelCenters of America LLC

Tejon TravelCenter of America

5621 Outlets at Tejon Parkway
Wheeler Ridge, CA 93203

Issue Description:
ISSUED FOR PERMIT

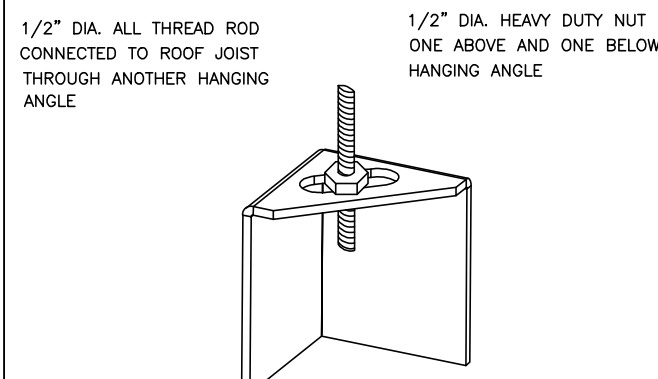
Revision Schedule

#	DATE	DESCRIPTION

Project #: 19027
Issue Date: 08/21/2019

M7.05

ND-2 HANGING ANGLE DETAIL



*ROD AND NUTS TO BE SUPPLIED BY INSTALLING CONTRACTOR
HANGING ANGLE IS PRE-PUNCHED AT FACTORY

HANGING ANGLE LOCATIONS

HOOD STYLE	DIM FROM REAR	DIM FROM FRONT (24" H)	DIM FROM FRONT (30" H)
CANOPY ND2	4.166"	2.246"	2.246"
ND2-PSP-F	4.166"	2.246"	2.246"
BACKSHELF BD-2	4.166"	2.246	-
VHB/VHB-G	36"x36"	42"x42"	48"x48"
FRONT/BACK DIMS BY SIZE	2.246"	2.246"	2.246"

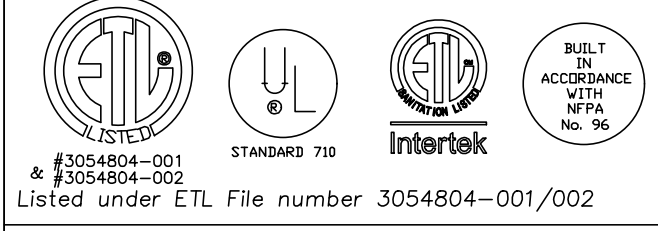
CALCULATIONS UTILIZED

EXHAUST CFM=LENGTH OF HOOD X CFM/UNIT. (LQAD)
SUPPLY CFM=EXHAUST CFM X PERFORMANCE REQUIRED
TOTAL DUCT AREA=144 X $\frac{CFM}{FFM(*)}$
DUCT LENGTH= $\frac{TOTAL DUCT AREA}{DUCT DEPTH}$

*CAPTIVE-AIRE DUCT CONNECTION SIZES ARE CALCULATED USING AN EXHAUST VELOCITY OF 1500-1800 FPM AND A SUPPLY VELOCITY OF 300-400 FPM.

BUILDING CODES

CAPTIVE-AIRE HOODS ARE BUILT IN COMPLIANCE WITH:



CLEARANCE TO COMBUSTIBLES

CAPTIVE-AIRE HOODS HAVE OPTIONAL CLEARANCE REDUCTION SYSTEMS AVAILABLE AS FOLLOWS:

MATERIAL	CLEARANCE REDUCTION SYSTEM
NON-COMBUSTIBLE	NONE REQUIRED
LIMITED-COMBUSTIBLE	3" UNINSULATED STANDOFF
COMBUSTIBLE	1" INSULATED STANDOFF

GENERAL NOTES

INSTALLATION

- ALL ELECTRICAL "FIELD" CONNECTIONS AND RELATED INTERCONNECTIONS BY ELECTRICAL CONTRACTORS.
- ALL PLUMBING "FIELD" CONNECTIONS AND RELATED INTERCONNECTIONS BY PLUMBING CONTRACTORS.
- HANGING BRACKETS LOCATED AND WELDED AS SHOWN ON PLANS. ALL OTHER HANGER MATERIALS PROVIDED BY INSTALLING CONTRACTORS.
- ALL CONNECTIONS FROM CAPTIVE-AIRE HOOD DUCT PER MECHANICAL CONTRACTOR'S PLANS.
- COOKING EQUIPMENT TO SHUTOFF IN EVENT OF FIRE.
- EXHAUST FANS TO TURN ON IN EVENT OF FIRE.
- ALL LIGHTS/FIXTURE SHOWN INSTALLED BY CAPTIVE-AIRE ARE FACTORY PREWIRED. INTERCONNECTIONS BETWEEN HOODS AND TO SWITCHES BY ELECTRICAL CONTRACTORS.
- LAMPS FOR LIGHT FIXTURES BY INSTALLING CONTRACTORS.
- SEISMIC RESTRAINTS ARE RESPONSIBILITY OF INSTALLING CONTRACTOR.
- INSTALLING CONTRACTORS ASSUME ALL RELATED RESPONSIBILITY FOR VERIFICATION OF DIMENSIONAL DATA CONTAINED ON THESE DOCUMENTS FOR ACCURACY, INTEGRATION, AND ADMINISTRATION OF CODE REQUIREMENTS IN EFFECT PRIOR TO ANY RELEASE FOR PRODUCTION OF EQUIPMENT SHOWN.

BALANCE

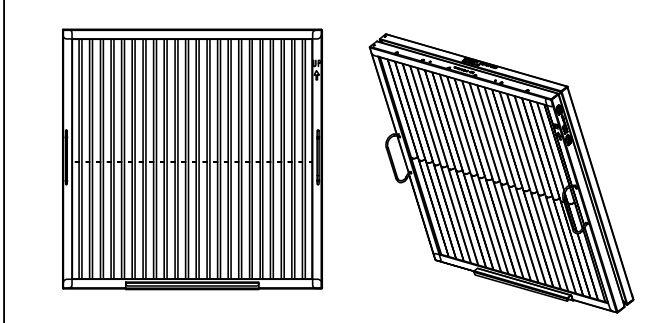
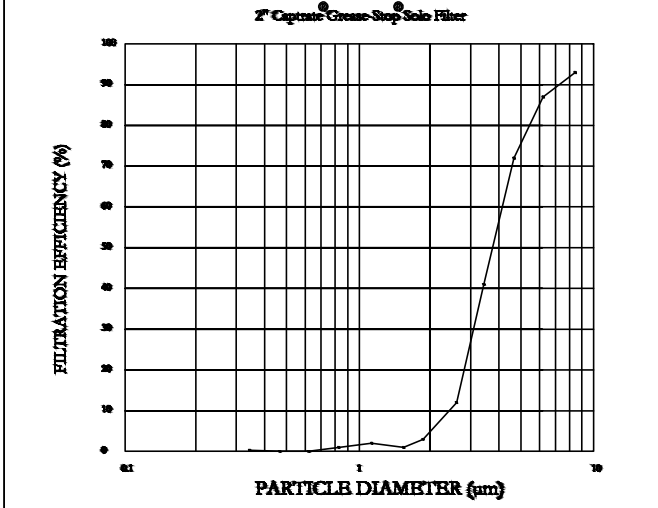
- KITCHEN HOODS MUST BE BALANCED WITH KITCHEN.
- KITCHEN SHALL BE NEGATIVE WITH RESPECT TO DINING AREA.
- RESTAURANT SHALL BE POSITIVE WITH RESPECT TO AMBIENT PRESSURE.

ADDITIONAL

- WRITTEN HOOD DIMENSIONS HAVE PRECEDENCE OVER SCALE.
- SIGNED AND "APPROVED" COPIES OF THIS DOCUMENT MUST BE RECEIVED BY THE FACTORY PRIOR TO COMMENCEMENT OF FABRICATION.

FILTER DETAIL

FILTER COLLECTION EFFICIENCY



CaptiveAir Captate Solo Filter
ETL Listed Grease Extracting Filters
Made From 430 Stainless Steel

HOOD INFORMATION - Job#3933004

HOOD NO.	TAG	MODEL	LENGTH	MAX. COOKING TEMP.	TOTAL EXH. CFM	EXHAUST PLENUM RISER(S)							TOTAL SUPPLY CFM	HOOD CONSTRUCTION	HOOD CONFIG.	
						WIDTH	LENG.	HEIGHT	DIA.	CFM	VEL.	S.P.			END TO END	ROW
1	HI-Fryers	4824 ND-2-PSP-F	6' 3"	600 Deg.	1250			4'	12'	1250	1592	-0.730'	1050	430 SS Where Exposed	ALONE	ALONE
2	HI-Griddle	5424 ND-2-PSP-F	5' 0"	600 Deg.	1000			4'	10'	1000	1833	-0.726'	780	430 SS Where Exposed	ALONE	ALONE

HOOD INFORMATION

HOOD NO.	TAG	TYPE	QTY.	HEIGHT	LENGTH	EFFICIENCY @ 7 MICRONS	QTY.	TYPE	WIRE GUARD	LOCATION	SIZE	UTILITY CABINET(S)		ELECTRICAL	SWITCHES	FIRE SYSTEM PIPING	HOOD HANGING WGT
												FIRE SYSTEM	SIZE		MODEL. #		
1	HI-Fryers	Captrate Solo Filter	4	16"	16"	85% See Filter Spec.	4	Recessed	NO	Right	12"x48"x24"	Ansul R102	3.0/3.0/3.0			YES	520 LBS
2	HI-Griddle	Captrate Solo Filter	3	16"	16"	85% See Filter Spec.	3	Recessed	NO							YES	365 LBS

HOOD OPTIONS

HOOD NO.	TAG	OPTION
1	HI-Fryers	FIELD WRAPPER 1800" High Front, Left, Right SENSOR-CV
2	HI-Griddle	FIELD WRAPPER 1800" High Front, Left, Right LEFT QUARTER END PANEL 23' Top Width, 0' Bottom Width, 23' High 430 SS RIGHT QUARTER END PANEL 23' Top Width, 0' Bottom Width, 23' High 430 SS SENSOR-CV

PERFORATED SUPPLY PLENUM(S)

HOOD NO.	TAG	POS.	LENGTH	WIDTH	HEIGHT	TYPE	RISER(S)			
							WIDTH	LENG.	DIA.	S.P.
1	HI-Fryers	Front	87"	14"	6"	MUA	12"	20"		525 0.151'
2	HI-Griddle	Front	60"	14"	6"	MUA	12"	28"		525 0.151'

SPECIFICATION: CAPTRATE® GREASE-STOP® SOLO FILTER

THE CAPTRATE GREASE-STOP SOLO FILTER IS A SINGLE-STAGE FILTER FEATURING A UNIQUE S-Baffle DESIGN IN CONJUNCTION WITH A SLOTTED REAR Baffle DESIGN, TO DELIVER EXCEPTIONAL FILTRATION EFFICIENCY.

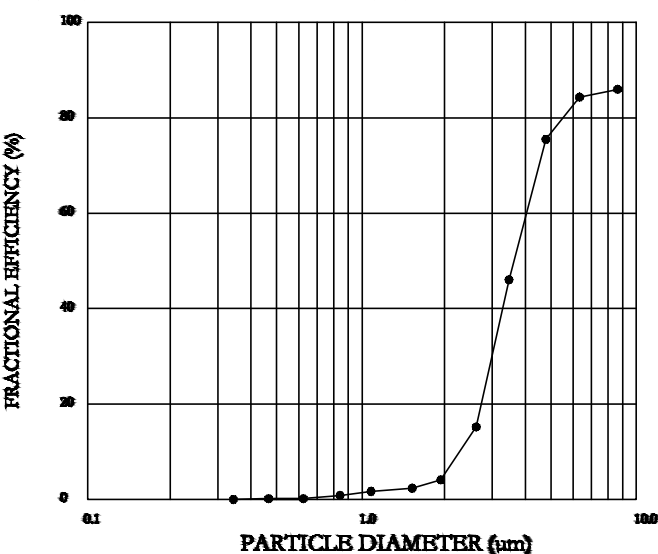
FILTER IS STAINLESS STEEL CONSTRUCTION, AND SIZED TO FIT INTO STANDARD 2-INCH DEEP HOOD CHANNEL(S).

UNITS SHALL INCLUDE STAINLESS STEEL HANDLES AND A FASTENING DEVICE TO SECURE THE TWO COMPONENTS WHEN ASSEMBLED.

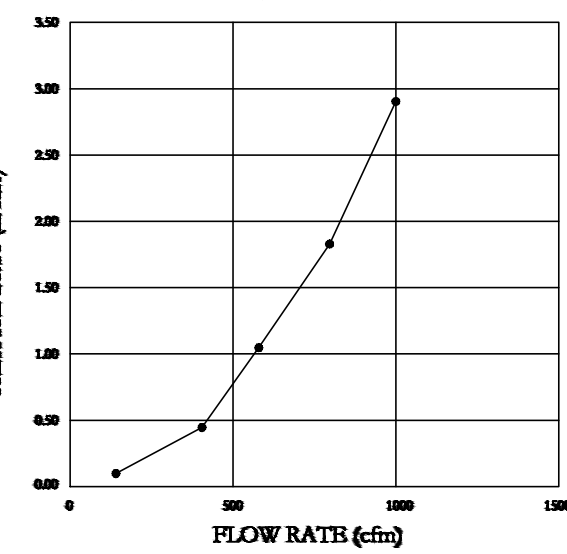
GREASE EXTRACTION EFFICIENCY PERFORMANCE SHALL REMOVE AT LEAST 75% OF GREASE PARTICLES FIVE MICRONS IN SIZE, AND 85% GREASE PARTICLES SEVEN MICRONS IN SIZE AND LARGER, WITH A CORRESPONDING PRESSURE DROP NOT TO EXCEED 1.0 INCHES OF WATER GAUGE.

THE CAPTRATE GREASE-STOP SOLO WAS TESTED TO ASTM STANDARD ASTM F2519-05.

EFFICIENCY VS. PARTICLE DIAMETER



PRESSURE DROP VS. FLOW RATE



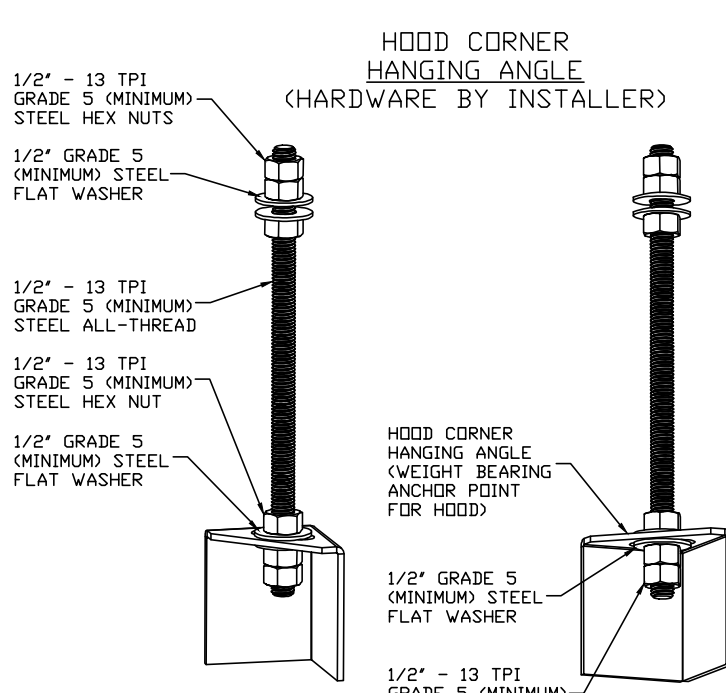
CAPTATE FILTERS ARE BUILT IN COMPLIANCE WITH:

- NFPA #96
- UL STANDARD #2
- INT. MECH. CODE (IMC)
- ULC-S649



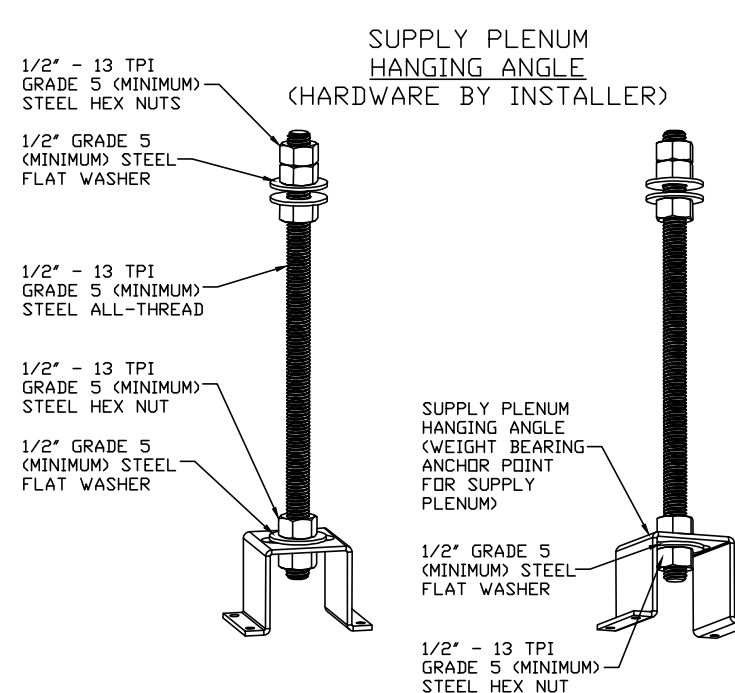
PATENT NUMBERS

AC-PSP (United States) - US Patent 7963830 B2
AC-PSP Wall (Canada) - CA Patent 2820509
AC-PSP Island (Canada) - CA Patent 2520330



ASSEMBLY INSTRUCTIONS

HANGING ANGLE MUST BE SUPPORTED WITH 1/2" - 13 TPI GRADE 5 (MINIMUM) ALL-THREAD. SANDWICH HANGING ANGLES AND CEILING ANCHOR POINTS WITH 1/2" GRADE 5 (MINIMUM) STEEL FLAT WASHERS AND 1/2" - 13 TPI GRADE 5 (MINIMUM) HEX NUTS AS SHOWN. MUST USE DOUBLED HEX NUT CONFIGURATION BENEATH HOOD HANGING ANGLES AND ABOVE CEILING ANCHORS. MAINTAIN 1/4" OF EXPOSED THREADS BENEATH BOTTOM HEX NUT. TORQUE ALL HEX NUTS TO 57 FT-LBS.



ASSEMBLY INSTRUCTIONS

HANGING ANGLE MUST BE SUPPORTED WITH 1/2" - 13 TPI GRADE 5 (MINIMUM) ALL-THREAD. SANDWICH HANGING ANGLES AND CEILING ANCHOR POINTS WITH 1/2" GRADE 5 (MINIMUM) STEEL FLAT WASHERS AND 1/2" - 13 TPI GRADE 5 (MINIMUM) HEX NUTS AS SHOWN. MUST USE DOUBLED HEX NUT CONFIGURATION ABOVE CEILING ANCHORS. SINGLE HEX NUT BENEATH HANGING ANGLE IS ACCEPTABLE FOR PSP HANGING ANGLES. MAINTAIN 1/4" OF EXPOSED THREADS BENEATH BOTTOM HEX NUT. TORQUE ALL HEX NUTS TO 57 FT-LBS.

System Design Verification (SDV)

If ordered, CAS Service will perform a System Design Verification (SDV) once all equipment has had a complete start up per the Operation and Installation Manual. Typically, the SDV will be performed after all inspections are complete.

Any field related discrepancies that are discovered during the SDV will be brought to the attention of the general contractor and corresponding trades on site. These issues will be documented and forwarded to the appropriate sales office. If CAS Service has to resolve a discrepancy that is a field issue, the general contractor will be notified and billed for the work. Should a return trip be required due to any field related discrepancy that cannot be resolved during the SDV, there will be additional trip charges.

During the SDV, CAS Service will address any discrepancy that is the fault of the manufacturer. Should a return trip be required, the general contractor and appropriate sales office will be notified. There will be no additional charges for manufacturer discrepancies.

ND-2 Series Specification

The model ND-2 is an exhaust only canopy hood rated for all types of cooking equipment. The hood shall have the size, shape and performance specified on drawings.

Construction shall be type 430 stainless steel, with a #3 or #4 polish where exposed. The manufacturer, ETL and NSF shall determine the individual component construction. Construction shall be dependent on the structural application to minimize distortion and other defects. All seams, joints and penetrations of the hood enclosure to the lower outermost perimeter that directs and captures grease-laden vapor and exhaust gases shall have a liquid-tight continuous external weld in accordance with NFPA 96. The hood shall be wall type with a minimum of four connections for hanger rods. Connectors shall have 9/16" holes pre-punched in 1 1/4" x 1 1/4" angle iron at the factory to allow for hanger rod connection by others.

The hood shall be furnished with UL classified filters, supplied in size and quantity as required by ventilator. Model CAPTRATE SOLO. The filters shall extend the full length of the hood and the filter panels shall not be more than 6' in width.

The hood manufacturer shall supply complete computer generated submittal drawings including hood sections view(s) and hood plan view(s). These drawings must be available to the engineer, architect and owner for their use in construction, operation and maintenance.

Exhaust duct collar to be 4" high with 1" flange. Duct sizes, CFM and static pressure requirements shall be as shown on drawings. Static pressure requirements shall be precise and accurate; air velocity and volume information shall be accurate within 1-ft increments along the length of the ventilator.

Recessed LED Lights with Bulbs to be provided pre-wired and installed in hood. Quantity as shown on drawings.

The hood shall have:
- A double wall insulated front to eliminate condensation and increase rigidity. The insulation shall have a flexural modulus of 475 EI, meet UL 181 requirements and be in accordance with NFPA 90A and 90B.
- An integral front baffle to direct grease laden vapors toward the exhaust filter bank.
- A built-in wiring chase provided for outlets and electrical controls on the hood face and shall not penetrate the capture area or require an external chase way.
- Renewable grease cup for easy cleaning.

The hood shall be ETL Listed as "Exhaust Hood Without Exhaust Damper", NSF Listed and built in accordance with NFPA 96.

The hood shall be listed for 450°F cooking surfaces at 150 CFM/ft, 600°F cooking surfaces at 200 CFM/ft, and 700°F cooking surfaces at 250 CFM/ft. The hood shall be ETL Listed as "Exhaust Hood Without Exhaust Damper".

REVISIONS

DESCRIPTION	DATE:
Δ	
Δ	
Δ	
Δ	

www.captiveaire.com

850 Morrison Rd, Gahanna, OH, 43230 PHONE: (614) 227-8928 EMAIL: reg5@captiveaire.com

Northern Ohio Office

DATE: 8/6/2019

DWG.#: 3933004

DRAWN BY: MAP-52

SCALE: 3/4" = 1'-0"

MASTER DRAWING

SHEET NO. 1

DS ARCHITECTURE

Kent, Ohio Cleveland, Ohio

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TravelCenters of America LLC

Tejon TravelCenter of America

5621 Outlets at Tejon Parkway
Wheeler Ridge, CA 93203

Issue Description:
ISSUED FOR PERMIT

Revision Schedule

#	DATE	DESCRIPTION
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Project #:
Issue Date:

19027
08/21/2019

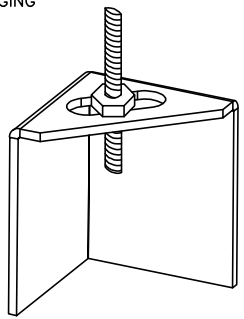
M7.07

CaptiveAir Drawings

ND-2 HANGING ANGLE DETAIL

1/2" DIA. ALL THREAD ROD
CONNECTED TO ROOF JOIST
THROUGH ANOTHER HANGING
ANGLE

1/2" DIA. HEAVY DUTY NUT
ONE ABOVE AND ONE BELOW
HANGING ANGLE



* ROD AND NUTS TO BE SUPPLIED BY INSTALLING CONTRACTOR
HANGING ANGLE IS PRE-PUNCHED AT FACTORY

HANGING ANGLE LOCATIONS

HOOD STYLE	DIM FROM REAR	DIM FROM FRONT (24" H)	DIM FROM FRONT (30" H)
CANOPY ND2	4.166"	2.246"	2.246"
ND2-PSP-F	4.166"	2.246"	2.246"
BACKSHELF BD-2	4.166"	2.246	—
VHB/VHB-G	36"X36"	42"X42"	48"X48"
FRONT/BACK DIMS BY SIZE	2.246"	2.246"	2.246"

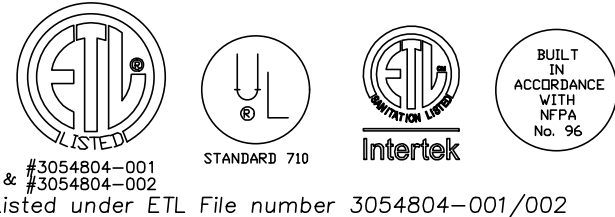
CALCULATIONS UTILIZED

EXHAUST CFM=LENGTH OF HOOD X CFM/LIN.FT. (LOAD)
SUPPLY CFM=EXHAUST CFM X PERCENTAGE REQUIRED
TOTAL DUCT AREA=144 X _____
CFM
TOTAL DUCT AREA _____
CFM
DUCT LENGTH= _____
DUCT DEPTH _____

* CAPTIVE-AIRE DUCT CONNECTION SIZES ARE CALCULATED USING AN EXHAUST VELOCITY OF 1500-1800 FPM AND A SUPPLY VELOCITY OF 300-400 FPM.

BUILDING CODES

CAPTIVE-AIRE HOODS ARE BUILT IN COMPLIANCE WITH:



CLEARANCE TO COMBUSTIBLES

CAPTIVE-AIRE HOODS HAVE OPTIONAL CLEARANCE REDUCTION SYSTEMS AVAILABLE AS FOLLOWS:

MATERIAL	CLEARANCE REDUCTION SYSTEM
NON-COMBUSTIBLE	NONE REQUIRED
LIMITED-COMBUSTIBLE	3" UNINSULATED STANDOFF
COMBUSTIBLE	1" INSULATED STANDOFF

GENERAL NOTES

INSTALLATION

- ALL ELECTRICAL "FIELD" CONNECTIONS AND RELATED INTERCONNECTIONS BY ELECTRICAL CONTRACTORS.
- ALL PLUMBING "FIELD" CONNECTIONS AND RELATED INTERCONNECTIONS BY PLUMBING CONTRACTORS.
- HANGING BRACKETS LOCATED AND WELDED AS SHOWN ON PLANS. ALL OTHER HANGER MATERIALS PROVIDED BY INSTALLING CONTRACTORS.
- ALL CONNECTIONS FROM CAPTIVE-AIRE DUCT PER MECHANICAL CONTRACTOR'S PLANS.
- COOKING EQUIPMENT TO SHUTOFF IN EVENT OF FIRE.
- EXHAUST FANS TO TURN ON IN EVENT OF FIRE.
- ALL LIGHTS FIXTURE SHOWN INSTALLED BY CAPTIVE-AIRE ARE FACTORY PREWIRED. INTERCONNECTIONS BETWEEN HOODS AND TO SWITCHES BY ELECTRICAL CONTRACTORS.
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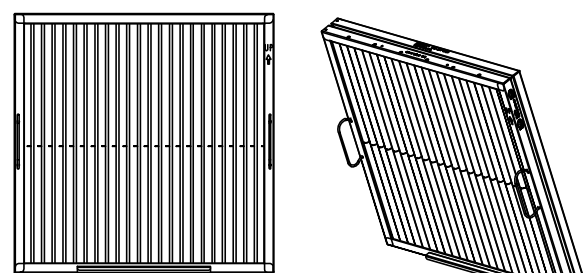
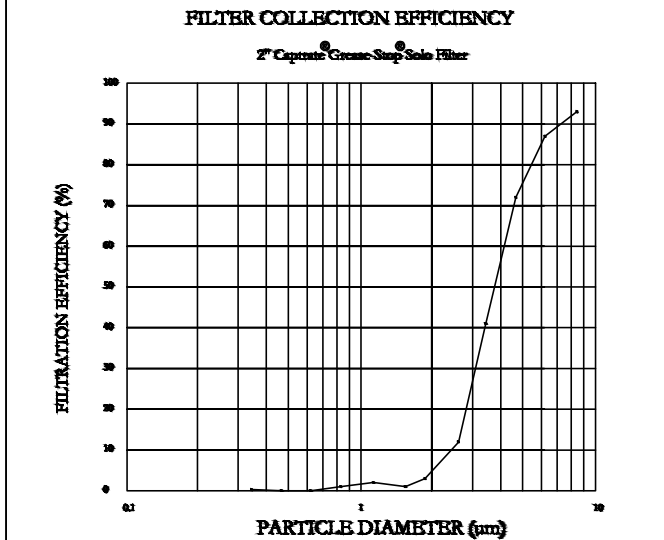
BALANCE

- KITCHEN HOODS MUST BE BALANCED WITH KITCHEN.
- KITCHEN SHALL BE NEGATIVE WITH RESPECT TO DINING AREA.
- RESTAURANT SHALL BE POSITIVE WITH RESPECT TO AMBIENT PRESSURE.

ADDITIONAL

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FILTER DETAIL



CaptiveAir Captrate Solo Filter
ETL Listed Grease Extracting Filters
Made From 430 Stainless Steel

FOR QUESTIONS, CALL THE:
OHIO REGIONAL OFFICE
850 MORRISON ROAD, GAHANNA, OH 43230
PHONE: (800) 948-6945
FAX: (919) 227-5925

CUSTOMER APPROVAL TO MANUFACTURE:

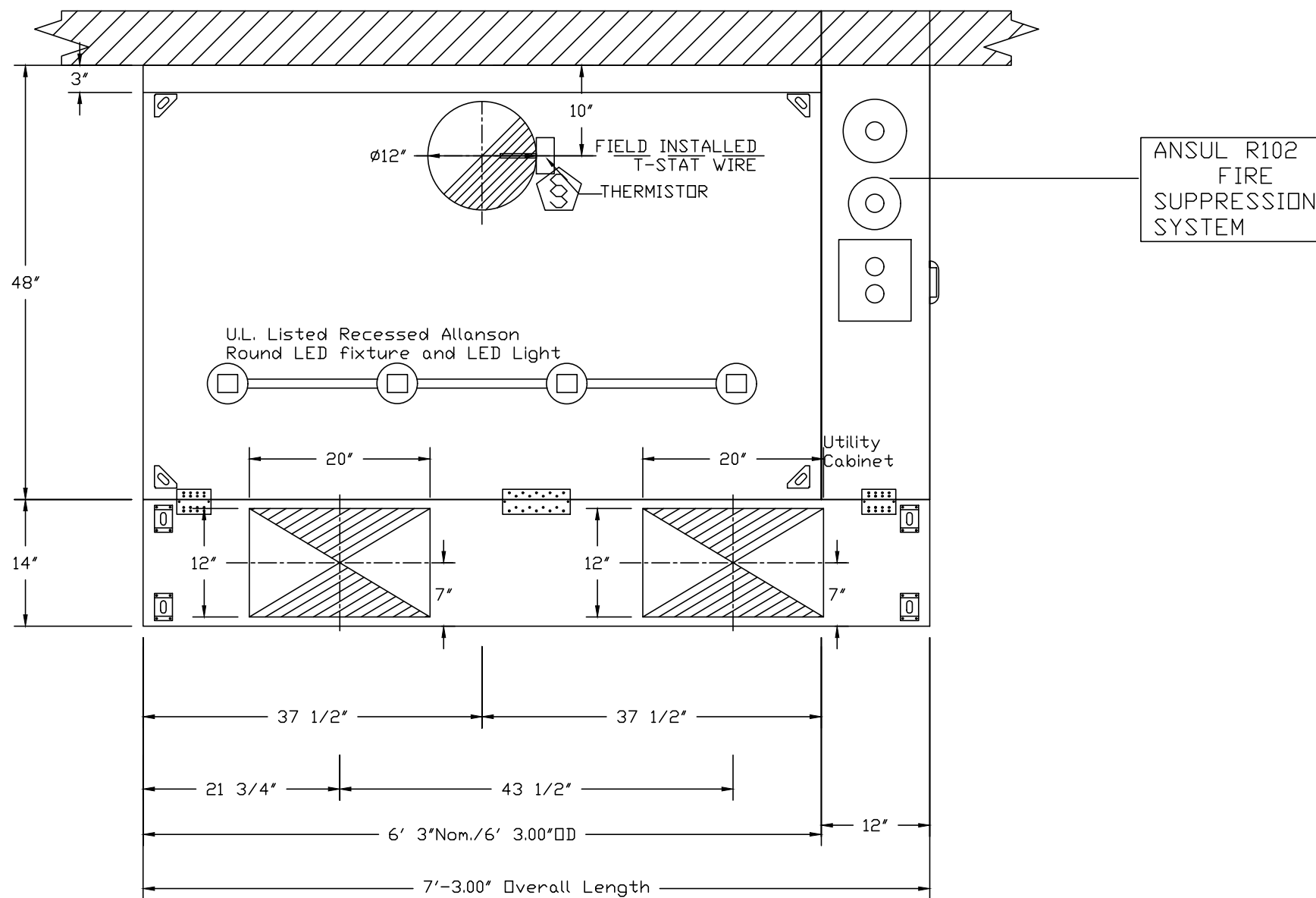
Approved as Noted ☐

Approved with NO Exception Taken ☐

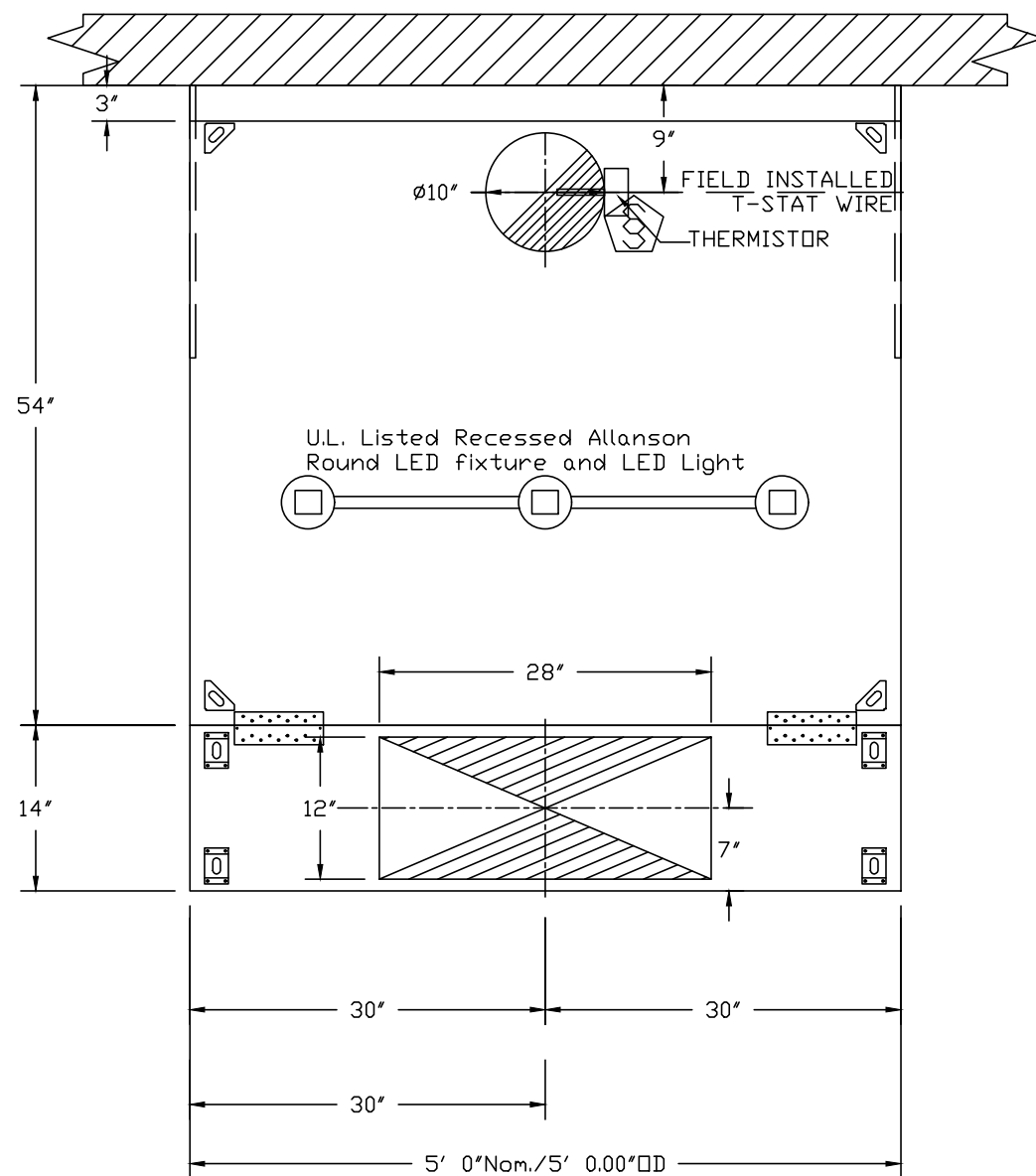
Revise and Resubmit ☐

SIGNATURE: _____

Your Title _____ Date _____

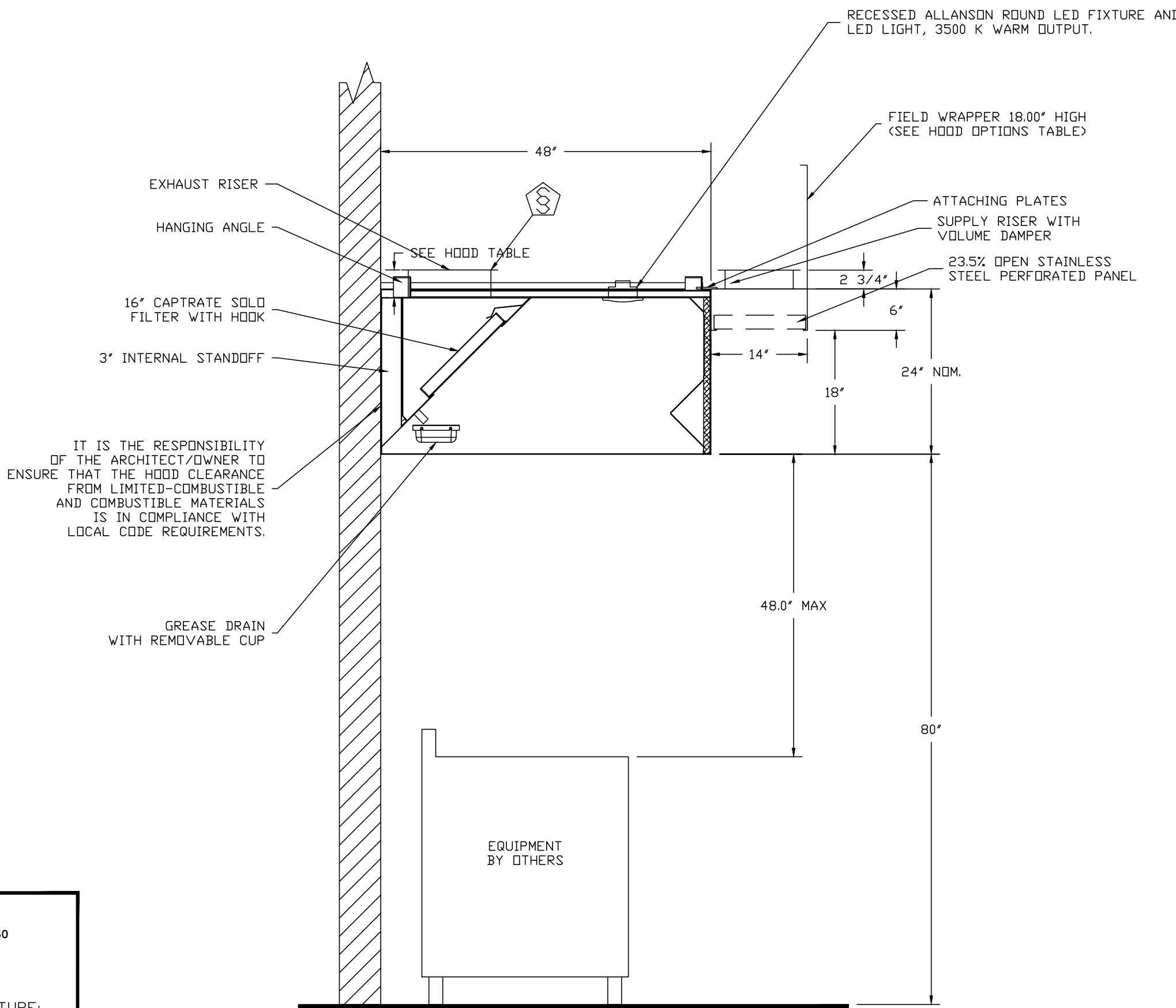


PLAN VIEW - Hood #1 (H1-Fryers)
6' 3.00" LONG 4824ND-2-PSP-F

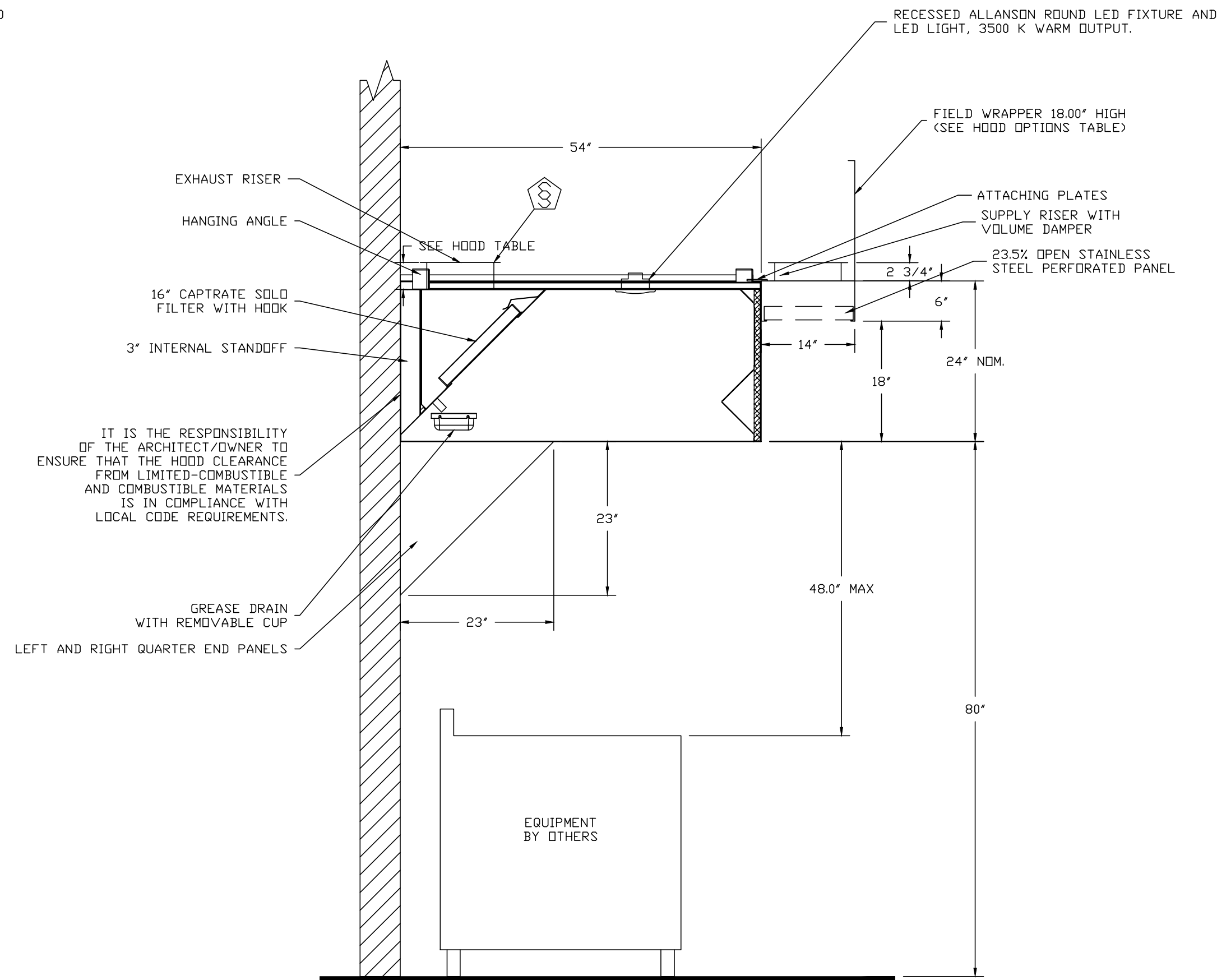


PLAN VIEW - Hood #2 (H1-Griddle)
5' 0.00" LONG 5424ND-2-PSP-F

VERIFY CEILING HEIGHT
Height required to verify that the hood will fit and to size the enclosure panels



SECTION VIEW - MODEL 4824ND-2-PSP-F
HOOD - #1 (H1-Fryers)



SECTION VIEW - MODEL 5424ND-2-PSP-F
HOOD - #2 (H1-Griddle)

REVISIONS

DESCRIPTION	DATE

CAPTIVE-AIRE

www.captiveaire.com

Northern Ohio Office

850 Morrison Rd. Gahanna, OH 43230 PHONE: (919) 227-5925 EMAIL: reg22@captiveaire.com

Charley's - Tejon East Travel
5621 Outlets at Tejon Pkw
ARVIN, CA, 93203

DATE: 8/6/2019

DWG.#:
3933004

DRAWN BY:
MAP-52

SCALE:
3/4" = 1'-0"

MASTER DRAWING

SHEET NO.
2

SA

DS ARCHITECTURE

Kent, Ohio Cleveland, Ohio

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Handwritten signature: Kirk A. Fry

REGISTERED PROFESSIONAL ENGINEER
M 34163
EXP. 6-30-20
MECHANICAL
STATE OF CALIFORNIA
8-21-19

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TravelCenters of America LLC
Tejon TravelCenter of America

5621 Outlets at Tejon Parkway
Wheeler Ridge, CA 93203

Issue Description:
ISSUED FOR PERMIT

Revision Schedule

#	DATE	DESCRIPTION
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Project #: 19027
Issue Date: 08/21/2019

M7.08

EXHAUST FAN INFORMATION – Job#3933004

FAN UNIT NO.	TAG	FAN UNIT MODEL #	CFM	ESP.	RPM	H.P.	B.H.P.	Ø	VOLT	FLA	DISCHARGE VELOCITY	WEIGHT (LBS.)	SONES
1		DUI80HFA	2250	1.750	1260	2.000	1.0210	3	208	6.1	520 FPM	162	16.4

CONDENSER DETAILS

FAN UNIT NO.	TAG	FAN UNIT MODEL #	CONDENSER NO.	TONNAGE	VOLTAGE	PHASE	FREQUENCY	MCA	RLA	MAX. FUSE SIZE	MIN. WIRE SIZE	SEER
2		A1-D.500-15D-MPU	1	2.5	208-230	3 PHASE	60 Hz	11.2 Amps	9.07 Amps	20 Amps	14 AWG	14
			2	2.5	208-230	3 PHASE	60 Hz	11.2 Amps	9.07 Amps	20 Amps	14 AWG	14

MUA FAN INFORMATION – Job#3933004

FAN UNIT NO.	TAG	FAN UNIT MODEL #	BLOWER	HOUSING	MIN CFM	DESIGN CFM	ESP.	RPM	H.P.	B.H.P.	Ø	VOLT	FLA	COOLING COIL ENTERING DB TEMP.	COOLING COIL ENTERING WB TEMP.	COOLING COIL LEAVING DB TEMP.	COOLING COIL LEAVING WB TEMP.	COOLING COIL TOTAL CAPACITY	COOLING COIL SENSIBLE CAPACITY	COOLING COIL LATENT CAPACITY	WEIGHT (LBS.)	SONES	BURNER EFFICIENCY(%)
2		A1-D.500-15D-MPU	15MF-1-MDD	A1-D.500	1000	1830	0.400	2054	3.000	1.3360	3	208	8.6	101.0°F	70.0°F	75.2°F	61.7°F	47.9 MBH	47.9 MBH	0.0 MBH	1307	21	92

GAS FIRED MAKE-UP AIR UNIT(S)

FAN UNIT NO.	TAG	INPUT BTUs	OUTPUT BTUs	TEMP. RISE	REQUIRED INPUT GAS PRESSURE	GAS TYPE
2		83663	76970	40 deg F	7 in. w.c. – 14 in. w.c.	Natural

FAN OPTIONS

FAN UNIT NO.	TAG	OPTION (Qty. – Descr.)
1		1 – Grease Box
		1 – Upblast Fan Wheel Access Port
2		1 – Fan Base Ceramic Seal – Ship Loose – For Grease Ducts
		1 – AC Interlock Relay – 24VAC Coil
		1 – Motorized Backdraft Damper for A1-D Housing
		1 – Low Fire Start
		1 – Inlet Pressure Gauge, 0-35"
		1 – Manifold Pressure Gauge, -5 to 15" wc
		1 – Extended Power Drop
		1 – Cooling Thermostat and Relay (Not req for evap)
		1 – 5 Ton 2 Circuit (2.5/2.5) Modular Packaged Cooling Option for Size 1 MUA (1,800 to 3,000 cfm), 208V/230V, 3 phase. Cooling Thermostat or Programmable Stat Required for Proper Operation.
		1 – Downturn Plenum for Size 1 DX Coil Module
		1 – Separate 120V Wiring Package (Required and used only for DCV or Prewire with VFD) – Three Phase Only

FAN ACCESSORIES

FAN UNIT NO.	TAG	EXHAUST			SUPPLY			
		GREASE CUP	GRAVITY DAMPER	WALL MOUNT	SIDE DISCHARGE	GRAVITY DAMPER	MOTORIZED DAMPER	WALL MOUNT
1		YES						
2							YES	

CURB ASSEMBLIES

NO.	QN FAN	WEIGHT	ITEM	SIZE
1	# 1	34 LBS	Curb	26.500"W x 26.500"L x 24.000"H Vented Hinged
2	# 2	83 LBS	Rail	6.000"W x 21.000"L x 20.000"H
2	# 2	83 LBS	Curb	21.000"W x 71.000"L x 20.000"H Insulated

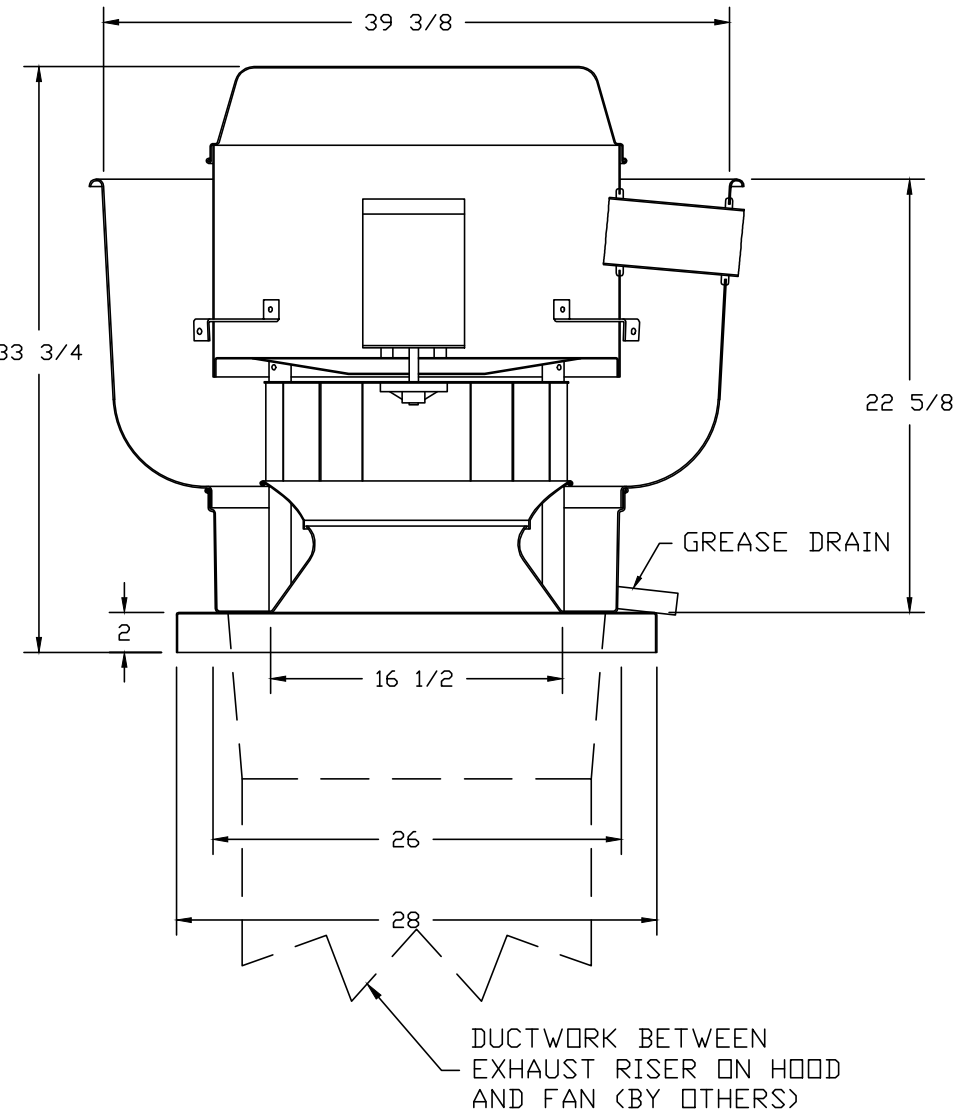
VERIFY ELECTRIC REQUIREMENTS

-----PHASE-----VOLT
Verify Electric Requirements to Ensure That Fan Motors and Electric Packages are Coordinated

VERIFY PITCH CURB

----- : -----
Curb Pitch Required in order to manufacture the curb to specification.

FAN #1 DUI80HFA – EXHAUST FAN



FEATURES:

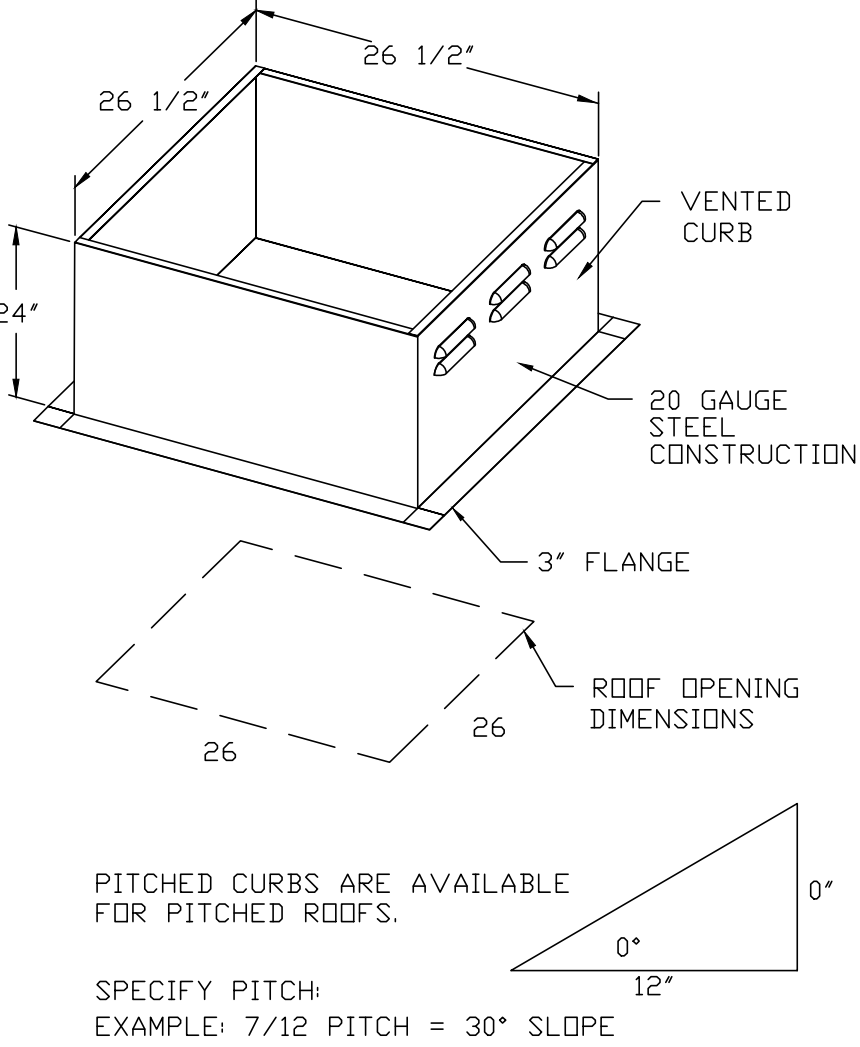
- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS)
- ROOF MOUNTED FANS
- RESTAURANT MODEL
- UL705 AND UL762 AND ULC-S645
- VARIABLE SPEED CONTROL
- INTERNAL WIRING
- WEATHERPROOF DISCONNECT
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE)
- HIGH HEAT OPERATION 300°F (149°C)
- GREASE CLASSIFICATION TESTING

NORMAL TEMPERATURE TEST
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING AIR AT 300°F (149°C) UNTIL ALL FAN PARTS HAVE REACHED THERMAL EQUILIBRIUM, AND WITHOUT ANY DETERIORATING EFFECTS TO THE FAN WHICH WOULD CAUSE UNSAFE OPERATION.

ABNORMAL FLARE-UP TEST
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING BURNING GREASE VAPORS AT 600°F (316°C) FOR A PERIOD OF 15 MINUTES WITHOUT THE FAN BECOMING DAMAGED TO ANY EXTENT THAT COULD CAUSE AN UNSAFE CONDITION.

OPTIONS

- GREASE BOX.
- UPBLAST FAN WHEEL ACCESS PORT.
- FAN BASE CERAMIC SEAL – SHIP LOOSE – FOR GREASE DUCTS.



PITCHED CURBS ARE AVAILABLE FOR PITCHED ROOFS.

SPECIFY PITCH:
EXAMPLE: 7/12 PITCH = 30° SLOPE

REVISIONS

DESCRIPTION	DATE:
Δ	
Δ	
Δ	
Δ	

CAPTIVEAIR

www.captiveaire.com

Northern Ohio Office

850 Morrison Rd, Gahanna, OH, 43230 PHONE: (619) 227-5925 EMAIL: reg62@captiveaire.com

Charley's – Tejon East Travel

5621 Outlets at Tejon Pkw

ARVIN, CA, 93203

DATE: 8/6/2019

DWG.#: 3933004

DRAWN BY: MAP-52

SCALE: 3/4" = 1'-0"

MASTER DRAWING

SHEET NO. 4

SA

DS ARCHITECTURE

Kent, Ohio Cleveland, Ohio

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Kirk A. Fry

REGISTERED PROFESSIONAL ENGINEER

M 34163

EXP. 6-30-20

MECHANICAL

STATE OF CALIFORNIA

8-21-19

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TravelCenters of America LLC
Tejon TravelCenter of America

5621 Outlets at Tejon Parkway
Wheeler Ridge, CA 93203

Issue Description: ISSUED FOR PERMIT		
Revision Schedule		
#	DATE	DESCRIPTION

Project #:	19027
Issue Date:	08/21/2019

M7.10

CaptiveAire Drawings

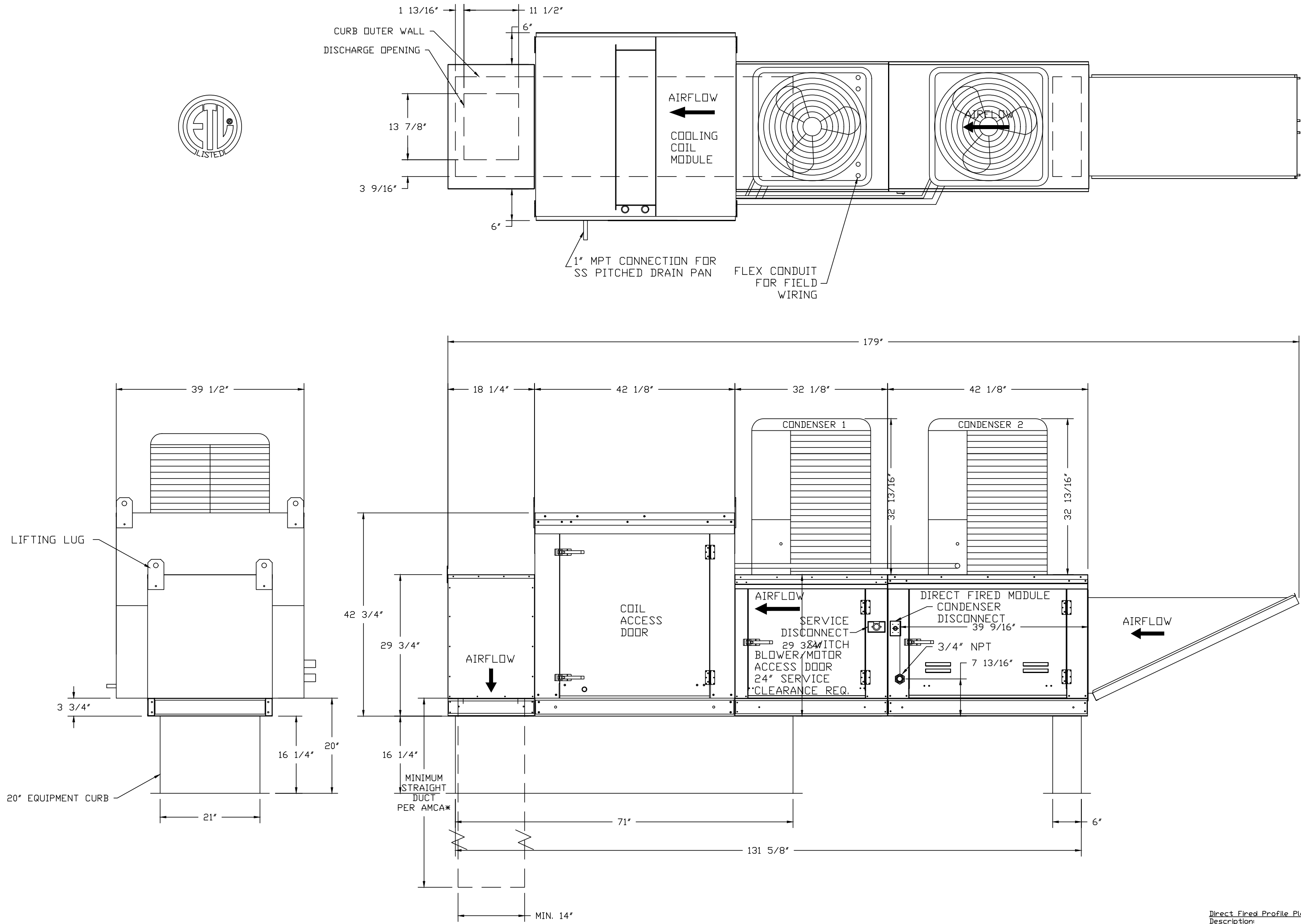
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- FAN #2 A1-D500-15D-MPU - HEATER
1. DIRECT GAS FIRED HEATED MAKE UP AIR UNIT WITH 15" DIRECT DRIVE FAN
 2. INTAKE HOOD WITH EZ FILTERS
 3. DOWN DISCHARGE - AIR FLOW RIGHT -> LEFT
 4. COOLING INTERLOCK RELAY. 24VAC COIL. 120V CONTACTS. LOCKS OUT BURNER CIRCUIT WHEN AC IS ENERGIZED.
 5. MOTORIZED BACK DRAFT DAMPER 16" X 18" FOR SIZE 1 STANDARD & MODULAR HEATER UNITS W/EXTENDED SHAFT, STANDARD GALVANIZED CONSTRUCTION, 3/4" REAR FLANGE, LOW LEAKAGE, 1FBI20S ACTUATOR INCLUDED
 6. LOW FIRE START. ALLOWS THE BURNER CIRCUIT TO ENERGIZE WHEN THE MODULATION CONTROL IS IN A LOW FIRE POSITION.
 7. GAS PRESSURE GAUGE, 0-35", 2.5" DIAMETER, 1/4" THREAD SIZE
 8. GAS PRESSURE GAUGE, -5 TO +15 INCHES WC, 2.5" DIAMETER, 1/4" THREAD SIZE
 9. EXTENDED DROP FOR COMMERCIAL HEATERS AND SUPPLY FANS. EXTENDS THE POWER AND REMOTE PANEL CONNECTIONS TO THE UNIT TO 20' OF TOTAL LENGTH.
 10. DX COOLING INTAKE AIR THERMOSTAT AND RELAYS MOUNTED IN UNIT - SET POINT FOR THERMOSTAT SHOULD BE 85°F.
 11. 5 TON, DUAL CIRCUIT (2S/2S) MODULAR PACKAGED COOLING OPTION FOR SIZE 1 MODULAR PACKAGED UNIT. INCLUDES CONDENSER, DX COIL, FILTER/DRYER KIT, THERMAL EXPANSION VALVE, R410A REFRIGERANT, AND REFRIGERANT PIPING. (1,800 TO 3,000 CFM). NOT BUILT WITH OPPOSITE SIDE CONTROLS OR OPPOSITE AIRFLOW DIRECTION. CONDENSERS REQUIRE SEPARATE 208V, 3 PHASE POWER SUPPLY UNLESS ORDERED WITH SINGLE POINT CONNECTION. COIL = 2ZD9090ME
 12. DOWNTURN PLENUM FOR SIZE 1 COOLING COIL MODULE - REQUIRED FOR DOWN DISCHARGE COOLING COIL APPLICATIONS
 13. SEPARATE 120VAC WIRING PACKAGE FOR MAKE-UP AIR UNITS. OPTION MUST BE SELECTED WHEN MOUNTING VFD IN PREWIRE PANEL OR WITH DCV PACKAGE. PROVIDES SEPARATE 120VAC INPUT TO SUPPLY FAN. THIS 120V SIGNAL MUST BE RUN BY ELECTRICIAN FROM DCV TO MUA SWITCH.

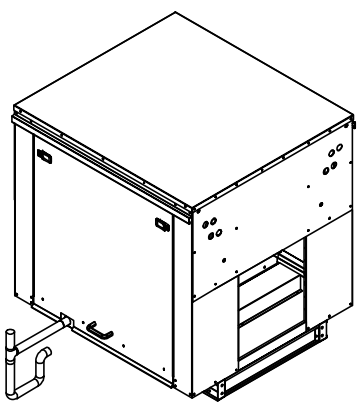
*NOTE: SUPPLY DUCT MUST BE INSTALLED TO MEET SMACNA STANDARDS. A MINIMUM STRAIGHT DUCT LENGTH MUST BE MAINTAINED DOWNSTREAM OF UNIT DISCHARGE AS OUTLINED IN AMCA PUBLICATION 201. DO NOT RELY ON UNIT TO SUPPORT DUCT IN ANY WAY. FAILURE TO PROPERLY SIZE DUCTWORK MAY CAUSE SYSTEM EFFECTS AND REDUCE PERFORMANCE OF THE EQUIPMENT. SUGGESTED STRAIGHT DUCT SIZE IS 14" X 14"

SUPPLY SIDE HEATER INFORMATION

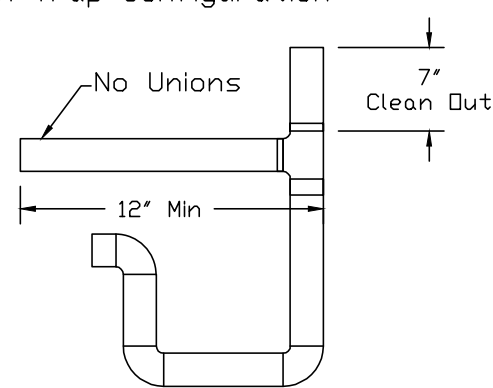
WINTER TEMPERATURE = 35°F. TEMP. RISE = 40°F.
BTUS CALCULATED OFF ACTUAL AIR DENSITY
OUTPUT BTUS AT ALTITUDE OF 0.0 Ft. = 78002
INPUT BTUS AT ALTITUDE OF 0.0 Ft. = 85003
OUTPUT BTUS AT ALTITUDE OF 439 Ft. = 76970
INPUT BTUS AT ALTITUDE OF 439 Ft. = 83663



Typical Drain Trap Install



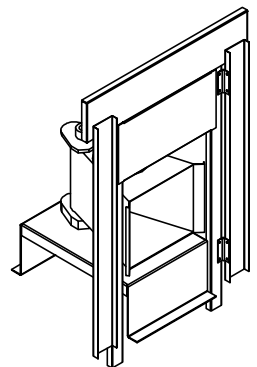
Recommended Cooling Coil Drain Trap Configuration



Notes:

- 1) 1" diameter PVC Pipe only
- 2) Use only low profile couplings
- 3) Add clean out as shown

Direct Fired (DF) Profile Plate Assembly



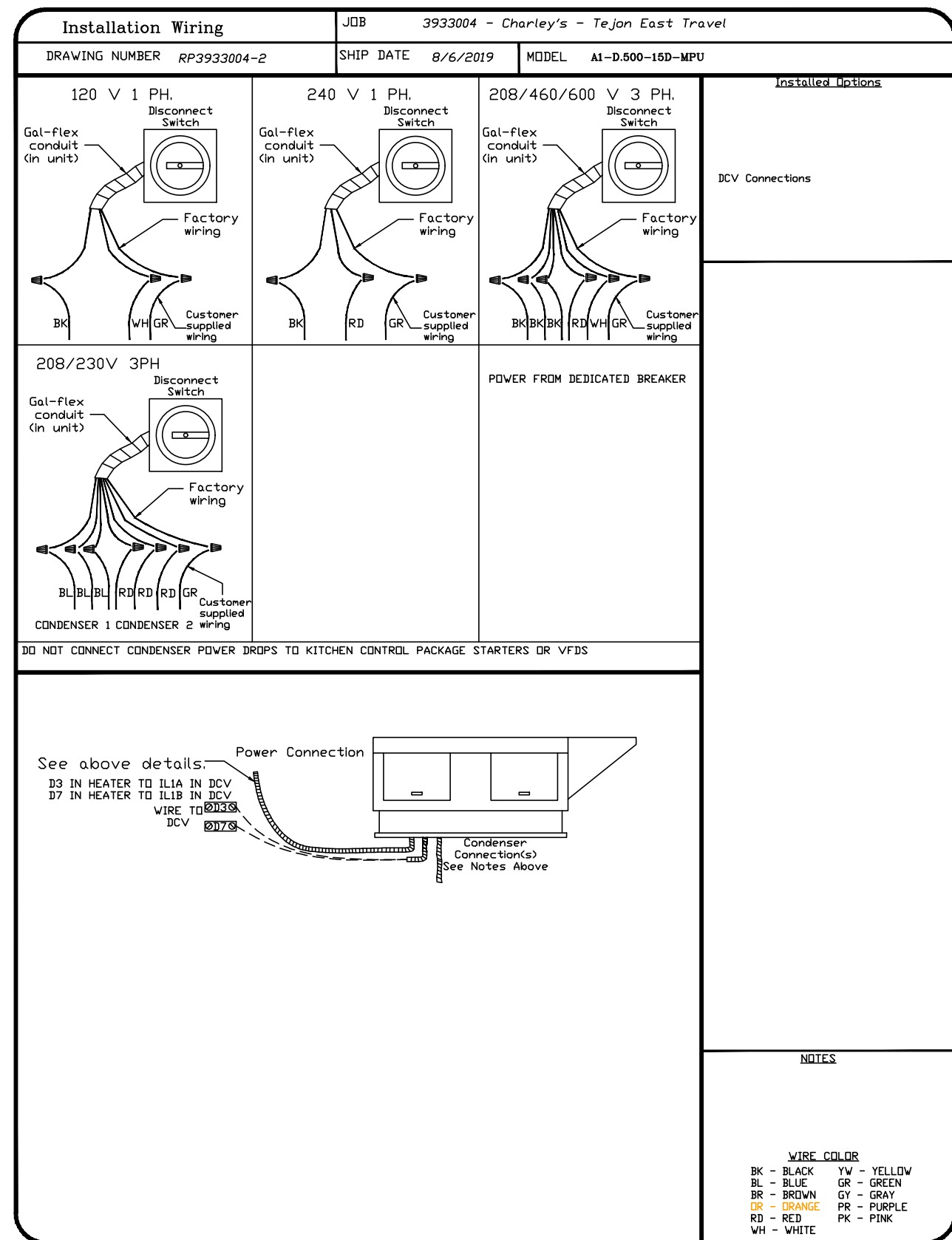
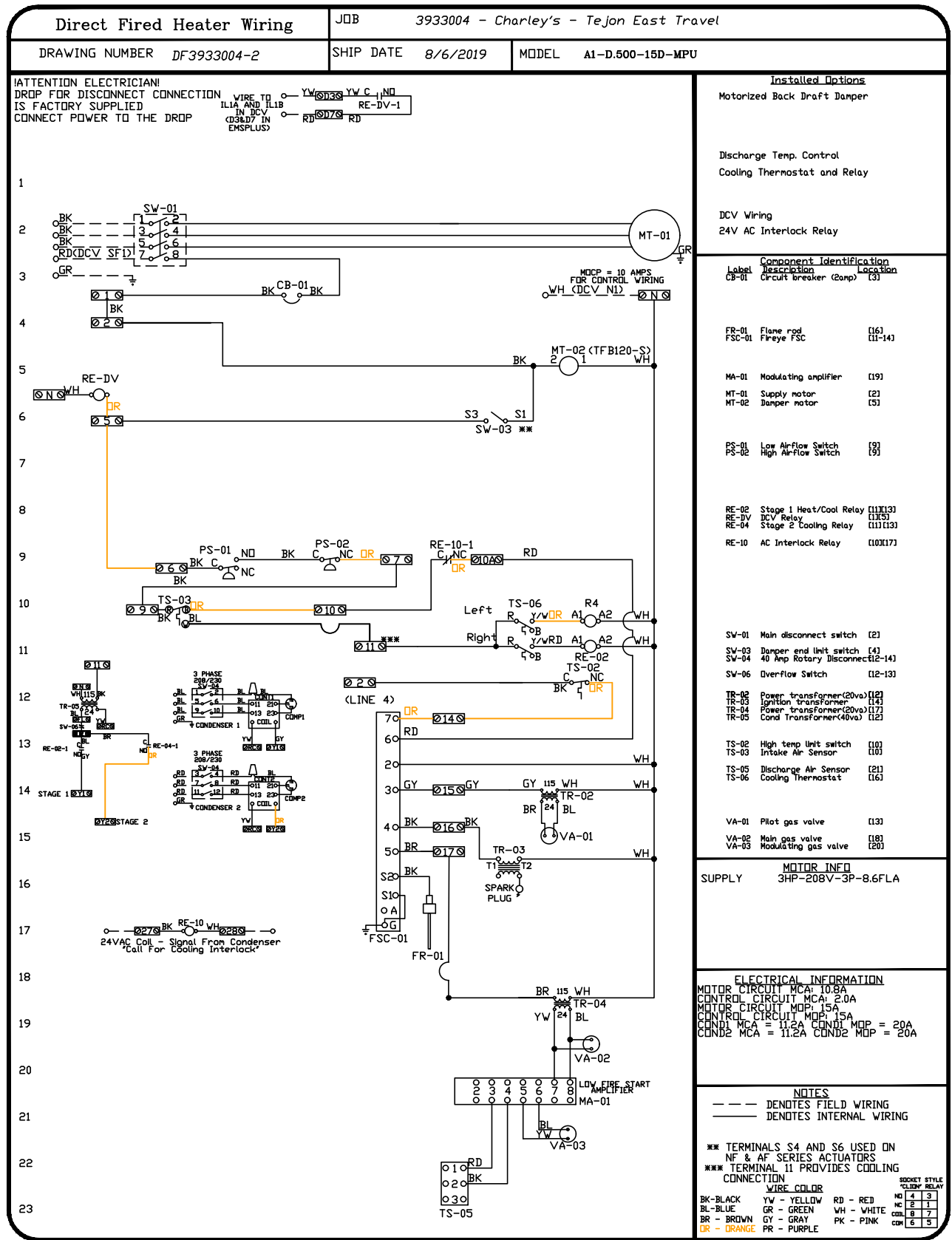
Direct Fired Profile Plate Specifications

Description:
Direct Fired burners shall have patented US Patent No. US6629523B2, self-adjusting profile plates designed to ensure proper air velocity and pressure drop across the burner. Profile plates shall allow burners to achieve clean combustion by limiting by-product levels to a maximum of 50ppm of carbon monoxide (CO) and 150ppm of Nitrogen dioxide (NO2). Direct Fired units shall be configured with the blower mounted downstream of the burner. This arrangement will ensure a consistent airflow, regardless of inlet air temperature.

Application:
Spring-loaded burner profile plates are engineered to automatically react to the nonuniform of a fresh air stream without the need for any motors or actuators to mechanically adjust them. With this feature, all DF units are designed for demand control ventilation (DCV) requirements.

Certifications:
All profile plate assemblies shall be included in the DF unit's ETL listing and comply with combined safety standards ANSI Z83.4 and CSA 3.7 (non-recirculating DF heaters) and ANSI Z83.18 (recirculating DF heaters).

General Construction:
-Profile plates shall be formed from G90 galvanized steel.
-Profile plates shall vary in size per unit.
-Profile plates shall be mounted along the same plane as the discharge of the burner.
-Design shall incorporate properly torqued, permanently mounted spring hinges.
-Spring hinges shall be made from plated steel.



REVISIONS	
DESCRIPTION	DATE

DATE: 8/6/2019

DWG.#: 3933004

DRAWN BY: MAP-52

SCALE: 3/4" = 1'-0"

MASTER DRAWING

SHEET NO. 5

Charley's - Tejon East Travel
5621 Outlets at Tejon Pkwy
ARVIN, CA, 93203

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EXP. 6-30-20
MECHANICAL
STATE OF CALIFORNIA
8-21-19

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TravelCenters of America LLC
Tejon TravelCenter of America
5621 Outlets at Tejon Parkway
Wheeler Ridge, CA 93203

Issue Description:
ISSUED FOR PERMIT

Revision Schedule

#	DATE	DESCRIPTION

Project #: 19027
Issue Date: 08/21/2019

M7.11

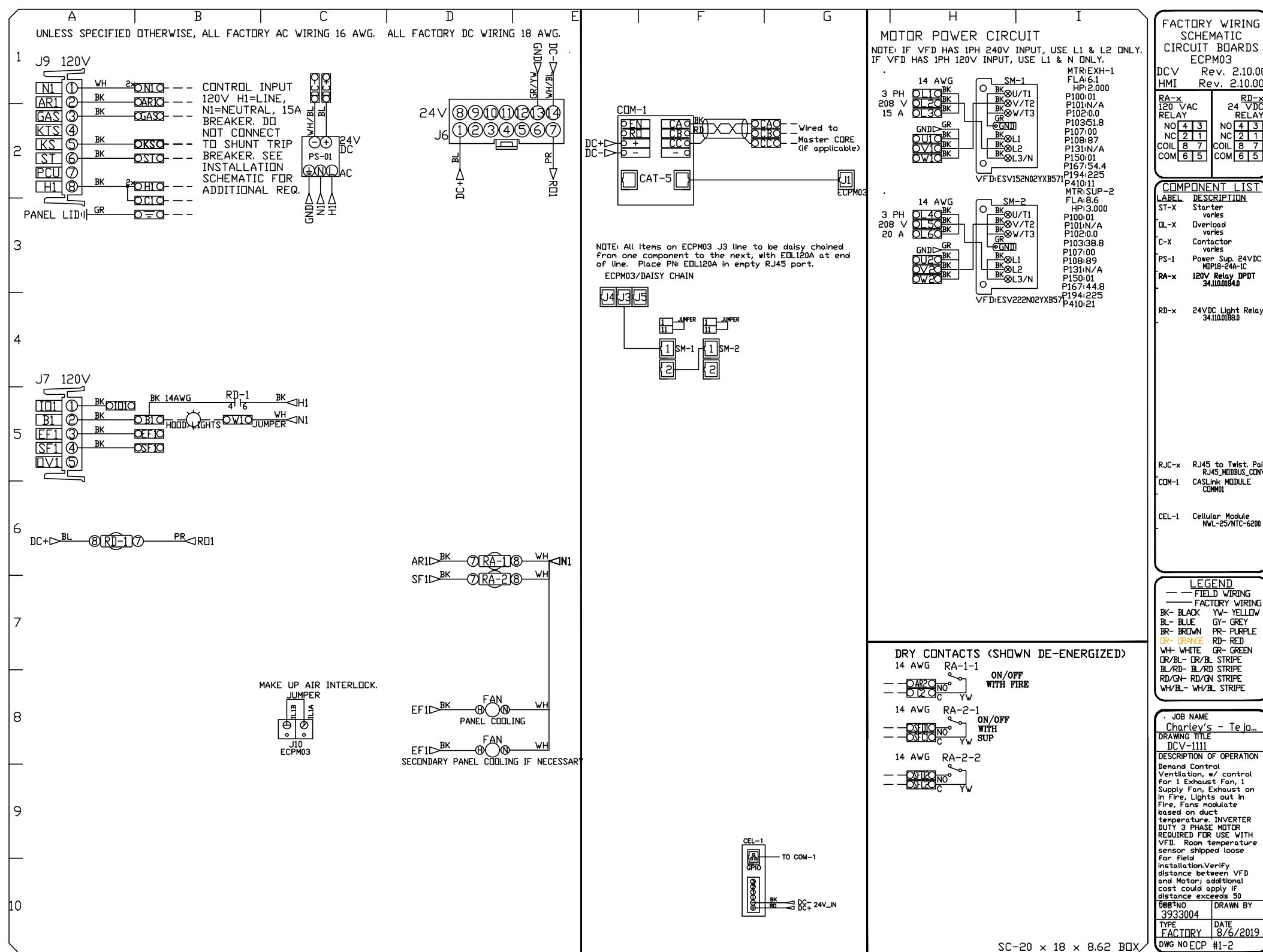
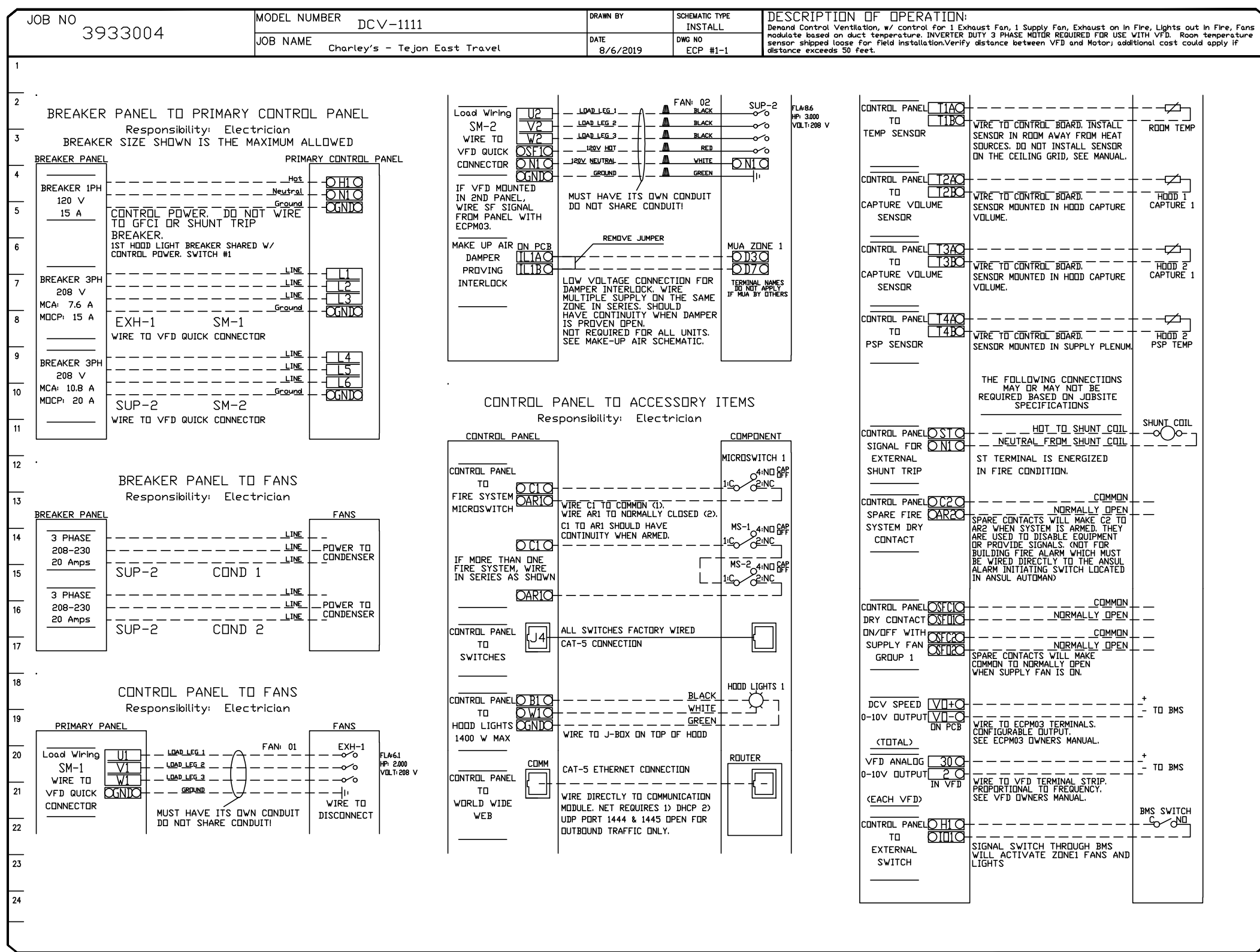
CaptiveAire Drawings

NO.	TAG	PACKAGE #	LOCATION	SWITCHES		OPTION	FANS CONTROLLED				
				LOCATION	QUANTITY		TYPE	◆	H.P.	VOLT	FLA
1		DCV-1111	Wall Mount In SS Box	05 - SS Wall Mount Box	1 Light 1 Fan	Smart Controls DCV	Exhaust	3	2,000	208	6.1
							Supply	3	3,000	208	8.6



- Hood control panel to support communications to cloud-based Building Management System.
- Hood Control Panel to allow cloud-based Building Management System to monitor real time parameters outlined as MONITOR in the points list.
- Hood Control Panel to allow cloud-based Building Management System to control parameters outlined as CONTROL in the points list.
- Hood control panel to allow remote changes to system setting such as: VFD Frequencies, ECM speeds, temperature set points, fan and wash schedules, etc.

DCV Packages	Function	SC Packages	Function
Room Temperature	MONITOR	Room Temperature(s)	MONITOR
Duct Temperature(s)	MONITOR	Duct Temperature(s)	MONITOR
MMA Discharge Temperature	MONITOR	MMA Discharge Temperature	MONITOR
Kitchen RTU Discharge Temperature	MONITOR	Kitchen RTU Discharge Temperature	MONITOR
Fan Speed	MONITOR	Controller Faults	MONITOR
Fan Amps/seg	MONITOR	Fan Faults	MONITOR
Fan Power	MONITOR	Fan Status	MONITOR
VFD Faults	MONITOR	POU Faults	MONITOR
Controller Faults	MONITOR	POU Filter Clog Percentages	MONITOR
Fan Faults	MONITOR	Fire Condition	MONITOR
Fan Status	MONITOR	CDRE Fire System	MONITOR
POU Faults	MONITOR	Building Pressures	MONITOR
POU Filter Clog Percentages	MONITOR	Fans Button(s)	MONITOR & CONTROL
Fire Condition	MONITOR	Lights Button(s)	MONITOR & CONTROL
CDRE Fire System	MONITOR	Vssh Button	MONITOR & CONTROL
Building Pressures	MONITOR		
Prep Twe Button	MONITOR & CONTROL		
Fans Button	MONITOR & CONTROL		
Lights Button	MONITOR & CONTROL		
Vssh Button	MONITOR & CONTROL		



- Controls shall be listed by ETL (UL 508A) and shall comply with demand ventilation system turndown requirements outlined in IECC 403.2.8 (2015).

- The control enclosure shall be NEMA 1 rated and listed for installation inside of the exhaust hood utility cabinet. The control enclosure may be constructed of stainless steel or painted steel.

- Temperature probe(s) located in the exhaust duct riser(s) shall be constructed of stainless steel.

- A digital controller shall be provided to activate the hood exhaust fans dynamically based on a fixed differential between the ambient and duct temperatures sensors. This function shall meet the requirements of IMC 507.1.1.

- A digital controller shall provide adjustable hysteresis settings to prevent cycling of the fans after the cooking appliances have been turned off and/or the heat in the exhaust system is reduced.

- A digital controller shall provide an adjustable minimum fan run-time setting to prevent fan cycling.

- Variable Frequency Drives (VFDs) shall be provided for fans as required. The digital controller shall modulate the VFDs between a minimum setpoint and a maximum setpoint on demand. The duct temperature sensor input(s) to the digital controller shall be used to calculate the speed reference signal.

- The VFD speed range of operation shall be from 0% to 100% for the system, with the actual minimum speed set as required to meet minimum ventilation requirements.

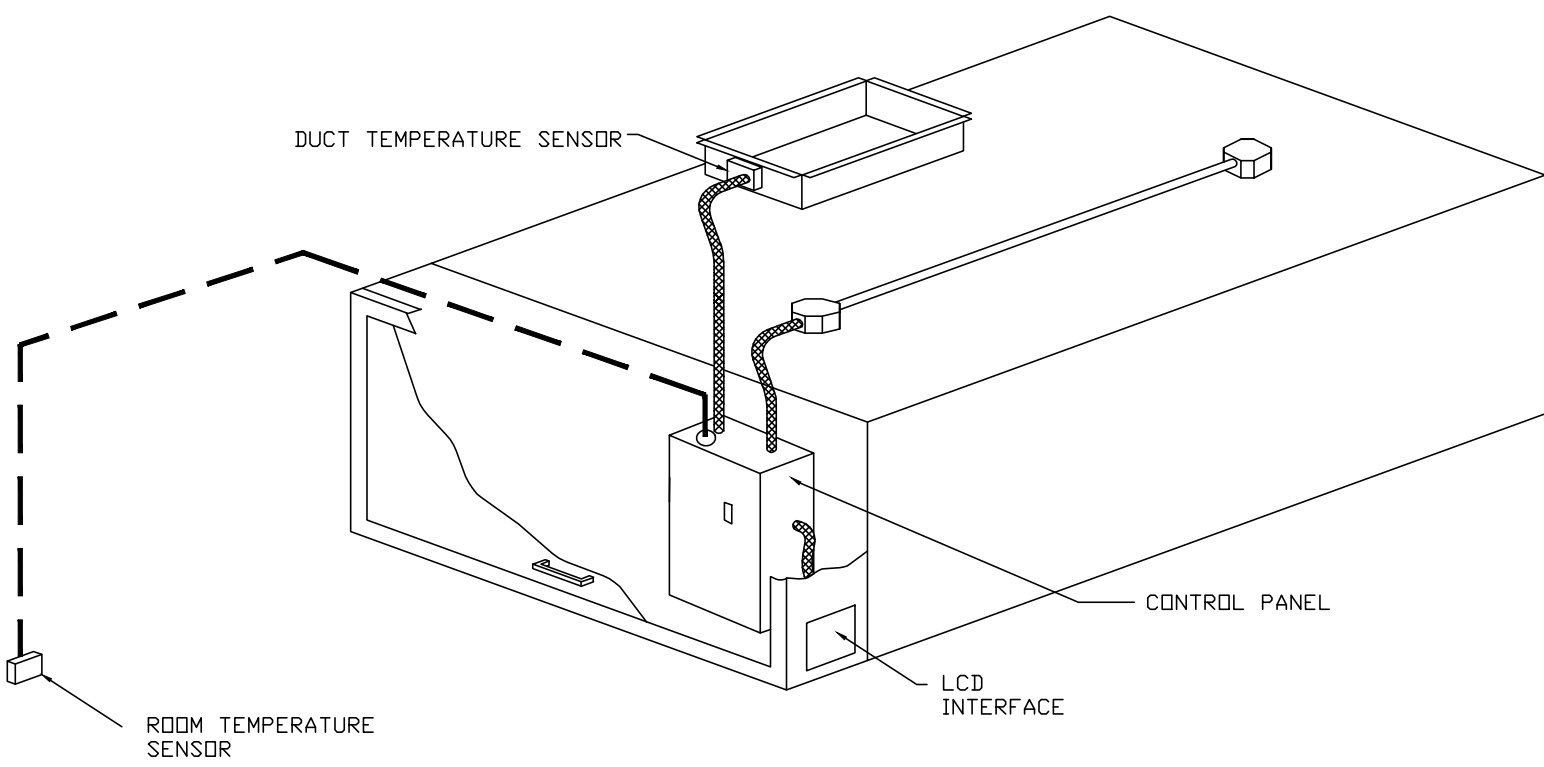
- An internal algorithm to the digital controller shall modulate supply fan VFD speed proportional to all exhaust fans that are located in the same fan group as the supply fan.

- The system shall operate in PREP MODE during light cooking load or COOL DOWN MODE when sufficient heat remains underneath the hood system after cooking operations have completed. Operation during either of these periods will disable the supply fans and provide an exhaust fan speed that is equal to the minimum ventilation requirement.

- A digital controller shall disable the supply fan(s), activate the exhaust fan(s), activate the appliance shunt trip, and disable an electric gas valve automatically when fire condition is detected on a covered hood.

- A digital controller shall allow for external BMS fan control via Dry Contact (external control shall not override fan operation logic as required by code).

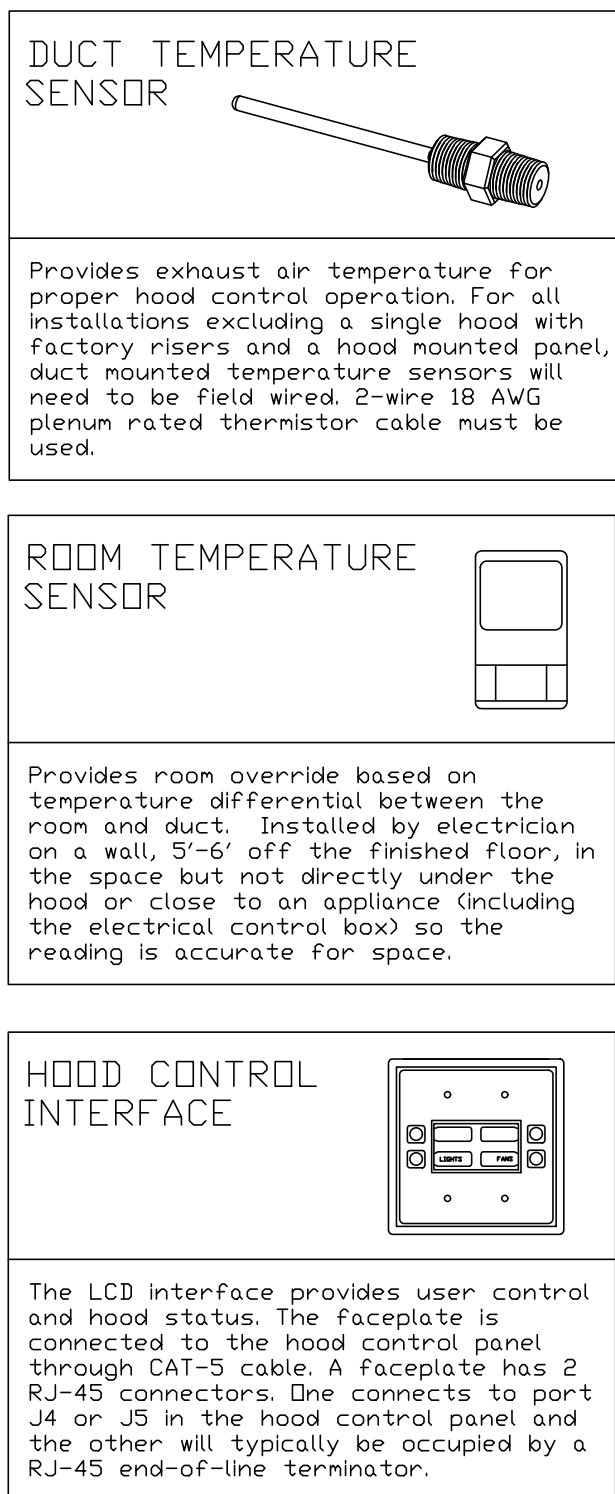
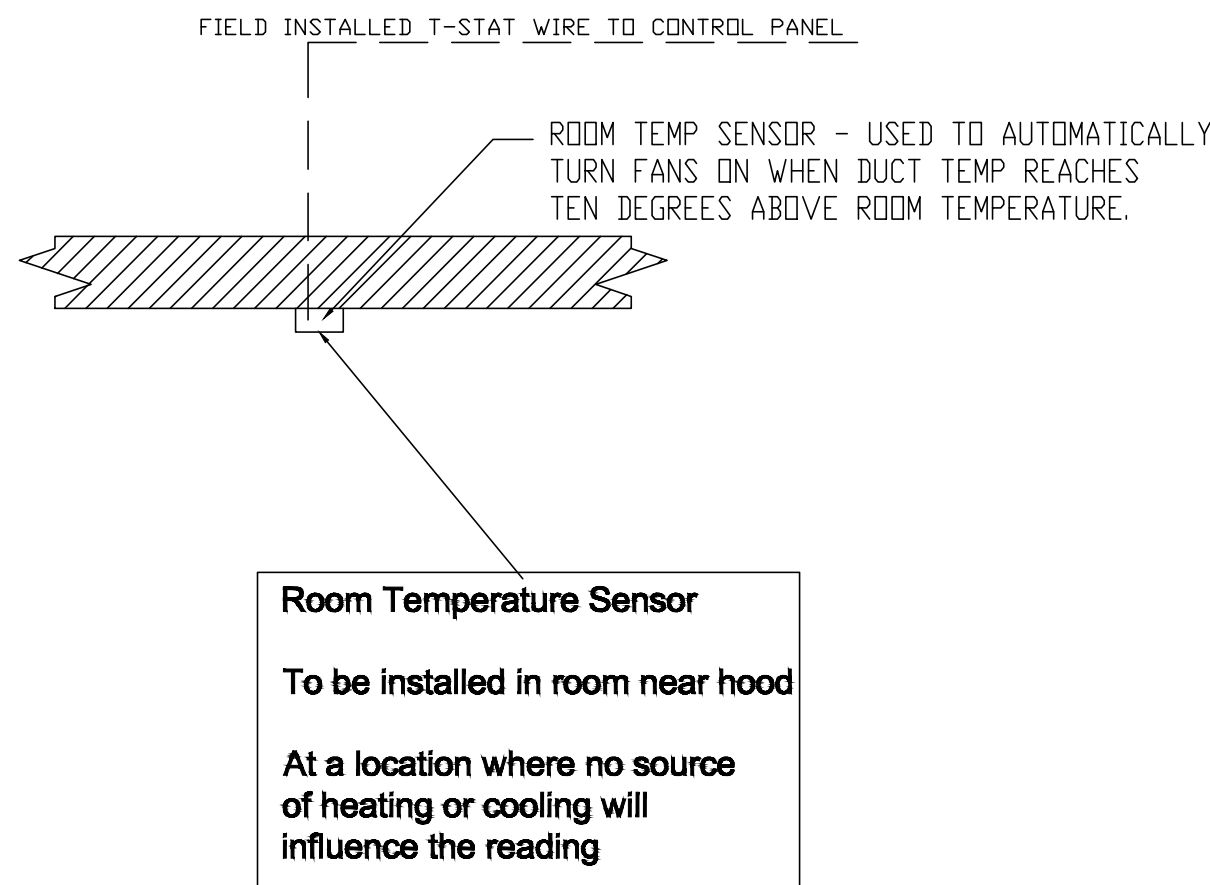
- An LCD interface shall be provided with the following features:
- On/Off push button fan & light switch activation
 - Integrated gas valve reset for electronic gas valves (no reset relay required)
 - VFD Fault display with audible & visual alarm notification
 - Duct temperature sensor failure detection with audible & visual alarm notification
 - Mis-wired duct temperature sensor detection with audible & visual alarm notification
 - A single low voltage Cat-5 RJ45 wiring connection
 - An energy savings indicator that utilizes measured kWh from the VFDs



TYPICAL HOOD CONTROL PANEL INSTALLATION

The hood control panel is capable of operating in one or more of the following states at any given time:


- **Automatic:** The system operates based on the differential between room temperature and the temperature at the hood cavity or exhaust duct collar. Fans activate at a configurable temperature differential threshold. Depending on the job configuration each fan zone can be configured as static or dynamic. These terms refer to whether a variable motor (such as EC Motors or VFD driven motors) modulate with temperature. If the panel is equipped with variable speed fans and the zone is defined as 'dynamic', these will modulate within a user-defined range based on the temperature differential. Panels equipped with fixed speed fans and a fan zone defined as 'static', fans will run at a set speed calculated for the drive. Demand control ventilation systems are capable of modulating exhaust and make up air fan speeds per the requirements outlined in IECC 403.2.8.
- **Manual:** The system operates based on human input from an HMI.
- **Schedule:** A weekly schedule can be set to run fans for a specified period throughout the time. There are three occupied times per day to allow for the user to set up a time that is suitable to their needs. Any time that is within the defined occupied time, the system will run at modulation mode and follow the fan procedure algorithm based on temperature during this time. During unoccupied time, the system will have an extra offset to prevent unintended activation of the system during a time where the system is not being occupied.
- **Other:** The system operates based on the input from an external source (DDC, BMS or hard-wired interlock).



REVISIONS	
DESCRIPTION	DATE
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CAPTIVE

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Charley's - Tejon East Travel

5621 Outlets at Tejon Pkw

ARVIN, CA, 93203

DATE: 8/6/2019

DWG.#:
3933004

DRAWN BY: MAP-52

SCALE:
3/4" = 1'-0"

MASTER DRAWING

SHEET NO.

6



TravelCenters of America LLC
Tejon TravelCenter of America

5621 Outlets at Tejon Parkway
Wheeler Ridge, CA 93203

Issue Description:
ISSUED FOR PERMIT

Revision Schedule

#	DATE	DESCRIPTION
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Project #: 19027

Issue Date: 08/21/2019

Abstract

M7-12

IV.12

CaptiveAire Drawing

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