

MECHANICAL SPECIFICATIONS
<p>PROVIDE EQUIPMENT INDICATED ON THE DRAWINGS, AND AS REQUIRED FOR A COMPLETE FUNCTIONING SYSTEM. DEFINITIONS: FURNISH MEANS TO SUPPLY AND DELIVER TO PROJECT SITE, READY FOR INSTALLATION. INSTALL MEANS TO PLACE IN POSITION AND MAKE CONNECTIONS FOR SERVICE OR USE. PROVIDE MEANS TO FURNISH AND INSTALL, COMPLETE AND READY FOR INTENDED USE. WARRANTY: PROVIDE LABOR AND MATERIALS TO REPAIR OR REPLACE DEFECTIVE PARTS AND MATERIALS AS REQUIRED FOR ONE YEAR AFTER SUBSTANTIAL COMPLETION OR OWNER ACCEPTANCE OF THE COMPLETED PROJECT. PROVIDE A SEPARATE LINE ITEM DEDUCT AMOUNT ON THE PROPOSAL FORM TO DELETE WARRANTY SERVICE, AT THE OWNER'S OPTION. PROVIDE OPERATION MANUALS, MAINTENANCE MANUALS AND SCHEMATICS FOR ALL MECHANICAL EQUIPMENT INSTALLED. COORDINATION: COORDINATE WITH THE WORK OF OTHER SECTIONS, EQUIPMENT FURNISHED BY OTHERS, REQUIREMENTS OF THE OWNER, AND WITH THE CONSTRAINTS OF THE EXISTING CONDITIONS OF THE PROJECT SITE. ROOF PENETRATIONS SHALL COMPLY WITH "SMACNA" AND "NRCA" STANDARDS, AND WITH THE REQUIREMENTS OF THE EXISTING ROOFING WARRANTY, IF APPLICABLE. DO NOT PERFORM ROOFING PENETRATIONS IN A MANNER WHICH WOULD VOID OR OTHERWISE LIMIT THE EXISTING ROOF WARRANTY. DUCT DIMENSIONS: UNLESS OTHERWISE NOTED, DUCT DIMENSIONS ON THE DRAWINGS ARE INSIDE CLEAR DIMENSIONS. SHEET METAL DUCTWORK: PROVIDE SHEET METAL DUCTWORK FABRICATED AND INSTALLED IN ACCORDANCE WITH ASHRAE AND SMACNA STANDARDS, FOR 1" W.G. PRESSURE CLASS, SEAL CLASS "A". SHEET METAL SHALL BE GALVANIZED SHEET STEEL OF LOCK FORMING QUALITY, WITH G90 ZINC COATING. SHEET STEEL SHALL COMPLY WITH ASTM A653 STANDARD SPECIFICATION FOR STEEL SHEET METAL, ZINC COATED (GALVANIZED) OR ZINC-IRON ALLOY-COATED (GALVANNEALED) BY THE HOT DIP PROCESS, AND A924 STANDARD SPECIFICATION FOR GENERAL REQUIREMENTS FOR SHEET, METALLIC-COATED BY THE HOT DIP PROCESS. ALL ANGLE IRON USED FOR SUPPORT SHALL BE GALVANIZED. CONNECTIONS TO WALLS OR FLOOR SHALL BE AIR TIGHT WITH ANGLE IRON AND CAULKING. SEAL ALL DUCT SEAMS, TRANSVERSE AND LONGITUDINAL, AIR TIGHT. PROVIDE TURNING VANES AT ALL 90° ELBOWS. TRAPEZE DUCT HANGERS: PROVIDE MINIMUM 1" X 2" X 1" X 18 GAUGE CHANNELS WITH MINIMUM 1" X 18 GAUGE STRAPS TO STRUCTURAL SUPPORT. ROUND SHEET METAL DUCT: PROVIDE SPIRAL SEAM (ALL SIZES) OR SNAP LOCK (DUCT SIZES UP TO 10") GALVANIZED STEEL COMPLYING WITH SMACNA STANDARDS. SPIRAL SEAM DUCTWORK SHALL HAVE SMACNA SEAM TYPE RL-1. FIBER GLASS DUCT BOARD IS AN ACCEPTABLE ALTERNATIVE IF APPROVED BY OWNER AND THE LOCAL BUILDING CODE OFFICIAL. PRODUCT AND INSTALLATION MUST MEET NAIMA STANDARDS AND OTHER APPLICABLE CODES AND REGULATIONS. EXPOSED DUCTWORK: EXPOSED DUCTWORK SHALL BE CLEANED OF DEBRIS AND OIL, THEN WIPED DOWN WITH VINEGAR OR OTHER SURFACE PREPARING CHEMICAL TO PREPARE DUCT FOR PAINT. DUCT SEALANT: PROVIDE POLYMERIC RUBBER TYPE SEALANT FOR USE ON BOTH INTERIOR LOCATED DUCTWORK AND DUCTWORK EXPOSED TO OUTDOOR CONDITIONS. SEALER SHALL HAVE HIGH BONDING STRENGTH FOR SURE, FIRST TIME SEALING OF JOINTS IN LOW, MEDIUM, AND HIGH PRESSURE DUCT SYSTEMS. SEALER SHALL BE HIGH IN SOLID CONTENT, PROVIDE A TWO PART TAPE SEALING SYSTEM, CONSISTING OF WOVEN FIBER TAPE IMPREGNATED WITH A GYPSUM MINERAL COMPOUND, AND A MODIFIED ACRYLIC/SILICONE ACTIVATOR THAT REACTS EXOTHERMICALLY WITH THE TAPE. TWO PART TAPE SEALING SYSTEM MUST BE RATED FOR BOTH INDOOR AND OUTDOOR APPLICATION. TAPE SHALL NOT CONTAIN ASBESTOS. DUCT INSULATION: MATERIAL FOR SUPPLY AND RETURN AIR DUCT ABOVE CEILING INSIDE THE BUILDING SHALL HAVE THE EQUIVALENT THERMAL RESISTANCE OF MINIMUM R-6. THE REQUIRED R VALUES ARE FOR INSTALLED INSULATION WITH 25% COMPRESSION AT THE CORNERS. PROVIDE PINS AND WASHERS IN ACCORDANCE WITH SMACNA REQUIREMENTS AND AS REQUIRED TO PREVENT INSULATION FROM SAGGING. PROVIDE ADEQUATE INSULATION AT THE SUPPLY AIR DIFFUSERS TO PREVENT CONDENSATION. FLEXIBLE DUCT : UL #181 LISTED, CLASS 1, AND CONTAIN A 0.1 PERM RATED POLYETHYLENE INNER LINER, WITH R-8 FIBERGLASS INSULATION. FLEXIBLE DUCTS SHALL BE SECURED TO RIGID SHEET METAL COLLARS AND AIR DIFFUSERS WITH NYLON TIES OR STAINLESS STEEL WORM GEAR STRAPS. SEAL ALL CONNECTIONS AND JOINTS AIRTIGHT. SUPPORT FLEXIBLE DUCTS FROM THE BUILDINGS STRUCTURE WITH MINIMUM 1" WIDE, 18 GAUGE, GALVANIZED STEEL STRAP AT MAXIMUM 4'-0" CENTERS. PROVIDE 4" WIDE SHEET METAL SADDLES AT EACH SUPPORT EACH STRAP. SAG OF FLEXIBLE DUCT BETWEEN HANGERS SHALL NOT EXCEED 1/2" PER FOOT OF SUPPORT SPACING. RADIUS FOR TURNS OF FLEXIBLE DUCTS SHALL BE A MINIMUM OF ONE DUCT DIAMETER. FLEXIBLE DUCT RUNS SHALL NOT EXCEED 10'-0" IN LENGTH AND SHALL BE THE SAME SIZE AS THE DIFFUSER NECK CONNECTION. ROUND VOLUME DAMPERS: PROVIDE MINIMUM 20 GAUGE GALVANIZED STEEL FRAME AND BLADES, MINIMUM 3/8" SQUARE STEEL AXLE, MOLDED SYNTHETIC BEARINGS, WITH LOCKING POSITION REGULATOR. REGULATOR SHALL BE POSITIONED WITH SHEET METAL BRACKET BEYOND DUCT COVERING. WHERE POSITIONING REGULATOR IS NOT ACCESSIBLE, PROVIDE COUPLING AND EXTENSION ROD WITH REGULATOR FOR CEILING OR WALL INSTALLATION, AS REQUIRED. RECTANGULAR VOLUME DAMPERS: PROVIDE MINIMUM 16 GAUGE GALVANIZED STEEL CHANNEL FRAME, 16 GAUGE GALVANIZED STEEL BLADES, MINIMUM ½" HEXAGONAL AXLE, BOLDDED SYNTHETIC BEARINGS, WITH 3/8" SQUARE PLATED STEEL CONTROL SHAFT. LINKAGES SHALL BE CONCEALED IN THE FRAME. OPERATING SHAFT SHALL EXTEND BEYOND FRAME AND DUCT TO A LOCKING QUADRANT WITH ADJUSTABLE LEVER. MAXIMUM BLADE WIDTH SHALL NOT EXCEED 6".</p>

DUCT TURNING VANES: PROVIDE FABRICATED TURNING VANES AND VANE RUNNERS, CONSTRUCTED IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS". PROVIDE TURNING VANES CONSTRUCTED OF CURVED BLADES, SUPPORTED WITH BARS PERPENDICULAR TO BLADES, AND SET INTO SIDE STRIPS SUITABLE FOR MOUNTING IN DUCTWORK. FOLLOW SMACNA GUIDELINES FOR SPACING SUPPORT, AND CONSTRUCTION. ALL BLADES SHALL BE DOUBLE THICKNESS AIRFOIL TYPE. FLEXIBLE DUCT CONNECTORS: PROVIDE U.L. LABELED 30 OUNCE NEOPRENE COATED FIBERGLASS FABRIC DUCT CONNECTORS. DUCT ACCESS DOORS: PROVIDE HINGED ACCESS DOORS IN DUCTWORK WHERE REQUIRED FOR ACCESS TO EQUIPMENT. PROVIDE INSULATED ACCESS DOORS FOR INSULATED DUCTWORK. CONSTRUCT OF SAME OR THICKER GAUGE SHEET METAL AS DUCT IN WHICH IT IS INSTALLED. PROVIDE FLUSH FRAMES FOR UN-INSULATED DUCTS, AND EXTENDED FRAMES FOR EXTERNALLY INSULATED DUCTS. PROVIDE CONTINUOUS HINGE ON ONE SIDE, WITH ONE HANDLE-TYPE LATCH FOR ACCESS DOORS 12" HIGH AND SMALLER, AND TWO HANDLE-TYPE LATCHES FOR LARGER ACCESS DOORS. HVAC CONTROL SYSTEM: PROVIDE ALL THE NECESSARY CONTROLS AND CONTROL WIRING IN CONDUIT COMPATIBLE TO SYSTEMS SHOWN ON EQUIPMENT SCHEDULE M2.0. PROGRAMMABLE THERMOSTAT FOR EACH SYSTEM SHALL ENABLE THE SUPPLY FAN AND CYCLE THE COOLING AND HEATING STAGES TO MAINTAIN SPACE SET-POINT. SUPPLY FAN RUNS CONTINUOUSLY DURING THE OCCUPIED MODE. EACH THERMOSTAT SHALL HAVE A DEAD BAND OF AT LEAST 5 DEGREES (ADJ) WITHIN WHICH THE SUPPLY OF HEATING AND COOLING IS SHUT OFF, EACH THERMOSTAT SHALL HAVE SETBACK AND SET-UP CAPABILITY DURING THE UNOCCUPIED MODE. FOR SETBACK, THE HEATING SHALL RESTART AND TEMPORARILY OPERATE ACCORDING TO A SET-POINT ADJUSTABLE DOWN TO 55 DEGREES. FOR SET-UP, THE COOLING SHALL RESTART AND TEMPORARILY OPERATE ACCORDING TO A SET-POINT ADJUSTABLE UP TO 85 DEGREES OR TO PREVENT HIGH SPACE HUMIDITY LEVELS. EACH SYSTEM SHALL BE PROVIDED WITH A MOTORIZED OUTSIDE AIR DAMPER THAT WILL AUTOMATICALLY SHUT WHEN THE SYSTEM OR SPACES SERVED ARE NOT IN USE. VENTILATION OUTSIDE AIR DAMPERS SHALL BE CAPABLE OF AUTOMATICALLY CLOSING DURING PREOCCUPANCY BUILDING WARM-UP, COOL DOWN, AND SETBACK, EXCEPT WHEN VENTILATION REDUCES ENERGY COSTS (e.g., NIGHT PURGE) OR WHEN VENTILATION MUST BE SUPPLIED TO MEET CODE REQUIREMENTS. COMMISSIONING/VERIFICATION: HVAC CONTROL SYSTEM SHALL BE TESTED TO ENSURE THAT CONTROL ELEMENTS ARE CALIBRATED, ADJUSTED, AND IN PROPER WORKING CONDITION, AND THAT THE SYSTEM MEETS THE DESIGN REQUIREMENTS. TEST AND BALANCE: CONTRACT DIRECTLY A THIRD PARTY TO PROVIDE TEST AND BALANCE OF THE HVAC SYSTEM. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR SCHEDULING. TEST AND ADJUST ALL MECHANICAL SYSTEM AND EQUIPMENT TO ASSURE PROPER BALANCE AND OPERATION. PERFORM TESTS IN ACCORDANCE WITH NEBB PROCEDURAL STANDARDS-1999 OR AABC 2002, AND ASHRAE STANDARD 111. ELIMINATE NOISE AND VIBRATION, AND ASSURE PROPER FUNCTION OF CONTROLS. SUBMIT COMPLETED TEST AND BALANCE REPORT TO OWNER'S REPRESENTATIVE. BALANCING CONTRACTOR SHALL BE INDEPENDENT AND CERTIFIED WITH NEBB OR AABC. BALANCE ALL SYSTEMS WITHIN 5% OF AIR FLOW INDICATED ON DRAWINGS, AND REPORT ALL DISCREPANCIES TO THE HVAC CONTRACTOR FOR CORRECTION. MARK FINAL BALANCE POSITIONS ON DAMPERS WITH PERMANENT MARKER. COMPLETION REQUIREMENTS: THE CONTRACTOR SHALL PROVIDE, WITHIN 90 DAYS AFTER THE DATE OF SYSTEM ACCEPTANCE, RECORD DRAWINGS AND AN OPERATING AND MAINTENANCE MANUAL TO THE BUILDING OWNER OR THE DESIGNATED REPRESENTATIVE OF THE OWNER. THE RECORD DRAWING SHALL BE OF THE ACTUAL INSTALLATION AND INCLUDE AS A MINIMUM THE LOCATION AND PERFORMANCE DATA ON EACH PIECE OF EQUIPMENT, GENERAL CONFIGURATION OF DUCT AND PIPE DISTRIBUTION SYSTEM INCLUDING SIZES, AND THE TERMINAL AIR OR WATER DESIGN FLOW RATES. THE OPERATING AND MAINTENANCE MANUALS SHALL BE IN ACCORDANCE WITH INDUSTRY-ACCEPTED STANDARDS AND SHALL INCLUDE, AT A MINIMUM, THE FOLLOWING: (A) SUBMITTAL DATA STATING EQUIPMENT SIZE AND SELECTED OPTIONS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE; (B) OPERATION MANUALS AND MAINTENANCE MANUALS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE, EXCEPT EQUIPMENT NOT FURNISHED AS PART OF THE PROJECT. REQUIRED ROUTINE MAINTENANCE ACTIONS SHALL BE CLEARLY IDENTIFIED; (C) NAMES AND ADDRESSES OF AT LEAST ONE SERVICE AGENCY; (D) HVAC CONTROLS SYSTEMS MAINTENANCE AND CALIBRATION INFORMATION, INCLUDING WIRING DIAGRAMS, SCHEMATICS, AND CONTROL SYSTEM SEQUENCE DESCRIPTIONS. DESIRED OR FIELD-DETERMINED SET-POINTS SHALL BE PERMANENTLY RECORDED ON CONTROL DRAWINGS AT CONTROL DEVICES OR, FOR DIGITAL CONTROL SYSTEMS, IN PROGRAMMING COMMENTS; (E) A COMPLETE NARRATIVE OF HOW EACH SYSTEM EACH SYSTEM IS INTENDED TO OPERATE, INCLUDING SET-POINTS.

HVAC GENERAL NOTES
<p>1. THE INTENT OF THESE PLANS AND SPECIFICATIONS IS TO INCLUDE ALL LABOR, EQUIPMENT, MATERIALS, AND SERVICES NECESSARY TO FURNISH, INSTALL, TEST, AND ADJUST A COMPLETE WORKABLE HEATING, VENTILATION, AND AIR CONDITIONING SYSTEM AS SHOWN, PRESCRIBED, OR REASONABLY IMPLIED BUT NOT LIMITED TO THAT EXPLICITLY INDICATED IN THE CONTRACT DOCUMENTS, BUT NECESSARY FOR THE PROPER EXECUTION AND COMPLETION OF THE INTENT THEREOF.</p> <p>2. THE ENTIRE INSTALLATION SHALL CONFORM TO THE APPLICABLE CODES AND REGULATIONS REQUIRED BY AUTHORITIES HAVING JURISDICTION. IN THE EVENT OF CONFLICT BETWEEN SPECIFICATIONS, CODES, AND REGULATIONS, THE MORE RESTRICTIVE SHALL APPLY.</p> <p>3. DRAWINGS FOR HVAC WORK ARE DIAGRAMATIC SHOWING THE GENERAL LOCATION, TYPE, LAYOUT, AND EQUIPMENT REQUIRED. THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENT, REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS. PROVIDE ALL DUCTWORK, MATERIALS, CONNECTIONS, ACCESSORIES, FITTINGS, OFFSETS, TRANSITIONS, DAMPERS AS REQUIRED FOR A COMPLETE WORKABLE SYSTEM.</p> <p>4. ALL EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND APPROVED LISTING. ALL EQUIPMENT, PIPING AND SUPPORTS SHALL BE RESTRAINED IN ACCORDANCE WITH THE LATEST EDITION OF THE "GUIDLINES FOR SEISMIC RESTRAINTS OF MECHANICAL SYSTEMS AND PLUMBING PIPING SYSTEMS" BY THE SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION (SMACNA). ALL EQUIPMENT SHALL BE ANCHORED TO RESIST THE LATERAL FORCE REQUIREMENTS OF CHAPTER 16 OF THE 2022 CALIFORNIA BUILDING CODE.</p> <p>5. COORDINATE THE INSTALLATION OF THE HVAC SYSTEM WITH ALL OTHER TRADES PRIOR TO FABRICATION OR INSTALLATION. COORDINATE THE LOCATIONS OF PENETRATIONS AND FINAL LOCATION OF ALL EQUIPMENT WITH THE GENERAL CONTRACTOR. PROVIDE EQUIPMENT WEIGHTS, EQUIPMENT DIMENSIONS, PLATFORM SIZES & LOCATIONS, CURB SIZES & LOCATIONS. CONCRETE PAD SIZES AND LOCATIONS AST REQUIRED. COORDINATE LOCATIONS OF GAS & CONDENSATE LINES WITH PLUMBING CONTRACTOR. COORDINTAE LOCATIONS OF POWER, DISCONNECTS, AND CONTROL CONDUIT WITH THE ELECTRICAL CONTRACTOR. COORDINATE LOCATIONS OF ALL DIFFUSERS, REGISTERS, AND GRILLES WITH ARCHITECTURAL PLANS, ELECTRICAL LIGHTING PLANS AND ARCHITECTURAL ELEVATIONS.</p> <p>6. DETAILS FOR EQUIPMENT PADS, PLATFORMS, AND FLASHINGS SHALL BE AS INDICATED BY THE ARCHITECTURAL/STRUCTURAL/CIVIL DRAWINGS, UNLESS NOTED OTHERWISE.</p> <p>7. ALL EQUIPMENT, DUCTS, PIPING, SUPPORTS, AND OTHER DEVICES OUTSIDE OF THE BUILDING OR EXPOSED TO WEATHER, SHALL BE COMPLETELY WEATHER-PROOFED.</p> <p>8. OUTSIDE AIR INTAKES SHALL BE AT LEAST 10 FT. AWAY OR 3 FT. BELOW ANY VENT OR EXHAUST DISCHARGE.</p> <p>9. ALL DUCT SIZES ARE CLEAR INSIDE DIMENSIONS. DUCTWORK SHALL BE CONSTRUCTED, ERECTED, INSULATED AND TESTED IN ACCORDANCE CHAPTER 6 OF THE 2022 CALIFORNIA MECHANICAL CODE.</p> <p>10. ALL EXHAUST FANS SHALL BE EQUIPED WITH A BACK DRAFT DAMPER.</p> <p>11. DUCT AND AIR TRANSFER PENETRATIONS THRU BUILDING ASSEMBLIES REQUIRING PROTECTION SHALL BE PROTECTED WITH FIRE DAMPERS, SMOKE DAMPERS, COMBINATION SMOKE/FIRE DAMPERS AND CEILING RADIATION DAMPERS IN ACCORDANCE WITH SECTION 607 OF THE CALIFORNIA MECHANICAL CODE. DUCTS NOT REQUIRING DAMPERS SHALL COMPLY WITH SECTION 714 & 717 OF THE 2022 CALIFORNIA BUILDING CODE.</p> <p>12. INSTALL SMOKED DETECTORS AND PROVIDE FOR SMOKE DETECTION AND AUTOMATIC SHUT-OFF OF ALL AIR HANDLING EQUIPMENT IN ACCORDANCE WITH SECTION 606 OF THE 2022 CALIFORNIA MECHANICAL CODE.</p> <p>13. UNLESS NOTED OTHERWISE, ALL LINE VOLTAGE WIRING, CONDUIT, FINAL CONNECTIONS, DISCONNECTS, STARTERS, AND OVER CURRENT PROTECTION DEVICES SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR AS INDICATED ON THESE MECHANICAL DRAWINGS AND/OR ELECTRICAL DRAWINGS AND/OR ELECTRICAL SECTION OF THE SPECIFICATIONS.</p> <p>14. INSTALL ALL LOW VOLTAGE HVAC CONTROL WIRE AND DEVICES PER PLAN. ALL WIRE SHALL BE IN CONDUIT PROVIDED AND INSTALLED BY THE ELECTIONAL CONTRACTOR UNLESS NOTED OTHERWISE.</p> <p>15. PROVIDE OWNER WITH THREE COPIES OF A CERTIFIED AIR BALANCE REPORT PREPARED IN BY A THIRD PARTY CERTIFIED BY THE AABC OR NEBB. TEST, ADJUST AND BALANCE THE HVAC SYSTEM IN ACCORDANCE WITH AABC OR NEBB PROCEDURES. PROVIDE START-UP/TEST REPORTS FOR ALL AIR HANDLING EQUIPMENT, FANS, AND REFRIGERATION EQUIPMENT. TEST AND VERIFY PROPER OPERATION OF ALL MAKE-UP AIR/EXHAUST AIR INTERLOCK SYSTEMS AND THIER SEQUENCES OF OPERATION. BALANCE ALL AIR FLOWS WITHIN 5% OF DESIGN VALUES. PERMANENTLY MARK BALANCE POSITION OF ALL REGULATING DEVICES.</p> <p>16. PROVIDE OWNER WITH THREE SETS OF AS-BUILT PLANS AND OPERATIONS AND MAINTENANCE MANUALS. CLEARLY IDENTIFY ALL EQUIPMENT WITH PERMANENT PLASTIC OR METAL LABELS/TAGS (PEN MARKING NOT ACCEPTABLE).</p> <p>17. PROVIDE ONE YEAR WARRANTY ON ALL LABOR, PARTS AND MATERIALS.</p> <p>18. ANY CHANGE OR DEVIATION FROM THESE PLANS OR SPECIFICATIONS SHALL REQUIRE THE WRITTEN APPROVAL OF THE ENGINEER PRIOR TO COMMENCEMENT OF SUCH WORK. 19.0</p> <p>a) DUCTS FOR DEMAND CONTROLLED VENTILATION SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE FAN MANUFACTURER'S INSTALLATION INSTRUCTIONS, THE PROVISIONS ASHRAE 62.2, TABLE 5.3, OR THE AIRFLOW SHALL BE MEASURED AS REQUIRED BY AND IN COMPLIANCE WITH ASHRAE 62.2. 5.4.</p> <p>1) DUCTS FOR KITCHEN COOKTOPS OR RANGES SHALL BE SHOWN OF METAL WITH A SMOOTH INTERIOR.</p> <p>a) DUCTS FOR DOMESTIC CLOTHES DRYERS SHALL BE INSTALLED IN ACCORDANCE WITH CMC 504.0.</p> <p>b) DUCTS FOR DOMESTIC CLOTHES DRYERS SHALL BE RIGID METALLIC DUCTS WITH A MINIMUM MILL THICKNESS OF 16 (0.016-INCH), SHALL HAVE A MINIMUM 4-INCH DIAMETER AND A SMOOTH INTERIOR. THE COMBINED HORIZONTAL AND VERTICAL LENGTH OF THE DUCTS OF THE DUCTS SHALL BE 14-FEET, WHICH SHALL BE REDUCED BY 2-FEET FOR EVERY 90-DEGREE ELBOW IN EXCESS OF TWO ELBOWS.</p> <p>c) LISTED CLOTHES DRYER TRANSITION DUCTS NOT MORE THAN 6-FEET IN LENGTH SHALL BE PERMITTED TO CONNECT THE DRYER TO THE EXHAUST DUCTS AS LONG AS THEY ARE NOT CONCEALED WITHIN CONSTRUCTION, AND THEY ARE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.</p>

LEGEND		
		DUCT WORK (WIDTHxDEPTH)
		LINED DUCT WORK (WIDTHxDEPTH DIMENSIONS ARE FOR I.D.)
		SUPPLY DUCT, SECTION
		RETURN DUCT, SECTION
		EXHAUST DUCT, SECTION
		RISE OR DROP IN DIRECTION OF AIR FLOW
	FLEX. CONN.	FLEXIBLE CONNECTION
		DUCT TRANSITION, ROUND AND RECTANGULAR
		SPLITTER DAMPER
		EXTRACTOR AT BRANCH DUCT
		TURNING VANES
		FLEXIBLE DUCT
		SINGLE LINE DUCT WORK
	AVD	AUTOMATIC VOLUME DAMPER
	MVD	MANUAL VOLUME DAMPER
	BDD	BACKDRAFT DAMPER
	MD	MODULATING DAMPER
	AFD	AUTOMATIC FIRE DAMPER
	AD	ACCESS DOOR
	SD	SUPPLY DIFFUSER
	RR	RETURN REGISTER
	ER	EXHAUST REGISTER
	SWR	SIDE WALL SUPPLY REGISTER
	SWE	SIDE WALL RETURN OR EXHAUST
	LD	LINEAR DIFFUSER
	DL	DOOR LOUVER
	UC	UNDER CUT DOOR
	VAV	VARIABLE AIR VOLUME
	①	THERMOSTAT
	②	DUCT SMOKE DETECTOR
	T/B	TO BELOW
	F/B	FROM BELOW
	T/A	TO ABOVE
	F/A	FROM ABOVE

SPECIAL NOTICE TO CONTRACTORS

- ALL CONTRACTORS (GENERAL CONTRACTOR AND SUB-CONTRACTORS) BIDDING THIS PROJECT ARE REQUIRED TO VISIT THE JOB SITE AND VERIFY THE EXISTING CONDITIONS PRIOR TO SUBMITTING THEIR BID. CONTRACTORS ARE TO CAREFULLY REVIEW ALL CONSTRUCTION DOCUMENTS AND NOTE ANY DISCREPANCIES BETWEEN THE CONSTRUCTION DOCUMENTS AND THE CONDITIONS OBSERVED AT THE JOB SITE PRIOR TO SUBMISSION OF ANY BID. THE BUILDING OWNER REPRESENTATIVE LISTED BELOW MAY BE CONTACTED FOR ACCESS TO THE JOB SITE.
- CONTRACTORS ARE RESPONSIBLE FOR VERIFYING THE LOCATION AND CONDITION OF ALL POINTS OF CONNECTION, LOCATION AND CONDITION OF ALL BUILDING (ROOF/FLOOR/CEILING) PENETRATIONS, LOCATION AND CONDITION OF ALL UTILITIES AND BUILDING SYSTEMS INCLUDING, BUT NOT LIMITED TO, GAS, WATER, SEWER, VENT, ELECTRICAL, BUILDING MECHANICAL SYSTEMS, DUCT CONNECTIONS, EXHAUST/OUTSIDE AIR CONNECTIONS, SECURITY, FIRE ALARM, DATA, AND PHONE PRIOR TO SUBMISSION OF THEIR BID.
- ANY DISCREPANCIES BETWEEN THE CONSTRUCTION DOCUMENTS AND THE CONDITIONS OBSERVED SHALL BE BROUGHT TO THE ATTENTION, IN WRITING, TO THE ARCHITECT AND/OR ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.
- NO WORK SHALL BE DONE ON ANY PART OF THE BUILDING BEYOND THE POINT INDICATED IN EACH SUCCESSIVE INSPECTION WITHOUT FIRST OBTAINING THE WRITTEN APPROVAL OF THE CODE OFFICIAL. NO CONSTRUCTION SHALL BE CONCEALED WITHOUT BEING INSPECTED AND APPROVED.

SCOPE OF WORK

PROVIDING MECHANICAL DESIGN FOR MAIN FLOOR AND ROOF FLOOR.

MECHANICAL LIST OF DRAWINGS (LoD):

SHEET TAG	TITLE	SCALE
M 0.00	GENERAL NOTES	NTS
M 0.01	MECHANICAL CODES	NTS
M 1.01	MAIN FLOOR PLAN	1/4"=1'-0"
M 1.02	ROOF FLOOR PLAN	1/4"=1'-0"
M 2.01	MECHANICAL EQUIPMENT SCHEDULES	NTS
M 3.01	LOAD CALCULATIONS	NTS
M 4.01 TO 4.08	MECHANICAL EQUIPMENT DATA SHEETS.	NTS
M 5.01	MECHANICAL GENERAL DETAILS.	NTS

CLIENT:

ADDRESS:

CONFIDENTIALITY STATEMENT:

ALL DRAWINGS AND WRITTEN MATERIALS APPEARING HEREIN CONSTITUTE THE ORIGINAL AND UNPUBLISHED WORK OF THE DESIGNER AND THE SAME MAY NOT BE DUPLICATED, USED OR DISCLOSED WITHOUT CONSENT OF THE DESIGNER.

NOTES:

- ALL DIMENSIONS HEREIN ARE IN IMPERIAL UNITS UNLESS STATED OTHERWISE.
- THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL RELEVANT DESIGNER, ENGINEER OR SPECIALIST DRAWINGS AND SPECIFICATIONS.
- THE CONTRACTOR MUST CHECK ALL DIMENSION AT SITE BEFORE COMMENCING WORK.
- THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY TEMPORARY SUPPORT TO THE BUILDING AND ANY ADJACENT STRUCTURES.

REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

TITLE:
GENERAL NOTES

PROJ. NO. PROJ. ENGR. SCALE © 24X36:
NTS

DRAWING NO.

REV.

M 0 . 0 0

CALIFORNIA MECHANICAL CODE CHECKING:

DUCT SIZING, THICKNESS & INSULATION

PLEASE REFER TO TABLE 506.2(1) FOR MINIMUM SHEET METAL THICKNESS FOR ROUND DUCTS

604.0 Insulation of Ducts.

604.1 General. Air ducts conveying air at temperatures exceeding 140°F (60°C) shall be insulated to maintain an insulation surface temperature of not more than 140°F (60°C). Factory-made air ducts and insulations intended for installation on the exterior of ducts shall be legibly printed with the name of the manufacturer, the thermal resistance (R) value at installed thickness, flame-spread index, and smoke developed index of the composite material. Internal duct liners and insulation shall be installed in accordance with SMACNA HVAC Duct Construction standards – Metal and Flexible. [OSHPD 1, 1R, 2, 3, 4 & 5] Cold air ducts shall be insulated wherever necessary or to prevent condensation.

Exceptions:

- (1) Factory-installed plenums, casings, or ductwork furnished as part of HVAC equipment tested and rated in accordance with approved energy efficiency standards.
- (2) Ducts or plenums located in conditioned spaces where heat gain or heat loss will not increase energy use.
- (3) For runouts less than 10 feet (3048 mm) in length to air terminals or air outlets, the rated R-value of insulation need not exceed R-3.5.
- (4) Backs of air outlets and outlet plenums exposed to unconditioned or indirectly conditioned spaces with face areas exceeding 5 square feet (0.5m²) need not exceed R-2; those 5 square feet (0.5m²) or smaller need to be insulated.
- (5) Ducts and plenums used exclusively for evaporative cooling systems.

E 502.4 Ducts. Ducts shall be sized, installed, and tested in accordance with Section E 502.4.1 through Section E 502.4.4.

E 502.4.1 Insulation and Ducts. Portions of the air distribution system installed in or on buildings for heating and cooling shall be R-8. Where the mean outdoor dew-point temperature in a month exceeds 60°F (16°C), vapor retarders shall be installed on conditioned-air supply ducts. Vapor retarders shall have a water vapor permeance not exceeding 0.5 perm [2.87 E-11 kg/(Pa.s.m²)] where tested in accordance with Procedure A in ASTM E96.

Insulation shall not be required where the ducts are within the conditioned space. [ASHRAE 90.2:6.4]

E 502.4.4 Duct Sizing. Duct systems shall be sized in accordance with ACCA Manual D or other methods approved by the Authority Having Jurisdiction with the velocity in the main duct not exceed 1000 feet per minute (ft/min) (5.08m/s) and the velocity in the secondary branch duct not to exceed 600 ft/min (3.048 m/s).

CONDENSATE DRAIN:

310.0 Condensate Wastes and Control.

310.1 Condensate Disposal. Condensate from air washers, air-cooling coils, condensing appliances, and the overflow from evaporative coolers and similar water-supplied equipment or similar air-conditioning equipment shall be collected and discharged to an approved plumbing fixture or disposal area. Where discharged into the drain system, equipment shall drain by means of an indirect waste pipe. The Waste pipe shall have a slope of not less than 1⁄8 inch per foot (10.4 mm/m) or 1 percent slope and shall be of approved corrosion-resistant material not smaller than the outlet size in accordance with Section 310.3 or Section 310.4 for air-cooling coils or condensing appliances, respectively. Condensate or wastewater shall not drain over a public way.

310.3 Condensate Waste Pipe Material and Sizing.

Condensate waste pipes from air-cooling coils shall be sized in accordance with the equipment capacity as specified in Table 310.3. The material of the piping shall comply with the pressure and temperature rating of the appliance or equipment, and shall be approved for use with the liquid being discharged.

TABLE 310.3
MINIMUM CONDENSATE WASTE PIPE SIZE

EQUIPMENT CAPACITY IN TONS OF REFRIGERATION	MINIMUM CONDENSATE PIPE DIAMETER (inches)
Up to 20	3⁄4
21 – 40	1
41 – 90	1 1⁄4
91 – 125	1 1⁄2
126 – 250	2

For SI units: 1 ton of refrigeration = 3.52 kW, 1 inch = 25 mm

310.3.1 Cleanouts. Condensate drain lines shall be configured or provided with a cleanout to permit the clearing of blockages and for maintenance without requiring the drain line to be cut.

310.5 Point of Discharge. Air conditioning condensate waste pipes shall connect indirectly, except where permitted in Section 310.6, to the drainage system through an air gap or air break to trapped and vented receptors, dry wells, leach pits, or the tailpiece of plumbing fixtures. A condensate drain shall be trapped in accordance with the appliance manufacturer's instructions or as approved.

310.6 Condensate Waste From Air-Conditioning Coils. Where the condensate waste from air-conditioning coils discharges by direct connection to a lavatory tailpiece or to an approved accessible inlet on a bathtub overflow, the connection shall be located in the area controlled by the same person controlling the air-conditioned space.

AIR INTAKE AND EXHAUST:

402.4 Outdoor Air Intake Protection. Required outdoor-air intakes shall be covered with a screen having not less than 1⁄4 of an inch (6.4 mm) openings, and shall have not more than 1⁄2 of an inch (12.7 mm) openings.

402.4.1 Weather Protections. Outdoor air intakes that are part of the mechanical ventilation system shall be designed to manage rain entrainment, to prevent rain intrusion, and manage water from snow in accordance with ASHRAE 62.1.

402.5 Bathroom Exhaust Fans. [HCD 1 & HCD 2] Each bathroom shall be mechanically ventilated in accordance with Division 4.5 of the California Green Building Standards Code (CALGreen).

407.2.2 Exhaust Outlets. Exhaust outlets shall be located a minimum of 10 feet (3048 mm) above adjoining grade and 10 feet (3048 mm) from doors, occupied areas, and operable windows.

Exception: Airborne infection isolation rooms shall comply with Section 414.1.

701.10.1 Minimum Screen Mesh Size. Screens shall be not less than 1⁄4 of an inch (6.4 mm) mesh. [NFPA 54:9.3.7.2]

311.3 Prohibited Source. Outside or return air for a heating or cooling air system shall not be taken from the following locations:

- (1) Less than 10 feet (3048 mm) in distance from an appliance vent outlet, a vent opening of a plumbing drainage system, or the discharge outlet of an exhaust fan, unless the outlet is 3 feet (914 mm) above the outside-air inlet.
- (2) Less than 10 feet (3048 mm) above the surface of an abutting public way, sidewalk, street, alley, or driveway.

FACTORY-MADE AIR DUCTS.

FACTORY-MADE AIR DUCTS SHALL BE LISTED AND LABELED IN ACCORDANCE WITH UL 181 AND INSTALLED IN ACCORDANCE WITH THE TERMS OF THEIR LISTING. THE MANUFACTURER'S INSTALLATION INSTRUCTIONS, AND SMACNA HVAC DUCT CONSTRUCTION STANDARDS-METAL AND FLEXIBLE.

FACTORY-MADE AIR DUCTS SHALL NOT BE USED FOR VERTICAL RISERS IN AIR-DUCT SYSTEMS SERVING MORE THAN TWO STORIES AND SHALL NOT PENETRATE A FIRE-RESISTANCE-RATED ASSEMBLY OR CONSTRUCTION.

FACTORY-MADE AIR DUCTS SHALL BE INSTALLED WITH NOT LESS THAN 4 INCHES (102 MM) OF SEPARATION FROM EARTH, EXCEPT WHERE INSTALLED AS A LINER INSIDE OF CONCRETE, TILE, OR METAL PIPE AND SHALL BE PROTECTED FROM PHYSICAL DAMAGE.

THE TEMPERATURE OF THE AIR TO BE CONVEYED IN A DUCT SHALL NOT EXCEED 250°F (121° C). FLEXIBLE AIR CONNECTORS SHALL NOT BE PERMITTED.

RECTANGULAR DUCTS

SUPPORTS FOR RECTANGULAR DUCTS SHALL BE INSTALLED ON TWO OPPOSITE SIDES OF EACH DUCT AND SHALL BE RIVETED, BOLTED, OR METAL SCREWED TO EACH SIDE OF THE DUCT AT INTERVALS SPECIFIED.

METAL DUCTS

DUCTS SHALL BE SUPPORTED AT EACH CHANGE OF DIRECTION AND IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS-METAL AND FLEXIBLE. RISER DUCTS SHALL BE HELD IN PLACE BY MEANS OF METAL STRAPS OR ANGLES AND CHANNELS TO SECURE THE RISER TO THE STRUCTURE.

METAL DUCTS SHALL BE INSTALLED WITH NOT LESS THAN 4 INCHES (102 MM) SEPARATION FROM EARTH. DUCTS SHALL BE INSTALLED IN A BUILDING WITH CLEARANCES THAT WILL RETAIN THE FULL THICKNESS OF FIRE-PROOFING ON STRUCTURAL MEMBERS.

COMBUSTIBLES WITHIN DUCTS OR PLENUMS

MATERIALS EXPOSED WITHIN DUCTS OR PLENUMS SHALL BE NONCOMBUSTIBLE OR SHALL HAVE A FLAME SPREAD INDEX NOT TO EXCEED 25 AND A SMOKE-DEVELOPED INDEX NOT TO EXCEED 50, WHERE TESTED AS A COMPOSITE PRODUCT IN ACCORDANCE WITH ASTM E84 OR UL 723.

EXCEPTIONS:

1. RETURN-AIR AND OUTSIDE-AIR DUCTS, PLENUMS, OR CONCEALED SPACES THAT SERVE A DWELLING UNIT.
2. AIR FILTERS IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 311.2.
3. WATER EVAPORATION MEDIA IN AN EVAPORATIVE COOLER.
4. CHARCOAL FILTERS WHERE PROTECTED WITH AN APPROVED FIRE SUPPRESSION SYSTEM.
5. PRODUCTS LISTED AND LABELED FOR INSTALLATION WITHIN PLENUMS IN ACCORDANCE WITH SECTION 602.2.1 THROUGH SECTION 602.2.3.
6. SMOKE DETECTORS.
7. DUCT INSULATION, COVERINGS, AND LININGS AND OTHER SUPPLEMENTARY MATERIALS INSTALLED IN ACCORDANCE WITH SECTION 604.0.
8. MATERIALS IN A HAZARDOUS FABRICATION AREA INCLUDING THE AREAS ABOVE AND BELOW THE FABRICATION AREA SHARING A COMMON AIR RECIRCULATION PATH WITH THE FABRICATION AREA.

NOTES ON DUCTS MATERIAL & CONSTRUCTION:

FLEXIBLE AIR DUCTS

FLEXIBLE AIR DUCTS SHALL COMPLY WITH UL 181, AND SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND SMACNA HVAC DUCT CONSTRUCTION STANDARDS-METAL AND FLEXIBLE.

FLEXIBLE AIR DUCT INSTALLATIONS SHALL COMPLY WITH THE FOLLOWING:

1. DUCTS SHALL BE INSTALLED USING THE MINIMUM REQUIRED LENGTH TO MAKE THE CONNECTION.
2. HORIZONTAL DUCT RUNS SHALL BE SUPPORTED AT NOT MORE THAN 4 FEET (1219 MM) INTERVALS.
3. VERTICAL RISERS SHALL BE SUPPORTED AT NOT MORE THAN 6 FEET (1829 MM) INTERVALS.
4. SAG BETWEEN SUPPORT HANGERS SHALL NOT EXCEED 1/2 INCH (12.7 MM) PER FOOT (305 MM) OF SUPPORT SPACING.
5. SUPPORTS SHALL BE RIGID AND SHALL BE NOT LESS THAN 1 1/2 INCHES (38 MM) WIDE AT POINT OF CONTACT WITH THE DUCT SURFACE.
6. DUCT BENDS SHALL BE NOT LESS THAN ONE DUCT DIAMETER BEND RADIUS.
7. SCREWS SHALL NOT PENETRATE THE INNER LINER OF NON-METALLIC FLEXIBLE DUCTS UNLESS PERMITTED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
8. FITTINGS FOR ATTACHING NON-METALLIC DUCTS SHALL BE BEADED AND HAVE A COLLAR LENGTH OF NOT LESS THAN 2 INCHES (51 MM) FOR ATTACHING THE DUCT.
9. EXCEPTION: A BEAD SHALL NOT BE REQUIRED WHERE METAL WORM-GEAR CLAMPS ARE USED OR WHERE ATTACHING METALLIC DUCTS USING SCREWS IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
10. DUCT INNER LINER SHALL BE INSTALLED AT NOT LESS THAN 1 INCH (25.4 MM) ON THE COLLAR AND PAST THE BEAD PRIOR TO THE APPLICATION OF THE TAPE AND MECHANICAL FASTENER. WHERE MASTIC IS USED INSTEAD OF TAPE, THE MASTIC SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
11. DUCT OUTER VAPOR BARRIERS SHALL BE SECURED USING TWO WRAPS OF APPROVED TAPE. A MECHANICAL FASTENER SHALL BE PERMITTED TO BE USED IN PLACE OF, OR IN COMBINATION WITH, THE TAPE.
12. FLEXIBLE AIR DUCTS SHALL NOT PENETRATE A FIRE-RESISTANCE-RATED ASSEMBLY OR CONSTRUCTION.
13. THE TEMPERATURE OF THE AIR TO BE CONVEYED IN A FLEXIBLE AIR DUCT SHALL NOT EXCEED 250°F (121° C).
14. FLEXIBLE AIR DUCTS SHALL BE SEALED IN ACCORDANCE WITH SECTION 603.10.

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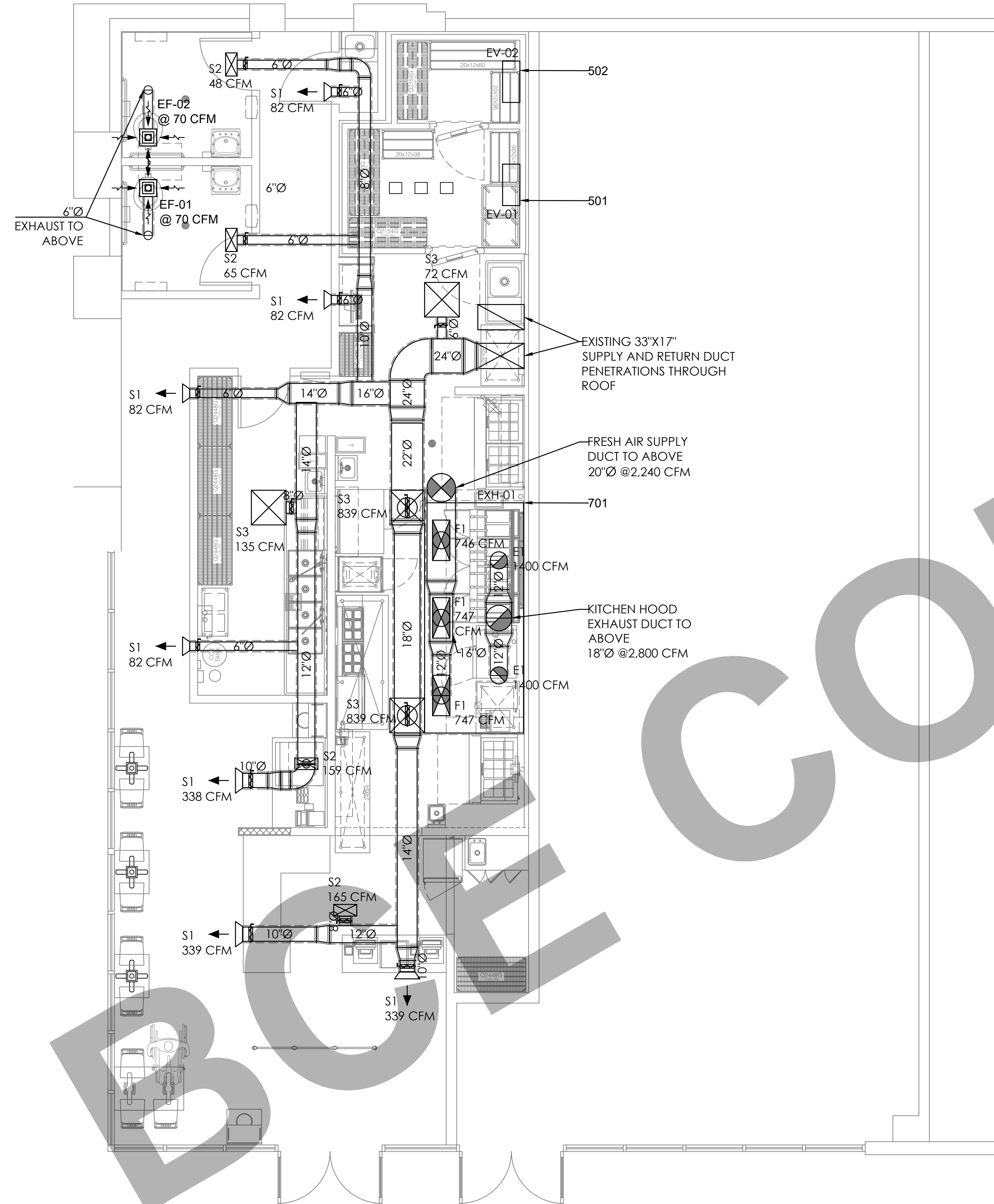
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REV.	NO.	DESCRIPTION	DATE	BY

PROJECT:

TITLE:
MECHANICAL CODES

PROJ. NO.	PROJ. ENGR.	SCALE © 24X36:
		NTS
DRAWING NO.		REV.
M 0 . 0 1		



GENERAL NOTES:

- MECHANICAL CONTRACTOR TO COORDINATE ROUTING AND LOCATION OF MECHANICAL COMPONENTS AND EQUIPMENT WITH ALL OTHER TRADES AND EXISTING FIELD CONDITIONS PRIOR TO PERFORMING WORK.
- CONTRACTOR TO CUT AND PATCH AS REQUIRED TO PERFORM THE WORK.
- ACCESS DOORS ARE REQUIRED FOR ANY COMPONENT REQUIRING ACCESS ABOVE HARD LID CEILINGS. COORDINATE SIZE, LOCATION AND FINISH WITH ARCHITECT PRIOR TO PERFORMING WORK.
- REFER TO THE DIAGRAMS THAT APPLY TO THIS SHEET WHICH PROVIDE GENERAL GUIDANCE FOR INSTALLATION THOUGH NOT ALL COMPONENTS AND ACCESSORIES MAY BE SHOWN.
- PRIOR TO INSTALLATION, CONFIRM SPECIFIC LOCATION FOR ALL THERMOSTATS / SENSORS WITH ARCHITECT. MOUNT AT 48" A.F.F. OR IN ACCORDANCE WITH ADA REQUIREMENTS. PROVIDE LOCKING COVERS.
- COORDINATE AND CONFIRM BORDER, FRAME, FINISH, AND LOCATION WITH ARCHITECT PRIOR TO ORDERING.
- ANY PENETRATIONS THROUGH WALL STUDS, FLOOR JOISTS, OR ROOF TO BE IN ACCORDANCE WITH THE LATEST ADOPTED BUILDING CODE.
- DUCT DIMENSIONS SHOWN ARE CLEAR INSIDE DIMENSIONS.
- CONTRACTOR TO CONFIRM ADEQUATE RETURN AIR PATH BACK TO MAIN AIR HANDLING UNIT.

VENTILATION CALCULATION IS BASED ON TABLE 120.1-A IN THE 2022 BUILDING ENERGY EFFICIENCY STANDARDS.

PROJECT: Hoots Wings - Santa Ana

Ventilation Calculations:

S.N.	Space Name	AREA (FT2)	AREA OUTDOOR AIR RATE (CFM/FT2)	OCCUPANT DENSITY PER 1000 FTA2	# OF PERS.	PEOPLE OUTDOOR AIR RATE (CFM/PERS.)	CFM-B	TOTAL CFM
1	Dining 101 and Entry 100	284	0.18	51	70	20	149	200
2	P.O.S 102	135	0.12	16	20	3	20	36
3	Beverage Station 103	55	0.06	3	0	0	0	3
4	Cook line 104	279	0.12	33	20	6	42	75
5	Prep 105	81	0.12	10	20	2	12	22
6	Dishwash 106	133	0.12	16	20	3	20	36
7	Bath 109	54	0.06	3	0	0	0	3
8	Bath 110	54	0.06	3	0	0	0	3
9	Corridor	328	0.06	20	0	0	0	20
10	TOTAL =	1,403	-	156	-	32	243	399

AIR BALANCE SCHEDULE

MARK	SUPPLY AIR	RETURN AIR	OUTSIDE AIR	EXHAUST AIR	RESULTING PRESSURE	PERCENT OUTSIDE AIR
RTU-02	3,666 CFM	3,266 CFM	400 CFM	-----	+400 CFM	10.91%
BATHROOM EXHAUST FANS CONTI. @35 CFM				-70 CFM	-70 CFM	
KEF-01			-----	-2,800 CFM	-2,800 CFM	
KMUA-01			2,240 CFM		+2,240 CFM	
TOTAL	+3,666 CFM	+3,266 CFM	+2,640 CFM	-2,870 CFM	-230 CFM	

WALK IN COOLER AND WALK IN FREEZER R-VALUES AS PER CEC TABLE 120.6A:

- COOLER:
- CEILING/ROOF: R-28
 - WALLS: R-28

- FREEZER:
- CEILING/ROOF: R-40
 - WALLS: R-36
 - FLOORS: R-35

THE MAXIMUM HEIGHTS OF THE WALK IN COOLER AND WALK IN FREEZER SHOULD BE LESS THAN 7'-10".

ALL SUPPLY DIFFUSERS TO BE INSTALLED WITH A CEILING RADIATION DAMPER.

ALL SUPPLY DIFFUSERS IN THE DINING AREA ARE OF LINEAR TYPE AND ARE FLUSH WITH ITS WALLS.

ACTIVATION OF THE DUCT SMOKE DETECTORS SUPPLYING MORE THAN 2,000CFM PER UNIT AND/ OR TOTAL PER AREA, SHALL ACTIVATE A VISIBLE AND AN AUDIBLE SIGNAL IN AN APPROVED LOCATION. ADD NOTE TO MECHANICAL SHEETS

DUCTWORK SHALL BE TESTED IN ACCORDANCE WITH SMACNA HVAC AIR DUCT LEAKAGE TEST MANUAL AS PER CMC 603.10.1

AIR CONDITIONING REFRIGERANT CIRCUIT ACCESS PORTS LOCATED OUTDOORS SHALL BE PROTECTED FROM UNAUTHORIZED ACCESS AS PER CMC 1105.11.

HVAC AND AIR DUCT/VENT PENETRATIONS OVER 96 SQUARE INCHES REQUIRE APPROVED BURGLAR BARS OR SECURITY MESH. HOOD EXEMPT.

IRON BARS OF AT LEAST 1/2 INCH ROUND OR ONE INCH BY 1/4 INCH FLAT STEEL MATERIAL SPACED NO MORE THAN FIVE INCHES APART AND SECURITY I FASTENED; OR-IRON OR STEEL GRILLS OF AT LEAST 1/8 INCH MATERIAL WITH A MAXIMUM TWO-INCH MESH AND SECURELY FASTENED.

AT THE TIME OF ROUGH INSTALLATION, OR DURING STORAGE ON THE CONSTRUCTION SITE AND UNTIL FINAL STARTUP OF THE HEATING, COOLING, AND VENTILATING EQUIPMENT, ALL DUCT AND OTHER RELATED AIR DISTRIBUTION COMPONENT OPENINGS SHALL BE COVERED WITH TAPE, PLASTIC, SHEET METAL, OR OTHER ACCEPTABLE METHODS TO REDUCE THE AMOUNT OF DUST, WATER, AND DEBRIS WHICH MAY ENTER THE SYSTEM AS PER CAL GREEN 5.504.3.

THE BATHROOM EXHAUST FANS SHALL BE LIGHT/ SWITCH ACTIVATED.

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

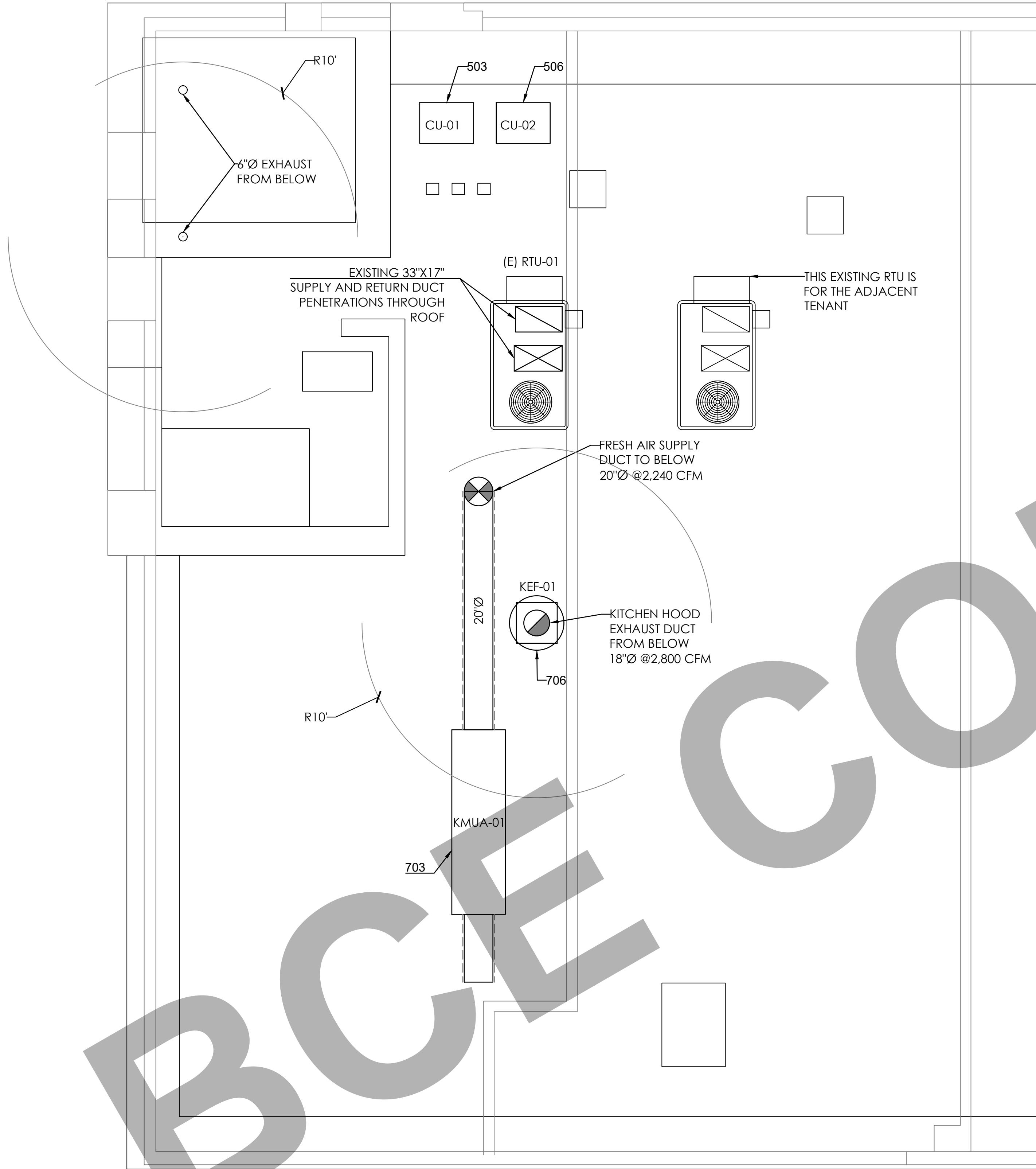
TITLE:
MAIN FLOOR PLAN

PROJ. NO. PROJ. ENGR. SCALE © 24X36:
1/4" = 1'-0"

DRAWING NO.

M 1 . 0 1

REV.



GENERAL NOTES:

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- COORDINATE AND CONFIRM BORDER, FRAME, FINISH, AND LOCATION WITH ARCHITECT PRIOR TO ORDERING.
- ANY PENETRATIONS THROUGH WALL STUDS, FLOOR JOISTS, OR ROOF TO BE IN ACCORDANCE WITH THE LATEST ADOPTED BUILDING CODE.
- DUCT DIMENSIONS SHOWN ARE CLEAR INSIDE DIMENSIONS.
- CONTRACTOR TO CONFIRM ADEQUATE RETURN AIR PATH BACK TO MAIN AIR HANDLING UNIT.

ACTIVATION OF THE DUCT SMOKE DETECTORS SUPPLYING MORE THAN 2,000CFM PER UNIT AND/ OR TOTAL PER AREA, SHALL ACTIVATE A VISIBLE AND AN AUDIBLE SIGNAL IN AN APPROVED LOCATION. ADD NOTE TO MECHANICAL SHEETS

THE CONDENSATE DRAIN LINES OF THE EXISTING ROOFTOP PACKAGED UNITS ALREADY EXIST.

AT THE TIME OF ROUGH INSTALLATION, OR DURING STORAGE ON THE CONSTRUCTION SITE AND UNTIL FINAL STARTUP OF THE HEATING, COOLING, AND VENTILATING EQUIPMENT, ALL DUCT AND OTHER RELATED AIR DISTRIBUTION COMPONENT OPENINGS SHALL BE COVERED WITH TAPE, PLASTIC, SHEET METAL, OR OTHER ACCEPTABLE METHODS TO REDUCE THE AMOUNT OF DUST, WATER, AND DEBRIS WHICH MAY ENTER THE SYSTEM AS PER CAL GREEN 5.504.3.

THE EXHAUST AND MAKEUP AIR SYSTEM SHALL BE CONNECTED BY AN ELECTRICALLY INTERLOCKING SWITCH.

CALIFORNIA RETAIL FOOD CODE, SECTION 114149:

MECHANICAL EXHAUST VENTILATION EQUIPMENT SHALL BE PROVIDED OVER ALL COOKING EQUIPMENT AS REQUIRED TO EFFECTIVELY REMOVE COOKING ODORS, SMOKE, STEAM, GREASE, HEAT, AND VAPORS. ALL MECHANICAL EXHAUST VENTILATION EQUIPMENT SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE CALIFORNIA MECHANICAL CODE. MAKEUP AIR SHALL BE PROVIDED AT THE RATE OF THAT EXHAUSTED. ALL AREAS OF A FOOD FACILITY SHALL HAVE SUFFICIENT VENTILATION TO FACILITATE PROPER FOOD STORAGE AND TO PROVIDE A REASONABLE CONDITION OF COMFORT FOR EACH EMPLOYEE, CONSISTENT WITH THE JOB PERFORMED BY THE EMPLOYEE.

HVAC AND AIR DUCT/VENT PENETRATIONS OVER 96 SQUARE INCHES REQUIRE APPROVED BURGLAR BARS OR SECURITY MESH. HOOD EXEMPT.

IRON BARS OF AT LEAST 1/2 INCH ROUND OR ONE INCH BY 1/4 INCH FLAT STEEL MATERIAL SPACED NO MORE THAN FIVE INCHES APART AND SECURITY I FASTENED; OR-IRON OR STEEL GRILLS OF AT LEAST 1/8 INCH MATERIAL WITH A MAXIMUM TWO-INCH MESH AND SECURELY FASTENED.

DUCTWORK SHALL BE TESTED IN ACCORDANCE WITH SMACNA HVAC AIR DUCT LEAKAGE TEST MANUAL AS PER CMC 603.10.1

AIR CONDITIONING REFRIGERANT CIRCUIT ACCESS PORTS LOCATED OUTDOORS SHALL BE PROTECTED FROM UNAUTHORIZED ACCESS AS PER CMC 1105.11.

A SMOKE DETECTOR IS TO BE INSTALLED WITH THE SUPPLY LINE OF THE RTU.

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

TITLE:
ROOF PLAN

PROJ. NO. PROJ. ENGR. SCALE © 24X36:
1/4" = 1'-0"

DRAWING NO. REV.
M 1 . 0 2

SCHEDULE No. 1

EXISTING PACKAGED ROOFTOP UNIT

TAG	(E) RTU-01
SERVING	DINING & COOK LINE
MANUFACTURER	YORK
MODEL	ZHE078C09D2B6DAA1A1
POWER SUPPLY (V / PH / HZ)	230 / 1 / 60
MCA (A) / MOCP (A)	56.9 / 70
SUPPLY FAN CFM / ESP (IN) / HP / RPM	2,600 / 1,25 / 1,725 / 2
GAS INPUT (BTU/HR)	120,000
COOLING / HEATING CAPACITIES (BTU/HR)	76,000 / 120,000
WEIGHT (LBS)	911

SCHEDULE No. 4

WALK-IN COOLER AND WALK-IN FREEZER COMPRESSORS

TAG	CU-01	CU-02
ITEM NUMBER	503	506
SERVING	WIC	WIF
MANUFACTURER	THERMO-KOOL	THERMO-KOOL
MODEL	MOZ010M63	MOZO22L63
POWER SUPPLY (V / PH / HZ)	208/230 / 3 / 60	208/230 / 3 / 60
POWER (HP) / COMPRESSOR CURRENT (A)	1 / 10	2 / 10.8
MCA (A) / MOPD (A)	15 / 15	23.8 / 25
COOLING CAPACITY (BTU/HR)	10,460	6,680

SCHEDULE No. 7

WALK-IN COOLER AND WALK-IN FREEZER EVAPORATORS

TAG	EV-01	EV-02
ITEM NUMBER	502	505
SERVING	WIC	WIF
MANUFACTURER	THERMO-KOOL	THERMO-KOOL
MODEL	TKM-0141	TKL-0651
POWER SUPPLY (V / PH / HZ)	208/230 / 1 / 60	208/230 / 3 / 60
POWER (KW) / CURRENT (A)	0.118 / 1	0.118 - 1.8 / 1 - 7.8

SCHEDULE No. 2

AIR OUTLETS

TAG	DESCRIPTION	MANUFACTURER	MODEL	MOUNTING
S1	SIDE DIFFUSER	TITUS	10"Ø	Duct Mounted
S2	SUPPLY DIFFUSER	TITUS	14in. x 6in.	Duct Mounted
S3	SUPPLY DIFFUSER	TITUS	24in. x 24in.	Duct Mounted
F1	FRESH AIR DIFFUSER	TITUS	28in. x 12in.	Duct Mounted
E1	EXHAUST AIR DIFFUSER	TITUS	12"Ø	Duct Mounted

NOTES:

1. COORDINATE FINISH, COLOR, BORDER AND EXACT LOCATION WITH OWNER PRIOR TO ORDERING.
2. PROVIDE OPPOSED BLADE DAMPER ACCESSIBLE THROUGH DIFFUSER FACE FOR GYP BD. CEILING INSTALLATIONS.
3. PROVIDE DUCT TRANSITIONS AS REQUIRED.
4. RETURNS R1 ARE PROVIDED WITH PROPER FILTERS.

SCHEDULE No. 5

EXHAUST FAN OF THE KITCHEN EXHAUST HOOD

TAG / ITEM NUMBER	KEF-01 / 706	SPEED (RPM)	1,344
LOCATION	COOK LINE	POWER (HP)	2
MANUFACTURER	CAPTIVEAIRE	BHP	1.695
MODEL	DU180HFA	VOLTAGE (V / PH / HZ)	208 / 3 / 60
CFM / VELOCITY (FPM)	2,800 / 647	FLA (A)	7.3
E.S.P (IN. W.C.)	1.75	WEIGHT (LBS)	199

NOTES:

1. SHALL BE INTERLOCKED WITH KMUA-01

SCHEDULE No. 6

MAKE-UP AIR FAN OF THE KITCHEN EXHAUST HOOD

TAG / ITEM NUMBER	KMUA-01 / 703	SPEED (RPM)	2,121
LOCATION	COOK LINE	EVAP. ENTERING DB / WB (°F)	90 / 69
AIR FLOW (CFM) / S.P (IN. W.G)	2,240 / 0.5"	EVAP. LEAVING DB / WB (°F)	72 / 69
VOLTAGE (V / PH / HZ)	208 / 3 / 60	WEIGHT (LBS)	599
POWER (HP) / BHP / FLA (A)	2 / 1.522 / 5.7	MANUFACTURER	CAPTIVE AIRE
MCA (A) / MOCP (A)	7.2 / 15	FAN UNIT / BLOWER MODEL	A1-15D / 15MF-1-MOD

NOTES:

1. SHALL BE INTERLOCKED WITH KEF-01

SCHEDULE No. 8

CEILING RADIATION DAMPER

MANUFCATURER	RUSKIN
MODEL	CFD7(T)
TYPE	THROUGH CEILING MEMBRANE PENETRATION

NOTES:

1. CFD7(T) IS THE ONLY UL APPROVED RADIATION DAMPER THAT CAN BE USED AS SUPPLY/RETURN AIR PLENUM TO CONNECT TO AHU UNIT BELOW THE CEILING ASSEMBLY.

SCHEDULE No. 3

KITCHEN EXHAUST HOOD

TAG	EXH-01
ITEM NUMBER	701
SERVING	COOK LINE
MANUFACTURER	CAPTIVEAIRE
MODEL	5424-ND-2-PSP-F
LENGTH / TYPE / DUTY	12'-6" / 1 / HEAVY
MAX. COOKING TEMP (°F)	600
DESIGN CFM/FT	224
TOTAL EXHAUST CFM	2,800
TOTAL SUPPLY CFM	2,240

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

TITLE:
MECHANICAL EQUIPMENT SCHEDULES

PROJ. NO. PROJ. ENGR. SCALE © 24X36:
NTS

DRAWING NO.

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REV.

Air System Sizing Summary for RTU-01		04/04/2023 09:42
Project Name: 2.2.528 Fate Hootwings Santa Ana Prepared by: ESCOM		
Air System Information		
RTU-01	Number of zones	1
Air System Name	Floor Area	1266.7 ft ²
Equipment Class	Location	Los Angeles LAX, California
Air System Type	SZCAV	
Sizing Calculation Information		
Calculation Months	Jan to Dec	Zone CFM Sizing
Sizing Data	Calculated	Sum of space airflow rates
		Individual peak space loads
Central Cooling Coil Sizing Data		
Total coil load	4.7 Tons	Load occurs at
Total coil load	56.2 MBH	Jun 1500
Sensible coil load	47.4 MBH	OA DB / WB
Coil CFM at Jun 1500	3667 CFM	84.0 / 84.0 °F
Max block CFM	3667 CFM	Entering DB / WB
Sum of peak zone CFM	3667 CFM	76.6 / 85.4 °F
Sensible heat ratio	0.845	Leaving DB / WB
CFM/Ton	753.6	Coil ADP
ft ³ /Ton	270.7	Bypass Factor
BTU/(hr-ft ²)	44.3	Resulting RH
Water flow @ 10.0 °F rise	N/A	Design supply temp
		70 %
		Zone T-stat Check
		1 of 1 OK
		Max zone temperature deviation
		0.0 °F
Central Heating Coil Sizing Data		
Max coil load	15.3 MBH	Load occurs at
Coil CFM at Des Htg	3667 CFM	Des Htg
Max coil CFM	3667 CFM	BTU/(hr-ft ²)
Water flow @ 20.0 °F drop	N/A	12.1
		Ent. DB / Lvg DB
		67.7 / 71.6 °F
Supply Fan Sizing Data		
Actual max CFM	3667 CFM	Fan motor BHP
Standard CFM	3663 CFM	1.00 BHP
Actual max CFM/R ²	2.90 CFM/R ²	Fan motor kW
		0.80 kW
		Fan static
		1.00 in wg
Outdoor Ventilation Air Data		
Design airflow CFM	299 CFM	CFM/person
CFM/R ²	0.24 CFM/R ²	13.07 CFM/person

Hourly Analysis Program 5.10
Page 1 of 22

Zone Sizing Summary for RTU-01

Project Name: 22.528.Fate Hootings Santa Ana
 Prepared by: ESCOM

04/04/2023
09:42

Air System Information

Air System Name RTU-01 Equipment Class PKG ROOF Air System Type SZCAV	Number of zones 1 Floor Area 1266.7 ft² Location Los Angeles LAX, California
--	---

Sizing Calculation Information

Calculation Months Jan to Dec Sizing Data Calculated	Zone CFM Sizing Sum of space airflow rates Space CFM Sizing Individual peak space loads
---	--

Zone Terminal Sizing Data

Zone Name	Design Supply Airflow (CFM)	Minimum Supply Airflow (CFM)	Zone CFM ¹	Reheat Coil Load (MBH)	Reheat Coil Water gpm @ 20.0 °F	Zone Htg Unit Coil Load (MBH)	Zone Htg Unit Water gpm @ 20.0 °F	Mixing Box Fan Airflow (CFM)
Zone 1	3667	3667	2.90	0.0	-	0.0	-	0

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (MBH)	Time of Peak Sensible Cooling Load	Zone Heating Load (MBH)	Zone Floor Area (ft²)
Zone 1	43.1	Jul 1300	9.3	1266.7

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (MBH)	Time of Peak Sensible Load	Air Flow (CFM)	Heating Load (MBH)	Floor Area (ft²)	Space CFM/ft²
Zone 1							
Bath 109	1	0.6	Jul 1300	48	0.2	54.1	0.89
Bath 110	1	0.8	Sep 1500	65	0.5	54.1	1.20
Bev Station 103	1	1.9	Jun 1300	159	0.1	55.2	2.89
Dishwash 106	1	1.6	Jun 1300	135	0.1	133.1	1.01
Entry 100 & Dining 101	1	12.0	Jun 0900	1018	5.8	284.3	3.58
Conditn	1	3.9	Jul 1300	328	2.0	191.5	1.71
Cook Line 104	1	19.9	Jun 1300	1678	0.3	278.7	6.02
P.O.S 102	1	2.0	Jun 1300	165	0.1	135.1	1.22
Prep 105	1	0.9	Jun 1300	72	0.2	80.6	0.90

Hourly Analysis Program 5.10

Page 2 of 22

Hourly Analysis Program 5.10

Page 3 of 22

Air System Design Load Summary for RTU-01						
Project Name: 2.2.628.Fate Hootwings Santa Ana Prepared by: ESCOM						
04/04/2023 09:42						
	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jun 1500			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 84.0 °F / 64.0 °F			HEATING OA DB / WB 43.0 °F / 36.1 °F		
	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
ZONE LOADS						
Window & Skylight Solar Loads	440 Bt	6903	-	440 Bt	-	-
Wall Transmission	707 Bt	2034	-	707 Bt	2120	-
Roof Transmission	1267 Bt	2970	-	1267 Bt	1291	-
Window Transmission	440 Bt	1457	-	440 Bt	5584	-
Skylight Transmission	0 Bt	0	-	0 Bt	0	-
Door Loads	21 Bt	67	-	21 Bt	255	-
Floor Transmission	1267 Bt	0	-	1267 Bt	0	-
Partitions	3140 Bt	-110	-	3140 Bt	95	-
Ceiling	0 Bt	0	-	0 Bt	0	-
Overhead Lighting	1267 W	4322	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	903 W	3081	-	0	0	-
People	23	6025	6711	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	15676	9425	-	0	0
Safety Factor	0% / 0%	0	0	0%	0	0
>> Total Zone Loads	-	42424	16136	-	9254	0
Zone Conditioning	-	42129	16136	-	9344	0
Plenum Wall Load	0%	0	-	0	0	-
Plenum Roof Load	0%	0	-	0	0	-
Plenum Lighting Load	0%	0	-	0	0	-
Return Fan Load	3667 CFM	0	-	3667 CFM	0	-
Ventilation Load	299 CFM	2587	-7415	299 CFM	8640	0
Supply Fan Load	3667 CFM	2719	-	3667 CFM	-2719	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	47435	8720	-	15265	0
Central Cooling Coil	-	47435	-	-	0	0
Central Heating Coil	-	0	-	-	15265	-
>> Total Conditioning	-	47435	8725	-	15265	0
Key:	Positive values are ckg loads Negative values are htg loads			Positive values are htg loads Negative values are ckg loads		

Hourly Analysis Program 5.10

Page 4 of 22

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REV. NO.	DESCRIPTION	DATE	BY
PROJECT:			
TITLE: LOAD CALCULATIONS			
PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36: NTS	
DRAWING NO. M 3 . 0 1		REV.	

Plug 'N Play™ Modules

Plug 'N Play™ modules provide up to three additional features. Select from Multi-Speed with Time Delay, Motion Sensor, and Condensation Sensor.



FV-VS15VK1: Multi-Speed with Time Delay

Allows you to select the proper CFM settings to satisfy ASHRAE 62.2 continuous ventilation requirements. The fan runs continuously at a pre-set lower level (0, 30-100 CFM, in 10 CFM increments), then elevates to a maximum level of operation (50-80-110 CFM) when the wall switch is turned on, or when the motion sensor or Condensation Sensor module is activated. A High/Low delay timer returns the fan to the pre-set CFM level after a period of time set by the user.



FV-MSVK1: Motion Sensor

Automatically activates when someone enters the room. Once the settings have been applied, the fan becomes truly automatic. This module also activates a 20 minute delay off timer for the fan.



FV-CSVK1: Condensation Sensor

Helps control bathroom condensation to prevent mold and mildew. Sensor technology detects relative humidity and temperature to anticipate dew point, automatically turning the fan on to control humidity. Built-in Relative Humidity (RH) sensitivity adjustment enables fine tuning for moist conditions and for satisfying CalGreen requirements. When the condensation sensor is used in conjunction with multi-speed functionality, the fan will kick up to high speed when the condensation sensor detects moisture in the room. This module also activates a 20 minute delay off timer for the fan.

Fan Specifications			/hisperGreen Select™ FV-0511VK2								
Static Pressure in inches w.g.	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25
Air Volume (CFM)	110	110	108	80	80	79	60	60	51	51	51
Noise (sones)	<0.3	0.8	-	<0.3	0.5	-	<0.3	0.4	-	<0.3	0.3
Power Consumption (watts)	9.9	15.4	20.0	5.1	9.6	13.4	3.1	6.2	8.3	9.6	9.6
Energy Efficiency (CFM/Watt)	11.1	7.1	5.4	15.7	8.3	5.9	16.2	8.3	5.3	5.3	5.3
Speed (RPM)	920	1182	1356	795	1113	1315	722	1054	1266	1266	1266
Current (amps)	0.10	0.16	0.20	0.06	0.10	0.14	0.04	0.07	0.10	0.10	0.10
MAX. Current(amps)											
Power Rating (V/Hz)											
ENERGY STAR rated											

0.375=Installed Performance

Fan Specifications			WhisperGreen Select™: FV-0511VK2 + FV-VS15VK1 (Multi Speed Plug 'N Play™ Module)																																															
Static Pressure in inches w.g.	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375					
Air Volume (CFM)	110	110	108	100	101	101	90	90	90	80	80	79	70	71	70	60	60	60	50	51	51	40	41	40	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30		
Noise (sones)	<0.3	0.8	-	<0.3	0.7	-	<0.3	0.6	-	<0.3	0.5	-	<0.3	0.5	-	<0.3	0.4	-	<0.3	0.4	-	<0.3	0.3	-	<0.3	0.3	-	<0.3	0.3	-	<0.3	0.3	-	<0.3	0.3	-	<0.3	0.3	-	<0.3	0.3	-	<0.3	0.3	-	<0.3	0.3	-	<0.3	0.3
Power Consumption (watts)	9.9	15.4	20.0	7.9	13.1	17.8	6.5	11.2	16.0	5.1	9.6	13.4	4.3	8.5	12.1	3.7	6.9	10.5	3.1	6.2	9.6	2.7	5.5	7.8	2.4	4.6	6.8	4.4	6.6	8.8	11.0	13.2	15.4	17.6	19.8	22.0	24.2	26.4	28.6	30.8	33.0	35.2	37.4	39.6	41.8	44.0	46.2	48.4		
Energy Efficiency (CFM/Watt)	11.1	7.1	5.4	12.7	7.7	5.7	13.9	8.0	5.6	15.7	8.3	5.9	16.7	8.5	5.9	16.3	8.7	5.7	16.2	8.3	5.3	14.8	7.4	5.1	12.6	6.6	4.4	6.6	4.4	6.6	4.4	6.6	4.4	6.6	4.4	6.6	4.4	6.6	4.4	6.6	4.4	6.6	4.4	6.6	4.4	6.6	4.4	6.6	4.4	
Speed (RPM)	920	1182	1356	889	1164	1356	839	1135	1351	795	1113	1315	760	1112	1309	751	1061	1287	722	1054	1266	707	1057	1251	711	1039	1259	711	1039	1259	711	1039	1259	711	1039	1259	711	1039	1259	711	1039	1259	711	1039	1259	711	1039	1259		
Current (amps)	0.10	0.16	0.20	0.09	0.14	0.18	0.07	0.12	0.16	0.06	0.10	0.14	0.05	0.09	0.13	0.05	0.08	0.11	0.04	0.07	0.10	0.04	0.07	0.09	0.04	0.06	0.08	0.04	0.06	0.08	0.04	0.06	0.08	0.04	0.06	0.08	0.04	0.06	0.08	0.04	0.06	0.08	0.04	0.06	0.08	0.04	0.06	0.08		
MAX. Current(amps)	0.20																																																	
Power Rating (V/Hz)	120/60																																																	
ENERGY STAR rated	Yes																																																	

0.375=Installed Performance

Panasonic Eco Solutions Company of North America
Eco Products Division
Two Riverfront Plaza
Newark, NJ 07102

us.panasonic.com/ventfans



Panasonic

VF18972SS-FV-0511VK2

THROUGH CEILING MEMBRANE PENETRATION

APPLICATION

CFD7(T) is the only UL approved radiation damper that can be used as supply/return air plenum to connect to AHU unit below the ceiling assembly.



Ductwork may be connected directly to the bottom side of the CFD7(T) from the AHU below. Retaining angles are utilized in lieu of steel grille flange that cover the gap in between the gypsum and the CFD7(T).

WOOD JOIST

APPLICATION

CFD7 is the first Ceiling Radiation Damper to be UL listed for 2" x10" or 2" x 12" wood joist assemblies (Ref. L501). The CFD7 is listed on 21 different UL rated ceiling designs.



CFD7 can be supplied with or without a steel plenum box. The plenum is to be insulated in the field (Insulation is factory supplied).



STEEL JOIST

APPLICATION

CFD7 is the first Ceiling Radiation Damper to be UL listed for steel joist assemblies (L524).



CFD7 installs with angles attached to the sides of the joist. Angles may be factory or field supplied.

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

TITLE:
MECHANICAL DATA SHEETS

PROJ. NO. PROJ. ENGR. SCALE © 24X36:
NTS

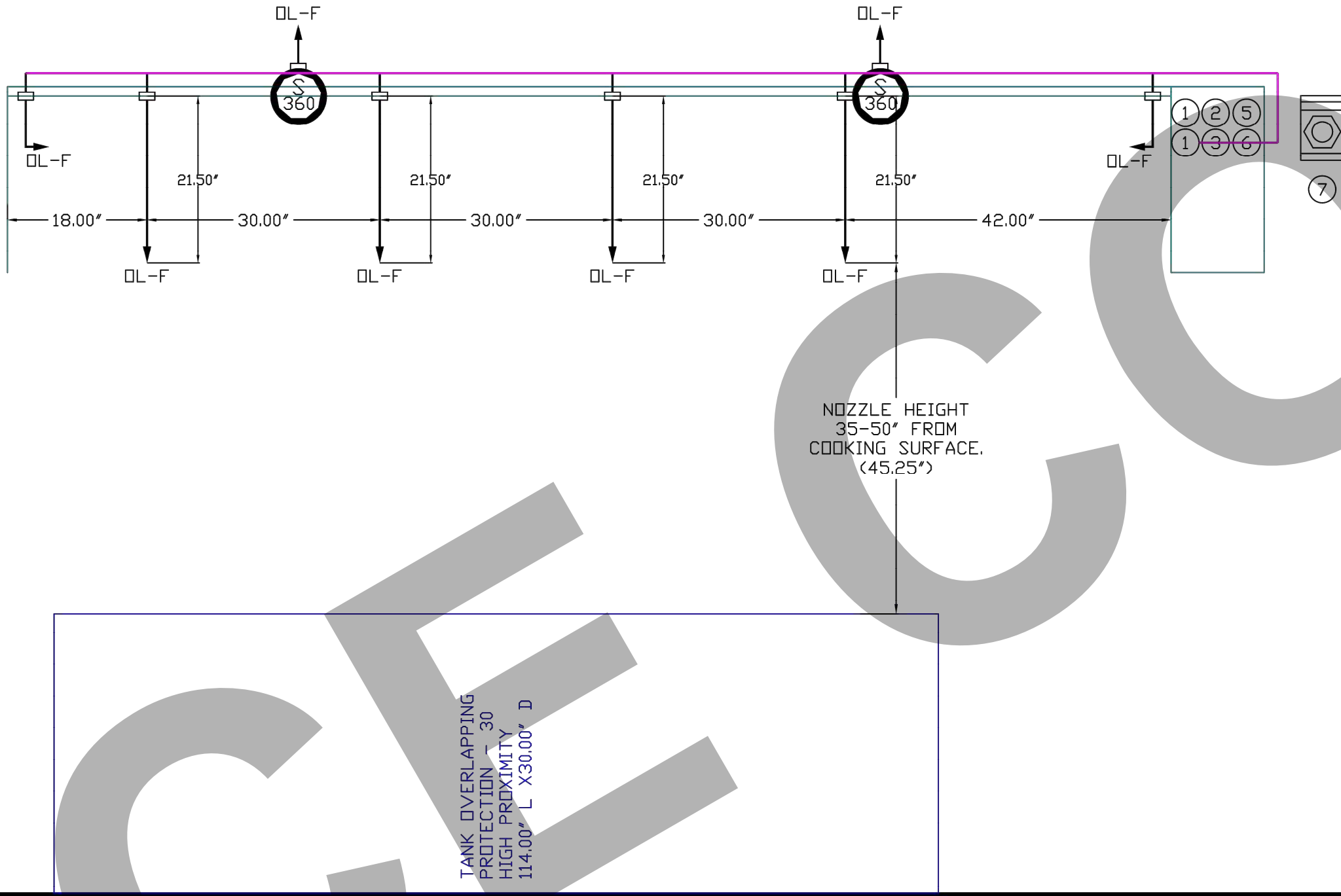
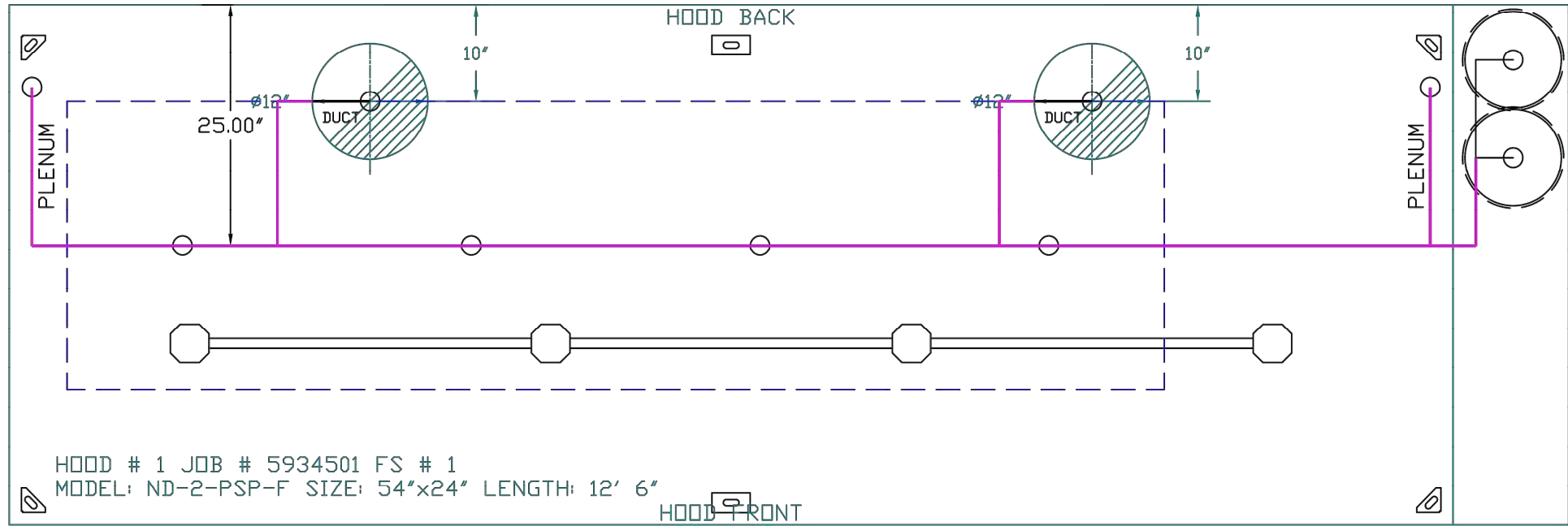
DRAWING NO.

M 4 . 0 1

REV.

FIRE SYSTEM INFORMATION – JOB#5934501

FIRE SYSTEM NO	TAG	TYPE	SIZE	FLOW POINTS	INSTALLATION	
					SYSTEM	LOCATION ON HOOD
1		TANK FS	4.0/4.0	36	FIRE CABINET RIGHT	RIGHT, HOOD 1



- NOTES
- FIELD PIPE DROPS AS SHOWN
 - PIPING, ELBOWS, TEES, AND NOZZLES SUPPLIED BY CAS.
 - FIELD INSTALLED DROP: FACTORY WILL PROVIDE QTY 2 60IN LONG PIECES OF CHROME PLATED PIPING SHIPPED LOOSE TO BE FIELD-INSTALLED.
 - SHIP LOOSE DROP: FACTORY WILL PROVIDE THE EXACT CHROME PIPE LENGTH NEEDED SHIPPED LOOSE TO BE FIELD-INSTALLED.
 - RELOCATE NOZZLES IF FLOW PATTERN IS BLOCKED BY SHELVEING, SALAMANDERS, ETC.
 - OVERLAPPING COVERAGE SHALL NOT BE USED ON ANY APPLIANCE WITH AN OBSTRUCTION.
 - IF APPLICABLE, EXTENDED PRE-PIPED DROPS ARE SHIPPED LOOSE.
 - FACTORY PIPING EXTENDS A MAXIMUM OF 6" ABOVE THE TOP OF THE HOOD.
- APPLIANCE DIMENSIONS LISTED REPRESENT THE COOKING SURFACE SIZE, NOT THE OVERALL APPLIANCE SIZE.

- THIS FIRE SYSTEM COMPLIES WITH U.L. 300 REQUIREMENTS.
- QL-F NOZZLE PART NUMBER REPLACES 3070-3/8H-10-SS

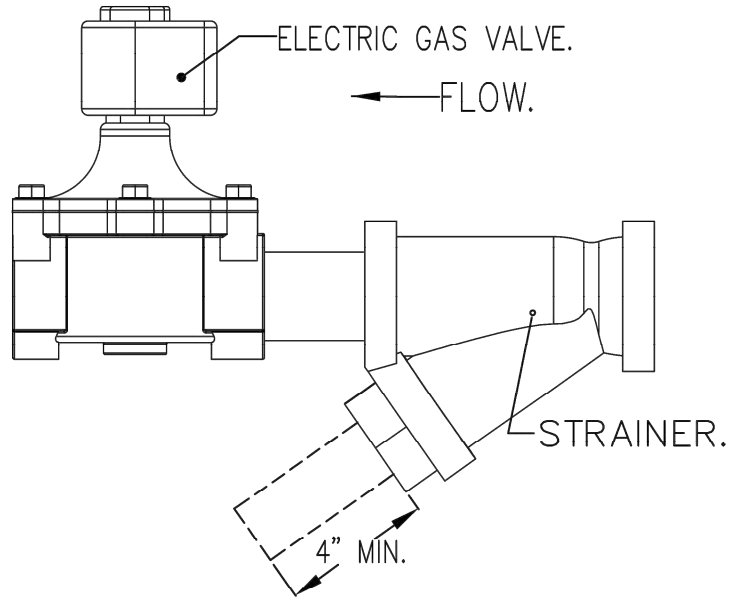
JOB #: 5934501.
JOB NAME: HOOTS WINGS - SANTA ANA, CA R1.

SYSTEM SIZE: TANK-SP-2 TOTAL FP REQUIRED: 36.
HOOD # 1 12' 6.00' LONG x 54" WIDE x 24" HIGH.
RISER # 1 SIZE: 12" DIA.
RISER # 2 SIZE: 12" DIA.
HOOD # 1 METAL BLOW-OFF CAPS INCLUDED.

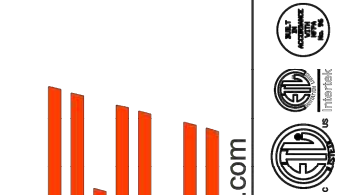
- HEAVY-DUTY APPLIANCES (RATED 600°F) WILL REQUIRE AN ADDITIONAL DOWNSTREAM FIRESTAT IN THE EVENT THAT THE DUCTWORK CONTAINS ANY HORIZONTAL RUNS OVER 25 FT IN LENGTH.
- MEDIUM TO LIGHT-DUTY APPLIANCES (RATED 450°F) WILL NOT REQUIRE ANY ADDITIONAL DOWNSTREAM DETECTION.

LEGEND – FIRE CABINET TANK SYSTEM

- 1 4 GALLON TANK.
- 2 PRIMARY ACTUATOR RELEASE.
- 3 SECONDARY ACTUATOR RELEASE.
- 4 PRESSURE SUPERVISION SWITCH.
- 5 PRIMARY HOSE ASSEMBLY.
- 6 SECONDARY HOSE ASSEMBLY.
- 7 REMOTE MANUAL ACTUATION DEVICE.



REVISIONS	
DESCRIPTION	DATE



Eastern LA & Orange City Mech
www.captivefire.com
3002 Dow Avenue, Suite 410, Tustin, CA 92780 PHONE: (714) 503-0777 EMAIL: reg14@captivefire.com

Hoots Wings - Santa Ana, CA R1
1935 17th Street,
Santa Ana, CA, 92705

DATE: 4/4/2023
DWG.#: 5934501
DRAWN BY: JG
SCALE: 1/2" = 1'-0"
MASTER DRAWING

SHEET NO. 2

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

TITLE:
MECHANICAL HOOD DETAILS

PROJ. NO.	PROJ. ENGR.	SCALE	© 24X36:

DRAWING NO.

M 4 . 0 3

REV.

EXHAUST FAN INFORMATION – JOB#5934501

FAN UNIT NO	TAG	QTY	FAN UNIT MODEL #	MANUFACTURER	CFM	ESP	RPM	MOTOR ENCL	HP	BHP	PHASE	VOLT	FLA	DISCHARGE VELDCTY	WEIGHT (LBS)	SDNES
1	KEF-1	1	DUI80HFA	CAPTIVEAIRE	2800	1.750	1344	TEFC,PREMIUM	2.000	1.6950	3	208	7.3	647 FPM	199	19.6

MUA FAN INFORMATION – JOB#5934501

FAN UNIT NO	TAG	QTY	FAN UNIT MODEL #	BLOWER	HOUSING	MIN CFM	DESIGN CFM	ESP	RPM	MOTOR ENCL	HP	BHP	PHASE	VOLT	FLA	MCA	MOCF	EVAP FLOW RATE (Gals/Hr)	EVAP COOLER ENTERING DB TEMP	EVAP COOLER ENTERING WB TEMP	EVAP COOLER LEAVING DB TEMP	EVAP COOLER LEAVING WB TEMP	WEIGHT (LBS)	SDNES
2	KMUA-1	1	A1-15D	15MF-1-MDD	A1	-	2240	0.500	2121	TEFC,PREMIUM	2.000	1.5220	3	208	5.7	7.2A	15A	3.68	90.0°F	69.0°F	72.0°F	69.0°F	599	31.2

FAN OPTIONS

FAN UNIT NO	TAG	QTY	DESCRIPTION
1	KEF-1	1	GREASE BOX
		1	2 YEAR PARTS WARRANTY
		1	SIZE 1 UNTEMPERED COMMERCIAL DOWN DISCHARGE FOR DIRECT DRIVE AHUS
2	KMUA-1	1	EVAPORATIVE COOLER WIRING HARNESS
		1	SEPARATE 120V WIRING PACKAGE (REQUIRED AND USED ONLY FOR DCV OR PREWIRE WITH VFD) – THREE PHASE ONLY
		1	2 YEAR PARTS WARRANTY

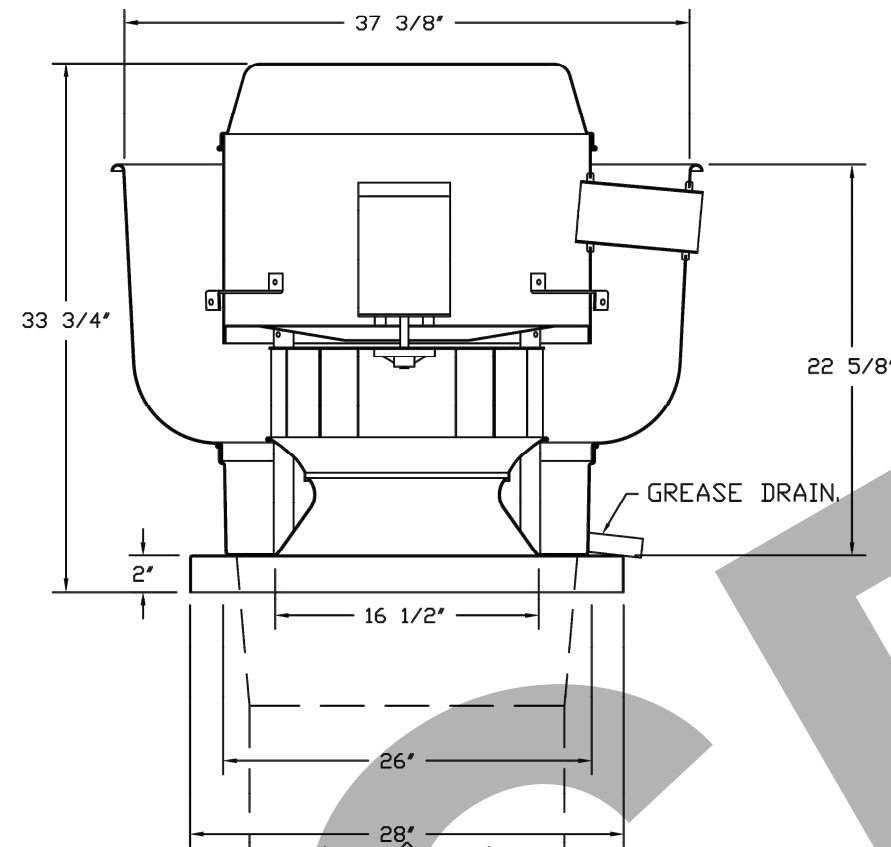
FAN ACCESSORIES

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

CURB ASSEMBLIES

NO	DN FAN	TAG	WEIGHT	ITEM	SIZE
1	# 1	KEF-1	41 LBS	CURB	26.500"W X 26.500"L X 20.000"H ALONG LENGTH, RIGHT VENTED HINGED.
2	# 2	KMUA-1	49 LBS	CURB	21.000"W X 21.000"L X 12.000"H ALONG LENGTH, RIGHT.
	# 2			RAIL	4.000"W X 4.000"L X 36.000"H RIGHT.
	# 2			RAIL	4.000"W X 4.000"L X 36.000"H RIGHT.

FAN #1 DUI80HFA – EXHAUST FAN (KEF-1)



TOP VIEW

FEATURES:

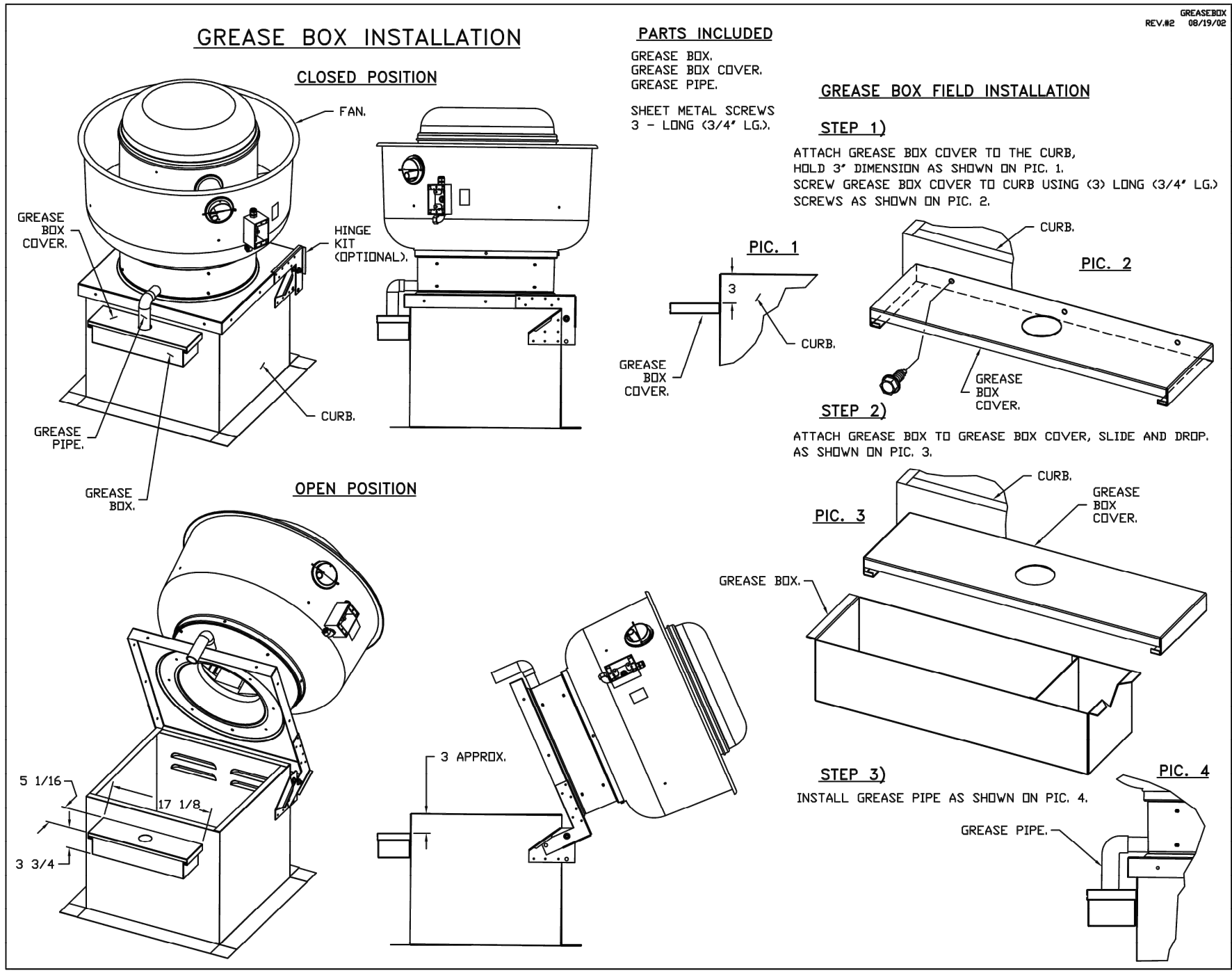
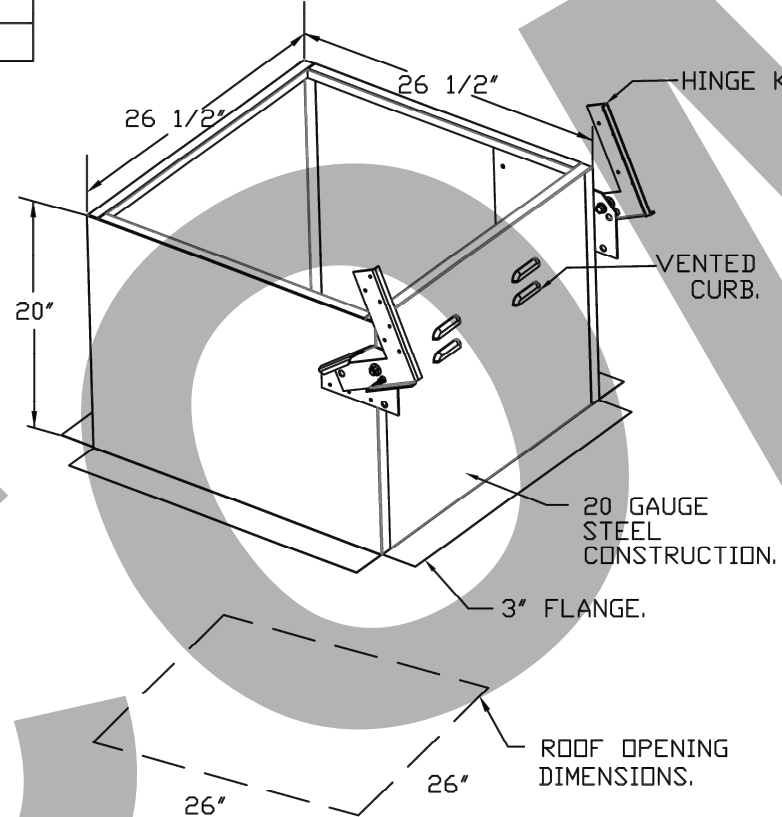
- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS).
- ROOF MOUNTED FANS.
- RESTAURANT MODEL.
- UL705 AND UL762 AND ULC-S645
- VARIABLE SPEED CONTROL.
- INTERNAL WIRING.
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE).
- HIGH HEAT OPERATION 300°F (149°C).
- GREASE CLASSIFICATION TESTING
- NEMA 3R SAFETY DISCONNECT SWITCH.

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.

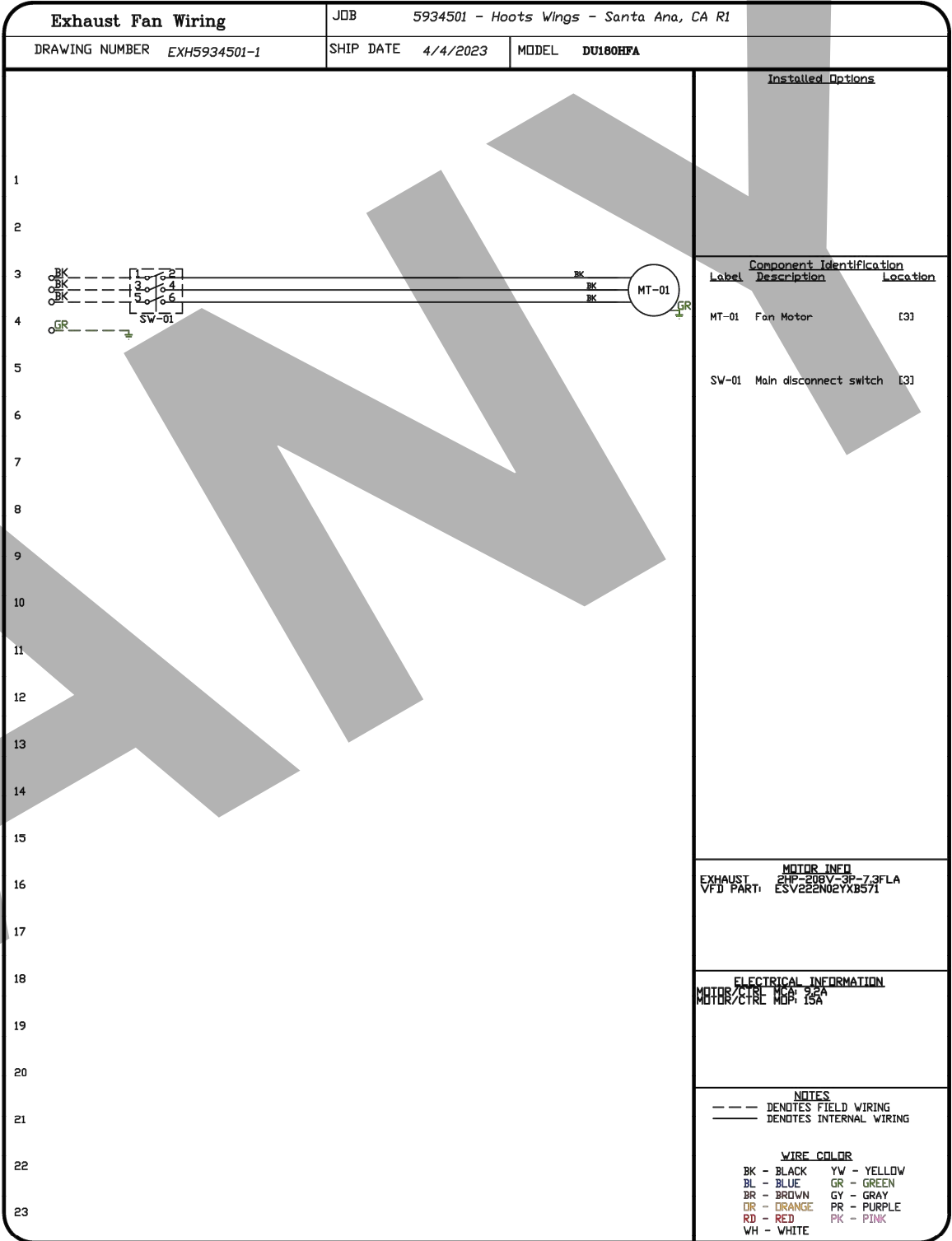
ABNORMAL FLARE-UP TEST
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING BURNING GREASE VAPORS AT 600°F (316°C) FOR A PERIOD OF 15 MINUTES WITHOUT THE FAN BECOMING DAMAGED TO ANY EXTENT THAT COULD CAUSE AN UNSAFE CONDITION.

OPTIONS

- GREASE BOX.
- 2 YEAR PARTS WARRANTY.



*NOTE: UL 705 INSTALL.



REVISIONS

DESCRIPTION	DATE

www.captiveaire.com

Eastern LA & Orange City Mech

3002 Dow Avenue, Suite 410, Tustin, CA 92780 PHONE: (714) 903-0777 EMAIL: reg144@captiveaire.com

Hoots Wings – Santa Ana, CA R1
1935 17th Street,
Santa Ana, CA, 92705

DATE: 4/4/2023
DWG.#: 5934501
DRAWN BY: JG
SCALE: 3/4" = 1'-0"
MASTER DRAWING

SHEET NO. 3

CLIENT:

ADDRESS:

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PROJECT:

TITLE:
MECHANICAL HOOD DETAILS

PROJ. NO. PROJ. ENGR. SCALE © 24X36:
NTS

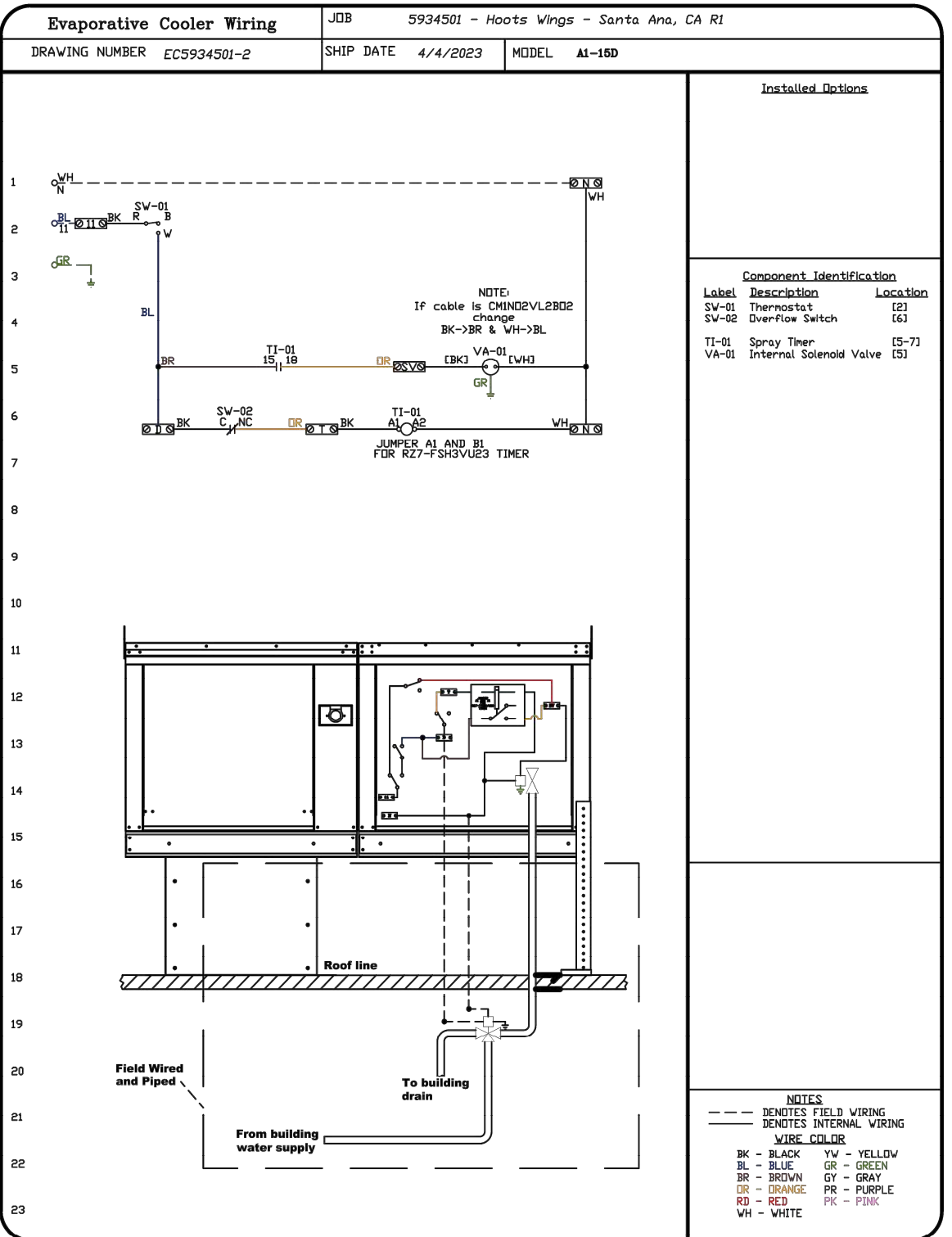
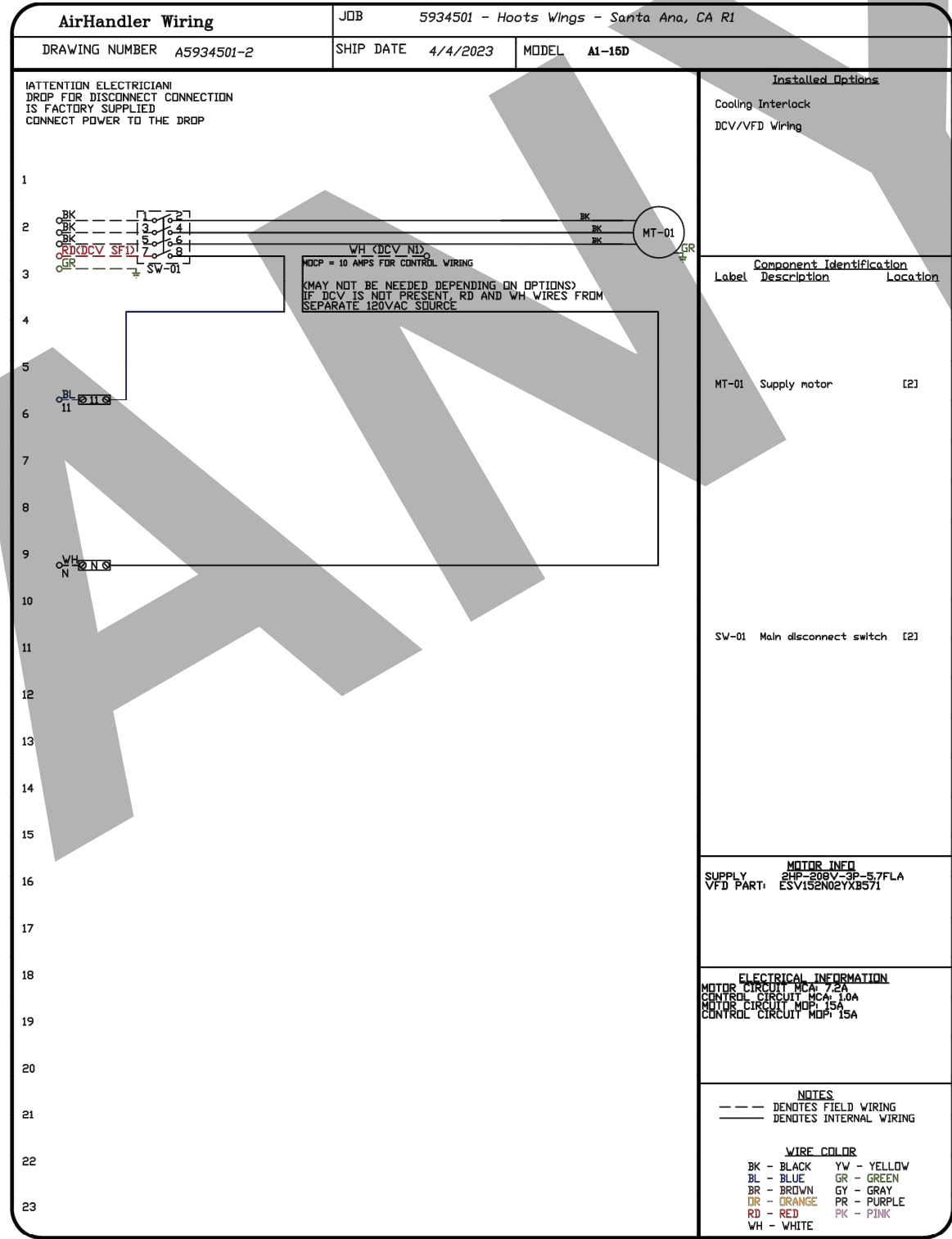
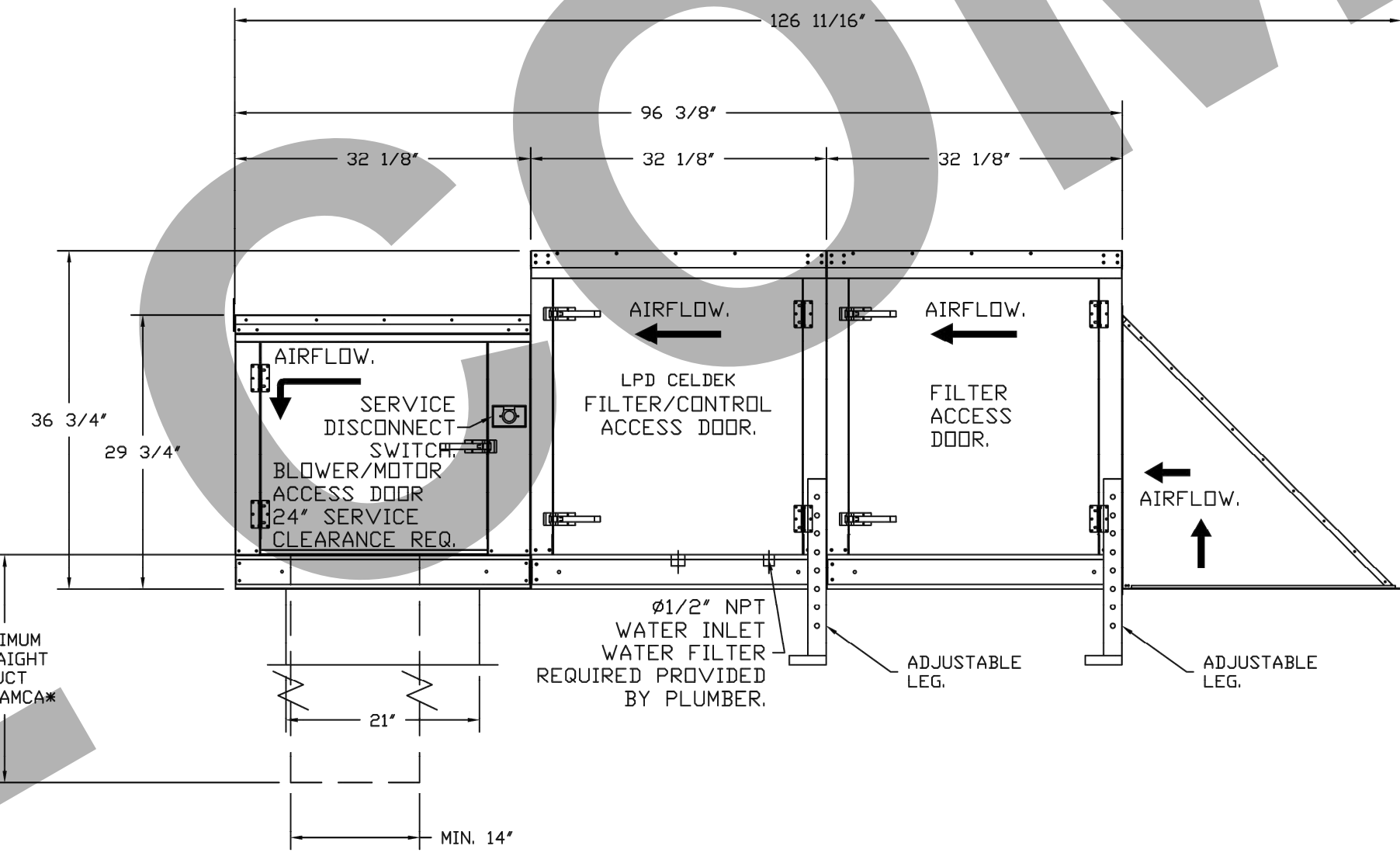
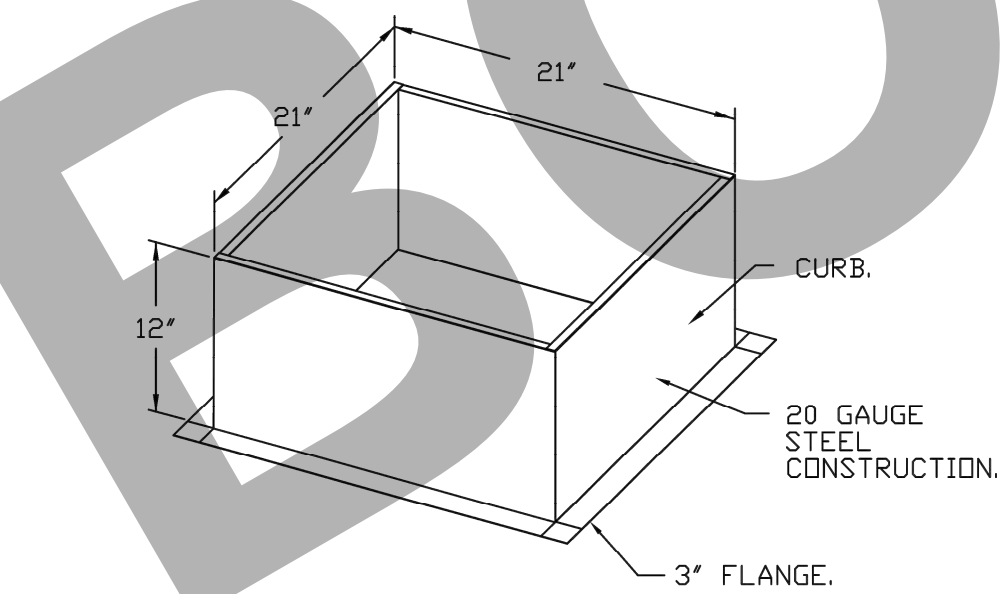
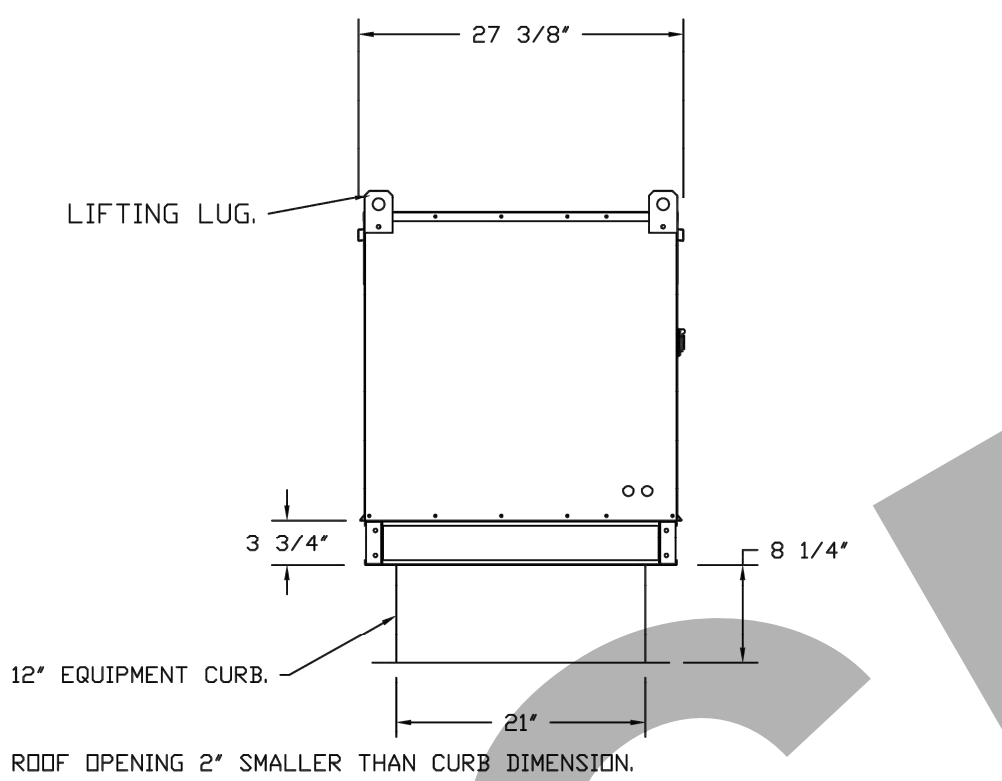
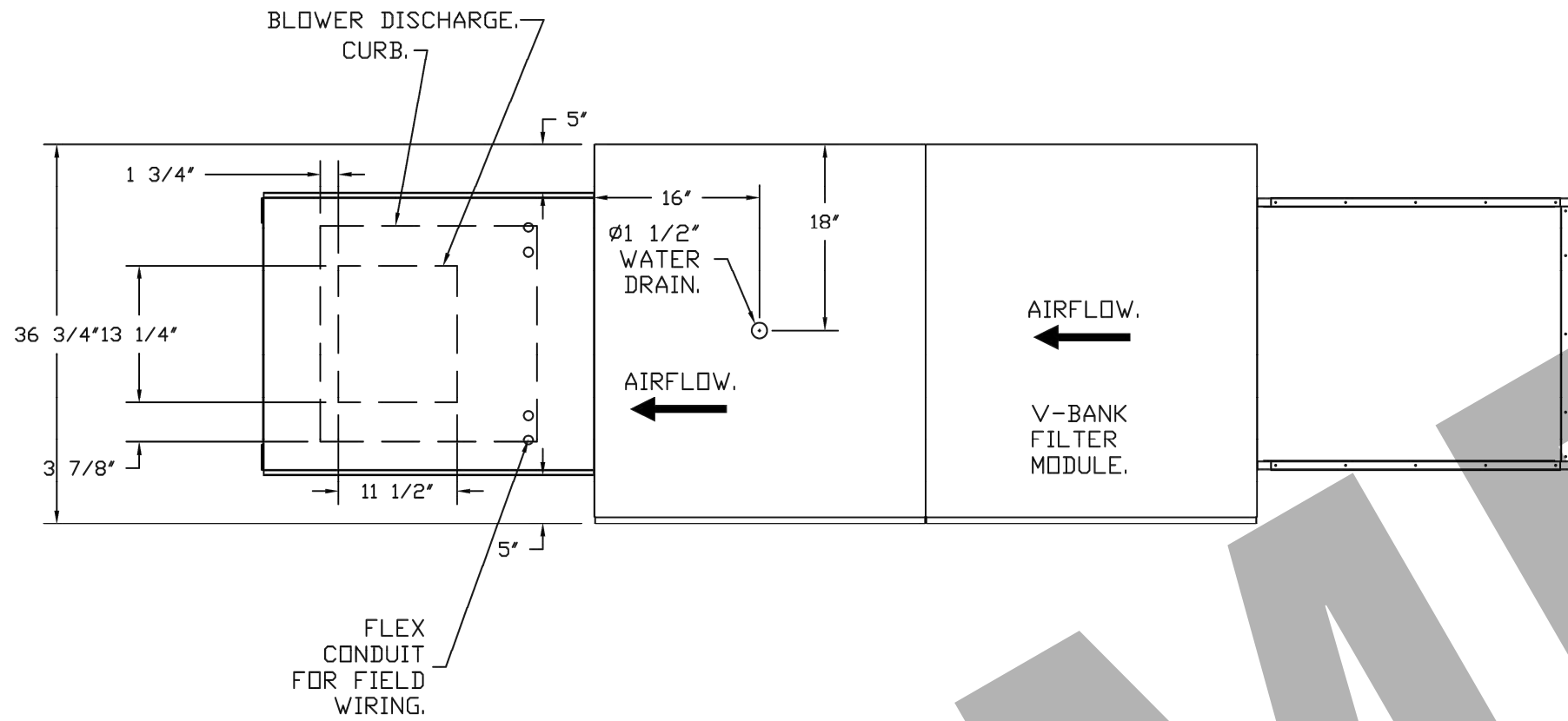
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REV.

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- FAN #2 A1-15D - SUPPLY FAN (KMUA-1)
1. UNTEMPERED SUPPLY UNIT WITH 15" MIXED FLOW DIRECT DRIVE FAN IN SIZE #1 HOUSING.
2. EVAP COOLER (LPD) & V-BANK WITH 2" TA-13 FILTERS-OUTDOOR.
3. DOWN DISCHARGE - AIR FLOW RIGHT -> LEFT.
4. DOWN DISCHARGE CONSTRUCTION FOR SIZE 1 UNTEMPERED DIRECT DRIVE AHUS.
5. 120V WIRING CONNECTION TO ENERGIZE EVAPORATIVE COOLERS FROM UNTEMPERED SUPPLY FANS.
6. 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.
7. HINGED DOUBLE WALL INSULATED DOOR ASSEMBLY (BURNER/BLOWER/EVAP SECTION).
8. 2 YEAR PARTS WARRANTY.

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. WHEN USING RECTANGULAR DUCTWORK, ELBOWS MUST BE RADIUS THROAT, RADIUS BACK WITH TURNING VANES. FLEXIBLE DUCTWORK AND SQUARE THROAT/SQUARE BACK ELBOWS SHOULD NOT BE USED. ANY TRANSITION AND/OR TURNS IN THE DUCTWORK WILL CAUSE SYSTEM EFFECT, SYSTEM EFFECT WILL BRASTICALLY INCREASE STATIC PRESSURE AND REDUCE AIRFLOW. 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".



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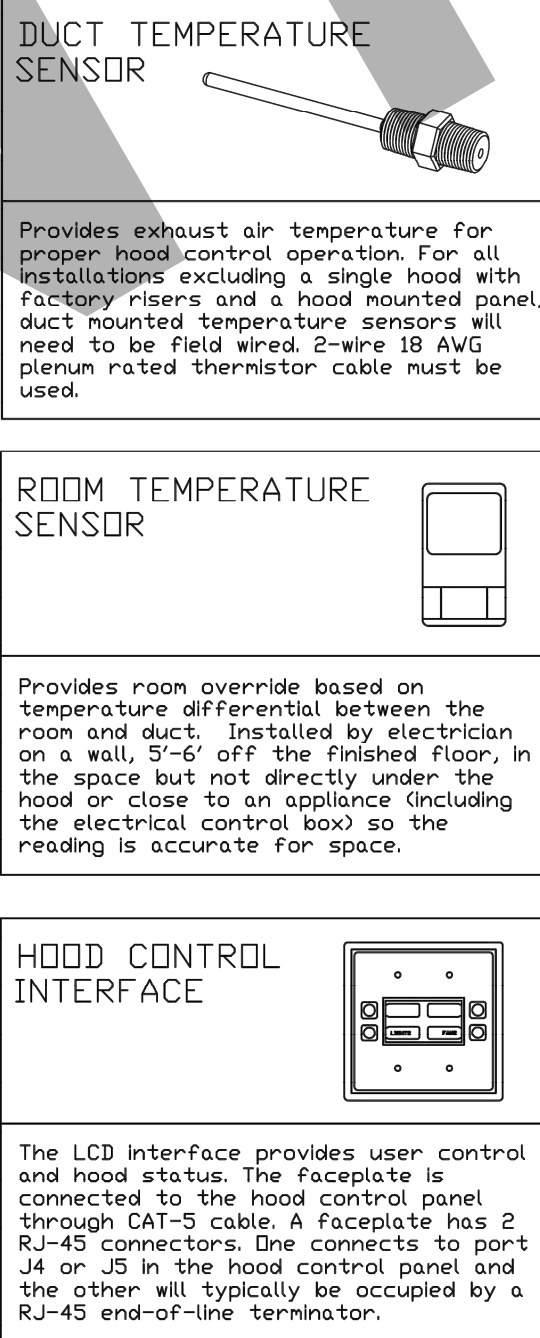
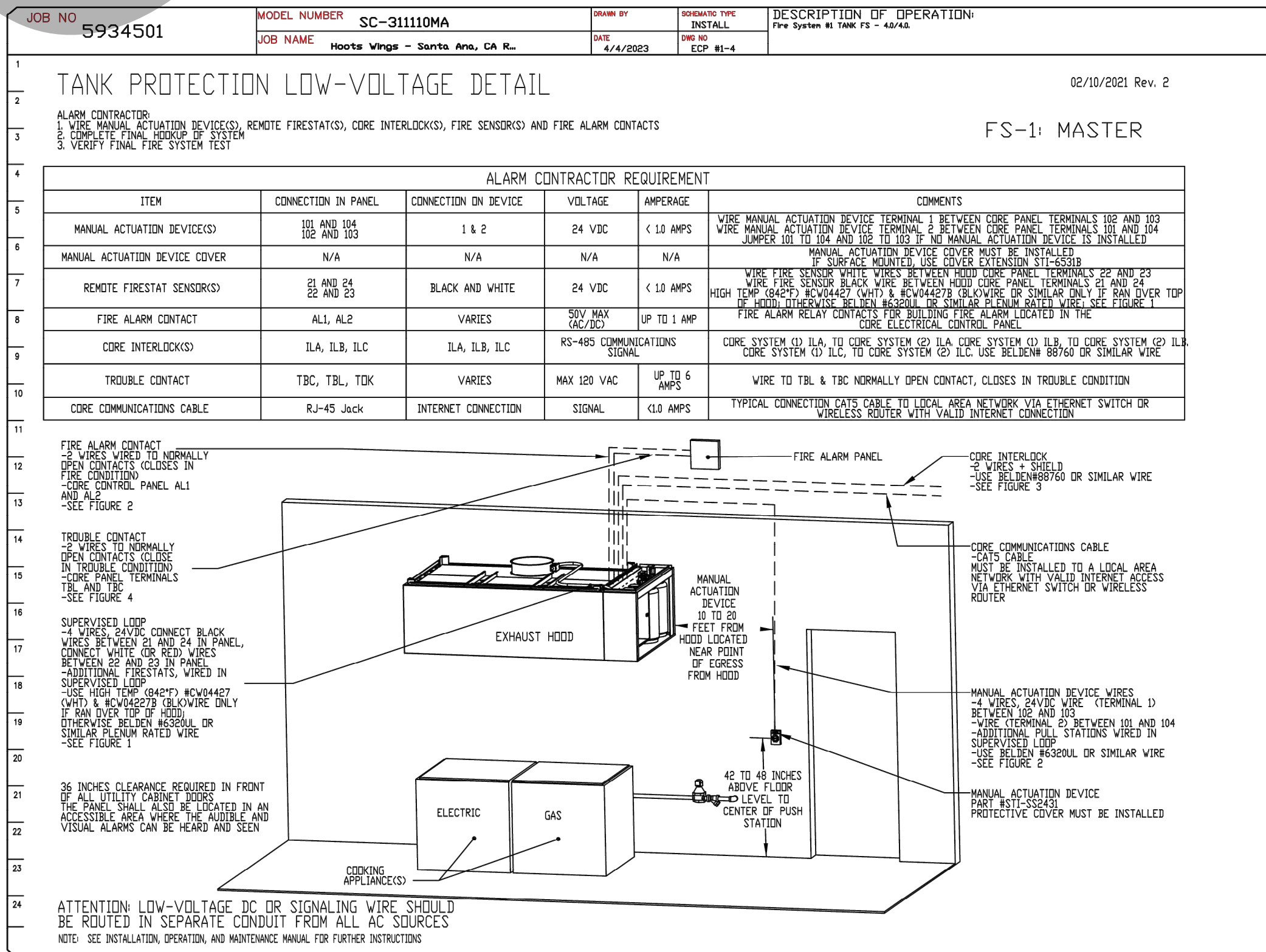
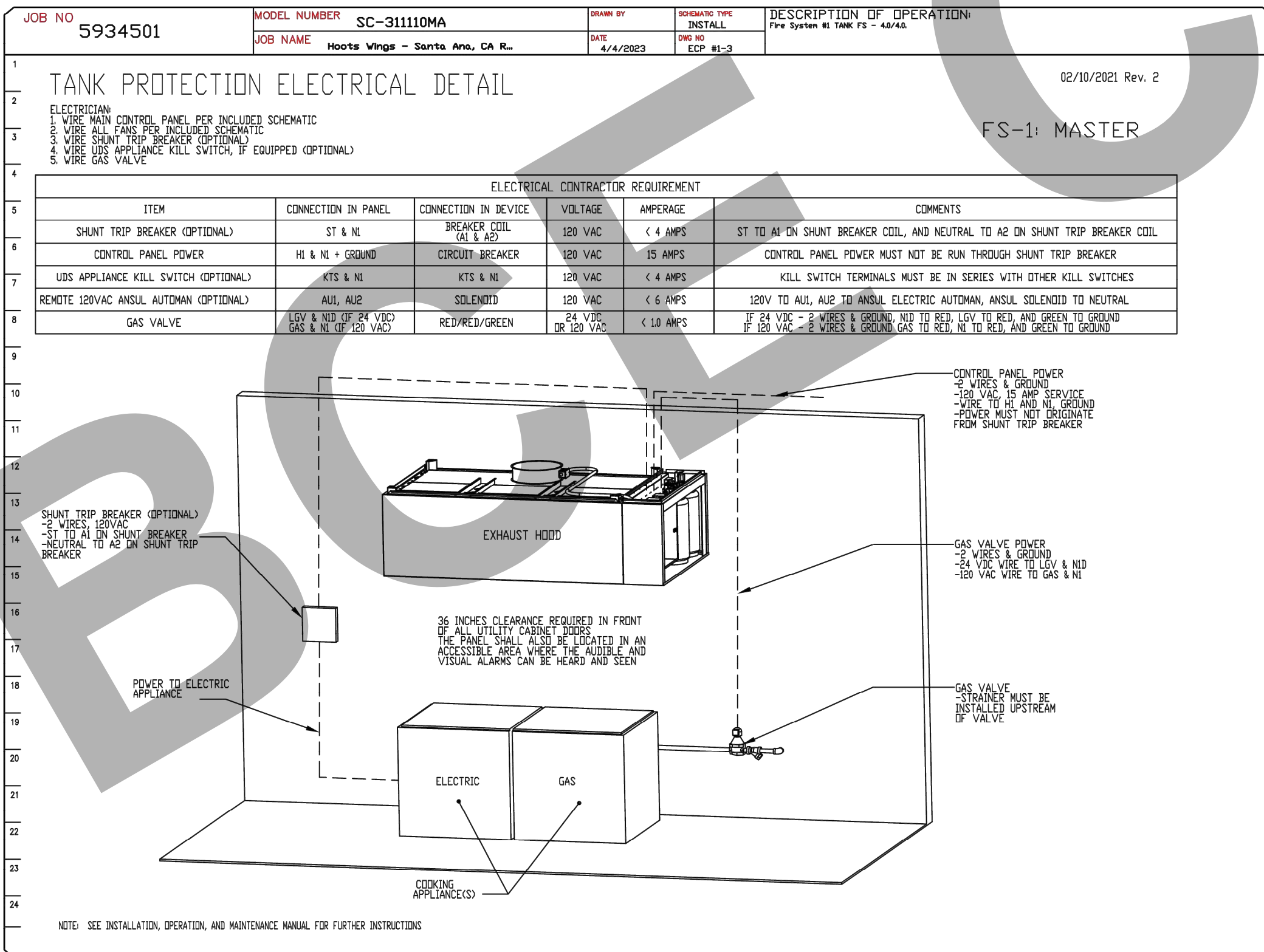
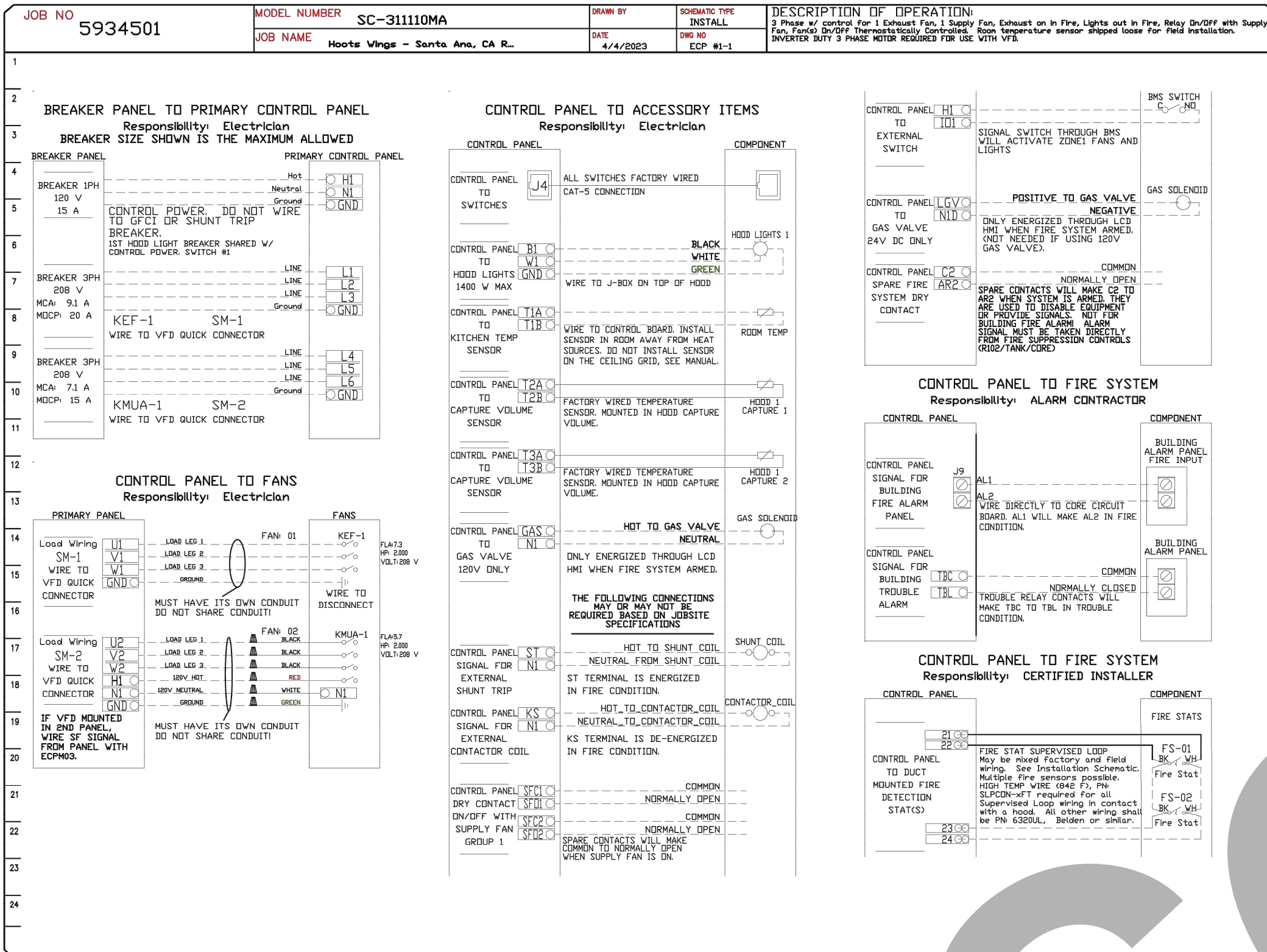
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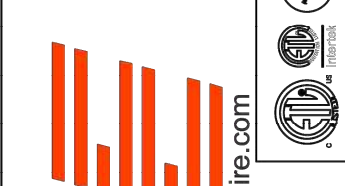
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ELECTRICAL PACKAGE - JOB#5934501

NO	TAG	PACKAGE #	LOCATION	SWITCHES		OPTION	FANS CONTROLLED				
				LOCATION	QUANTITY		FAN TAG	TYPE	#	HP	VOLT FLA
1		SC-31110MA	UTILITY CABINET RIGHT	UTILITY CABINET RIGHT	1 LIGHT	SMART CONTROLS THERMOSTATIC CONTROL W/ RELAY ON/OFF WITH SUPPLY	KEF-1	EXHAUST	3	2,000	208 7.3
				HOOD # 1	1 FAN		KMUA-1	SUPPLY	3	2,000	208 5.7



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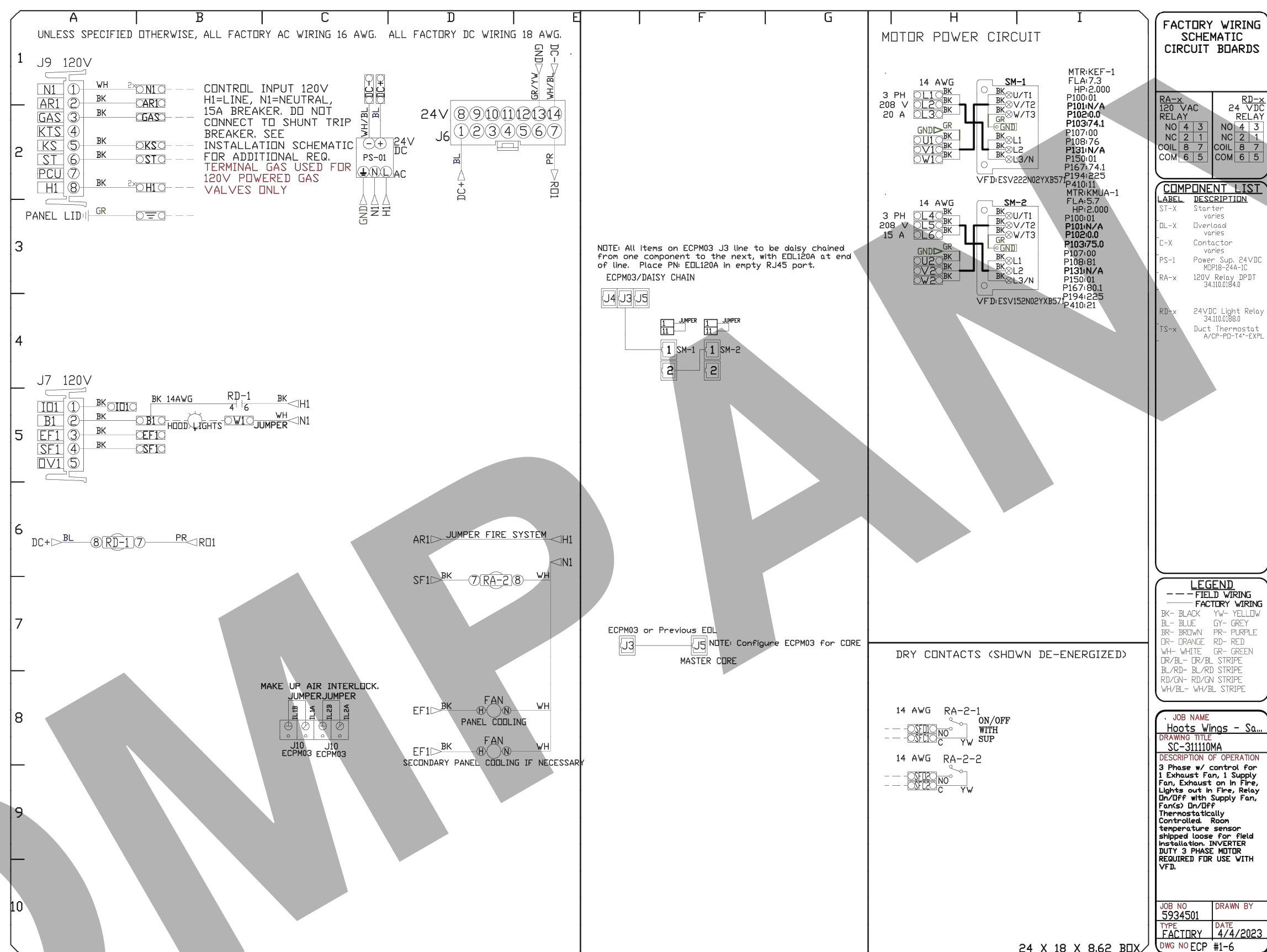
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DUCTWORK #1 PARTS – JOB#5934501 DOUBLE WALL										
TAG	PART #	CFM	GPM	ZONE	COVEREDBY	SP	WEIGHT	VELOCITY	QTY	DESCRIPTION
P1	DW1216DWRNDADP2ASY-2R-S	1400				-0.061	17.10	1782.54	1	DOUBLE WALL DUCT – 12" X 16" RND2RND ADAPTER – 2 LAYERS REDUCED CLEARANCE – 16" X 20" STAINLESS STEEL OUTER SHELL.
P2 ASSEMBLED W/P3	DW16DWEASY-2R-S	1400		1		-0.045	49.32	1002.68	1	DOUBLE WALL DUCT – 16" INNER TEE DUCT – 2 LAYERS REDUCED CLEARANCE – 20" STAINLESS STEEL OUTER SHELL.
P3 ASSEMBLED W/P2 & P4	DW16DWACCDORCOV-2R-S						21.48		1	DOUBLE WALL DUCT – 16" INNER ACCESS DOOR & 20" ACCESS DOOR COVER WITH CLAMPS – 2 LAYERS REDUCED CLEARANCE – 20" STAINLESS STEEL OUTER SHELL.
P4	DW1647DWT-2R-S	1400				-0.006	70.12	1002.68	1	DOUBLE WALL DUCT – 16" INNER DUCT, 47" LONG – 2 LAYERS REDUCED CLEARANCE – 20" STAINLESS STEEL OUTER SHELL.
P5	DW2024SADKIT						8.01		1	DUCT – HORIZONTAL SADDLE SUPPORT KIT, USED WITH 20" OD – INCLUDES UNI-STRUT CUT TO LENGTH, DW2024SAD, & HARDWARE BAG 4.
P6	DW2024SADKIT						8.01		1	DUCT – HORIZONTAL SADDLE SUPPORT KIT, USED WITH 20" OD – INCLUDES UNI-STRUT CUT TO LENGTH, DW2024SAD, & HARDWARE BAG 4.
P7	DW16DWEASY-2R-S	2800		1		-0.4695	49.32	2005.35	1	DOUBLE WALL DUCT – 16" INNER TEE DUCT – 2 LAYERS REDUCED CLEARANCE – 20" STAINLESS STEEL OUTER SHELL.
P8	DW1216DWRNDADP2ASY-2R-S	1400				-0.061	17.10	1782.54	1	DOUBLE WALL DUCT – 12" X 16" RND2RND ADAPTER – 2 LAYERS REDUCED CLEARANCE – 16" X 20" STAINLESS STEEL OUTER SHELL.
P9	DW1645DWASY-2R-S	2800				-0.3012	22.06	2005.35	1	DOUBLE WALL DUCT – 16" INNER 45 DUCT – 2 LAYERS REDUCED CLEARANCE – 20" STAINLESS STEEL OUTER SHELL.
P10	DW1645DWASY-2R-S	2800				-0.095	22.06	2005.35	1	DOUBLE WALL DUCT – 16" INNER 45 DUCT – 2 LAYERS REDUCED CLEARANCE – 20" STAINLESS STEEL OUTER SHELL.
P11	DW1647DWAJD-2R-S	2800				-0.019	103.34	2005.35	1	DOUBLE WALL ADJUSTABLE DUCT – 16" INNER DUCT – 2 LAYERS REDUCED CLEARANCE – 20" STAINLESS STEEL OUTER SHELL. MIN LENGTH = 11" / MAX LENGTH = 48.5" / ADJUSTMENT = 30.5" / ADJUSTABLE SECTION MAY NEED TO BE CUT. INCLUDES SINGLE AND DOUBLE WALL "V" CLAMPS.
P12 ASSEMBLED W/P13	DW164550DWTTP-2R-S	2800				-0.024	68.55	2005.35	1	DOUBLE WALL DUCT – 16" INNER DUCT, 45.5" LONG – 2 LAYERS REDUCED CLEARANCE – 20" STAINLESS STEEL OUTER SHELL – USED WITH TRANSITION PLATE.
P13 ASSEMBLED W/P12 SYSTEM AT P13	DW23516TPDBEX	2800					8.00	2005.35	1	DUCT TO CURB TRANSITION 3/4" DOWN TURN, 23.50" CURB TO 16" DUCT, 16 GA ALUMINIZED. FOR USE WITH EXHAUST FANS.
	3M-2000PLUS						0.80		3	DUCT – 3M FIRE BARRIER 2000 PLUS SILICONE – USED AS SEALANT TO SEAL DUCT JOINTS.
	DW16DWCLASY-2R-S						7.96		6	DUCT – 16" DUCT – 20" DOUBLE "V" CLAMP – 2R INSULATION & SINGLE "V" CLAMP INCLUDED – REDUCED CLEARANCE.
TOTAL WEIGHT							514.63			

DOUBLE WALL FACTORY BUILT DUCTWORK

- ALL DUCTWORK IS REQUIRED TO BE INSTALLED WITH THE MAXIMUM SUPPORT SPACING LISTED BELOW.
- FOR A COMPLETE LIST OF APPROVED SUPPORT METHODS, SEE THE ENTIRE INSTALLATION AND OPERATION MANUAL.
- DUCTWORK SHALL SLOPE NOT LESS THAN 1/16" PER LINEAR FOOT TOWARDS THE HOOD OR AN APPROVED GREASE COLLECTION RESERVOIR.
- WHERE HORIZONTAL DUCTS EXCEED 75 FEET IN LENGTH, THE SLOPE SHALL NOT BE LESS THAN 3/16" PER LINEAR FOOT.

HORIZONTAL	
DUCT DIAMETER	SUPPORT SPACING (FT)
5"	7'
6"	7'
7"	7'
8"	7'
10"	7'
12"	7'
14"	7'
16"	7'

VERTICAL			
TYPE	WALL SUPPORT (FT)	CURB SUPPORT (FT)	FLOOR SUPPORT (FT)
2R & 2R HT (5'-16')	20'	24'	24'

GREASE EXHAUST DUCT
TYPE I HOOD

20GA CONSTRUCTION
DOUBLE WALL
LISTED TO
UL-1978
UL-2221

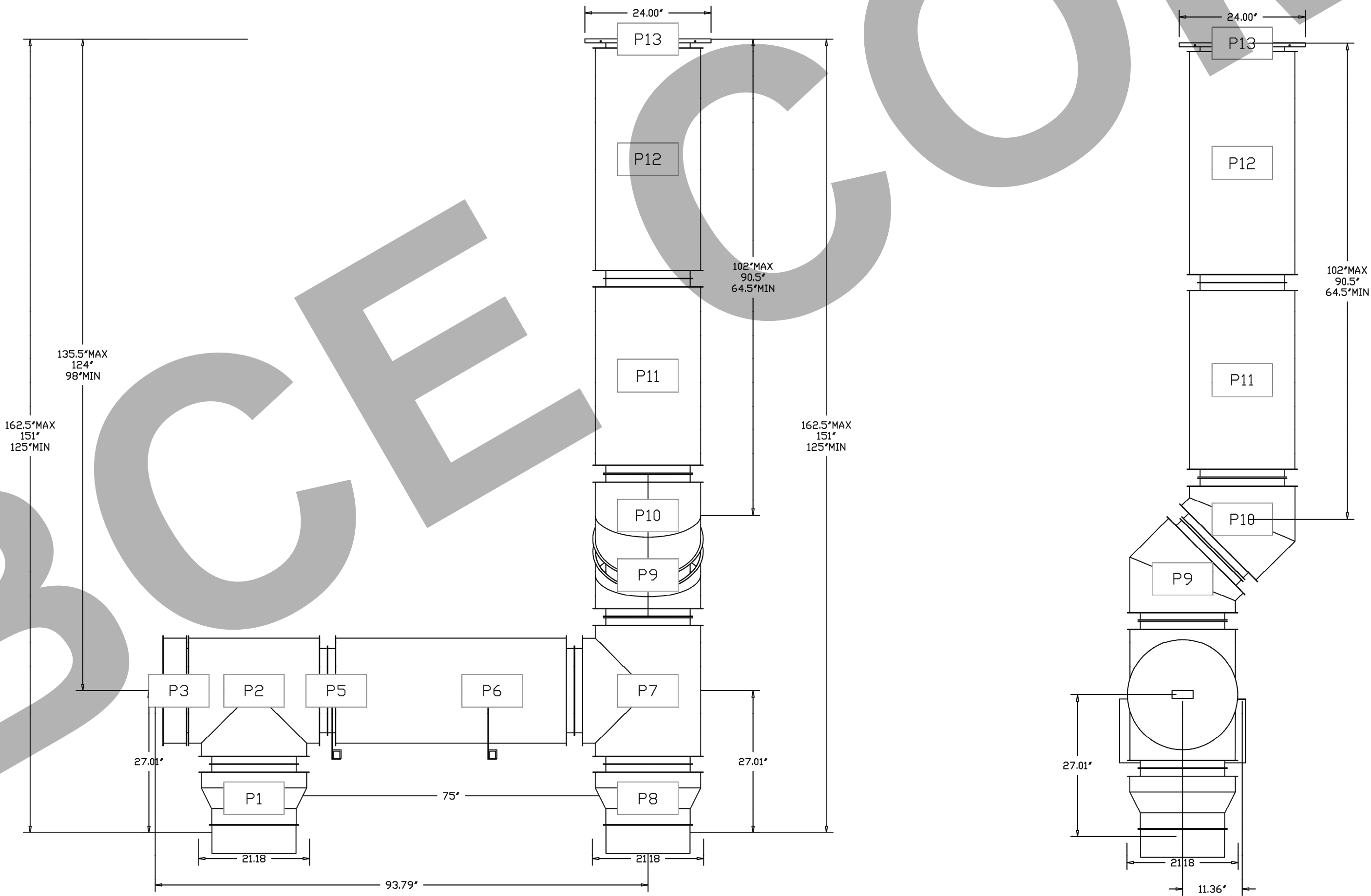
****INSTALLING CONTRACTOR****

TO FIELD VERIFY AND CONFIRM
ALL DUCTWORK ROUTING PRIOR TO ORDER

DUCTWORK #1 FRONT VIEW

DUCTWORK #1 SIDE VIEW

DUCTWORK #1 SE VIEW



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CAPTIVE
DUCTWORK

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GENERAL NOTES

1. MECHANICAL CONTRACTOR SHALL EXAMINE ALL OTHER SPECIFICATIONS, DRAWINGS AND ALL FEATURES OF BUILDING CONSTRUCTION WHICH MAY AFFECT HIS WORK AND SHALL B GOVERNED BY THESE AND OTHER SPECIFICATIONS, INCLUDIN THE GENERAL CONDITIONS AND PARTICULAR INSTRUCTIONS T ALL BIDDER AND SUPPLIERS
2. ALL WORK SHALL BE EXECUTED AND INSPECTED IN STRICT ACCORDANCE WITH ALL LOCAL CODES AND/OR STATE CODES, LAWS, ORDINANCES, RULES AND REGULATIONS APPLICABLE TO THIS PARTICULAR CLASS OF WORK, AND EACH CONTRACTOR SHALL INCLUDE IN HIS PRICE ALL APPLICABLE SERVICE CHARGES, FEES, PERMITS, TAXES, AND OTHER SIMILAR COSTS IN CONNECTION THEREWITH
3. PRIOR TO FABRICATION OF DUCTWORK, THE MECHANICAL CONTRACTOR SHALL EXAMINE AND VERIFY ALL CONDITIONS ABOVE AND BELOW THE CEILING WHICH MAY INTERFERE WITH THE DUCT SYSTEM AND NOTIFY THE ARCHITECT OF ANY CONFLICT ENCOUNTERED .CONTRACTOR SHALL PROVIDE ALL OFFSETS, ETC WHICH MAY BE REQUIRED, WITHOUT ADDITIONAL COST TO THE OWNER
4. ALL SHEET METAL DUCT CONSTRUCTION SHALL BE IN STRICT ACCORDANCE WITH "SMACNA" LOW PRESSURE DUCT CONSTRUCTION STANDARD
5. TURNING VANES SHALL BE INSTALLED IN ALL BENDS IN RECTANGULAR DUCT EXCEEDING 30"
6. ALL DUCTS SHALL BE SUPPORTED WITH 1"WIDE, 16 GAUGE, GALVANIZED STEEL BANDS
7. ALL RECTANGULAR DUCT SHALL BE INSULATED WITH A MIN. OF 1"INTERNAL LINER, 2 LBS. DENSITY R-60. ALL ROUND DUCTS AND DIFFUSER TOPS SHALL HAVE A MIN. 2" THICK OF FOIL BACKED BLANKET TYPE INSULATION R=4-4.2, WITH ALL JOINTS BUTTED AND TAPED
8. ALL DUCT DIMENSIONS SHOWN ON PLANS ARE INTERNAL
9. THE MECHANICAL CONTRACTOR SHALL COORDINATE THE LOCATION OF SUPPLY AND RETURN AIR REGISTERS, DUCTS, GRILLES AND DIFFUSERS WITH LIGHTING AND CEILING PATTERNS
10. PROVIDE LATERAL BRACING OF ALL DUCTS AND PIPES AS REQUIRED BY CODE
11. INSULATE AND SEAL ALL DUCTWORK PER CHAPTER 10 OF THE STATE MECHANICAL CODE (T-24, PART 4)
12. MOUNT ALL THERMOSTATS AT 48" ABOVE FINISHED FLOOR
13. ALL BRACING OF DUCTS AND PIPING SHALL BE INSTALLED IN ACCORDANCE WITH SMACNA GUIDELINES
14. WHERE BRACING DETAILS ARE NOT SHOWN ON THE DRAWINGS OR IN THE GUIDELINES, THE FIELD INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE ARCHITECT AND THE MECHANICAL ENGINEER
15. DUCT SMOKE DETECTOR SHALL BE INSTALLED BELOW THE ROOF
16. ALL MECHANICAL EQUIPMENT AND SYSTEMS INSTALLED AS PART OF PROJECT SHALL COMPLY WITH ALL REQUIREMENTS OF THE 2013 CALIFORNIA MECHANICAL CODE AND THE 2013 CALIFORNIA BUILDINGCODE AND THE 2013 CALIFORNIA BUILDING ENERGY EFFICIENCY STANDARDS
17. OUTSIDE AIR FOR A HEATING OR COOLING SYSTEM SHALL NOT BE TAKEN FROM CLOSER THAN 10 FEET FROM AN APPLIANCE VENT OUTLET, VENT OPENING OF A PLUMBING SYSTEM, OR THE DISCHARGE OUTLET OF EXHAUST FAN, UNLESS THE OUTLET IS 3 FT ABOVE THE OUTSIDE AIR INLET (CMC 314.3)
18. PROVIDE 120 VOLT ELECTRICAL OUTLETS WITHIN 25 FT. OF ALL MECH. EQUIPT. (CMC 309)
19. HEATING, VENTILATING, AND AIR CONDITIONING SYSTEMS SHALL BE BALANCED IN ACCORDANCE WITH ONE OF THE FOLLOWING METHODS IN ACCORDANCE WITH CMC 317.1 REQUIREMENTS

A. AABC NATIONAL STANDARDS FOR TOTAL SYSTEM BALANCE

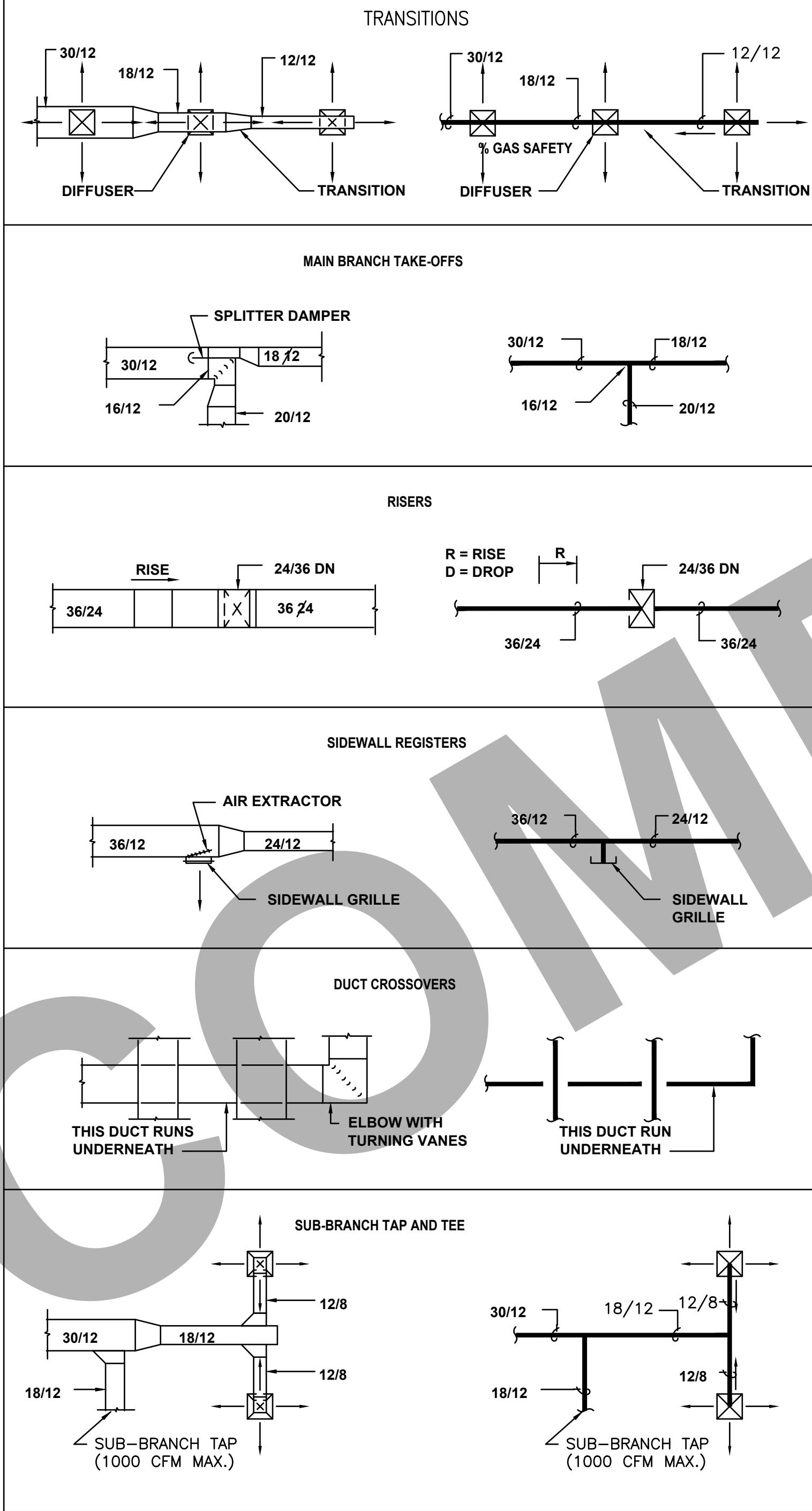
B. ACCA MANUAL B

C. ASHRAE 111

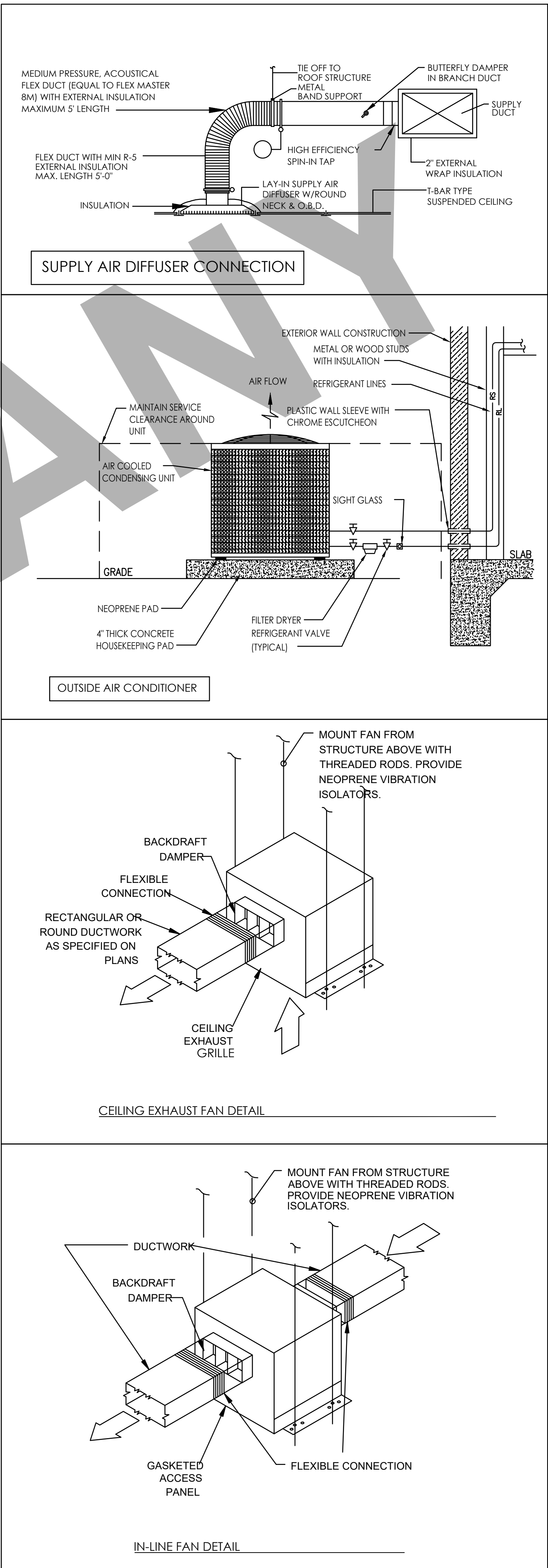
D. NEBB PROCEDURAL STANDARDS FOR TESTING, ADJUSTING, ADJUSTING, BALANCING OF ENVIRONMENTAL SYSTEMS

E. SMACNA HVAC TESTING, ADJUSTING, AND BALANCING
20. MATERIALS EXPOSED WITHIN DUCTS OR PLENUMS SHALL BE NON COMBUSTIBLE OR SHALL HAVE A FLAME SPREAD INDEX NOT TO EXCEED 25 AND A SMOKE DEVELOPED INDEX NOT TO EXCEED 50 WHERE TESTED AS A COMPOSITE PRODUCT IN ACCORDANCE WITH ASTM E84 OR UL 723

DUCTWORK SYMBOLS LEGEND



- 1) FIRE DEPARTMENT APPROVAL SHALL BE REQUIRED ON FIRE PROTECTION SYSTEM FOR GREASE HOODS AND DUCTS AS REQUIRED BY SECTION 513 OF THE CALIFORNIA MECHANICAL CODE AND AS REQUIRED BY THE FIRE CODE.
- 2) ALL FIRE EXTINGUISHING SYSTEMS SHALL BE INTERCONNECTED TO THE FUEL OF CURRENT SUPPLY SO THAT THE FUEL OR CURRENT IS AUTOMATICALLY SHUT OFF TO ALL EQUIPMENT UNDER THE HOOD WHEN THE SYSTEM IS ACTIVATED.
- 3) OWNER OF ESTABLISHMENT SHALL BE RESPONSIBLE FOR CLEANLINESS, MAINTENANCE, AND INSPECTION OF KITCHEN EXHAUST SYSTEM, FIRE PROTECTION, AND COOKING EQUIPMENT, CMC 507.22.
- 4) A DRAWING OF THE EXHAUST SYSTEM INSTALLATION ALONG WITH A COPY OF OPERATING INSTRUCTIONS FOR SUBASSEMBLIES AND COMPONENTS USED IN THE EXHAUST SYSTEM, INCLUDING ELECTRICAL SCHEMATICS, SHALL BE AVAILABLE ON THE PREMISES. CMC 507.5.
- 5) ALL SEAMS, JOINTS, AND PENETRATIONS OF THE HOOD ENCLOSURE THAT DIRECT AND CAPTURE GREASE-LADEN VAPORS AND EXHAUST GASES SHALL HAVE A LIQUID TIGHT CONTINUOUS EXTERNAL WELD TO THE LOWER OUTERMOST PERIMETER OF THE HOOD. CMC 508.3.2.
- 6) PRIOR TO THE USE OR CONCEALMENT OF A PORTION OF A GREASE DUCT SYSTEM, A LEAKAGE TEST SHALL BE PERFORMED TO DETERMINE THAT ALL WELDED JOINTS AND SEAMS ARE LIQUID TIGHT. CMC 510.5.3.1.
- 7) HOOD EXHAUST FAN SHALL CONTINUE TO OPERATE AFTER THE EXTINGUISHING SYSTEM HAS BEEN ACTIVATED, UNLESS FAN SHUTDOWN IS REQUIRED BY A LISTED COMPONENT OF THE VENTILATION SYSTEM. CMC 511.2.3.
- 8) TYPE 1 HOODS SHALL BEAR A LABEL INDICATING THE EXHAUST FLOW RATE IN CUBIC FEET PER MINUTE PER LINEAL FOOT.



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ELECTRICAL SPECIFICATIONS

1. DO NOT SCALE DRAWINGS. VERIFY DIMENSIONS IN FIELD PRIOR TO COMMENCEMENT OF WORK.
2. WHEREVER THE WORD "PROVIDE" IS USED, IT SHALL MEAN TO "PROVIDE AND INSTALL".
3. FINAL CONNECTIONS TO EQUIPMENT SHALL BE PER MANUFACTURER'S APPROVED WIRING DIAGRAMS, DETAILS AND INSTRUCTIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE MATERIALS AND EQUIPMENT COMPATIBLE WITH EQUIPMENT ACTUALLY SUPPLIED.
4. IT IS THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS TO ESTABLISH A STANDARD OF QUALITY. THE ENGINEER RESERVES THE RIGHT TO APPROVE METHODS AND MATERIALS NOT REFLECTED HEREIN.
5. CONTRACTOR SHALL REVIEW ARCHITECTURAL, STRUCTURAL, MECHANICAL, AND OTHER RELATED DRAWINGS PRIOR TO BID.
6. CONTRACTOR SHALL VISIT SITE PRIOR TO BID AND VERIFY THAT CONDITIONS ARE AS INDICATED IN THE CONTRACT DOCUMENTS. CONTRACTOR SHALL INCLUDE IN HIS BID, ANY COSTS REQUIRED TO MAKE HIS WORK MEET THE CONTRACT SCOPE UTILIZING EXISTING CONDITIONS.
7. WORK SHALL BE PERFORMED IN A WORKMANLIKE MANNER TO THE SATISFACTION OF THE ARCHITECT.
8. WORK, MATERIALS AND EQUIPMENT SHALL CONFORM TO THE LATEST EDITIONS OF LOCAL, STATE AND NATIONAL CODES AND ORDINANCES.
9. PROVIDE PERMITS AND INSPECTIONS REQUIRED.
10. GUARANTEE THE INSTALLATION AGAINST DEFECTS IN MATERIALS AND WORKMANSHIP WHICH MAY OCCUR UNDER NORMAL USAGE FOR A PERIOD OF ONE YEAR AFTER OWNER'S ACCEPTANCE, DEFECTS SHALL BE PROMPTLY REMEDIED WITHOUT COST TO THE OWNER.
11. PROVIDE RECORD DRAWINGS TO ENGINEER. DRAWINGS SHALL INCLUDE ALL ADDENDUM ITEMS, CHANGE ORDERS, ALTERATIONS, REROUTINGS, ETC.
12. VERIFY SPECIFIC LOCATION OF EQUIPMENT TO BE FURNISHED BY OTHERS PRIOR TO ROUGH-IN.
13. ELECTRICAL SYSTEMS SHALL BE TESTED FOR PROPER OPERATION. IF TESTS SHOW THAT WORK IS DEFECTIVE, CONTRACTOR SHALL MAKE CORRECTIONS NECESSARY AT NO COST TO OWNER.
14. RECESSED LIGHT FIXTURES INSTALLED IN GYP. BOARD OR PLASTER CEILINGS SHALL HAVE PLASTER FRAMES INSTALLED PRIOR TO CEILING MATERIAL.
15. RECESSED FIXTURES INSTALLED INDOORS SHALL BE THERMALLY PROTECTED.
16. SEE DIVISION 15 DRAWINGS FOR LOCATION OF MECHANICAL EQUIPMENT. PROVIDE SERVICE TO AND CONNECT EQUIPMENT AS REQUIRED.
17. PROVIDE EQUIPMENT GROUNDING CONDUCTOR IN ALL CONDUITS.
18. ALL ELECTRICAL SYSTEMS COMPONENTS SHALL BE LISTED OR LABELED BY U.L. OR OTHER RECOGNIZED TESTING FACILITY.
19. WIRE TERMINATION PROVISIONS FOR PANELBOARDS, CIRCUIT BREAKERS, SAFETY SWITCHES, AND ALL OTHER ELECTRICAL APPARATUS SHALL BE LISTED AS SUITABLE FOR 75 DEGREE C.
20. THE FOLLOWING CONDUCTOR SIZES SHALL BE UTILIZED FOR 20 AMP CIRCUITS PERTAINING TO DISTANCES (IN FEET) INDICATED:

120VOLT, 1PH	CONDUCTOR	240 VOLT, (1PH)
0-64	#12AWG	0-129
65-106	#10AWG	130-212
107-160	#8AWG	213-321

NOTE: BASED ON 75°C COPPER CONDUCTORS INSTALLED IN EMT WITH 16AMP LOAD @ 85% P.F.

21. CONTRACTOR SHALL REVIEW ARCHITECTURAL, STRUCTURAL AND MECHANICAL DRAWINGS AND SHALL PROVIDE LIGHTS, SWITCHES, RECEPTACLES, EQUIPMENT CONNECTIONS, ETC., AND ASSOCIATED CIRCUITING IN NEW AND REMODELED AREAS, EVEN IF SUCH AREAS ARE NOT SHOWN ON ELECTRICAL DRAWINGS. LAYOUTS, FIXTURE TYPES, QUANTITIES AND SPACING SHALL BE IN ACCORDANCE WITH SIMILAR AREAS ON THIS PROJECT. CONTRACTOR SHALL INCLUDE COSTS FOR THE ABOVE IN HIS BID. IN ADDITION, CONTRACTOR SHALL PROVIDE LAYOUT DRAWINGS FOR WORK IN SUCH AREAS AND SUBMIT FOR APPROVAL PRIOR TO ROUGH-IN.
22. WIRE SHALL BE COPPER, 75 DEGREES C RATED FOR GENERAL USE, FOR WIRING WITHIN 3 INCHES OF FLUORESCENT BALLASTS WIRE SHALL BE COPPER, MINIMUM 90 DEGREES C RATED. SIZES INDICATED ARE FOR INSTALLATION IN A MAXIMUM 30 DEGREES C AMBIENT. CONDUCTOR AMPACITY SHALL BE DERATED FOR HIGHER AMBIENT INSTALLATIONS. 600 VOLT COMPACT ALUMINUM WIRE AND CABLE IN SIZES 1/0 AND LARGER MAY BE SUBSTITUTED FOR COPPER ON SERVICES AND FEEDERS IF AMPACITY IS EQUIVALENT TO OR GREATER

23. CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING EQUIPMENT WHICH IS DAMAGED DUE TO INCORRECT FIELD WIRING PROVIDED UNDER THIS SECTION OR FACTORY WIRING IN EQUIPMENT PROVIDED UNDER THIS SECTION.
24. CONTRACTOR'S FAILURE TO ORDER OR RELEASE ORDER FOR MATERIALS AND/OR EQUIPMENT WILL NOT BE ACCEPTED AS A REASON TO SUBSTITUTE ALTERNATE MATERIALS, EQUIPMENT OR INSTALLATION METHODS.
25. ELECTRICAL SYSTEMS SHALL BE COMPLETE, OPERABLE AND READY FOR CONTINUOUS OPERATION AT COMPLETION OF PROJECT.
26. RECEPTACLES WHICH ARE SHOWN WALL MOUNTED ON THE ELECTRICAL DRAWINGS ON WALLS WHICH, ON THE ARCHITECTURAL DRAWINGS AND ELEVATIONS ARE SHOWN AS GLASS OR PARTITIONS, SHALL BE FLUSH FLOOR DUPLEX RECEPTACLES MOUNTED ADJACENT TO BAS OR WALLS.
27. RECEPTACLES AT COUNTER SHALL BE MOUNTED WITH THEIR LONG AXIS HORIZONTAL AT +46" UNLESS NOTED.
28. FLUSH FLOOR RECEPTACLE OUTLETS SHALL BE WIREMOLD 862 SERIES. PROVIDE CARPET OR TILE FLANGE TO MATCH FLOOR FINISH.
29. THE COLOR OF THE DEVICES AND COVER PLATES SHALL BE AS DIRECTED BY ARCHITECT, IN DAMP OR WET LOCATIONS COVER PLATES SHALL BE STAINLESS STEEL. IN DRY LOCATIONS COVER PLATES SHALL BE SMOOTH HIGH ABUSE NYLON OR EQUIVALENT. PROVIDE COVER PLATES FOR SWITCHES, RECEPTACLES, TELEPHONE, TELEVISION, COMPUTER AND J-BOX OUTLETS AS REQUIRED.
30. ROMEX CABLE WITH A GROUNDING CONDUCTOR MAY BE USED WHERE PERMITTED BY BOTH THE N.E.C. AND LOCAL ORDINANCES.
31. DISCONNECT SWITCHES SHALL BE GENERAL DUTY TYPE. FUSIBLE SWITCHES SHALL ACCEPT CLASS 'R' FUSES ONLY AND REJECT ALL OTHERS.
32. FINAL CONNECTIONS TO VIBRATING EQUIPMENT SHALL BE WITH FLEX (LIQUIDTIGHT FOR EXTERIOR APPLICATIONS) AND APPROVED FITTINGS. DO NOT SECURE CONDUITS, DISCONNECTS OR DEVICES TO DUCTWORK OR MECHANICAL EQUIPMENT.
33. THE ENGINEER OF RECORD HAS PERFORMED SHORT CIRCUIT CALCULATIONS AND THE AIC RATINGS INDICATED FOR EACH DEVICE IS ADEQUATE TO PROTECT THE EQUIPMENT AND THE ELECTRICAL SYSTEM.
34. THE ENGINEER OF RECORD HAS PERFORMED VOLTAGE DROP CALCULATIONS AND ALL BRANCH CIRCUITS AND FEEDERS COMPLY WITH NEC 210-19(A) FPN NO4.
35. THE CONTRACTOR SHALL PROVIDE 120V CONNECTION TO NEAREST MAINTENANCE RECEPTACLE WHERE REQUIRED FOR CONDENSATE PUMPS ASSOCIATED WITH FAN COIL UNITS. COORDINATE WITH MECHANICAL CONTRACTOR.
36. THE CONTRACTOR SHALL COORDINATE THE SPECIFIC LOCATION, MOUNTING HEIGHT, ROTATION, TYPE, COLOR, ETC. OF ALL DEVICES PRIOR TO INSTALLATION.
37. CONNECTIONS TO HYDROMASSAGE BATHTUBS, JACUZZI TUBS OR SIMILAR EQUIPMENT SHALL BE MADE IN ACCORDANCE WITH ARTICLE 680.70 OF THE NEC. PROVIDE BONDING AS REQUIRED BY ARTICLE 680.74 OF THE NEC.
38. ALL INDOOR FLUORESCENT FIXTURES THAT UTILIZE DOUBLE-ENDED LAMPS AND CONTAIN BALLAST(S) THAT CAN BE SERVICED IN PLACE OR BALLASTED LUMINARIES THAT ARE SUPPLIED FROM MULTIWIRE BRANCH CIRCUITS AND CONTAIN BALLAST(S) THAT CAN BE SERVICED IN PLACE SHALL COMPLY WITH 410.73 (G) OF THE NEC.
39. CEILING MOUNTED SMOKE AND CARBON MONOXIDE DETECTORS PER NFPA 72, SECTION R314 MUST COMPLY WITH U.L. 2075 AND SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS.
40. ALL SMOKE DETECTORS AND COMBINATION SMOKE/CARBON MONOXIDE DETECTORS SHALL BE HARDWIRED ON SAME CIRCUIT AND HAVE A BATTERY BACKUP SYSTEM.
41. WHEN MORE THAN EITHER ONE (1) SMOKE ALARM OR MORE THAN ONE (1) CARBON MONOXIDE ALARM IS REQUIRED TO BE INSTALLED WITHIN AN INDIVIDUAL DWELLING UNIT, ALL ALARM DEVICES SHALL BE INTERCONNECTED IN SUCH A MANNER THAT THE ACTUATION OF ONE ALARM WITH ACTIVATE ALL OF THE ALARMS IN THE INDIVIDUAL UNIT. SMOKE AND CARBON MONOXIDE ALARMS SHALL BE INSTALLED IN THE FOLLOWING LOCATIONS. (IRC SECTION R3143 AS AMENDED)
- A. SMOKE ALARMS IN EACH SLEEPING ROOM.
- B. SMOKE ALARMS OUTSIDE OF EACH SEPARATE SLEEPING AREA IN THE IMMEDIATE VICINITY OF THE BEDROOMS.
- C. SMOKE ALARMS ON EACH ADDITIONAL STORY OF THE DWELLING INCLUDING BASEMENTS BUT NOT INCLUDING CRAWL SPACE AND UNINHABITABLE ATTICS. IN DWELLINGS OR DWELLING UNITS WITH SPLIT LEVELS AND WITHOUT AN INTERVENING DOOR BETWEEN THE ADJACENT LEVELS. A SMOKE ALARM INSTALLED ON THE UPPER LEVEL SHALL SUFFICE FOR THE ADJACENT LOWER LEVEL PROVIDED THAT THE LOWER LEVEL IS LESS THAN ONE FULL STORY BELOW THE UPPER LEVEL..
- D. CARBON MONOXIDE ALARMS OUTSIDE OF SLEEPING AREAS IN THE IMMEDIATE VICINITY OF THE BEDROOMS IN DWELLING UNITS WITHIN WHICH FUEL-FIRED APPLIANCES ARE INSTALLED AND IN DWELLING UNITS THAT HAVE ATTACHED GARAGES.
- E. CARBON MONOXIDE ALARMS WITHIN EACH BEDROOM WHICH CONTAINS A FUEL-FIRED APPLIANCE.
43. ALL BRANCH CIRCUITS THAT SUPPLY 125-VOLT, SINGLE PHASE, 15 AND 20 AMP BRANCH CIRCUITS SUPPLYING OUTLETS INSTALLED IN DWELLING UNIT FAMILY ROOMS, DINING ROOMS, LIVING ROOMS, PARLORS, LIBRARIES, DENS, BEDROOMS, SUNROOMS, RECREATION ROOMS, CLOSETS, HALLWAYS, OR SIMILAR ROOMS OR AREAS SHALL BE PROTECTED BY A LISTED ARC-FAULT CIRCUIT INTERRUPTER, COMBINATION-TYPE, INSTALLED TO PROVIDE PROTECTION OF THE BRANCH CIRCUIT. NEC ARTICLE 210.12 (A).
44. ALL ATTIC ACCESSES SHALL BE PROVIDED WITH A SWITCHED LIGHT AND 120 VOLT GFI OUTLET AT OR NEAR THE FORCED AIR UNIT. LOCATE LIGHT SWITCH AT THE ATTIC ACCESS OPENING.

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4. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY TEMPORARY SUPPORT TO THE BUILDING AND ANY ADJACENT STRUCTURES.

REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

TITLE:

ELECTRICAL SPECIFICATIONS

PROJ. NO.	PROJ. ENGR.	SCALE © 24X36: NTS
DRAWING NO. E 0 . 0 0		REV.

NOTES:

1. FIXTURES SHALL HAVE APPROPRIATE U.L. LABEL (i.e., DAMP OR WET) AS REQUIRED BY CODES AND ORDINANCES.
2. FIXTURES SHALL INCLUDE ALL ACCESSORIES NECESSARY FOR INSTALLATION ACCORDING TO MANUFACTURER'S SHOP DRAWINGS AND AS REQUIRED BY CODES AND LOCAL ORDINANCES.
3. PRIOR TO ORDERING ANY LIGHTING EQUIPMENT, THE CONTRACTOR SHALL COORDINATE ALL FIXTURE LOCATIONS WITH ARCHITECTURAL REFLECTED CEILING PLANS AND CEILING CAVITY DEPTHS.
4. ALL LAMPS SHALL BE PROVIDED AND INSTALLED ACCORDING TO THE ATTACHED FIXTURE SCHEDULE AND SPECIFICATIONS ENSURE COMPATIBILITY BETWEEN FIXTURE, LAMP(S) AND BALLAST(S). (OSRAM SYLVANIA SERIES)
5. CONTRACTOR SHALL VERIFY FIXTURE VOLTAGES AND CEILING TRIM COMPATIBILITY PRIOR TO ORDERING FIXTURE.
6. PROVIDE APPROVED FIRE-RATED ENCLOSURES FOR ALL LIGHTING FIXTURES LOCATED IN FIRE-RATED CEILINGS.
7. LIGHTING FIXTURE CATALOG NUMBERS ARE SERIES TYPE ONLY. PROVIDE ALL NECESSARY HARDWARE AS REQUIRED BY THE SPECIFICATIONS, DRAWINGS, AND PROJECT CONDITIONS FOR A COMPLETE INSTALLATION.
8. ALL FIXTURES SHALL BE ORDERED WITH APPROPRIATE BALLAST(S) THAT HAVE U.L. AND CB, LABELS. ALL BALLASTS MUST CONFORM TO TITLE 24 AND/OR IECC REQUIREMENTS FOR PERFORMANCE. PROVIDE MULTIPLE BALLASTS FOR DUAL LEVEL SWITCHING AND WIRING (i.e. TANDEM) AS INDICATED ON THE PLANS.
9. UPON INITIAL ENERGIZING OF ALL NEW FLUORESCENT LAMPS, A CONTINUOUS PERIOD OF 30 HOURS SHALL OCCUR PRIOR TO DE-ENERGIZING OF LAMPS FOR MANUFACTURER REQUIRED
10. ALL FLUORESCENT BALLASTS SHALL BE ELECTRONIC TYPE. PROVIDE END OF LIFE (EOL) SHUT-DOWN PROTECTION FOR COMPACT FLUORESCENT LAMPS.
11. ENSURE COMPATIBILITY OF ALL LIGHTING SYSTEM COMPONENTS, ESPECIALLY DIMMED SYSTEMS. FIXTURES, LAMPS, BALLAST(S), AND DIMMING SYSTEMS/INDIVIDUAL CONTROLS MUST BE FACTORY CERTIFIED COMPATIBLE FOR FULL RANGE OF DIMMING COMPATIBILITY.
12. PROVIDE CLEARANCES FROM COMBUSTIBLES, A MINIMUM OF 3/4" (OTHER THAN AT POINTS OF SUPPORT) AND 3" FROM INSULATION FOR RECESSED LIGHTING FIXTURES WHICH ARE NON-IC RATED.
13. PROVIDE A MINIMUM OF TWO (2) #12 SUPPORT WIRES ATTACHED TO BUILDING FRAME IN ADDITION TO T-BAR CLIPS FOR FLUORESCENT FIXTURES RECESSED IN SUSPENDED T-BAR CEILING.
14. FIXTURES WITH EMERGENCY BATTERY BACKUP SHALL BE WIRED AHEAD OF ANY LOCAL SWITCHING IN COMPLIANCE WITH NEC ARTICLE 700.
15. EMERGENCY LIGHTING UNITS SHALL BE EQUIPPED WITH FACTORY-INSTALLED INTEGRAL TEST SWITCHES.
16. PROVIDE DOOR-TO-FRAME AND LENS-TO-DOOR GAS KETLING, INVERTED LENS, AND FOOD SERVICE RATING FOR ALL FIXTURES LOCATED IN FOOD SERVICE AREAS.
17. FLUORESCENT LUMINAIRES THAT UTILIZE DOUBLE-ENDED LAMPS AND CONTAIN BALLAST(S) THAT CAN BE SERVICED IN PLACE, OR BALLASTED LUMINAIRES THAT ARE SUPPLIED FROM MULTI- WIRE BRANCH CIRCUITS AND CONTAIN BALLAST(S) THAT CAN BE SERVICED IN PLACE, SHALL HAVE DISCONNECTING MEANS EITHER INTERNAL OR EXTERNAL TO EACH LUMINAIRE SO TO DISCONNECT SIMULTANEOUSLY FROM THE SOURCE OF SUPPLY ALL CONDUCTORS OF THE BALLAST (INCLUDING THE GROUNDED CONDUCTOR IF ANY). IN ACCORDANCE WITH NEC ARTICLE 410, THE LINE-SIDE TERMINALS OF THE DISCONNECTING MEANS SHALL BE LOCATED SO AS TO BE ACCESSIBLE TO QUALIFIED PENSIONS BEFORE SERVICING OR MAINTAINING THE BALLAST.
18. ALL FLUORESCENT LAMPS SHALL BE OF A LOW MERCURY DESIGN, HAVE A MINIMUM CRI RATING OF 85 AND 3500K COLOR TEMPERATURE UNLESS NOTED OTHERWISE.

LIST OF DRAWINGS

- E0.00 ELECTRICAL SPECIFICATION
- E1.00 ELECTRICAL GENERAL NOTES
- E2.00 ELECTRICAL LIGHTING LAYOUT
- E3.00 ELECTRICAL POWER FLOOR PLAN
- E3.01 ELECTRICAL POWER ROOF PLAN
- E4.00 SINGLE LINE LAYOUT
- E5.00 PANEL BOARDS SCHEDULE

SCOPE OF WORK

PROVIDING ELECTRICAL LIGHTING DESIGN AND POWER DESIGN FOR A RESTAURANT

APPLICABLE CODES:

- 2022 CALIFORNIA ELECTRICAL CODE (CEC)
- 2022 CALIFORNIA BUILDING CODE (CBC)
- 2022 CALIFORNIA MECHANICAL LOAD (CMC)
- 2022 CALIFORNIA PLUMBING CODE (CPC)

GENERAL NOTES

1. ALL 120 VOLT, SINGLE PHASE 15 AND 20 AMPERE BRANCH CIRCUIT SUPPLYING OUTLETS INSTALLED IN DWELLING UNIT FAMILY ROOMS, DINING ROOMS, LIVING ROOMS, PARLORS, LIBRARIES, DENS, BEDROOMS, SUNROOMS, RECREATION ROOMS, CLOSETS, HALLWAYS, OR SIMILAR AREAS SHALL BE PROTECTED BY A LISTED ARC-FAULT CIRCUIT INTERRUPTER, COMBINATION TYPE INSTALLED TO PROVIDE PROTECTION OF THE BRANCH CIRCUIT. (NEC ARTICLE 210.12(A))
2. IN EVERY KITCHEN, FAMILY ROOM, DINING ROOM, LIVING ROOM, PARLOR, LIBRARY, DEN, SUNROOM, BEDROOM, RECREATION ROOM OR SIMILAR ROOM OR AREA OF DWELLING UNITS RECEPTACLE OUTLETS SHALL BE INSTALLED IN ACCORDANCE WITH THE GENERAL PROVISIONS SPECIFIED IN THE FOLLOWING ARTICLES.
- a. NEC ARTICLE 210.52(A) (1) SPACING. RECEPTACLES SHALL BE INSTALLED THAT NO POINT ALONG THE FLOOR LINE OF THE WALL IS MORE THAN 6-FEET FROM A RECEPTACLE.
- b. NEC article 210.52(a) (2) AS AMENDED WALL SPACE. ANY WALL 24-INCHES OR MORE IN LENGTH SHALL BE PROVIDED WITH A RECEPTACLE OUTLET. WALL SPACE SHALL INCLUDE AROUND CORNERS, THE FIRST SLIDING PANEL OF A SLIDING DOOR, FIXED ROOM DIVIDERS SUCH AS A FREESTANDING BAR TYPE COUNTER. WALL SPACE NED NOT INCLUDE THE SPACE BEHIND OPERABLE DOORS. AND NEED NOT INCLUDE ENTRIES, HALLWAYS ETC. LESS THAN 5-FEET WIDE LOCATED IN BEDROOMS.
- c. NEC ARTICLE 210.52(A) (3) AS AMENDED FLOOR RECEPTACLES.
3. IN EVERY KITCHEN, FAMILY ROOM, DINING ROOM, LIVING ROOM, PARLOR, LIBRARY, DEN, SUNROOM, BEDROOM, RECREATION ROOM OR SIMILAR ROOM OR AREA OF DWELLING UNITS, ALL 125 VOLT 15 AND 20 AMP RECEPTACLES SHALL BE LISTED TAMPER-RESISTANT RECEPTACLES NEC 406.12)
4. ALL WORK AND EQUIPMENT UNDER THIS DIVISION SHALL BE IN STRICT COMPLIANCE WITH THE CODES, STANDARDS AND PRACTICES LISTED HEREIN, AND THEIR RESPECTIVE DATES ARE FURNISHED AS THE MINIMUM LATEST REQUIREMENTS.
- A. LIFE SAFETY CODE
- B. NATIONAL FIRE PROTECTION ASSOCIATION
- C. NATIONAL ELECTRICAL CODE
- D. AMERICAN NATIONAL STANDARDS INSTITUTE
- E. INSTITUTE IF ELECTRICAL AND ELECTRONIC ASSOCIATION
- F. NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION (NEMA)
- G. REQUIREMENTS OF LOCAL POWER COMPANY
- H. BUILDING CODE
5. THE ELECTRICAL INSTALLATION SHALL MEET THE APPROVAL OF THE LOCAL GOVERNING AUTHORITIES AND THE OWNER'S REPRESENTATIVE PRIOR TO ACCEPTANCE.
6. REFER TO THE ARCHITECTURAL, MECHANICAL, PLUMBING, FIRE PROTECTION, CIVIL, INTERIOR DESIGN, FOR RELATED INFORMATION AND ADDITIONAL INSTALLATION REQUIREMENTS TO BE CONSIDERED AS PART OF THE ELECTRICAL CONTRACT DOCUMENTS.
7. IT IS NOT THE INTENT OF THESE PLANS TO SHOW EVERY MINOR DETAIL OF CONSTRUCTION THE CONTRACTOR IS EXPECTED TO FURNISH ALL ITEMS FOR A COMPLETE ELECTRICAL SYSTEM. PROVIDE EVERYTHING NECESSARY FOR EQUIPMENT TO BE PLACED IN PROPER WORKING ORDER. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL MINOR ITEMS WHICH ARE OBVIOUSLY NECESSARY TO COMPLETE THE INSTALLATION.
8. LIGHT SWITCHES SHALL BE MOUNTED 48 INCHES ABOVE FINISHED FLOOR TO CENTER LINE OF THE DEVICE, UNLESS NOTED OTHERWISE. GANG SWITCHES AND DIMMER WITH A COMMON PLATE WHERE TWO (2) OR MORE ARE INDICATED ADJACENT TO EACH OTHER.
9. RECEPTACLES SHALL BE LOCATED 18" ABOVE FINISHED FLOOR TO CENTER LINE OF DEVICE. UNLESS NOTED OTHERWISE. ABOVE-COUNTER RECEPTACLES SHALL BE MOUNTED 6" ABOVE BACK SPLASH TO CENTERLINE OF DEVICE UNLESS NOTED OTHERWISE.
10. USE GALVANIZED RIGID STEEL CONDUIT WHERE EPOSED TO EXTERIOR CONDITIONS OR WHERE EXPOSED IN ANY LOCATIONS WHERE SUBJECT TO MECHANICAL DAMAGE. EMT SHALL BE PROVIDED WITH SET SCREW STEEL FITTINGS FOR INSTALLATION IN ALL CONCEALED WALLS AND CEILINGS IN DRY AREAS. ALL CONDUIT FOR LIGHTING PROTECTION SHALL BE PVC, SCHEDULE 40. UNLESS OTHERWISE NOTED, PVC MAY BE USED WHERE BURIED UNDER GRADE AND ENCASED IN CONCRETE SLAB OR WALLS. ALUMINUM CONDUIT IS NOT ALLOWED. EMT CAN BE USED IN DRY AREAS WHEN INSTALLED 10 FEET ABOVE FINISHED FLOOR LEVEL.
11. ALL CONDUITS IN PUBLIC SHALL BE CONCEALED UNLESS NOTED OTHERWISE.

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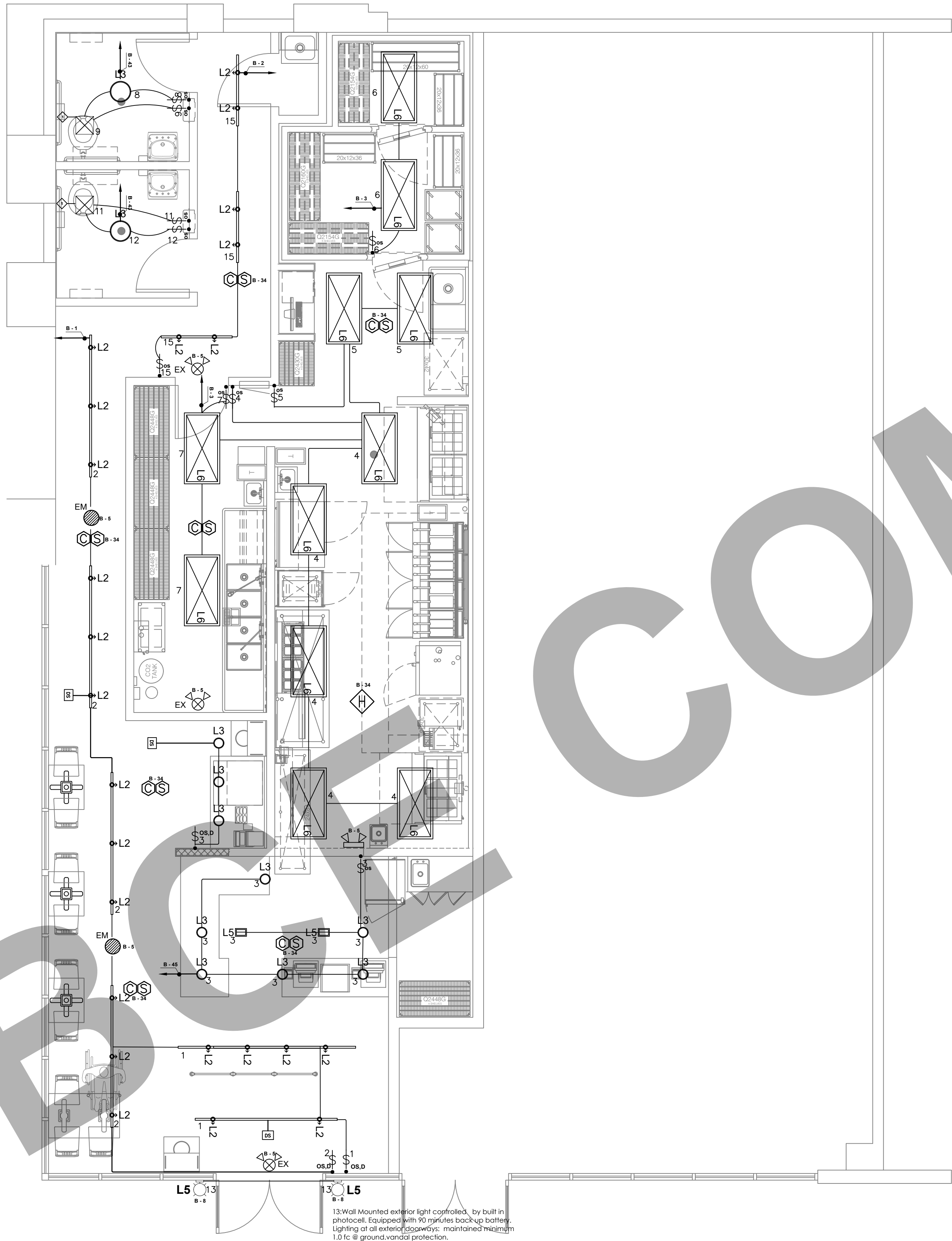
REV.	NO.	DESCRIPTION	DATE	BY

PROJECT:

TITLE: ELECTRICAL GENERAL GENERAL NOTES		
PROJ. NO.	PROJ. ENGR.	SCALE © 24X36: NTS
DRAWING NO. E 1 . 0 0		REV.

SHEET NOTES:

◇ HEAVY DUTY JUNCTION BOX, FLUSH IN CEILING FOR EXHAUST FANS



ELECTRICAL LEGEND

→	NEW TRACK LIGHTS
□	Lighting 4-ft x 2-ft Cool White LED Panel Light similar to GT 8GENERAL PURPOSE T 8TROFFER 2'X 4 4LP T# 8A 19LENS 1/4ELEC
○	RECESSED MOUNTED SPOT SIMILAR TO DN140B PSED-E IP54 D162 1 xLED10S/840 C WITH POWER 11.5 WATT
⊠	HEAVY DUTY JUNCTION BOX, FLUSH IN CEILING FOR EXHAUST FANS
WALL WSH LIGHTS	
⋮	2-POLE SWITCH
⋮	ONE WAY LIGHTING SWITCH
⋮	SWITCH WITH OCCUPANCY SENSOR
⋮	SWITCH INCLUDE DIMMER & OCCUPANCY SENSOR
⋮	3-WAY DIMMER SWITCH WITH OCCUPANCY SENSOR
DS	DAYLIGHT SENSOR
EM	EMERGENCY LIGHTING WALL MOUNTED WITH INTERNAL BACK UP BATTERY WITH MINIMUM 90 MINS AUTONOMY
EX	EXIT SIGN WALL MOUNTED WITH INTERNAL BACK UP BATTERY WITH MINIMUM 90 MINS AUTONOMY
⊙	SELF CONTAINED SMOKE/CARBON MONOXIDE (120 W/BATTERY BACKUP) - CEILING MOUNTED
⊙	SELF CONTAINED SMOKE DETECTOR/ANNUNCIATOR (120 W/BATTERY BACKUP) - CEILING MOUNTED
EM	EMERGENCY LIGHTING WITH INTERNAL BACK UP BATTERY WITH MINIMUM 90 MINS AUTONOMY - CEILING MOUNTED RATED IC / AT FOR FLAT CEILING; 20 W
H	SELF CONTAINED HEAT DETECTOR/ANNUNCIATOR (120 W/BATTERY BACKUP) - CEILING MOUNTED

GENERAL NOTES

- ALL JUNCTION BOXES, CONDUITS, AND AIRES SHALL BE SIZED PER NEC.
- CONNECT ALL EXIT LIGHTS AHEAD OF ANY LOCAL OR AUTOMATIC SWITCHING DEVICE.
- PROVIDE A CONSTANT HOT FROM PANEL BOARD DIRECTLY TO ALL EMERGENCY BATTERY PACKS/BALLASTS IN EMERGENCY LIGHTING FIXTURES AND EXIT SIGNS. EMERGENCY LIGHTING FIXTURES SHALL TURN ON TO FULL BRIGHTNESS IN CASE OF POWER LOSS.
- REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION & MOONING HEIGHTS OF ALL LIGHTING FIXTURES SHOWN ON THIS DRAWING.
- REFER TO DETAIL SHEET FOR SYMBOLS, SPECIFICATIONS, ABBREVIATIONS, AND LIGHTING FIXTURE SCHEDULE.
- ALL DEVICES AND EQUIPMENT OUTSIDE THE SCOPE OF WORK ARE EXISTING TO REMAIN U.O.N.
- CONTRACTOR SHALL PROVIDE AN ACCURATELY TYPED PANEL BOARD SCHEDULE FOR EACH PANEL BOARD.
- ELECTRICAL CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY PROBLEMS PERTAINING TO CIRCUIT AVAILABILITY OR LOAD CAPACITY PRIOR TO INSTALLATION.
- ALL EXTERIOR LUMINARIES AND ELECTRICAL DEVICES SHALL BE USED AS WEATHERPROOF TYPE.
- ALL NEW CEILING OCCUPANCY SENSORS SHALL BE DUAL-TECHNOLOGY WITH 1000 SQFT COVERAGE AT 360 DEGREES U.O.N. ON THE DRAWING. COORDINATE EXACT LOCATION AND REQUIREMENTS OF ALL OCCUPANCY SENSORS SHOWN ON THIS DRAWING WITH MANUFACTURER REPRESENTATIVE PRIOR TO COMMENCEMENT OF WORK. CONTRACTOR TO PROVIDE POWER PACKS AS REQUIRED.
- CONTRACTOR SHALL CONFIRM COMPATIBILITY OF ALL LIGHTING CONTROL DEVICES/SWITCHES/DIMMERS WITH LIGHTING FIXTURES AND BALLASTS/DRIVERS PRIOR TO SUBMITTAL.
- FIXTURE MARKED WITH SUBSCRIPT "E" IS EXISTING TO REMAIN, CONTRACTOR TO MAINTAIN CONTINUITY OF BRANCH CIRCUITS.
- ALL CONDUIT RUNS IN OPEN PLENUM SPACE SHALL BE INSTALLED IN A NEAT MANNER PERPENDICULAR OR PARALLEL TO WALLS AND PAINTED AS DIRECTED BY OWNER.

LIGHTING SCHEDULE

ID	SYMBOL	TYPE	MAKE	MODEL	WATTAGE	DESCRIPTION
L6	⊠	2 x 4 Feet Surface Mount	Lithonia	CPX 4000LM 35K M2	20	LED Light, Dimmable, CSA Certified, IC Rated, Energy Star
L2	○	JUNO LIGHTING fixture	Lithonia	TRAC-LITES R605L SERIRS	10.5	TRACK LED Light, Dimmable, CSA Certified, IC Rated, Energy Star
L5	⊙	Wall Sconce Outdoor	Lumons	-	12.6	LED Built-in, Dimmable, Aluminum, ADA & T24 Compliant
L4	⊙ EX	Emergency with Battery	Commercial Electric	EECLEDG120277	4.6	Emergency with minimum 90 min included 9.6 V Ni-Cad Battery, Efficacy 53 LPW, Max Mounting Height 35.31 Ft
L3	○	4" Can Light	Halo	HLBSL4	9.7	Energy Star, T24 Compliance, LED Light, Efficacy 76 LPW, Downlight, Dimmable from 100% to 10%

NOTES:

- THIS PLAN SHALL BE USED IN CONJUNCTION WITH THE ELECTRICAL, MECHANICAL AND PLUMBING PLANS. COORDINATION REQUIRED. NOTIFY ARCHITECT IN CASE OF DISCEPANCIES FOUND.
- MANUFACTURERS AND MODELS ARE SHOWN FOR CODE COMPLIANCE AND BIDDING PURPOSES ONLY. PRIOR ORDERING / INSTALLING ANY LIGHT FIXTURES CONTRACTOR SHALL PROVIDE SAMPLES AND CUT SHEETS TO OWNER FOR APPROVAL AND CONFIRM MANUFACTURER, MODEL, COLOR AND BUDGET / COSTS.

"AS Per Section 3-20-1.B of the Zoning Ordinance, screening shall be provided so that materials stored in any outdoor storage area and/or equipment at grade or on the roof area screened from adjacent streets, no matter the street grade, and all properties at the same grade."

- Track lighting must be hard wired. Cord connection is not allowed. CEC 410.151.
- Track lighting must be supported at a minimum of two points and every four feet. CEC 410.154.

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

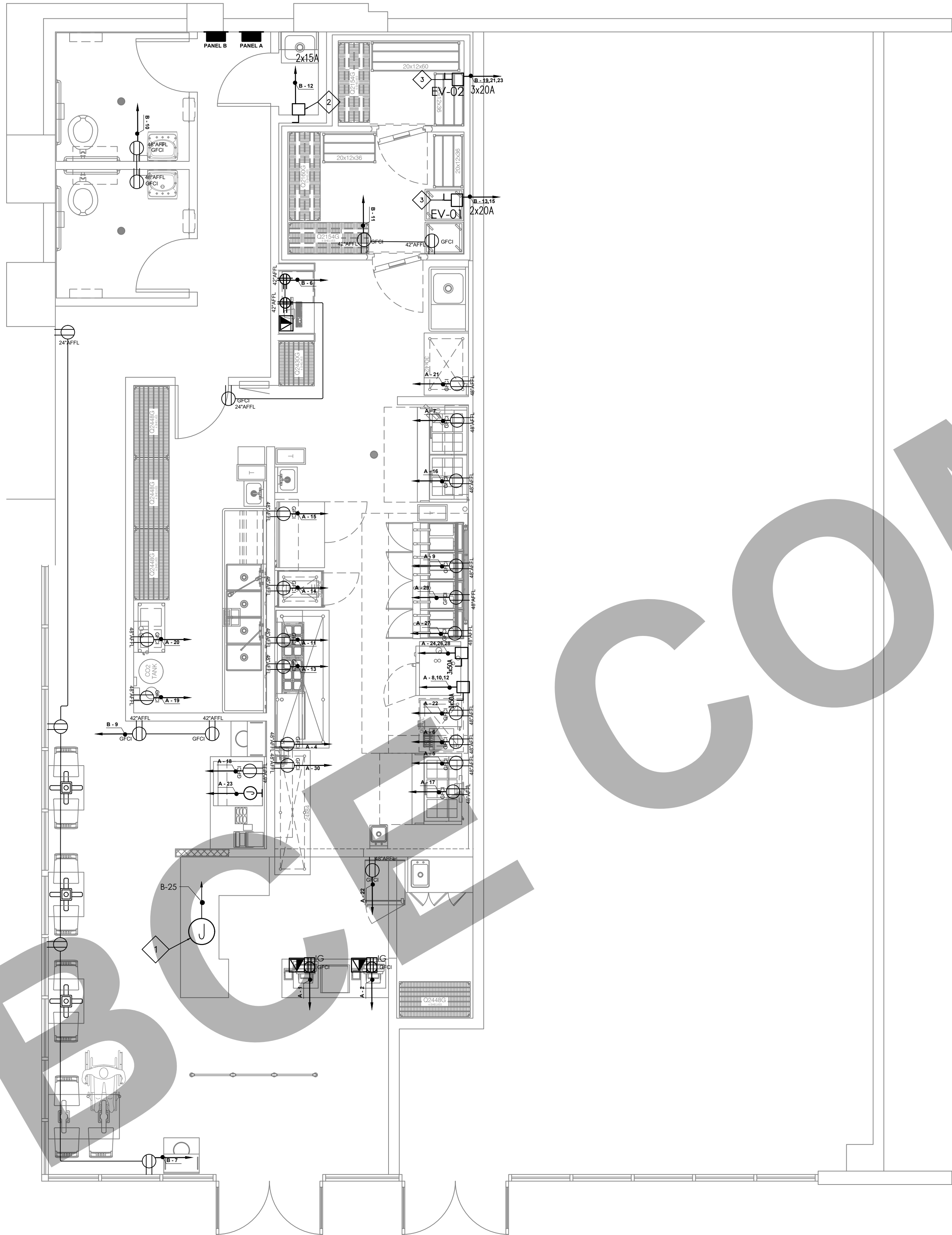
TITLE:
ELECTRICAL LIGHTING FLOOR PLAN

PROJ. NO. PROJ. ENGR. SCALE © 24X36:
1/4" = 1'-0"

DRAWING NO.

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REV.



GENERAL NOTES

- ALL 120 VOLT, SINGLE PHASE 15 AND 20 AMPERE BRANCH CIRCUIT SUPPLYING OUTLETS INSTALLED IN DWELLING UNIT FAMILY ROOMS, DINING ROOMS, LIVING ROOMS, PARLORS, LIBRARIES, DEN, BEDROOMS, SUNROOMS, RECREATION ROOMS, CLOSETS, HALLWAYS, OR SIMILAR AREAS SHALL BE PROTECTED BY A LISTED ARC-FAULT CIRCUIT INTERRUPTER, COMBINATION TYPE INSTALLED TO PROVIDE PROTECTION OF THE BRANCH CIRCUIT. (NEC ARTICLE 210.12(A))
- IN EVERY KITCHEN, FAMILY ROOM, DINING ROOM, LIVING ROOM, PARLOR, LIBRARY, DEN, SUNROOM, BEDROOM, RECREATION ROOM OR SIMILAR ROOM OR AREA OF DWELLING UNITS RECEPTACLE OUTLETS SHALL BE INSTALLED IN ACCORDANCE WITH THE GENERAL PROVISIONS SPECIFIED IN THE FOLLOWING ARTICLES.
 - NEC ARTICLE 210.52(A) (1) SPACING, RECEPTACLES SHALL BE INSTALLED THAT NO POINT ALONG THE FLOOR LINE OF THE WALL IS MORE THAN 6- FEET FROM A RECEPTACLE.
 - NEC article 210.52(a) (2) AS AMENDED WALL SPACE, ANY WALL 24-INCHES OR MORE IN LENGTH SHALL BE PROVIDED WITH A RECEPTACLE OUTLET. WALL SPACE SHALL INCLUDE AROUND CORNERS, THE FIRST SLIDING PANEL OF A SLIDING DOOR, FIXED ROOM DIVIDERS SUCH AS A FREESTANDING BAR TYPE COUNTER. WALL SPACE NED NOT INCLUDE THE SPACE BEHIND OPERABLE DOORS. AND NEED NOT INCLUDE ENTRIES, HALLWAYS ETC. LESS THAN 5- FEET WIDE LOCATED IN BEDROOMS.
 - NEC ARTICLE 210.52(A) (3) AS AMENDED FLOOR RECEPTACLES.
- IN EVERY KITCHEN, FAMILY ROOM, DINING ROOM, LIVING ROOM, PARLOR, LIBRARY, DEN, SUNROOM, BEDROOM, RECREATION ROOM OR SIMILAR ROOM OR AREA OF DWELLING UNITS, ALL 125 VOLT 15 AND 20 AMP RECEPTACLES SHALL BE LISTED TAMPER-RESISTANT RECEPTACLES NEC 406.12
- APPLIANCES IDENTIFIED IN 422.5(A)(1) THROUGH (A)(7) RATED 150 VOLTS OR LESS TO GROUND AND 60 AMPERES OR LESS, SINGLE-OR 3- PHASE, SHALL BE PROVIDED WITH CLASS A GFCI PROTECTION FOR PERSONNEL. MULTIPLE CLASS A GFCI (7) DISHWASHERS PROTECTIVE DEVICES SHALL BE PERMITTED BUT SHALL NOT BE REQUIRED.
- ELECTRICAL MATERIAL AND EQUIPMENT LISTED APPROVAL NO ELECTRICAL MATERIALS, APPARATUS, DEVICES, APPLIANCES, FIXTURES, OR EQUIPMENT SHALL BE SOLD OR INSTALLED UNLESS THEY ARE IN CONFORMANCE WITH THE PROVISIONS OF THIS CODE, THE LAWS OF THE STATE OF TEXAS AND ANY APPLICABLE RULES AND REGULATIONS ISSUED UNDER THE AUTHORITY OF THE STATE STATUTES. THE MAKERS NAME, TRADEMARK, OR OTHER IDENTIFICATION SYMBOL SHALL BE PLACED ON ALL ELECTRICAL MATERIALS, APPARATUS, DEVICES, APPLIANCES, FIXTURES, AND EQUIPMENT USED OR INSTALLED UNDER THE PROVISIONS OF THIS CODE. ALL ELECTRICAL MATERIALS AND EQUIPMENT SHALL BE LISTED AND LABELED FOR THE INTENDED USE AND SHALL BE INCLUDED IN A LIST PUBLISHED BY AN APPROVED AGENCY

SHEET NOTES:

- PROVIDE NON-FUSED NEMA 3R DISCONNECT SWITCH FOR GWH
- PROVIDE NON-FUSED NEMA 3R DISCONNECT SWITCH FOR EV1-EV2

ELECTRICAL LEGEND

- ⬮ DUPLEX RECEPTACLE - WALL MOUNTED @ +18" AFF UNLESS NOTED GFCI DENOTES: GROUND FAULT PROTECTION
- ⬮ DUPLEX RECEPTACLE - FLOOR MOUNTED IG DENOTES: IG TYPE
- ⬮ QUADRIplex RECEPTACLE - WALL MOUNTED @ +18" AFF UNLESS NOTED GFCI DENOTES: GROUND FAULT PROTECTION
- YXXX NON-FUSED DISCONNECT SWITCH - SIZE AS INDICATED
- ⬮ FLOOR DATA OUTLET WITH CAT5 CONNECTION
- ⬮ WALL MOUNTED ELECTRIC JUNCTION BOX

"AS Per Section 3-20-1.B of the Zoning Ordinance, screening shall be provided so that materials stored in any outdoor storage area and/or equipment at grade or on the roof area screened from adjacent streets, no matter the street grade, and all properties at the same grade."

Per Section 3-20-1.B of the Zoning Ordinance, screening shall be provided so that materials stored in any outdoor storage area and/or Page 3 of 4 equipment at grade or on the roof area screened from adjacent streets, no matter the street grade, and all properties at the same grade.

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

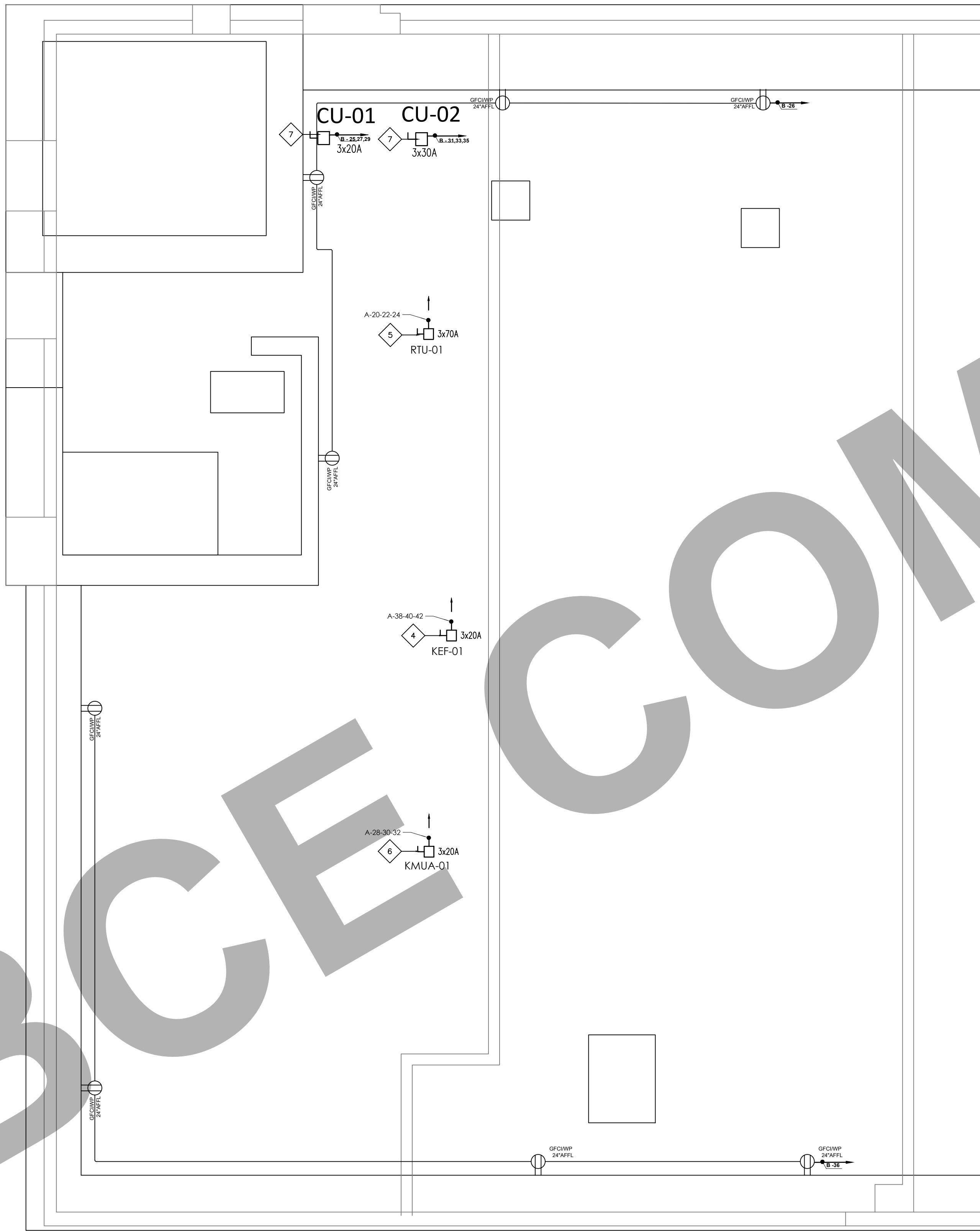
TITLE:
ELECTRICAL POWER FLOOR PLAN

PROJ. NO. PROJ. ENGR. SCALE © 24X36:
1/4" = 1'-0"

DRAWING NO.

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REV.



- SHEET NOTES:**
- 4. PROVIDE NON-FUSED NEMA 3R DISCONNECT SWITCH FOR KEF-01
 - 5. PROVIDE NON-FUSED NEMA 3R DISCONNECT SWITCH FOR RTU-01
 - 6. PROVIDE NON-FUSED NEMA 3R DISCONNECT SWITCH FOR KMUA-01
 - 7. PROVIDE NON-FUSED NEMA 3R DISCONNECT SWITCH FOR CU-01, CU-02

- YXXA**
- NON-FUSED DISCONNECT SWITCH - SIZE AS INDICATED
 - WATER PROOF DUPLEX RECEPTACLE - WALL MOUNTED @ +18" AFF UNLESS NOTED. GFCI DENOTES: GROUND FAULT PROTECTION

- ALL 120 VOLT, SINGLE PHASE 15 AND 20 AMPERE BRANCH CIRCUIT SUPPLYING OUTLETS INSTALLED IN DWELLING UNIT FAMILY ROOMS, DINING ROOMS, LIVING ROOMS, PARLORS, LIBRARIES, DEN, BEDROOMS, SUNROOMS, RECREATION ROOMS, CLOSETS, HALLWAYS, OR SIMILAR AREAS SHALL BE PROTECTED BY A LISTED ARC-FAULT CIRCUIT INTERRUPTER, COMBINATION TYPE INSTALLED TO PROVIDE PROTECTION OF THE BRANCH CIRCUIT. (NEC ARTICLE 210.12(A))
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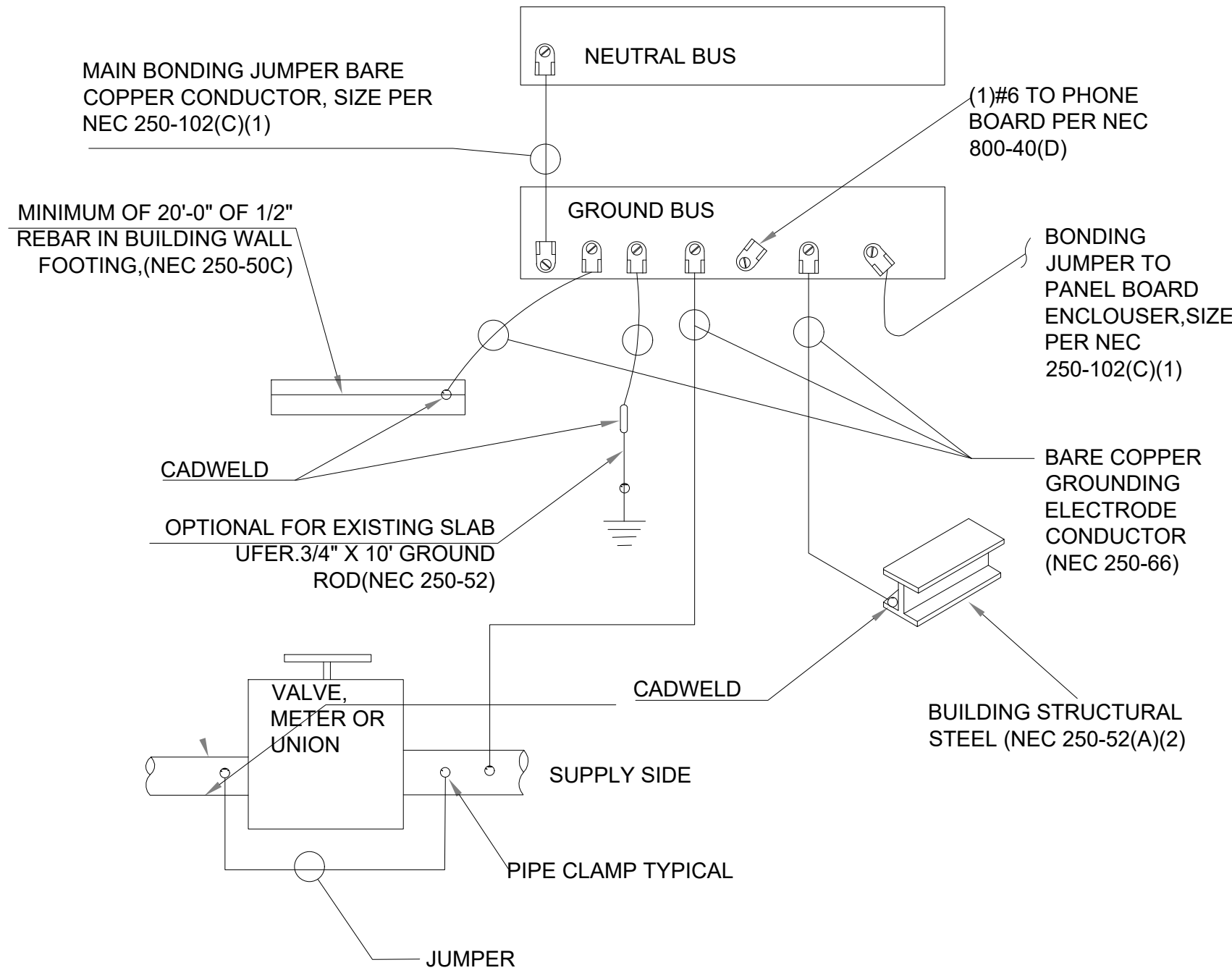
REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

TITLE:
ELECTRICAL POWER ROOF PLAN

PROJ. NO.	PROJ. ENGR.	SCALE © 24X36: 1/4" = 1'-0"
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DRAWING NO. E 3 . 0 1	REV.
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NOTE: ALL GROUNDING SHALL BE INSTALLED IN ACCORDANCE WITH ARTICLE 250-50 OF THE NATIONAL ELECTRICAL CODE, SIZE OF CONDUCTORS PER ONE-LINE

GROUNDING DETAIL

GENERAL NOTES

- ALL EXISTING COMPONENTS OF THIS ELECTRICAL DIAGRAM ARE TO REMAIN AS INSTALLED AND ARE SHOWN FOR REFERENCE ONLY.
- ALL WORK SHALL CONFORM TO THE LATEST EDITION OF THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 70, NATIONAL ELECTRICAL CODE. ALL ITEMS ARE ON AN OR EQUAL BASIS.
- ALL SINGLE PHASE BRANCH CIRCUITS (RECEPTACLES, LIGHTING, ETC., ARE 1/2" CONDUIT OR EMT WITH THIN, 90C WIRING, UNLESS NOTED OTHERWISE. ALL OTHER CONDUIT AND WIRING SHALL BE AS INDICATED ON THE PLANS. ACTUAL ROUTING AND HOME RUN GROUPINGS ARE TO BE DETERMINED IN THE FIELD.
- ELECTRICAL DRAWINGS ARE DIAGRAMMATIC EXCEPT FOR DETAILS AND ELEVATIONS. DO NOT SCALE FROM DIAGRAMMATIC DRAWINGS. EXACT LOCATIONS OF DEVICES AND PANELS ARE TO BE DETERMINED AND ROUGHED-IN DURING CONSTRUCTION TO AVOID INTERFERENCE, TO MEET USER REQUIREMENTS, TO PROVIDE ADEQUATE MOUNTING, AND TO MEET NEC LINEAR ACCESS AND CLEARANCE REQUIREMENTS.
- BACK TO BACK MOUNTING OF RECEPTACLES IS NOT PERMITTED.
- IN ADDITION TO THE NEC REQUIREMENTS FOR GFCI PROTECTION FOR RECEPTACLES, THE FOLLOWING RECEPTACLES SHALL ALSO HAVE GFCI PROTECTION: (1) ALL RECEPTACLES LOCATED WITHIN 8 FEET OF A SINK. (2) ALL RECEPTACLES WHICH ARE PROVIDED FOR CONVENIENCE IN SERVICING HVAC EQUIPMENT REGARDLESS OF LOCATION AS REQUIRED TO ACCOMMODATE CONDUCTOR PULLING EASE, FIELD LIFE SAFETY.
- PROVIDE A LAMICOID NAMEPLATE (WHITE LETTERS ON BLACK BACKGROUND, ON EACH PANELBOARD, MOTOR STARTER, CONTACTOR, TRANSFORMER, ETC. LETTERS SHALL BE 0.75 INCH MINIMUM.
- CONTRACTOR SHALL CUT AS REQUIRED TO INSTALL ELECTRICAL EQUIPMENT REPAIR OF FLOOR OR WALLS SHALL BE COORDINATED WITH GENERAL CONTRACTOR CONTRACTOR SHALL ALSO REPAIR ALL OPENINGS LEFT DUE TO EQUIPMENT REMOVAL.
- CONDUCTORS ARE COPPER UNLESS OTHERWISE SHOWN. ALL CONDUCTORS LARGER THAN #10 SHALL BE STRANDED.
- PANELBOARDS SHALL CONTAIN A TYPEWRITTEN DIRECTORY WITH A PLASTIC COVER AFFIXED TO THE INSIDE DOOR.

- ALL FIXTURES, DEVICES, CONDUIT, AND EQUIPMENT SHALL BE SECURED WITH APPROVED HANGERS AND ANCHORS AND IN ACCORDANCE WITH APPROVED STANDARDS OF INSTALLATION.
- ALL BREAKERS SHOWN IN THE PANELBOARD SCHEDULE SHALL BE RATED AS SHOWN FOR BOTH CIRCUIT CAPACITY AND FAULT CURRENT INTERRUPTING CAPACITY.
- ALL PANELBOARDS, DISCONNECT SWITCHES, MOTOR STARTERS, AND CONTACTORS SHALL BE NEMA 1, UNLESS OTHERWISE NOTED.
- ELECTRICAL CONTRACTOR MUST BE AVAILABLE AT TIME OF DBS INSPECTION. COORDINATE WITH GENERAL CONTRACTOR.
- FIELD VERIFY THE AVAILABLE FAULT CURRENT AT THE LANDLORD'S EXISTING PANEL AND PROVIDE A NEW, FULLY RATED, PANEL TO MATCH EXISTING.
- CONTRACTOR TO MAKE FINAL CONNECTIONS IN EMS PANEL FOR LANDLORD PROVIDED LIGHTING CIRCUITS. 50% OF THE GENERAL LIGHTING CIRCUITS SHOULD BE ROUTED THROUGH THE CUSTOMER CONTROL ZONE.

Available Fault Current Calculation

Utility Fault Current: 42,000 amperes, kVA: 57.03, E: 485, trans. FLA: 69

$I = \frac{kVA \times 1000}{E \times 1.732} = \text{trans. FLA}$

$I_{sc} = \frac{\text{trans. FLA} \times 100 \times PF}{\text{transformer Z}}$

I_{sc} = 2,541 amperes

Point to Point Method: Length (distance): 75, L: 75, I_{sc}: 42,000, N: 1, C: 16,483, Phase Conductor: 250 kcmil, E-L-L: 208 Volt, f: 1.591, Neutral conductor constant: 16,483, Neutral Conductor: 250 kcmil, E-L-N: 120 Volt, f: 4.137

Multiplier: $M = \frac{1}{1 + f}$, Line to Line: 0.386, Line to Neutral: 0.195

$I_{sc} \times M$ = fault current at terminals of main disconnect L-L = 16,208 amperes

$I_{sc} \times M$ = fault current at terminals of main disconnect L-N = 8,175 amperes

Fault Current from: Service Equipment to Panel B, Copper in Metal Raceway

Length (distance): 20, L: 20, I_{sc}: 16,208, Phase: 8,175, Neutral: 8,175

$I_{sc} \times M$ = fault current at terminal of the panel L-L = 13,927 amperes

$I_{sc} \times M$ = fault current at terminal of the panel L-N = 7,152 amperes

Calculation does not include motor contribution

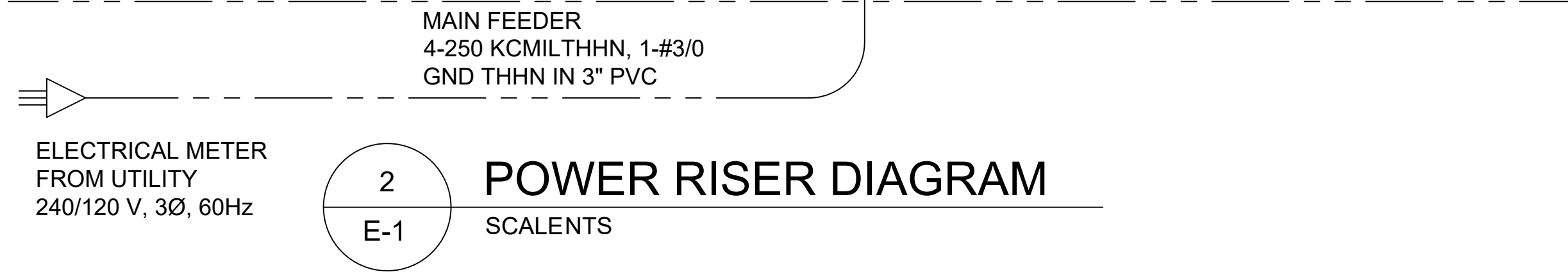
Branch Circuit Fault from: Service Equipment to Panel A, Copper in Nonmetallic Raceway

Three Phase Branch: Length (distance): 10, L: 10, I_{sc}: 13,927, Phase: 7,152, Neutral: 7,152

$I_{sc} \times M$ = fault current at terminal of the panel L-L = 12,061 amperes

$I_{sc} \times M$ = fault current at terminal of the panel L-N = 5,920 amperes

Calculation does not include motor contribution



NOTES

- CONTRACTOR TO INCLUDE IN THE CONTRACT ALL ONE TAP CHARGERS AND FEES FROM THE POWER COMPANY, AND COORDINATE WITH THE POWER COMPANY.
- PROVIDE PLAQUE STATING LOCATION OF DISCONNECTING MEANS.
- PANEL BOARD TO HAVE FULLY RATED BREAKERS UNLESS NOTED OTHERWISE.

CONTRACTOR TO PROVIDE 2" C, WITH 2# 3/0 CU, IN EACH, AND (1) EMPTY CONDUIT WITH PULL WIRE UNLESS UTILITY COMPANY STATES OTHERWISE, MINIMUM OF 36" BELOW GRADE, TO UTILITY TRANSFORMER. (CONTRACTOR MAY USE ALUMINUM WIRE ONLY FOR MAIN FEED FROM UTILITY TRANSFORMER TO MAIN SWITCH, ALL OTHER FEEDS MUST BE COPPER. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO SIZE WIRE AND GROUNDING APPROPRIATELY). IF ALUMINUM CONDUCTORS ARE USED THEN PROVIDE ANTI-OXIDANT PASTE LISTED FOR ALUMINUM CONDUCTORS AT TERMINAL WHERE ALUMINUM IS EXPOSED. PROVIDE CO/ALR LISTED TERMINALS IN WIREWAY FOR ALUMINIUM/COPPER SPLICE.

- Provide arc flash warning labels for electrical equipment such as switchboards and panelloads as required per CEC 110.16. If not already installed

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

TITLE:

SINGLE LINE LAYOUT

PROJ. NO.	PROJ. ENGR.	SCALE
		© 24X36: NTS

DRAWING NO.

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REV.

Location: RESTAURANT				CONNECTED LOAD			DEMAND
* LOAD SUMMARY	CL	DF		A	B	C	TOTAL
L Lighting	0.71	1.25		0.36	0.30	0.05	0.88
R Convenience Recept	3.94	0.40		1.44	0.88	1.62	1.58
H Heating (Space)	0.20	1.25				0.20	0.20
C Cooling		1.00					
A HVAC	26.80	1.00		9.00	9.00	8.80	26.80
P Process		1.00					
O Other Continuous		1.25					
K Kitchen		0.80					
N Noncontinuous	26.72	1.00		8.91	8.91	8.91	26.72
M Motor		1.00					
Total	58.37			19.70	19.09	19.58	56.18

Total Demand Load (KVA)	56.18
Total Demand Current (A)	155.94
Min. Feeder Ampacity (A)	194.93

DESCRIPTION		* WIRE	GRD	CB	KVA	A	B	C	KVA	CB	WIRE	GRD	DESCRIPTION	*
1	LIGHTING ENTRANCES & DINING	L	2X 14 AWG - #14G	15A-1P	0.19	0.26			0.06	15A-1P	2X 14 AWG - #14G		LIGHTING CORRIDOR	L 2
3	LIGHTING COOK LINE&DISHWASH	L	2X 14 AWG - #14G	15A-1P	0.18		0.22		0.04	15A-1P	2X 14 AWG - #14G		LIGHTINGWC-WIF	L 4
5	EMERGENCY LIGHTING	L	2X 14 AWG - #14G	15A-1P	0.05			0.59	0.54	20A-1P	2X 12 AWG - #12G		RECEPTACLES PREP	R 6
7	RECEPTACLES ENTRY & DINING	R	2X 12 AWG - #12G	20A-1P	0.72	0.76			0.04	15A-1P	2X 14 AWG - #14G		LIGHTING ENTRY	L 8
9	RECEPTACLES BEV	R	2X 12 AWG - #12G	20A-1P	0.36		0.72		0.36	20A-1P	2X 12 AWG - #12G		RECEPTACLES BATHROOM	R 10
11	RECEPTACLES WMC-WIF	R	2X 12 AWG - #12G	20A-1P	0.36			0.56	0.20	15A-2P	2X 12 AWG - #12G		GWH	H 12
13	EV-01	A	2X 12AWG-#12G	20A-2P	0.20	4.57			4.37	70A-3P	3X 4 AWG - #4G		RTU-01	A 14
15		A			0.20		4.57		4.37					A 16
17	SPACE							4.37	4.37					A 18
19	EV-02	A	3X 10 AWG - #10G	20A-3P	0.60	0.60							SPACE	A 20
21		A			0.60		0.60							A 22
23		A			0.60			0.60						A 24
25	CU-01	A	3X 10 AWG - #10G	20A-3P	1.04	1.76			0.72	20A-1P	2X 12 AWG - #12G		RECEPTACLES ON ROOF	R 26
27		A			1.04		1.59		0.55	15A-3P	3X 10 AWG - #10G		KMUAF-01	A 28
29		A			1.04		1.59		0.55					A 30
31	CU-02	A	3X 10 AWG - #10G	30A-3P	1.73	2.28			0.55					A 32
33		A			1.73		1.89		0.16	15A-1P	2X 12 AWG - #12G		SMOKE DETECTORS	R 34
35		A			1.73			2.45	0.72	20A-1P	2X 12 AWG - #12G		RECEPTACLES ON ROOF	R 36
37	PANEL-A	N	3X 1 AWG - #6G	100A-3P	8.91	9.42			0.51	15A-3P	3X 10 AWG - #10G		KEF-01	A 38
39		N			8.91		9.42		0.51					A 40
41		N			8.91			9.42	0.51					A 42
43	LIGHTING BATHROOMS	L	2X 14 AWG - #14G	15A-1P	0.06	0.06							SPACE	A 44
45	LIGHTING P.O.S	L	2X 14 AWG - #14G	15A-1P	0.08		0.08						SPACE	A 46
47	SPACE												SPACE	A 48
49	SPACE												SPACE	A 50
(KVA)														
Total Connected Load					19.70	19.09	19.58							

PANEL B	
PANELBOARD DESIGNATION	
SYSTEM VOLTAGE	208/120V, 3Φ, 4W
BUS SIZE	225
SYSTEM TYPE	NORMAL
FEEDER PROT	225A-3P C/B Bus Plug
CONDUCTOR SIZE	250-kcmil - #3/0G CU
CONDUCTOR/PHASE	1
MAINS	225A MCB
SCCR	FULLY RATED
MCB RATING	80%
GROUND FAULT	NO
FEEDER LENGTH (FT)	50
FEEDER V. DROP (%)	0.967
FAULT CURRENT	
KAIC RATING	22
ENCLOSURE	TYPE 3R

Location: RESTAURANT				CONNECTED LOAD			DEMAND
* LOAD SUMMARY	CL	DF	A	B	C	TOTAL	
L Lighting		1.25					
R Convenience Recept	0.70	0.40	0.40		0.30	0.28	
H Heating (Space)		1.25					
C Cooling		1.00					
A HVAC		1.00					
P Process		1.00					
O Other Continuous		1.25					
K Kitchen	22.00	6.00	13.60	14.27	12.81	26.44	
N Noncontinuous		1.00					
M Motor		1.00					
Total	22.70		14.00	14.27	13.11	26.72	

Total Demand Load (KVA)	26.72
Total Demand Current (A)	74.18
Min. Feeder Ampacity (A)	92.72

PANEL A			
PANELBOARD DESIGNATION			
SYSTEM VOLTAGE	208/120V, 3Φ, 4W		
BUS SIZE	100		
SYSTEM TYPE	NORMAL		
FEEDER PROT	100A-3P C/B Bus Plug		
CONDUCTOR SIZE	1 AWG - #6G CU		
CONDUCTOR/PHASE	1		
MAINS	100A MCB		
SCOR	FULLY RATED		
MCB RATING	80%		
GROUND FAULT	NO		
FEEDER LENGTH (FT)	50		
FEEDER V. DROP (%)	0.642		
FAULT CURRENT	3342.747		
KAIC RATING	22		
ENCLOSURE	TYPE 3R		

DESCRIPTION	* WIRE	GRD	CB	KVA	A	B	C	KVA	CB	WIRE	GRD	DESCRIPTION	*
1 POS-1	K 2X 10 AWG - #10G		20A-1P	0.26	0.52			0.26	20A-1P	2X 10 AWG - #10G		POS-2	K 2
3 COOLER DISPLAY	K 2X 10 AWG - #10G		20A-1P	0.65		0.95		0.30	20A-1P	2X 10 AWG - #10G		KITCHEN DISPLAY & CONTROLLER	K 4
5 MAKEBOX	K 2X 10 AWG - #10G		20A-1P	0.35			0.56	0.21	20A-1P	2X 10 AWG - #10G		BUN TOASTER	K 6
7 KITCHEN DISPLAY & CONTROLLER1	K 2X 10 AWG - #10G		20A-1P	0.30	4.50			4.20	50A-3P	3X 6 AWG - #6G		COMBI OVEN CONNECTION-1	K 8
9 FRY BATTERY	K 2X 10 AWG - #10G		20A-1P	0.94		5.14		4.20					K 10
11 WARMER-1	K 2X 10 AWG - #10G		20A-1P	1.20			5.40	4.20					K 12
13 WARMER-2	K 2X 10 AWG - #10G		20A-1P	1.20	3.28			2.08	25A-1P	2X 10 AWG - #10G		HOLDING CABINET	K 14
15 FREEZER TOP	K 2X 10 AWG - #10G		20A-1P	0.67		1.24		0.58	20A-1P	2X 10 AWG - #10G		BREEDING STATION	K 16
17 KITCHEN DISPLAY & CONTROLLER2	K 2X 10 AWG - #10G		20A-1P	0.30			1.42	1.12	20A-1P	2X 10 AWG - #10G		SODA DISPENSOR	K 18
19 CO2 MONITOR	K 2X 10 AWG - #10G		20A-1P	0.30	1.10			0.80	20A-1P	2X 10 AWG - #10G		SODA FILTRATION SYSTEM	K 20
21 DATA CODE SYSTEM	K 2X 10 AWG - #10G		20A-1P	0.30		1.62		1.32	20A-1P	2X 10 AWG - #10G		FRY DUMP STATION	K 22
23 ICE MACHINE	K 2X 10 AWG - #10G		20A-1P	0.30			4.50	4.20	50A-3P	3X 6 AWG - #6G		COMBI OVEN CONNECTION-2	K 24
25 MENU BOARD	R 2X 10 AWG - #10G		20A-1P	0.40	4.60			4.20					K 26
27 COMBI OVEN SMOKER ACCESSORY	K 2X 12AWG-#12G		20A-1P	1.12		5.32		4.20					K 28
29 FRY BATTERY	K 2X 10 AWG - #10G		20A-1P	0.94			1.24	0.30	15A-1P	2X 12 AWG - #12G		LABEL PRINTER	R 30
31 SPACE												SPACE	32
33 SPACE												SPACE	34
35 SPACE												SPACE	36

(KVA)						
Total Connected Load				14.00	14.27	13.11

PANEL A	
PANELBOARD DESIGNATION	
SYSTEM VOLTAGE	208/120V, 3Φ, 4W
BUS SIZE	100
SYSTEM TYPE	NORMAL
FEEDER PROT	100A-3P C/B Bus Plug
CONDUCTOR SIZE	1 AWG - #6G CU
CONDUCTOR/PHASE	1
MAINS	100A MCB
SCCR	FULLY RATED
MCB RATING	80%
GROUND FAULT	NO
FEEDER LENGTH (FT)	50
FEEDER V. DROP (%)	0.642
FAULT CURRENT	3342.747
KAIC RATING	22
ENCLOSURE	TYPE 3R

CLIENT:

ADDRESS:

CONFIDENTIALITY STATEMENT:

ALL DRAWINGS AND WRITTEN MATERIALS
APPEARING HEREIN CONSTITUTE THE
ORIGINAL AND UNPUBLISHED WORK OF THE
DESIGNER AND THE SAME MAY NOT BE
DUPLICATED, USED OR DISCLOSED WITHOUT
CONSENT OF THE DESIGNER.

NOTES:

1. ALL DIMENSIONS HEREIN ARE IN IMPERIAL UNITS UNLESS STATED OTHERWISE.
2. THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL RELEVANT DESIGNER, ENGINEER OR SPECIALIST DRAWINGS AND SPECIFICATIONS.
3. THE CONTRACTOR MUST CHECK ALL DIMENSION AT SITE BEFORE COMMENCING WORK.
4. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY TEMPORARY SUPPORT TO THE BUILDING AND ANY ADJACENT STRUCTURES.

REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

TITLE:
**PANEL BOARDS
SCHEDULE**

PROJ. NO.	PROJ. ENGR.	SCALE © 24X36: NTS
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DRAWING NO.

REV.

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PLUMBING SPECIFICATIONS

THE WORK INCLUDES MODIFICATION TO THE EXISTING PLUMBING SYSTEM AND PROVIDING NEW MATERIALS, FITTINGS AND ACCESSORIES NECESSARY FOR A COMPLETE FUNCTIONING PLUMBING SYSTEM. THE WORK ALSO INCLUDES ROUGH-IN AND FINAL CONNECTIONS TO FOOD SERVICE EQUIPMENT AND BEVERAGE DISPENSING EQUIPMENT PROVIDED BY OTHERS. ALL WORK SHALL BE IN ACCORDANCE WITH LOCAL CODES AND/OR ORDINANCES AND IS SUBJECT TO INSPECTION. HOOK-UP CHARGES, PERMITS AND ALL OTHER EXPENSES RELATED TO A COMPLETE AND FUNCTIONING PLUMBING SYSTEM ARE INCLUDED AS A PART OF THIS SECTION. WARRANTY: PROVIDE LABOR AND MATERIALS TO REPAIR OR REPLACE DEFECTIVE PARTS AND MATERIALS AS REQUIRED FOR ONE YEAR AFTER SUBSTANTIAL COMPLETION OR OWNER ACCEPTANCE OF THE COMPLETED PROJECT. PROVIDE A SEPARATE LINE ITEM DEDUCT AMOUNT ON THE PROPOSAL FORM TO DELETE WARRANTY SERVICE, AT THE OWNER'S OPTION. THE INTENT OF THE DRAWINGS IS TO INDICATE THE GENERAL EXTENT OF WORK REQUIRED FOR THE PROJECT. THE DRAWINGS FOR PLUMBING WORK ARE DIAGRAMMATIC, SHOWING THE GENERAL LOCATION, TYPE, FIXTURES AND EQUIPMENT REQUIRED. THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENTS. REFER TO MANUFACTURER'S STANDARD ROUGH-IN DRAWINGS FOR PLUMBING FIXTURE INSTALLATION REQUIREMENTS. COMPLY WITH ALL APPLICABLE ADA INSTALLATION REQUIREMENTS. COORDINATE WITH THE WORK OF OTHER SECTIONS, EQUIPMENT FURNISHED BY OTHERS, AND WITH THE CONSTRAINTS OF THE EXISTING CONDITIONS OF THE PROJECT SITE. PIPING SYSTEMS - GENERAL: ALL PIPING SHALL BE RUN PARALLEL TO BUILDING LINES AND SUPPORTED AND ANCHORED AS REQUIRED TO FACILITATE EXPANSION AND CONTRACTION. ALL PIPING SHALL BE CONCEALED EXCEPT IN UNFINISHED SPACES. INSTALL AS REQUIRED TO MEET ALL CONSTRUCTION CONDITIONS AND TO ALLOW FOR INSTALLATION OF OTHER WORK SUCH AS DUCTS AND ELECTRICAL CONDUIT. AT ALL CONNECTIONS BETWEEN FERROUS PIPING AND NONFERROUS PIPING, PROVIDE AN ISOLATING DIALECTIC UNION. ALL HANGERS SHALL BE COMPATIBLE WITH PIPING MATERIAL TO PREVENT CORROSION. PROVIDE ALL FITTINGS, ACCESSORIES, OFFSETS, AND MATERIALS NECESSARY TO FACILITATE THE PLUMBING SYSTEM'S FUNCTIONING AS INDICATED BY THE DESIGN AND THE EQUIPMENT INDICATED. FIXTURES/EQUIPMENT FURNISHED BY OTHERS: PLUMBING CONTRACTOR SHALL PROVIDE UTILITY CONNECTIONS REQUIRED SUCH AS WATER, GAS, AIR, SUPPLIES, WASTE OUTLET, TRAPS, ETC. AT ALL PLUMBING TYPE FIXTURES OR EQUIPMENT FURNISHED BY OWNER, GENERAL CONTRACTOR, FOOD SERVICE CONTRACTOR, EQUIPMENT SUPPLIER, ETC. INCLUDED ARE STOP VALVES, ESCUTCHEONS, AND CHROME PLATED BRASS TUBING WITH COMPRESSION FITTINGS. SEWER AND WASTE PIPING: PROVIDE ALL DRAINS AND SEWERS WITHIN THE SPACE WITH CONNECTION TO THE EXISTING DRAINAGE SYSTEMS ON-SITE. SANITARY DRAINAGE PIPING ABOVE FLOOR SHALL BE CO-EXTRUDED PVC DWV (SCHEDULE 40) PIPE, FITTINGS AND CONNECTIONS. SANITARY DRAINAGE PIPING BELOW GRADE SHALL BE CO-EXTRUDED PVC DWV (SCHEDULE 40) PIPE WITH SOLVENT WELD FITTINGS MAY BE USED (WHERE PERMITTED BY CODE/LOCAL AUTHORITIES). ALL DRAINAGE PIPING SHALL BE UNIFORMLY PITCHED, 1/4" PER FOOT UNLESS OTHERWISE REQUIRED BY EXISTING CONDITIONS, OR INDICATED ON THE DRAWINGS. VENTS: PROVIDE A COMPLETE SYSTEM OF STANDARD WEIGHT CAST IRON NO-HUB VENT RISERS WHERE THE CEILING SPACE IS USED AS A RETURN AIR PLENUM OR USE CO-EXTRUDED PVC DWV (SCHEDULE 40) PIPE (WHERE PERMITTED BY CODE/LOCAL AUTHORITIES) WHERE THERE IS A DUCTED RETURN AIR SYSTEM. DO NOT USE PVC PIPE IN RETURN AIR PLENUM SPACES. THE VENT SYSTEM SHALL BE CARRIED THROUGH THE ROOF WITH APPROPRIATE FLASHING. CONDENSATE AND INDIRECT DRAIN PIPING: PIPING ABOVE FLOOR SHALL BE CO-EXTRUDED PVC DWV (SCHEDULE 40) PIPE, FITTINGS AND CONNECTIONS. PIPING BELOW GRADE SHALL BE CO-EXTRUDED PVC DWV (SCHEDULE 40) PIPE WITH SOLVENT WELD FITTINGS. CLEANOUTS: PROVIDE CLEANOUTS AT THE END OF EACH HORIZONTAL RUN, AND AT THE BASE OF ALL VERTICAL WASTE AND DRAIN PIPES. CLEANOUTS SHALL BE OF THE SAME SIZE AS THE PIPES THEY SERVE, CONFORMING TO CODE REQUIREMENTS. PROVIDE SUITABLE WALL OR FLOOR CLEANOUTS WITH ACCESSORIES TO OBSCURE FROM VIEW. WATER DISTRIBUTION PIPING: LAYOUT WATER PIPING SO THAT THE ENTIRE SYSTEM CAN BE DRAINED. HOT AND COLD WATER PIPING SHALL BE 1/2" MIN. CPVC PIPE WITH SOLVENT FITTING. PROVIDE WATER HAMMER ARRESTERS AT EACH FIXTURE OR GROUP OF FIXTURES AS REQUIRED. INSTALL CHROME PLATED BRASS ESCUTCHEON PLATES AT ALL PENETRATIONS THROUGH FINISHED SURFACES (INCLUDING CABINET INTERIORS). PIPE INSULATION: INSULATE (AS ALLOWED BY CODE) ALL LISTED SERVICE PIPING AS FOLLOWS. DOMESTIC COLD/HOT WATER, HOT WATER RETURN, STORM WATER PIPING. PROVIDE 1" PREFORMED FIBERGLASS, ASJ/SS-11, FLAME SPREAD 25, SMOKE DEVELOPED 50, ASTM C-547. FOR CONDENSATE PIPING PROVIDE 1/2" THICK INSULATION OF SAME CHARACTERISTICS AS LISTED FOR 1" ABOVE. WHERE PERMITTED BY LOCAL CODES, PROVIDE 1/2" SELF-ADHESIVE UNICELLULAR FOAM PIPE INSULATION WITH PRE-FORMED PVC FITTING COVERS - EQUAL TO SELF-ADHESIVE ARMSTRONG 2000 WITH K FACTOR OF 0.27 AT 75 DEGREES MEAN TEMPERATURE. INSULATE ANY EXPOSED CONDENSATE PIPING WITH WASTE TEMPERATURE BELOW 60 DEGREES F. SHUTOFF VALVES, WITH UNIONS SHALL BE PROVIDED FOR SERVICE TO EACH PLUMBING FIXTURE, FOOD SERVICE EQUIPMENT ITEM OR OTHER EQUIPMENT ITEM, TO FACILITATE ISOLATION FOR REPAIR OR REPLACEMENT. VALVES SHALL BE EQUAL TO JENKINS #902-T BALL VALVE, CHROME-FINISHED BRONZE, TEFLON SEATS AND PACKING, 400 LB. W.O.G., SOLDER END. ACCESS PANELS SHALL BE PROVIDED WHERE CONCEALED CONTROL DEVICES, VALVES, ETC. ARE CONCEALED WITHIN WALLS. WHERE ACCESS FOR ADJUSTMENT AND MAINTENANCE IS POSSIBLE THROUGH LAY-IN SUSPENDED CEILINGS, ACCESS PANELS ARE NOT REQUIRED. PIPING SYSTEM- PVC SCHEDULE 40, SCHEDULE 80 AND CPVC PIPE WITH SOLVENT FITTINGS SHALL BE USED WHERE PEMITTED BY CODE/LOCAL AUTHORITIES. INSTALLATION: THOROUGHLY CLEAN ITEMS BEFORE INSTALLATION. CAP PIPE OPENINGS TO EXCLUDE DIRT UNTIL FIXTURES ARE INSTALLED AND FINAL CONNECTIONS HAVE BEEN MADE. PROCEED AS RAPIDLY AS CONSTRUCTION WILL PERMIT. SET FIXTURES LEVEL AND IN PROPER ALIGNMENT. INSTALL SUPPLIES IN PROPER ALIGNMENT WITH FIXTURES. INSTALL SILICONE SEALANT BETWEEN FIXTURES AND ADJACENT MATERIAL, FOR SANITARY JOINT, AND OMIT ESCUTCHEONS. REPAIR EXISTING PLUMBING SYSTEM COMPONENTS DAMAGED BY CONSTRUCTION OPERATIONS AND RESTORE TO ORIGINAL CONDITIONS. TEST WATER SYSTEM UNDER 150 PSIG HYDROSTATIC PRESSURE, FOR FOUR (4) HOURS MINIMUM. WHEN TESTING INDICATES MATERIALS OR WORKMANSHIP IS DEFICIENT, REPLACE OR REPAIR AS REQUIRED, AND REPEAT TEST UNTIL STANDARDS ARE ACHIEVED. ROOF PENETRATIONS SHALL COMPLY WITH "SMACNA" AND "NRCA" STANDARDS, AND WITH THE REQUIREMENTS OF THE EXISTING ROOFING WARRANTY, IF APPLICABLE. DO NOT PERFORM ROOFING PENETRATIONS IN A MANNER WHICH WOULD VOID OR OTHERWISE LIMIT THE EXISTING ROOFING WARRANTY.

GENERAL NOTES

1. THE INTENT OF THESE PLANS AND SPECIFICATIONS IS TO INCLUDE ALL LABOR, EQUIPMENT, MATERIALS, AND SERVICES NECESSARY TO FURNISH, INSTALL, TEST, AND ADJUST A COMPLETE WORKABLE PLUMBING INSTALLATION AS SHOWN, PRESCRIBED, OR REASONABLY IMPLIED BUT NOT LIMITED TO THAT EXPLICITLY INDICATED IN THE CONTRACT DOCUMENTS, BUT NECESSARY FOR THE PROPER EXECUTION AND COMPLETION OF THE INTENT THEREOF.
2. THE ENTIRE INSTALLATION SHALL CONFORM TO THE REQUIREMENTS OF THE 2022 CALIFORNIA PLUMBING CODE, 2022 CALIFORNIA BUILDING CODE, 2022 CALIFORNIA ENERGY CONSERVATION CODE AND ALL OTHER APPLICABLE CODES AND REGULATIONS REQUIRED BY AUTHORITIES HAVING JURISDICTION. IN THE EVENT OF CONFLICT BETWEEN SPECIFICATIONS, CODES, AND REGULATIONS, THE MORE RESTRICTIVE SHALL APPLY.
3. COORDINATE ENTIRE INSTALLATION OF THE PLUMBING SYSTEM WITH THE WORK OF OTHER TRADES PRIOR TO ANY FABRICATION OR INSTALLATION. FIELD VERIFY ALL DIMENSIONS AND CONDITIONS. REPORT ANY DISCREPANCIES, IN WRITING, TO THE ENGINEER PRIOR TO COMMENCEMENT OF WORK.
5. CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS WITH ALL CHANGES NOTED THEREON AT THE COMPLETION OF THE PROJECT IN ACCORDANCE WITH THE SPECIFICATIONS. PROVIDE ONE YEAR WARRANTY ON ALL PARTS AND LABOR.
6. THE DRAWINGS ARE DIAGRAMMATIC AND INTENDED TO SHOW SCOPE. CONTRACTOR SHALL COORDINATE HIS WORK WITH OTHER TRADES TO PROVIDE THE BEST ARRANGEMENT OF ALL DUCT, PIPE, CONDUIT, ETC. ALL CUTTING AND PATCHING OF THE EXISTING STRUCTURE SHALL BE PROVIDED UNDER OTHER SECTIONS OF THE WORK. PROVIDE NECESSARY REQUIREMENTS TO THE PROJECT SUPERINTENDENT.
8. ALL HOT WATER PIPING AND RECIRCULATION PIPING (EXCEPT RUNOUTS 12 FT. OR SHORTER TO INDIVIDUAL FIXTURES) SHALL BE INSULATED TO MEET THE REQUIREMENTS OF THE 2022 CALIFORNIA ENERGY CONSERVATION CODE
9. CONDENSATE DRAINS SHALL BE PROVIDED FOR EACH AIR CONDITIONING UNIT. HORIZONTAL CONDENSATE DRAINS ABOVE ANY CEILING SHALL BE INSULATED WITH MIN. 3/8" THICK CLOSED CELL INSULATION.
10. PIPING:

A. WASTE, VENT, AND STORM DRAIN PIPING SHALL BE CO-EXTRUDED PVC SCHEDULE 40) PIPE

B. WATER PIPE SHALL BE CPVC PIPE

C. CONDENSATE PIPING SHALL BE CO-EXTRUDED PVC (SCHEDULE 40) PIPE

D. INSIDE GAS PIPING SHALL BE BLACK IRON SCHEDULE 40 WITH MALLEABLE IRON FITTINGS. OUTSIDE SHALL BE GALVANIZED IRON SCHEDULE 40 WITH GALVANIZED FITTINGS. GAS LINE TO BE PAINTED GRAY IN COLOR. A 24 HOUR METERED GAS TEST SHALL BE REQUIRED.

E. ALL PIPING NOT ENCLOSED IN CONDITION SPACE OR AT EXTERIOR WALLS SHALL BE INSULATED.

F. PIPING: PVC SCHEDULE 40, SCHEDULE 80 AND CPVC PIPING WITH SOLVENT WELD FITTINGS SHALL BE USED WHERE PERMITTED BY CODE/LOCAL AUTHORITIES
11. ALL VENTS OR EXHAUSTS SHALL BE AT LEAST 10 FT. AWAY OR 3 FT. ABOVE ANY WINDOW, DOOR, OPENING, OR AIR INTAKE.
12. CLEANOUTS SHALL BE INSTALLED PER THE 2022 CALIFORNIA PLUMBING CODE.
13. PROVIDE WATER TIGHT FLASHINGS WHEREVER PIPES PASS THROUGH EXTERIOR WALLS, ROOFS, OR FLOORS.
14. PROVIDE ISOLATION FOR ALL PIPES THAT COME IN CONTACT WITH THE STRUCTURE.
15. LOCATION OF EXISTING UTILITIES AND POINTS OF CONNECTION ARE APPROXIMATE. CONTRACTOR SHALL VERIFY EXACT LOCATIONS AND DEPTHS OF EXISTING UTILITIES AND SERVICES PRIOR TO STARTING WORK OF THIS SECTION. IF INDICATED POINTS OF CONNECTION CANNOT BE MADE TO EXISTING UTILITIES AS FOUND, THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO INSTALLING ANY WORK WHICH MAY BE AFFECTED.
16. VALVES SHALL BE NIBCO, JENKINS, HAMMOND, RED & WHITE OR APPROVED EQUAL. SERVICE PRESSURE SHALL BE SUITABLE FOR SERVICE INTENDED. THE MAIN WATER SHUT OF VALVE SHALL BE A FULL PORT BALL TYPE AND APPROVED FOR SERVICE INTENDED.
17. CONTRACTOR SHALL PROVIDE ALL SHUT OFF VALVES AS NECESSARY TO ISOLATE ANY EQUIPMENT, PLUMBING ITEMS, OR FIXTURES, THAT MAY NEED SERVICING OR ARE SUBJECT TO FAILURE WHETHER OR NOT SUCH VALVES ARE SHOWN ON THE DRAWINGS.
18. PROVIDE HANGERS AND SUPPORTS AS REQUIRED. PLUMBERS TAPE AND WIRE ARE NOT ACCEPTABLE.
19. CONTRACTOR IS RESPONSIBLE FOR HIS OWN TRENCHING, BACKFILL, AND COMPACTION OF TRENCHES NECESSARY TO COMPLETE HIS SCOPE OF WORK. BACKFILLED TRENCHES SHALL BE RETURNED TO THEIR ORIGINAL GRADE UNLESS NOTED OTHERWISE.
20. CONTRACTOR SHALL AFFIX A MAINTENANCE LABEL TO ALL EQUIPMENT REQUIRING ROUTINE MAINTENANCE AND SHALL PROVIDE MAINTENANCE AND OPERATIONAL MANUALS IN ACCORDANCE WITH THE SPECIFICATIONS.
21. ALL EQUIPMENT THAT REQUIRES KEYS OR SPECIAL TOOLS TO OPERATE SHALL SUPPLY THE OWNER WITH TWO OF ANY SUCH KEYS OR TOOLS FOR EACH PIECE OF EQUIPMENT THAT REQUIRE THE SAME.
25. ANY CHANGE OR DEVIATION FROM THESE PLANS OR SPECIFICATIONS SHALL REQUIRE THE APPROVAL, IN WRITING, OF THE ENGINEER PRIOR TO COMMENCEMENT OF SUCH WORK.
26. ALL PLUMBING, ELECTRICAL, AND GAS LINES SHALL BE CONCEALED WITHIN THE THE BUILDING STRUCTURE TO AS GREAT EXTENT AS POSSIBLE. ALL LINES NOT CONCEALED SHALL BE SECURED 6" OFF THE FLOOR AND 3/4" FROM THE WALLS USING STANDOFF BRACKETS
27. AN APPROVED BACKFLOW PREVENTOR SHALL BE PROPERLY INSTALLED UPSTREAM OF ANY POTENTIAL HAZARD BETWEEN THE POTABLE WATER SUPPLY AND SOURCE OF CONTAMINATION.
28. WATER SUPPLY CARBONATORS SHALL BE PROTECTED BY AN APPROVED REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTOR. THE RELIEF VALVE SHALL DRAIN IN-DIRECTLY TO A FLOOR SINK WITH A 1" MIN. AIR GAP.

PLUMBING LEGEND		
SYMBOL	ABBREV.	DESCRIPTION
	SS or W	NEW SEWER OR WASTE
	V	NEW VENT
	CW	NEW COLD WATER
	HW	NEW HOT WATER
	G	NEW GAS
	CD	NEW CONDENSATE DRAIN
	CA	COMPRESSED AIR
—CA—	FCO	FLOOR CLEANOUT
—H—	WCO	WALL CLEANOUT
—H—	FD	FLOOR DRAIN
—H—	FS	FLOOR SINK
—H—	TP	TRAP PRIMER & TRAP PRIMER PIPING
—H—	SOV	SHUT-OFF VALVE
—H—	CV	CHECK VALVE
—H—	BFP	BACKFLOW PREVENTER W SOV'S
—H—	T & P	
—H—	DN	PIPE DOWN
—H—	UP	PIPE UP
—H—	POC	POINT OF CONNECTION
—H—	-	PLUMBING NOTE CALL-OUT
—H—	ABV	ABOVE
—H—	AFF	ABOVE FINISH FLOOR
—H—	AP	ACCESS PANEL
—H—	BEL	BELOW
—H—	BLDG	BUILDING
—H—	CLG	CEILING
—H—	CONT	CONTINUATION
—H—	EL	ELEVATION
—H—	FIN	FINISH
—H—	FL	FLOOR
—H—	GR	GRADE
—H—	NTS	NOT TO SCALE
—H—	OC	ON CENTER
—H—	S = %	SLOPE AT A PERCENTAGE
—H—	SHT	SHEET
—H—	TYP	TYPICAL
—H—	VTR	VENT THRU ROOF

PLUMBING / GENERAL NOTES

BATHTUBS AND WHIRLPOOL BATHTUBS. THE MAX. HOT WATER TEMPERATURE DISCHARGING SHALL BE LIMITED TO 120 DEGREES.

BATHTUBS WASTE OPENING IN FLOOR OVER CRAWL SPACES SHALL BE PROTECTED BY A METAL SCREEN NOT EXCEEDING 12" OR SOLID COVER.

SHOWERS AND TUB-SHOWERS COMBINATIONS IN ALL BUILDINGS SHALL BE PROVIDED WITH INDIVIDUAL CONTROL VALVES OF THE PRESSURE BALANCE, THERMOSTATIC, OR COMBINATION OF BOTH THAT PROVIDE SCALD AND THERMAL SHOCK PROTECTION. VALVES SHALL BE ADJUSTED TO DELIVER A MAXIMUM MIXED WATER SETTING OF 120 DEGREES FAHRENHEIT. THE WATER HEATER THERMOSTAT SHALL NOT BE CONSIDERED A SUITABLE CONTROL FOR MEETING THIS PROVISION. VERIFY AND WHERE WATER PRESSURE EXCEEDS 80 PSI AN APPROVED PRESSURE REGULATOR PRECEDED BY AN ADEQUATE STRAINER SHALL BE INSTALLED

1-INSTALL TEMPERATURE AND PRESSURE RELIEF VALVE WITH MINIMUM 3/4" DRAIN PIPE AND TERMINATE TO THE EXTERIOR OF THE BUILDING OVER WINDOW, DOOR OR VISIBLE LOCATION. DISCHARGE FROM A RELIEF VALVE INTO A WATER HEATER PAN SHALL BE PROHIBITED

2-PROVIDE (ON THE PLANS) A GAS PIPING DIAGRAM OF THE GAS PIPING SYSTEM THAT INCLUDES ALL PIPE SIZES, PIPE LENGTHS AND BTU RATINGS.

3-SUBMIT GAS LOAD CALCULATIONS IN ACCORDANCE WITH CPC TABLE 12-8 TO VERIFY THE PIPE SIZES ARE ADEQUATE FOR THE MAXIMUM DELIVERY CAPACITY OF CUBIC FEET OF GAS PER HOUR.

4- A WHOLE HOUSE HAS TEST IS REQUIRED UPON COMPLETION OF THE INSTALLATION, ALTERATION, OR REPAIR OF ANY GAS PIPING. THE CITY SHALL BE NOTIFIED WHEN GAS PIPING IS READY FOR INSPECTION.

5- 2 GPM SHOWER FIXTURE, MAX.1.5 GPM BATHROOM FAUCET, MAX. 2 GPM KITCHEN FAUCET, AND MAX 1.28 WATER CLOSET TO CONFORM TO CITY GREEN REQUIREMENTS.

BATHROOMS: PROVIDE AN EXHAUST FAN (AT LEAST 50 CFM) DUCTED TO THE OUTSIDE (MINIMUM 4" DIAMETER FLEX DUCT WITH A MAXIMUM LENGTH OF 70')WITH A MINIMUM VENTILATION RATE OF 100 CFM, IDENTIFY THE REQUIREMENT FOR A BACKDRAFT DAMPER ON THE DUCT, AN ENERGY STAR COMPLIANT EXHAUST FAN THAT IS CONTROLLED BY A HUMIDITY SENSOR THAT IS CAPABLE OF BEING ADJUSTED BETWEEN ≤ 50-PERCENT TO 80-PERCENT HUMIDITY; AND A SEPARATE SWITCH FROM THE LIGHT UNLESS THE FAN IS ALLOWED TO OPERATE WITH THE LIGHT SWITCHED OFF.

6-NOTE THAT ALL PLUMBING VENTS SHALL TERMINATE NOT LESS THAN 6" ABOVE ROOF NOR LESS THAN 1' FROM ANY VERTICAL SURFACE. VENTS SHALL TERMINATE NOT LESS THAN 10" FROM OR 3' ABOVE ANY WINDOW, DOOR OPENING AIR INTAKE, OR VENT SHAFT NOR 3' FROM LOT LINE. IF WATER PRESSURE EXCEEDS 80 PSI, AND EXPANSION TANK AND AN APPROVED PRESSURE REGULATOR SHALL BE INSTALLED.

NON-REMOVABLE BACK FLOW PRE-VENTER OR BIBB-TYPE VACUUM BREAKER WILL BE INSTALLED ON ALL EXTERIOR HOSE BIBS. HOT WATER RE-CIRCULATING SYSTEM IS INSTALLED, THE ENTIRE LENGTH OF HOT WATER PIPES SHALL BE INSULATED.

NOTES:

1-Projects which disturb less than one acre of soil shall manage storm water drainage during construction by one of the following: A. Retention basins. B. Where storm water is conveyed to a public drainage system, water shall be filtered by use of a barrier system, wattle or other approved method.

2-Site grading or drainage system will manage all surface water flows to keep water from entering buildings (swales, water collection, French drains, etc.), CGC Section 4.106.3. Exception: Additions not altering the drainage path.

3-When a shower is provided with multiple shower heads, the sum of flow to all the heads shall not exceed 1.8 gpm @ 80 psi, or the shower shall be designed so that only one head is on at a time. CGC Section 4.303.1.3.2

4-Landscape irrigation water use shall have weather or soil based controllers. CGC Section 4.304.1.

5-The plans that a minimum of 65% of construction waste is to be recycled. CGC Section 4.408.1.

6-The contractor shall submit a Construction Waste Management Plan, per CGC Section 4.408.2.

7-The builder is to provide an operation manual (containing information for maintaining appliances, etc.) for the owner at the time of final inspection. CGC Section 4.410.1.

8-The gas fire/applie(s) shall be a direct-vent sealed combustion type. Woodstove or pellet stoves must be U.S.EPA Phase II rated appliances. CGC Section 4.503.1.

WATER SAVING STANDARDS.

THE WATER SAVING PERFORMANCE STANDARDS FOR A PLUMBING FIXTURE ARE THOSE ESTABLISHED BY THE AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI), CURRENT REVISION, OR THE FOLLOWING STANDARDS, WHICHEVER ARE THE MORE RESTRICTIVE

1-THE MAXIMUM FLOW FROM A SINK OR LAVATORY FAUCET OR A FAUCET AERATOR SHALL NOT EXCEED 0.5 GALLONS OF WATER PER MINUTE AT A PRESSURE OF 60 POUNDS PER SQUARE INCH WHEN TESTED IN ACCORDANCE WITH ANSI TESTING PROCEDURES. 2- THE MAXIMUM VOLUME OF WATER PER FLUSH FROM A TOILET SHALL NOT EXCEED AN AVERAGE OF 1.28 GALLONS WHEN TESTED IN ACCORDANCE WITH ANSI TESTING PROCEDURES

3- THE MAXIMUM VOLUME OF WATER PER FLUSH FROM A URINAL AND THE ASSOCIATED FLUSH VALVE, IF ANY, SHALL NOT EXCEED AN AVERAGE OF ONE GALLON WHEN TESTED IN ACCORDANCE WITH ANSI TESTING PROCEDURES

SPECIAL NOTICE TO CONTRACTORS

1. ALL CONTRACTORS (GENERAL CONTRACTOR AND SUB-CONTRACTORS) BIDDING THIS PROJECT ARE REQUIRED TO VISIT THE JOB SITE AND VERIFY THE EXISTING CONDITIONS PRIOR TO SUBMITTING THEIR BID. CONTRACTORS ARE TO CAREFULLY REVIEW ALL CONSTRUCTION DOCUMENTS AND NOTE ANY DISCREPANCIES BETWEEN THE CONSTRUCTION DOCUMENTS AND THE CONDITIONS OBSERVED AT THE JOB SITE PRIOR TO SUBMISSION OF ANY BID. THE BUILDING OWNER REPRESENTATIVE LISTED BELOW MAY BE CONTACTED FOR ACCESS TO THE JOB SITE.
2. CONTRACTORS ARE RESPONSIBLE FOR VERIFYING THE LOCATION AND CONDITION OF ALL POINTS OF CONNECTION, LOCATION AND CONDITION OF ALL BUILDING (ROOF/FLOOR/CEILING) PENETRATIONS, LOCATION AND CONDITION OF ALL UTILITIES AND BUILDING SYSTEMS INCLUDING, BUT NOT LIMITED TO, GAS, WATER, SEWER, VENT, ELECTRICAL, BUILDING MECHANICAL SYSTEMS, DUCT CONNECTIONS, EXHAUST/OUTSIDE AIR CONNECTIONS, SECURITY, FIRE ALARM, DATA, AND PHONE PRIOR TO SUBMISSION OF THEIR BID.
3. ANY DISCREPANCIES BETWEEN THE CONSTRUCTION DOCUMENTS AND THE CONDITIONS OBSERVED SHALL BE BROUGHT TO THE ATTENTION, IN WRITING, TO THE ARCHITECT AND/OR ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.

SCOPE OF WORK	
PROVIDING MECHANICAL DESIGN FOR MAIN FLOOR AND ROOF FLOOR.	

PLUMBING LIST OF DRAWINGS (LoD):

SHEET TAG	TITLE	SCALE
P 0.00	GENERAL DETAILS	NTS
P 0.01	PLUMBING CODE CHECKING	NTS
P 1.01	MAIN FLOOR WATER SUPPLY LAYOUT & RISER	1/4"=1'-0"
P 2.01	MAIN FLOOR & ROOF SEWER LAYOUT	1/4"=1'-0"
P 2.02	SANITARY WASTE RISER	NTS
P 3.01	MAIN FLOOR GAS LAYOUT	1/4"=1'-0"
P 3.02	ROOF PLAN GAS LAYOUT	1/4"=1'-0"
P 4.01	GAS CODE AND ROOM RISER DIAGRAM	NTS
P 5.01	HOT WATER CALCS, EQUIPMENT, AND PIPE DESIGN	NTS
P 6.01	PLUMBING GENERAL DETAILS	NTS

CONFIDENTIALITY STATEMENT:

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NOTES:

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3. THE CONTRACTOR MUST CHECK ALL DIMENSION AT SITE BEFORE COMMENCING WORK.
4. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY TEMPORARY SUPPORT TO THE BUILDING AND ANY ADJACENT STRUCTURES.

REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

TITLE:
GENERAL NOTES

PROJ. NO.	PROJ. ENGR.	SCALE © 24X36:
		NTS
DRAWING NO.		REV.
P 0 . 0 0		

CALIFORNIA PLUMBING
CODE CHECKING:

PIPE SUPPORTS:

TABLE 313.3
HANGERS AND SUPPORTS

MATERIALS	TYPES OF JOINTS	HORIZONTAL	VERTICAL
Cast	Lead and Oakum	5 feet, except 10 feet where 10 foot length are installed ^{1,2,3}	Base and each floor, not to exceed 15 feet
	Compression Gasket	Every other joint, unless over 4 feet then support each joint ^{1,2,3}	Base and each floor, not to exceed 15 feet
Cast-iron Hubless	Shielded Coupling	Every other joint, unless over 4 feet then support each joint ^{1,2,3,4}	Base and each floor, not to exceed 15 feet
Copper & Copper Alloys	Soldered, Brazed, Threaded, or Mechanical	1 1/2 inches and smaller, 6 feet; 2 inches and larger, 10 feet	Each floor, not to exceed 10 feet ⁵
Steel Pipe for Water or DWV	Threaded or Welded	3/4 inch and smaller, 10 feet; 1 inch and smaller, 12 feet	Every floor, not to exceed 25 feet ⁶
Steel Pipe for Gas	Threaded or Welded	3/4 inch, 6 feet; 1/2 inch and 1 inch, 8 feet; 1 1/4 inches and larger, 10 feet	3/4 inch, 6 feet; 1/2 inch and 1 inch, 8 feet; 1 1/4 inches every floor level
Schedule 40 PVC and ABS DWV	Solvent Cemented	All sizes, 4 feet; allow for expansion every 30 feet ⁹	Base and each floor; provide mid-story guides
CPVC	Solvent Cemented	1 inch and smaller, 3 feet; 1 1/4 inches and larger, 4 feet	Base and each floor; provide mid-story guides
CPVC-AL-CPVC	Solvent Cemented	3/4 inch, 5 feet; 1/2 inch, 65 inches; 1 inch, 6 feet	Base and each floor; provide mid-story guides
Lead	Wiped or burned	Continuous support	Not to exceed 4 feet
Steel	Mechanical	In accordance with standards acceptable to the Authority Having Jurisdiction	
PEX	Cold Expansion, Insert and Compression	1 inch and smaller, 32 inches; 1 1/4 inches and larger, 4 feet	Base and each floor; provide mid-story guides
PEX-AL-PEX	Metal Insert and Metal compression	3/4 inch } 1/2 inch } 1 inch }	All sizes 98 inches
PE-AL-PE	Metal Insert and Metal compression	3/4 inch } 1/2 inch } 1 inch }	All sizes 98 inches
PE-RT	Insert and Compression	1 inch and smaller, 32 inches; 1 1/4 inches and larger, 4 feet	Base and each floor; provide mid-story guides
Polypropylene (PP)	Fusion weld (socket, butt, saddle, electrofusion), threaded (metal threads only), or mechanical	1 inch and smaller, 32 inches; 1 1/4 inches and larger, 4 feet	Base and each floor; provide mid-story guides

For SI units: 1 inch = 25.4 mm, 1 foot = 304.8 mm

Notes:

¹ Support adjacent to joint, not to exceed 18 inches (457 mm)

² Brace not to exceed 40 foot (12 192 mm) intervals to prevent horizontal movement.

³ Support at each horizontal branch connection.

⁴ Hangers shall not be placed on the coupling.

⁵ Vertical water lines shall be permitted to be supported in accordance with recognized engineering principles with regard to expansion and contraction, where first approved by the Authority Having Jurisdiction.

DRAINAGE:

719.0 Cleanouts.

719.1 Locations. Cleanouts shall be placed inside the building near the connection between the building drain and the building sewer or installed outside the building at the lower end of the building drain and extended to grade.

Additional building sewer cleanouts shall be installed at intervals not to exceed 100 feet (30 480 mm) in straight runs and for each aggregate horizontal change in direction exceeding 135 degrees (2.36 rad)

719.2 No additional Cleanouts. Where a building sewer or a branch thereof does not exceed 10 feet (3048 mm) in length and is a straight-line projection from a building drain that is provided with a cleanout, no cleanout will be required at its point of connection to the building drain.

721.0 Location.

721.1 Building Sewer. Except as provided in Section 721.2, no building sewer shall be located in a lot other than the lot that is the site of the building or structure served by such sewer nor shall a building sewer be located at a point having less than the minimum distances referenced in Table 721.1.

706.0 Changes in Direction of Drainage Flow.

706.1 Approved Fittings. Changes in the direction of drainage piping shall be made by the approximate use of approved fittings and shall be of the angles presented by a one-sixteenth bend, one-eight bend, or one-sixth bend, or other approved fittings of equivalent sweep.

706.2 Horizontal to Vertical. Horizontal drainage lines, connecting with a vertical stack, shall enter through 45 degree (0.79 rad) wye branch, 60 degree (1.05 rad) wye branches, combination wye and one-eighth bend branches, sanitary tee or sanitary tapped tee branches, or other approved fittings of equivalent sweep.

706.4 Vertical to Horizontal. Vertical drainage lines connecting with horizontal drainage lines shall enter through 45 degree (0.79 rad) wye branches, combination wye and one-eighth bend branches, or other approved fittings of equivalent sweep. Branches, or other approved fittings of equivalent sweep, Branches or offsets of 60 degrees (1.05 rad) shall be permitted to be used where installed in a true vertical position.

707.4 Location. Each horizontal drainage pipe shall be provided with a cleanout at its upper terminal, and each run of piping, that is more than 100 feet (30 480 mm) in total developed length, shall be provided with a cleanout for each 100 feet (30 480 mm), or fraction thereof, in length of such piping. An additional cleanout shall be provided in a drainage line for each aggregate horizontal change in direction exceeding 135 degrees (2.36 rad). A cleanout shall be installed above the fixture connecting fitting, serving each urinal, regardless of the location of the urinal in the building.

Exceptions

(1) Cleanouts shall be permitted to be omitted on a horizontal drain line less than 5 feet (1524 mm) in length unless such line is serving sinks or urinals

TABLE 703.2: MAXIMUM UNIT LOADING AND MAXIMUM LENGTH OF DRAINAGE AND VENT PIPING

SIZE OF PIPE (inches)	1 1/4	1 1/2	2	3	4	5	6	8	10	12
Maximum Units										
Drainage Piping ¹										
Vertical	1	2 ²	16 ³	48 ⁴	256	600	1380	3600	5600	8400
Horizontal	1	1	8 ³	35 ⁴	216 ⁵	428 ⁶	720 ⁵	2640 ⁵	4680 ⁵	8200 ⁵
Maximum Length										
Drainage Piping										
Vertical	45	65	85	212	300	390	510	750	—	—
Horizontal										
Vent Piping										
Horizontal and Vertical ⁴										
Maximum Units	1	8 ³	24	84	256	600	1380	3600	—	—
Maximum Lengths, (feet)	45	60	120	212	300	390	510	750		

For SI units: 1 inch = 25 mm, 1 foot = 304.8 mm

Notes:

¹ Excluding trap arm.

² Except for sinks, urinals, and dishwashers – exceeding 1 fixture unit.

³ Except for six-unit traps or water closets.

⁴ Only four water closets or six-unit traps allowed on a vertical pipe or stack, and not to exceed three water closets or six-unit traps on a horizontal branch or drain.

⁵ Based on 1/4 inch per foot (20.8 mm/m) slope, For 1/8 of an inch per foot (10.4 mm/m) slope, multiply horizontal fixture units by a factor of 0.8.

⁶ The diameter of an individual vent shall be not less than 1 1/4 inches (32 mm) nor less than one-half the diameter of the drain to which it is connected. Fixture unit load values for drainage and vent piping shall be computed from Table 702.1 and Table 702.2(2). Not to exceed one third of the total permitted length of a vent shall be permitted to be installed in a horizontal position. Where vents are increased one pipe size for their entire length, the maximum length limitations specified in this table do not apply. This table is in accordance with the requirements of Section 901.3.

VENT:

906.0 Vent Termination.

906.1 Roof Termination. Each vent pipe or stack shall extend through its flashing and shall terminate vertically not less than 6 inches (152 mm) above the roof nor less than 1 foot (305 mm) from a vertical surface. ABS and PVC piping exposed to sunlight shall be protected by water based synthetic latex paints.

906.2 Clearance. Each vent shall terminate not less than 10 feet (3048 mm) from, or not less than 3 feet (914 mm) above, an openable window, door, opening, air intake, or vent shaft, or not less than 3 feet (914 mm) in every direction from a hot line, alley and street excepted.

909.0 Special Venting for Island Fixtures.

909.1 General. Traps for island sinks and similar equipment shall be roughed in above the floor and shall be permitted to be vented by extending the vent as high as possible, but not less than the drainboard height and then returning it down- ward and connecting it to the horizontal sink drain immediately downstream from the vertical fixture drain. The return vent shall be connected to the horizontal drain through a wye-branch fitting and shall, in addition, be provided with a foot vent taken off the vertical fixture vent by means of a wye branch immediately below the floor and extending to the nearest partition and then through the roof to the open air, or shall be permitted to be connected to other vents at a point not less than 6 inches (152 mm) above the flood-level rim of the fixtures served. Drainage fittings shall be used on the vent below the floor level, and a slope of not less than 1/4 inch per foot (20.8 mm/m) back to the drain shall be maintained. The return bend used under the drainboard shall be a one-piece fitting or an assembly of a 45 degree (0.79 rad), a 90 degree (1.57 rad), and a 45 degree (0.79 rad) elbow in the order named. Pipe sizing shall be as elsewhere required in this code.

The island sink drain, upstream of the returned vent, shall serve no other fixtures. An accessible cleanout shall be installed in the vertical portion of the foot vent.

606.1 General. Valves up to and including 2 inches (50 mm) in size shall be copper alloy or other approved material. Sizes exceeding 2 inches (50 mm) shall be permitted to have cast iron or copper alloy bodies. Each gate or ball valve shall be a fullway or full-port type with working parts of the non-corrosive material. Valves carrying water used in potable water systems intended to supply drinking water shall comply with the requirements of NSF 61 and ASME A112.4.14, ASME B16.34, ASTM F1970, ASTM F2389 AWWA C500, AWWA C504, AWWA C507, IAPMO Z1157, MSS SP-67, MSS SP-70, MSS SP-71, MSS SP-72, MSS SP-78, MSS SP-80, MSS SP-110, MSS SP-122, or NSF 359.

608.4 Pressure Relief Valves. Each pressure relief valve shall be an approved automatic type with drain, and each such relief valve shall be set at a pressure of not more than 150 psi (1034 kPa). No shutoff valve shall be installed between the relief valve and the system.

FIRESTOP PROTECTION

1404.0 Combustible Piping Installations.

1404.2 Fire-Resistance Rating. Where penetrating a fire-resistance-rated wall, partition, floor, floor-ceiling assembly, roof-ceiling assembly, or shaft enclosure, the fire-resistance rating of the assembly shall be restored to its original rating.

1404.3 Firestop Systems. Penetrations shall be protected by an approved penetration firestop system installed as tested in accordance with ASTM E119, ASTM E814, UL 263, or UL 1479 with a positive pressure differential of not less than 0.01 of an inch of water (0.002 kPa). Systems shall have and F rating of not less than 1 hour but not less than the required fire-resistance rating of the assembly being penetrated. Systems protecting floor penetrations shall have a T rating of not less than 1 hour but not less than the required fire-resistance rating of the floor being penetrated. Floor penetrations contained within the cavity of a wall at the location of the floor penetration do not require a T rating. No T rating shall be required for floor penetrations by piping that is not in direct contact with combustible material.

1405.0 Noncombustible Piping Installations.

1404.6 Sleeves. Where sleeves are used, the sleeves shall be securely fastened to the fire-resistance-rated assembly. The (inside) annular space between the sleeve and the fire-resistance-rated assembly shall be firestopped in accordance with this chapter.

1405.3 Firestop Systems. Penetrations shall be protected by an approved penetration firestop system installed as tested in accordance with ASTM E119, ASTM E814, UL 263, or UL 1479 with a positive pressure differential of not less than 0.01 of an inch of water (0.002 kPa). Systems shall have an F rating of not less than 1 hour but not less than the required fire-resistance rating of the assembly being penetrated. Systems protecting floor penetrations shall have a T rating of not less than 1 hour but not less than the required fire-resistance rating of the floor being penetrated. Floor penetrations contained within the cavity of a wall at a location of the floor penetration do not require a T rating. No T rating shall be required for floor penetrations by piping that is not in direct contact with combustible material.

1405.6 Sleeves. Where sleeves are used, the sleeves shall be securely fastened to the fire-resistance-rated assembly. The (inside) annular space between the sleeve and the penetrating item and the (outside) annular space between the sleeve and the fire-resistance-rated assembly shall be firestopped in accordance with this chapter.

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REV. NO.	DESCRIPTION	DATE	BY

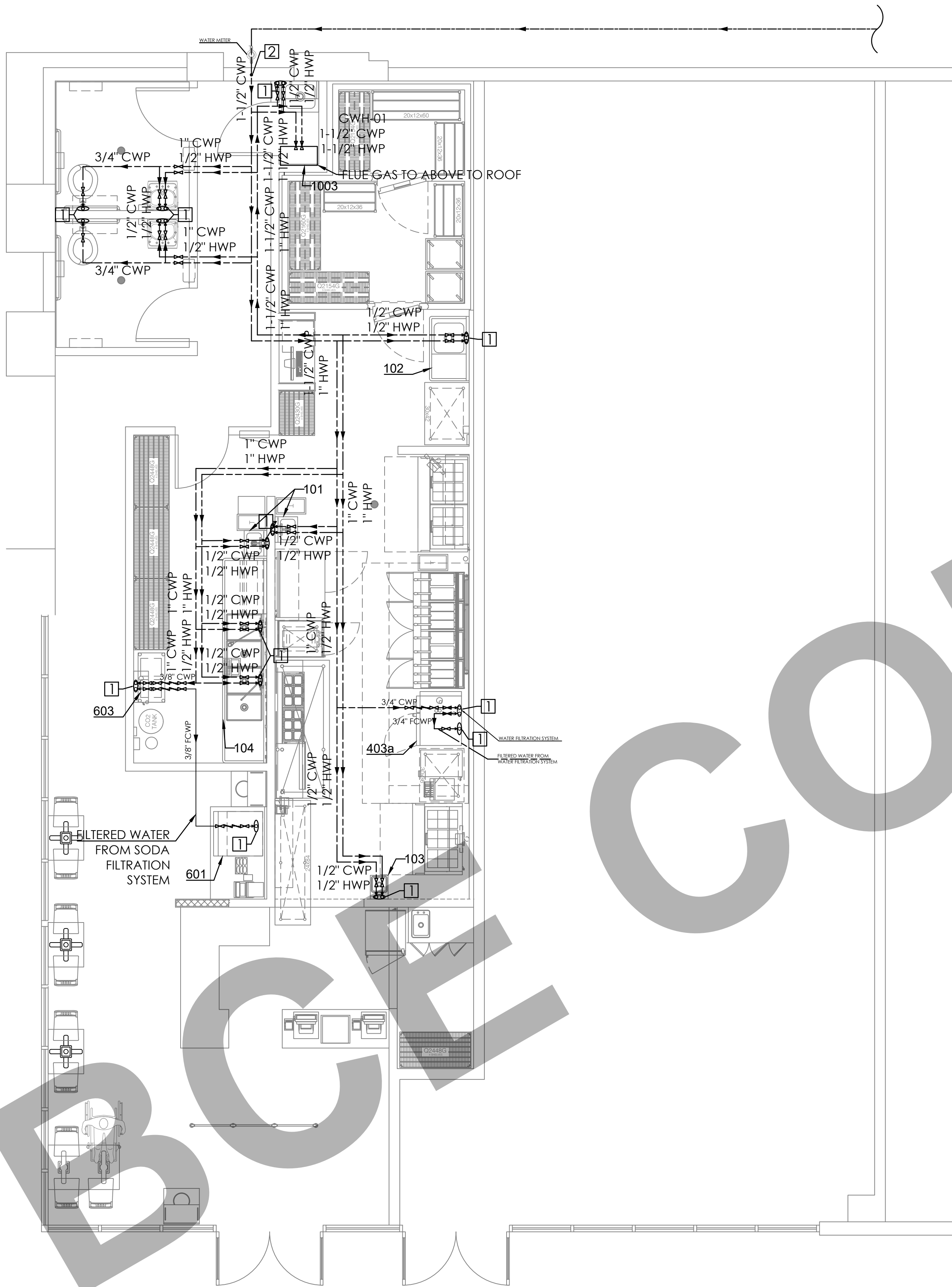
PROJECT:

TITLE:
PLUMBING CODE CHECKING

PROJ. NO. PROJ. ENGR. SCALE @ 24X36:
NTS

DRAWING NO. REV.

P 0 . 0 1



GENERAL NOTES:

- PRIOR TO PERFORMING WORK, CONTRACTOR TO COORDINATE EXACT PIPE SIZES, INVERT ELEVATIONS, PRESSURES FOR LOCATIONS OF ANY SEWER, WATER PIPING AND WATER METER WITH CIVIL UTILITIES DRAWINGS, AND ANY OTHER ENGINEER AS APPLICABLE.
- PRIOR TO PERFORMING WORK, CONTRACTOR TO COORDINATE PIPE ROUTING WITH ALL OTHER TRADES AND EXISTING FIELD CONDITIONS.
- REFER TO MECHANICAL PLANS FOR PLUMBING SPECIFICATION OF MATERIAL, INSULATION AND INSTALLATION REQUIREMENTS.
- CONTRACTOR IS RESPONSIBLE FOR ROUGH-IN COORDINATION AND LOCATIONS. REFER TO ARCHITECTURAL PLANS FOR LOCATIONS AND FIXTURES.
- CONTRACTOR IS RESPONSIBLE FOR ANY REQUIRED CUTTING AND PATCHING.
- ALL NOTCHING, BORING, AND CUTTING OF HOLES IN WALL STUDS AND FLOOR JOISTS SHALL BE PERFORMED BASED ON THE LATEST ADOPTED AND APPROVED EDITION OF THE BUILDING CODE.
- ALL PLUMBING FIXTURES SHALL BE OF WATER CONSERVATION TYPE AS REQUIRED BY LOCAL AUTHORITY HAVING JURISDICTION.
- ALL WATER PIPING SHALL BE INSTALLED ON INTERIOR SIDE OF THE BUILDING WALL INSULATION.
- CONTRACTOR SHALL PROVIDE VALVES LOCATED ABOVE LAY-IN CEILING OR 24"x24" CEILING ACCESS PANEL COORDINATE FINAL LOCATION AND SIZE WITH ARCHITECT. PROVIDE BALANCING VALVES FOR HOT WATER RETURN SYSTEM AS REQUIRED.
- ALL SANITARY DRAINAGE PIPING 3" AND SMALLER SHALL BE SLOPED AT $\frac{1}{4}$ " PER FOOT. PIPING 4" AND LARGER SHALL BE SLOPED AT $\frac{1}{8}$ " PER FOOT.
- ALL CONDENSATE DRAIN PIPING SHALL BE SLOPED AT $\frac{1}{8}$ " PER FOOT AND PROVIDE ACCESSIBLE CLEANOUTS AT ALL CHANGES OF DIRECTION.
- VENTS THAT TERMINATE AT THE ROOF SHALL BE A MINIMUM OF 10' FROM ANY FRESH AIR INTAKE.
- REFER TO THE PLUMBING DIAGRAMS FOR GUIDANCE OF INSTALLATION INTENT. CONTRACTOR IS TO PROVIDE ALL COMPONENTS NECESSARY TO MEET THE DESIGN INTENT, WHETHER SHOWN IN DIAGRAM OR NOT.

SCHEDULE No. 1

GAS WATER HEATER SCHEDULE

TAG / ITEM NUMBER	GWH-01
LOCATION	PREP ROOM
MANUFACTURER / MODEL	A.O SMITH / ATIO-910-N
TYPE	GAS TANKLESS
CURRENT (A)	1.48
VOLTAGE (V / PH / HZ)	120 / 1 / 60
APPROXIMATE WEIGHT (LBS)	113
WIDTH x DEPTH x HEIGHT (in.)	24-7/8" X 12-3/4" X 25-1/4"
CW / HW / GAS CONNECTION SIZES (in.)	1" / 1" / 1" NPT
GAS INPUT RANGE (BTU/HR)	15,000 - 380,000
GAS SUPPLY PRESSURE (IN. W.C.)	4 - 10.4
GPM RANGE	0.5 - 14.5

FROM 2022 CPC - TABLE 610.3:

WATER SUPPLY FIXTURE UNITS LOADS:

FIXTURE	W.S.F.U	QTY.	TOTAL W.S.F.U
HAND SINK	2.0	3	6.0
4-COMP. SINK (2 FAUCETS)	3.0	1	3.0
1-COMP. SINK	1.5	1	1.5
WATER CLOSET	2.5	2	5.0
LAVATORY	1.0	2	2.0
COMBI OVEN DUO	1.0	1	1.0
SODA FILTR. SYS.	0.5	1	0.5
MOP SINK	1.5	1	1.5

TOTAL BUILDING WSFU = 20.5

AS PER 2022 CPC - TABE 610.4:
THE LONGEST RUN IS APPROX. 80 FT.
AND FOR W/M PRESSURE RANGE 30-45 PSI,
THEREFORE, THE MAIN CWP TO BE NOT LESS
THAN 1"

CALIFORNIA PLUMBING CODE SECTIONS 403.3 AND 609.11.2:

WATER SUPPLY AND DRAIN PIPES UNDER ACCESSIBLE LAVATORIES AND SINKS SHALL BE INSULATED OR OTHERWISE BE CONFIGURED TO PROTECT AGAINST CONTACT. PROTECTORS, INSULATORS, OR BOTH SHALL COMPLY WITH ASME A112.18.9.

HOT WATER PIPE INSULATION SHALL HAVE A MINIMUM WALL THICKNESS OF NOT LESS THAN THE DIAMETER OF THE PIPE FOR A PIPE UP TO 2 INCHES (50 MM) IN DIAMETER. INSULATION WALL THICKNESS SHALL BE NOT LESS THAN 2 INCHES (51 MM) FOR A PIPE OF 2 INCHES (50 MM) OR MORE IN DIAMETER.

CALIFORNIA RETAIL FOOD CODE SECTIONS 114192 AND 114195:

WATER UNDER PRESSURE SHALL BE PERMANENTLY PLUMBED TO ALL FIXTURES, EQUIPMENT, AND NONFOOD EQUIPMENT THAT ARE REQUIRED TO USE WATER, EXCEPT FOR WATER SUPPLIED TO NONPERMANENT FOOD FACILITIES.

SCHEDULE No. 2

WATER SUPPLY AND DRAINAGE APPLIANCES AND FIXTURES

ITEM NB	QTY	DESCRIPTION	MANUFACTURER	MODEL	CW	HW	1W	DW
101	1	S.S. HAND SINK, WALL MOUNTED	COMMERCIAL STAINLESS FABRICATORS	H5-15HOA	1/2"	1/2"	-	1-1/2"
102	1	4 COMPARTMENT SINK WITH 1 DRAIN BOARD	COMMERCIAL STAINLESS FABRICATORS	SE1-1620-24L	1/2"	1/2"	1-1/2"	-
103	1	S.S. HAND SINK, NARROW, WALL MOUNTED	ADVANCE TABCO	7-PS-23-EC	1/2"	1/2"	-	1-1/2"
104	1	4 COMPARTMENT SINK WITH 2 DRAIN BOARDS	ADVANCE TABCO	FC-4-1824-18RL	(2) 1/2"	(2) 1/2"	(4) 1-1/2"	-
403a	1	COMBI OVEN DUO	RATIONAL	UG 61/61E	3/4"	-	2"	-
601	1	SODA DISPENSER	CORNELIUS	IDC 255	3/8"	-	3/4"	-
603	1	SODA FILTRATION SYSTEM	SELECTO INC	SMP IC600	3/8"	-	-	-
1002	1	MOP SINK	ZURN	Z1996-24	1/2"	1/2"	-	3"
1009	1	WATER FILTER SYSTEM	ECOLAB	9329-2266	3/4"	-	-	-

PLUMBING FIXTURE SCHEDULE

FIXT. ID	DESCRIPTION	MANUFACTURER	MODEL	ROUGH-IN				REMARKS
				SW	V	CW	HW	
FS-1	FLOOR SINK	ZURN	FD-2370	3"	2"	-	-	12"x12" RADIOUS PVC BODY FLOOR SINK WITH FULL RIM AND SEDIMENT BUCKET STRAINER. COORDINATE GRATE CONFIGURATION WITH KITCHEN ROUGH IN PLANS.
HD-1	HUB DRAIN	SELECT BY ARCH/OWNER	-	3"	2"	-	-	FIELD FABRICATED PVC BODY HUB DRAIN WITH BOTTOM OUTLET AND PVC REDUCER. TOP OF THE HUB SHALL BE 6" AFF.
FD-2	FLOOR DRAIN AND TRAP PRIMER	ZURN	LC-F35	3"	2"	-	-	PVC BODY FLOOR DRAIN AND TRAP PRIMER, WITH RLC-CS CAST IRON ADAPTOR THREADED SHANK, COMPLETE WITH RLC-FR50N 5" ROUND POLISHED NICKEL FRAME TOP GRATE.
FD-1	FLOOR DRAIN	ZURN	LC-F35	3"	2"	-	-	PVC BODY FLOOR DRAIN WITH RLC-CS CAST IRON ADAPTOR THREADED SHANK, COMPLETE WITH RLC-FR50N 5" ROUND POLISHED NICKEL FRAME TOP GRATE.
WC-1	WATER CLOSET	AMERICAN STANDARD	3461.001.002	4"	2"	1-1/2"	-	WHITE VITREOUS CHINA, FLOOR MOUNTED, ADA COMPLIANT, ELONGATED WATER CLOSET WITH SODAN RWES-111 FLUSH VALVE, 1.4 GPF, KOHLER PK-4731-5A, WHITE ELONGATED OPEN FRONT SEAT-LESS COVER WITH CHECK HINGE STOPS.
LAV-1	LAVATORY	AMERICAN STANDARD	3461.001.002	2"	1-1/2"	1/2"	1/2"	WITH DELTA R21C154 POLISHED CHROME PLATED FAUCET & 4" LEVEL, 0.5 GPM ADAPTOR, GFCI DRAIN TRAINER, BRASS CRAFT "COMMERCIAL" BRASS CRAFT "COMMERCIAL" TIGHT SUPPLY, ANGLE STOP & CHROM PLATED TUB, L.A. PATTERN CAST BRASS T-TAP WITH SILENT DISCHARGE, T-TAP AND WATER SUPPLIES SHALL BE WRAPPED WITH THERMO LAG GUARD F102 FOR ADA PROTECTION.

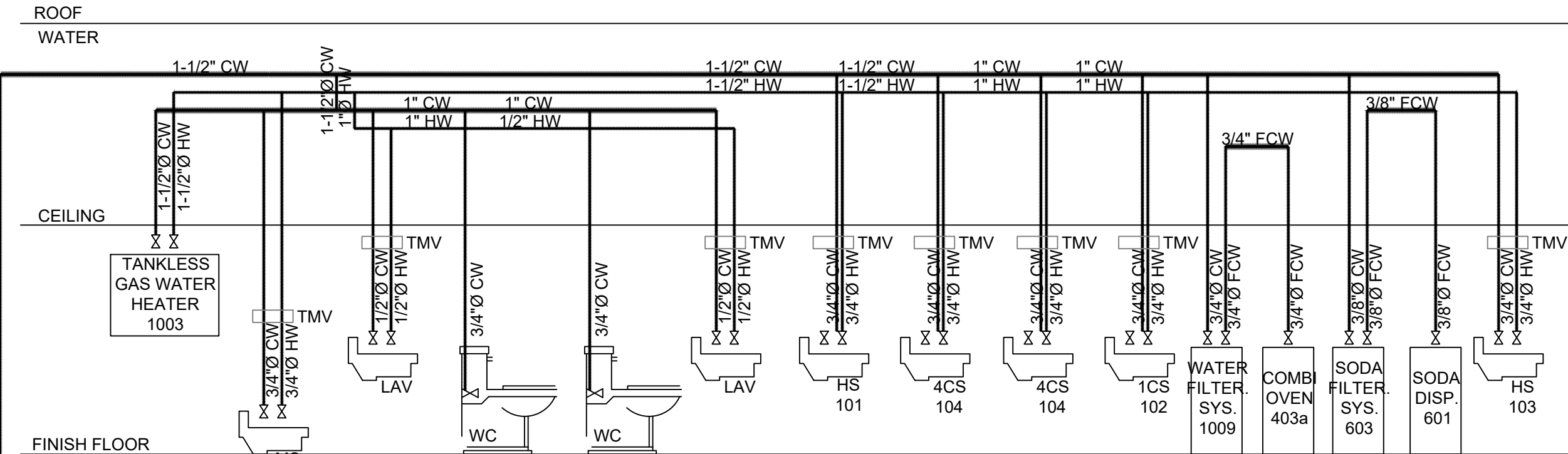
WATER SUPPLY SHEET NOTES:

- DCW AND/OR DHW OR DFCW TO FIXTURE CONNECTION.
- DCW RISES TO CEILING LEVEL.

WATER PIPE SIZING CALCULATIONS:

- A) MINIMUM / MAXIMUM PRESSURE: 30 - 45 PSI
B) HEIGHT OF HIGHEST OUTLET: 5.0 FT = 5.0 x 0.43 = 2.15 PSI
C) METER SIZE: 1.0 in | HEAD LOSS THROUGH WATER METER: 3.0 PSI
D) MAXIMUM DEVELOPED LENGTH: 150 FT.
E) TOTAL WSFU: 12.0 | GPM = 9.0
F) RESIDUAL PRESSURE: 20 PSI.
G) EQUIVALENT LENGTH = 1.25 x DEVELOPED LENGTH = 190 FT.
H) TOTAL HEAD LOSS = 25.15

REMAINING HEAD = 30-25.15 = 4.85 PSI
ALLOWABLE PRESSURE DROP THROUGH PIPING: 4.85/190 x 100 = 2.55 PSI/100 FT.



WATER SUPPLY RISER DIAGRAM (NOT TO SCALE)

CLIENT:

ADDRESS:

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

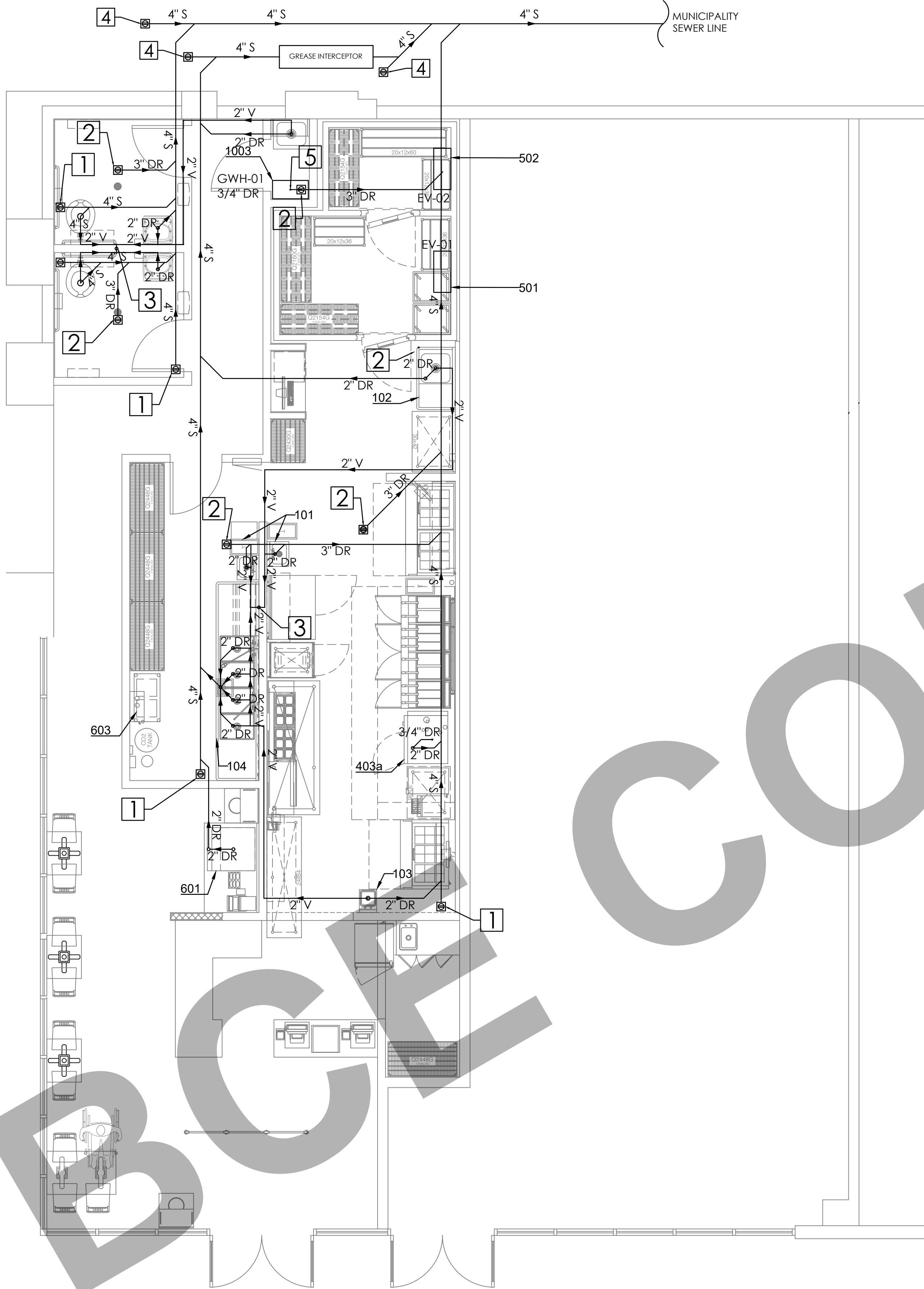
TITLE:
MAIN FLOOR WATER SUPPLY
LAYOUT AND RISER

PROJ. NO. PROJ. ENGR. SCALE © 24X36:
1/4" = 1'-0"

DRAWING NO.

REV.

P 1 . 0 1



- GENERAL NOTES:**
- PRIOR TO PERFORMING WORK, CONTRACTOR TO COORDINATE EXACT PIPE SIZES, INVERT ELEVATIONS, PRESSURES FOR LOCATIONS OF ANY SEWER, WATER PIPING AND WATER METER WITH CIVIL UTILITIES DRAWINGS, AND ANY OTHER ENGINEER AS APPLICABLE.
 - PRIOR TO PERFORMING WORK, CONTRACTOR TO COORDINATE PIPE ROUTING WITH ALL OTHER TRADES AND EXISTING FIELD CONDITIONS.
 - REFER TO MECHANICAL PLANS FOR PLUMBING SPECIFICATION OF MATERIAL, INSULATION AND INSTALLATION REQUIREMENTS.
 - CONTRACTOR IS RESPONSIBLE FOR ROUGH-IN COORDINATION AND LOCATIONS. REFER TO ARCHITECTURAL PLANS FOR LOCATIONS AND FIXTURES.
 - CONTRACTOR IS RESPONSIBLE FOR ANY REQUIRED CUTTING AND PATCHING.
 - ALL NOTCHING, BORING, AND CUTTING OF HOLES IN WALL STUDS AND FLOOR JOISTS SHALL BE PERFORMED BASED ON THE LATEST ADOPTED AND APPROVED EDITION OF THE BUILDING CODE.
 - ALL PLUMBING FIXTURES SHALL BE OF WATER CONSERVATION TYPE AS REQUIRED BY LOCAL AUTHORITY HAVING JURISDICTION.
 - ALL WATER PIPING SHALL BE INSTALLED ON INTERIOR SIDE OF THE BUILDING WALL INSULATION.
 - CONTRACTOR SHALL PROVIDE VALVES LOCATED ABOVE LAY-IN CEILING OR 24"x24" CEILING ACCESS PANEL COORDINATE FINAL LOCATION AND SIZE WITH ARCHITECT. PROVIDE BALANCING VALVES FOR HOT WATER RETURN SYSTEM AS REQUIRED.
 - ALL SANITARY DRAINAGE PIPING 3" AND SMALLER SHALL BE SLOPED AT $\frac{1}{8}$ " PER FOOT. PIPING 4" AND LARGER SHALL BE SLOPED AT $\frac{1}{8}$ " PER FOOT.
 - ALL CONDENSATE DRAIN PIPING SHALL BE SLOPED AT $\frac{1}{8}$ " PER FOOT AND PROVIDE ACCESSIBLE CLEANOUTS AT ALL CHANGES OF DIRECTION.
 - VENTS THAT TERMINATE AT THE ROOF SHALL BE A MINIMUM OF 10' FROM ANY FRESH AIR INTAKE.
 - REFER TO THE PLUMBING DIAGRAMS FOR GUIDANCE OF INSTALLATION INTENT. CONTRACTOR IS TO PROVIDE ALL COMPONENTS NECESSARY TO MEET THE DESIGN INTENT, WHETHER SHOWN IN DIAGRAM OR NOT.

SANITARY SHEET NOTES:

- 1 — 4" FLOOR CLEAN-OUT.
2 — 3" FLOOR DRAIN.
3 — VENT STACK TO ABOVE.
4 — 4" EXTERIOR CLEAN-OUT.
5 — INDIRECT DISCHARGE

**FROM 2022 CPC - TABLE 702.1:
DRAINAGE FIXTURE UNIT VALUES (DFU)**

FIXTURE	D.F.U	QTY.	TOTAL D.F.U
HAND SINK	2.0	3	6.0
4-COMP. SINK	12.0	1	12.0
1-COMP. SINK	3.0	1	3.0
WATER CLOSET	4.0	2	8.0
LAVATORY	1.0	2	2.0
MOP SINK	3.0	1	3.0
SODA DISPENSER	1.0	1	1.0
TOTAL BUILDING DFU =			35.0

**SCHEDULE No. 1
WATER SUPPLY AND DRAINAGE APPLIANCES AND FIXTURES**

ITEM NB	QTY	DESCRIPTION	MANUFACTURER	MODEL	CW	HW	1W	DW
101	1	S.S. HAND SINK, WALL MOUNTED	COMMERCIAL STAINLESS FABRICATORS	HS-15HOA	1/2"	1/2"	-	1-1/2"
102	1	1 COMPARTMENT SINK WITH 1 DRAIN BOARD	COMMERCIAL STAINLESS FABRICATORS	SE1-1620-24L	1/2"	1/2"	1-1/2"	-
103	1	S.S. HAND SINK, NARROW, WALL MOUNTED	ADVANCE TABCO	7-PS-23-EC	1/2"	1/2"	-	1-1/2"
104	1	4 COMPARTMENT SINK WITH 2 DRAIN BOARDS	ADVANCE TABCO	FC-4-1824-18RL	(2) 1/2"	(2) 1/2"	(4) 1-1/2"	-
403a	1	COMBI OVEN DUO	RATIONAL	UG 61/61E	3/4"	-	2'	-
601	1	SODA DISPENSER	CORNELIUS	IDC 255	3/8"	-	3/4"	-
603	1	SODA FILTRATION SYSTEM	SELECTO INC	SMF IC600	3/8"	-	-	-
1002	1	MOP SINK	ZURN	Z1996-24	1/2"	1/2"	-	3"

**GREASE INTERCEPTOR SIZING CALCULATION:
AS PER CPC 2022 TABLE 702.1 AND TABLE 1014.3.6**

FIXTURE	D.F.U	QTY.	TOTAL D.F.U
HAND SINK	1.0	1	1.0
4-COMP. SINK	12.0	1	12.0
1-COMP. SINK	3.0	1	3.0
SODA DISPENSER	1.0	1	1.0
TOTAL PRIVATE DFU =			17.0
GREASE INTERCEPTOR SIZE (GAL) =			750

CALIFORNIA PLUMBING CODE SECTION 407.2.2:

ALL FAUCETS IN PUBLIC RESTROOMS SHALL BE SELF CLOSING OR SELF-CLOSING METERING FAUCETS.

SLOPE OF 4" WASTE LINE SHALL BE 1/4 inch PER FOOT.

CALIFORNIA RETAIL FOOD CODE, SECTIONS 114193, 114197, 114199, 114201, AND 114271 AND UNIFORM PLUMBING CODE SECTION, 704.3:

LIQUID WASTE SHALL BE DISPOSED OF THROUGH THE APPROVED PLUMBING SYSTEM AND SHALL DISCHARGE INTO THE PUBLIC SEWERAGE OR INTO AN APPROVED PRIVATE SEWAGE DISPOSAL SYSTEM. ALL STEAM TABLES, ICE MACHINES AND BINS, FOOD PREPARATION SINKS, WAREWASHING SINKS, DISPLAY CASES, WALK-IN REFRIGERATION UNITS, AND OTHER SIMILAR EQUIPMENT THAT DISCHARGE LIQUID WASTE SHALL BE DRAINED BY MEANS OF INDIRECT WASTE PIPES, AND ALL WASTES DRAINED BY THEM SHALL DISCHARGE THROUGH AN AIRGAP INTO A FLOOR SINK OR OTHER APPROVED TYPE OF RECEPTOR. CONDUITS OF ALL TYPES SHALL BE INSTALLED WITHIN WALLS AS PRACTICABLE.

CALIFORNIA RETAIL FOOD CODE SECTIONS 114130, 114157, 114169, 114172, 114175, 113996, AND 114244:

EQUIPMENT AND UTENSILS SHALL BE DESIGNED AND CONSTRUCTED TO BE DURABLE AND TO RETAIN THEIR CHARACTERISTIC QUALITIES UNDER NORMAL USE CONDITIONS. ALL NEW AND REPLACEMENT FOOD-RELATED AND UTENSIL-RELATED EQUIPMENT SHALL BE CERTIFIED OR CLASSIFIED FOR SANITATION BY AN AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) ACCREDITED CERTIFICATION PROGRAM.

CALIFORNIA PLUMBING CODE SECTIONS 704.3, 801.3, 905.3, AND 1007.1:

EACH HORIZONTAL VENT SHALL RISE VERTICALLY TO A POINT NOT LESS THAN SIX INCHES IN HEIGHT ABOVE THE FLOOR LEVEL RIM OF THE FIXTURE BEFORE BEING CONNECTED TO ANY OTHER VENT.

FLOOR DRAINS AND SINKS SHALL BE PROVIDED WITH MEANS OF MAINTAINING THEIR TRAP SEALS (TRAP PRIMERS).

THE INDIRECT WASTE PIPING FROM FOOD HANDLING FIXTURES OR EQUIPMENT SHALL BE SEPARATELY PIPED BY MEANS OF AN AIR GAP TO THE INDIRECT WASTE RECEPTOR SHALL NOT BE COMBINED WITH ANY OTHER INDIRECT WASTE PIPING.

POT SINK, DISHWASHING SINK, AND OTHER SIMILAR FIXTURE SHALL BE CONNECTED DIRECTLY TO THE DRAINAGE SYSTEM. A FLOOR DRAIN SHALL BE PROVIDED UPSTREAM OF THE FIXTURE CONNECTION AND ADJACENT TO THE FIXTURE. NO OTHER DRAINAGE LINE SHALL BE CONNECTED BETWEEN THE FLOOR DRAIN WASTE CONNECTION AND THE FIXTURE DRAIN.

PLUMBING FIXTURE SCHEDULE								
FIXT. ID	DESCRIPTION	MANUFACTURER	MODEL	ROUGH-IN				REMARKS
				SW	V	CW	HW	
FS-1	FLOOR SINK	ZURN	FD-2370	3"	2"	-	-	12"x12" RADIUSSED PVC BODY FLOOR SINK WITH FULL RIM AND SEDIMENT BUCKET STRAINER. COORDINATE GRATE CONFIGURATION WITH KITCHEN ROUGH IN PLANS.
HD-1	HUB DRAIN	SELECT BY ARCH/OWNER	-	3"	2"	-	-	FIELD FABRICATED PVC BODY HUB DRAIN WITH BOTTOM OUTLET AND PVC REDUCER. TOP OF THE HUB SHALL BE 6" AFF.
FD-2	FLOOR DRAIN AND TRAP PRIMER	ZURN	LC-P35	3"	2"	-	-	PVC BODY FLOOR DRAIN AND TRAP PRIMER, WITH #1C-CS CAST IRON ADAPTOR THREADED SHANK, COMPLETE WITH #1C-FR05NI 5" ROUND POLISHED NICKEL FRAME TOP GRATE.
FD-1	FLOOR DRAIN	ZURN	LC-P35	3"	2"	-	-	PVC BODY FLOOR DRAIN WITH #1C-CS CAST IRON ADAPTOR THREADED SHANK, COMPLETE WITH #1C-FR05NI 5" ROUND POLISHED NICKEL FRAME TOP GRATE.
WC-1	WATER CLOSET	AMERICAN STANDARD	3461.001.002	4"	2"	1-1/2"	-	WHITE VITREOUS CHINA, FLOOR MOUNTED, ADA COMPLIANT, ELONGATED WATER CLOSET WITH SLOAN #WES-111 FLUSH VALVE, 1.6 GPF. KOHLER #K-4231-5A WHITE ELONGATED OPEN FRONT SEAT-LESS COVER WITH CHECK HINGE STOPS.
LAV-1	LAVATORY	AMERICAN STANDARD	3461.001.002	2"	1-1/2"	1/2"	1/2"	WITH DELTA #21C154 POLISHED CHROME PLATED FAUCET & 4" LEVERS. 0.5 GPM AERATOR. GRID DRAIN STRAINER. BRASSCRAFT "COMMERCIAL" BRASSCRAFT "COMMERCIAL" GRID SUPPLIES. ANGLE STOPS & CHROME PLATED 170A L.A. PATTERN CAST BRASS P-TRAP WITH SECURED ESCUTCHEON. P-TRAP AND WATER SUPPLIES SHALL BE WRAPPED WITH TRUEBOND LAVAGUARD #102 FOR ADA PROTECTION.

CLIENT:

ADDRESS:

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

TITLE:
MAIN FLOOR SEWER LAYOUT

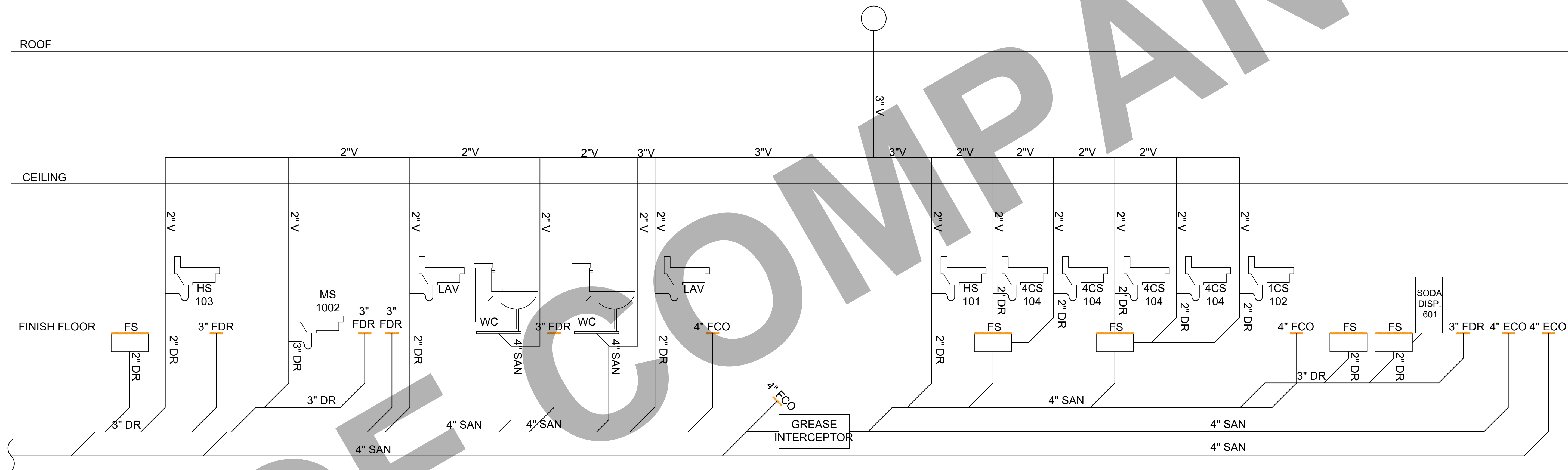
PROJ. NO. PROJ. ENGR. SCALE © 24X36:
1/4" = 1'-0"

DRAWING NO.

REV.

P 2 . 0 1

DRIANAGE RISER DIAGRAM



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[illegible]

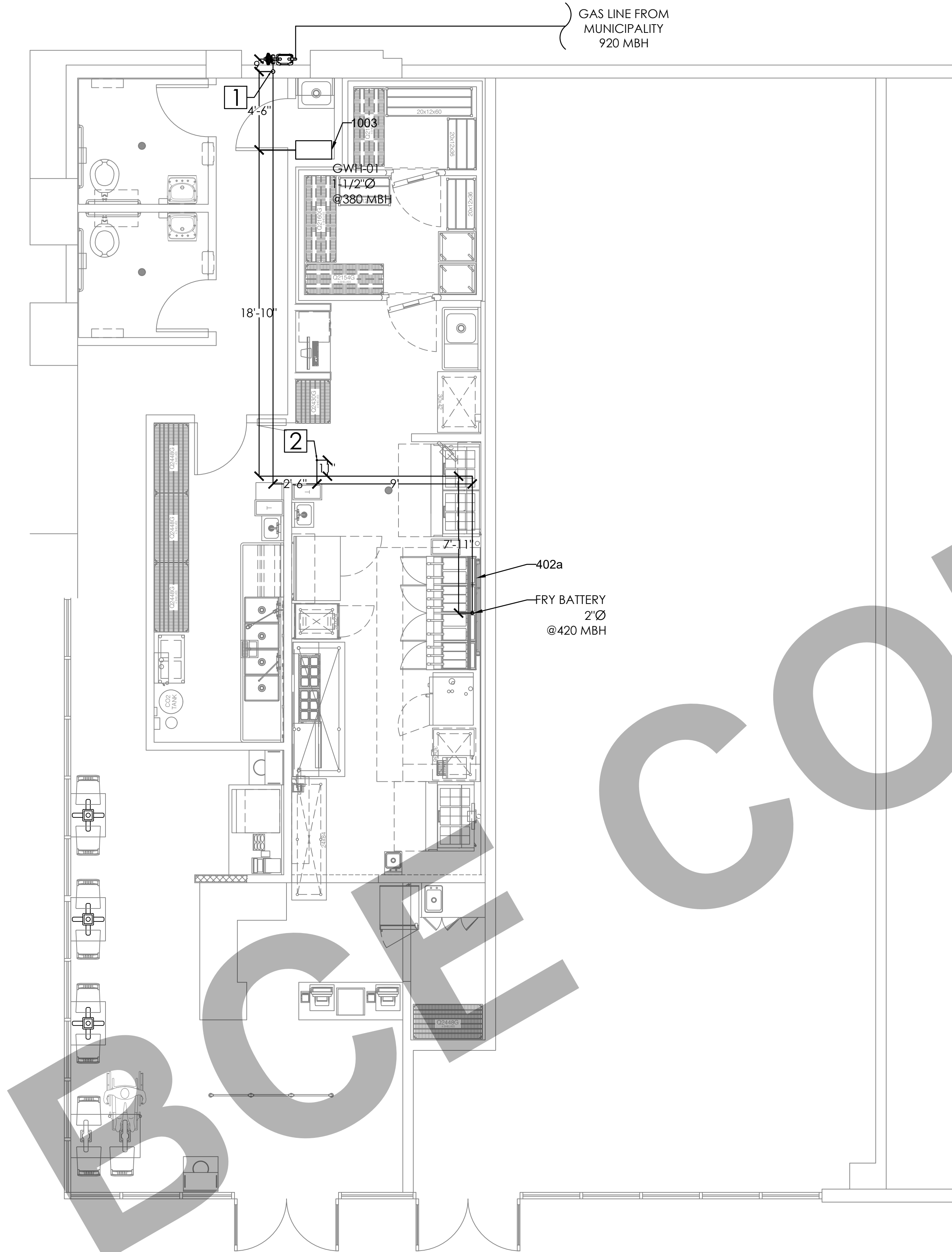
PROJECT:

TITLE:
SANITARY WASTE RISER

PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36: NTS
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DRAWING NO.	REV.
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P 2 . 0 2



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GAS SUPPLY SHEET NOTES:

- 1 — GAS PIPE RISES TO CEILING LEVEL.
- 2 — GAS PIPE RISES TO ABOVE.
- 3 — GAS PIPE RISES FROM BELOW.

CALIFORNIA PLUMBING CODE 1210.2:

ALL EXPOSED GAS PIPING SHALL BE PROTECTED AGAINST CORROSION BY COATING OR WARPING WITH A INERT MATERIAL APPROVED FOR SUCH APPLICATIONS.

SCHEDULE No. 1

FRY BATTERY

TAG	FRY BATTERY / 402a
LOCATION	COOK LINE
MANUFACTURER	PITCO
MODEL	SH75-2/FD/SH175D-2
GAS INPUT (BTU/HR)	420,000
POWER (HP) / CURRENT (A)	1/3 / 7.8
VOLTAGE (V / PH /HZ)	115 / 1 / 60

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REV. NO.	DESCRIPTION	DATE	BY

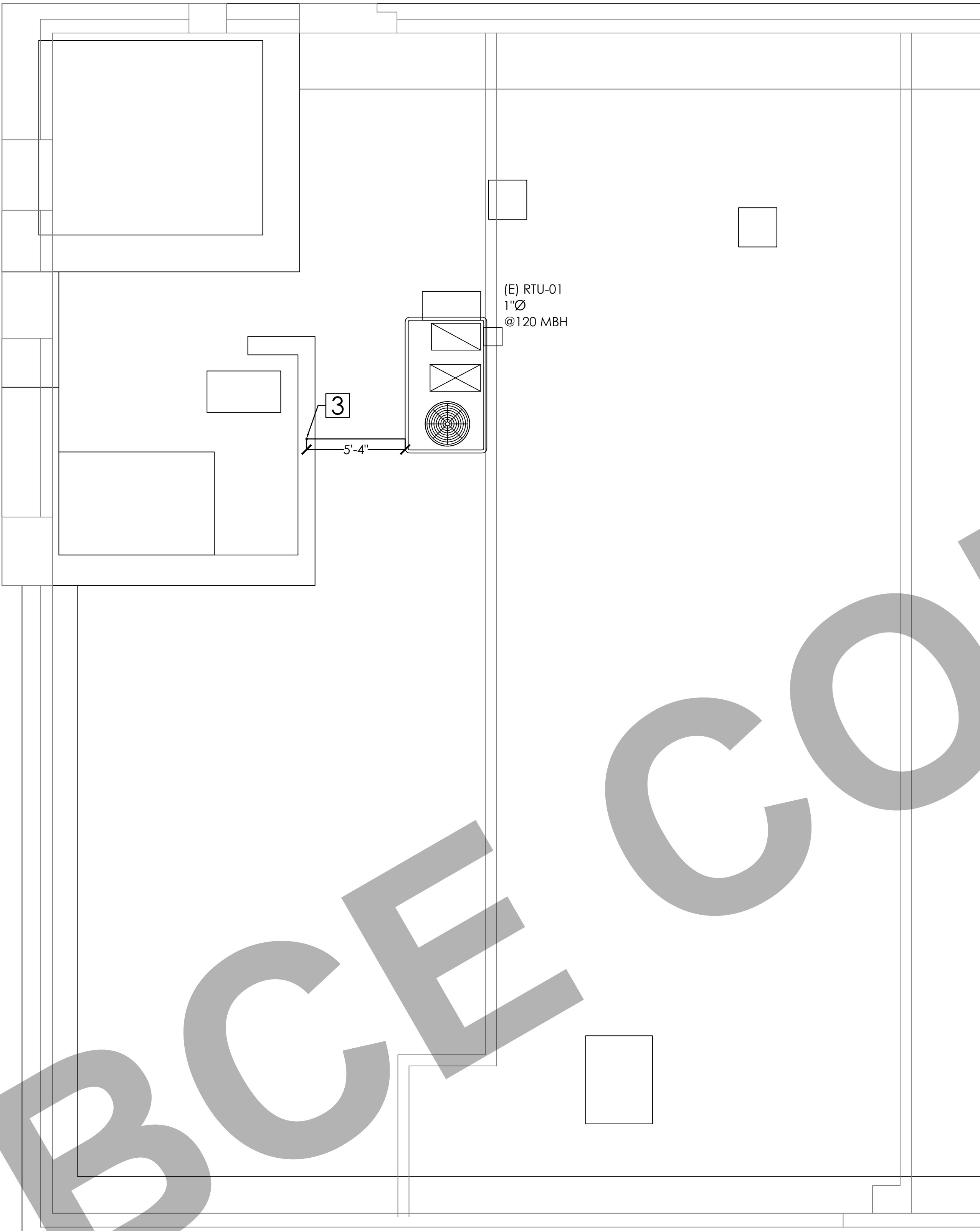
PROJECT:

TITLE:
MAIN FLOOR GAS LAYOUT

PROJ. NO. PROJ. ENGR. SCALE © 24X36:
1/4" = 1'-0"

DRAWING NO. REV.

P 3 . 0 1



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- 3 — GAS PIPE RISES FROM BELOW.

CALIFORNIA PLUMBING CODE 1210.2:

ALL EXPOSED GAS PIPING SHALL BE PROTECTED AGAINST CORROSION BY COATING OR WARPING WITH A INERT MATERIAL APPROVED FOR SUCH APPLICATIONS.

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

TITLE:
ROOF PLAN GAS LAYOUT

PROJ. NO. PROJ. ENGR. SCALE © 24X36:
1/4" = 1'-0"

DRAWING NO. REV.
P 3 . 0 2

CALIFORNIA GAS CODE
CHECKING:

GAS:

1208.7 Gas Meters. Gas meters shall be selected for the maximum expected pressure and permissible pressure drop. [NFPA 54:5.7.1]

1208.7.1 Location. Gas meters shall be located in ventilated spaces readily accessible for examination, reading, replacement, or necessary maintenance. [NFPA54:5.7.2.1]

1208.7.1.1 Subject to Damage. Gas meters shall not be placed where they will be subjected to damage, such as adjacent to a driveway; under a fire escape; n public passages, halls, or where they will be subject to excessive corrosion or vibration. [NFPA 54:5.7.2.2]

1208.7.1.2 Extreme Temperatures. Gas meters shall not be located where they will be subjected to extreme temperatures or sudden extreme changes in temperature or in areas where they are subjected to temperatures beyond those recommended by the manufacturer. [NFPA 54:5.7.2.3]

1208.7.2 Supports. Gas meters shall be supported or connected to rigid piping so as not to exert a strain n the meters. Where flexible connectors are used to connect a gas meter to downstream piping at mobile homes in mobile home parks, the meter shall be supported by a post or bracket placed in a firm footing or by other means providing equivalent support. [NFPA 54:5.7.3]

1208.7.3 Meter Protection. Meters shall be protected against overpressure, backpressure, and vacuum. [NFPA54:5.7.4]

1208.7.4 Identification. Gas piping at multiple meter installations shall be marked by a metal tag or other permanent means designating the building or the part of the building being supplied and attached by the installing agency. [NFPA 54:5.7.5]

1208.8 Gas Pressure Regulators. A line pressure regulator or gas appliance pressure regulator, as applicable, shall be installed where the gas supply pressure exceeds that at which the branch supply line or appliances are designed to operate or vary beyond design pressure limits. [NFPA 54:5.8.1]

1210.0 Gas Piping Installation.

1210.1 Piping Underground. Underground gas piping shall be installed with sufficient clearance from any other underground structure to avoid contact therewith, to allow maintenance, and to protect against damage from proximity to other structures. In addition, underground plastic piping shall be installed with sufficient clearance or shall be insulated from sources of heat to prevent the heat from impairing the serviceability of the pipe. [NFPA 54:7.1.1]

1212.6 Appliance Shutoff Valves and Connections.

Each appliance connected to a piping system shall have an accessible, approved manual shutoff valve with a non-displaceable valve member or a listed gas convenience outlet. Appliance shutoff valves and convenience outlets shall serve a single appliance only. The shutoff valve shall be located within 6 feet (1829 mm) of the appliance it serves. Where a connector is used, the valve shall be installed upstream of the connector. A union or flanged connection shall be provided downstream from the valve to permit removal of appliance controls. Shutoff valves serving decorative appliances shall be permitted to be installed in fireplaces if listed for such use. [NFPA 54:9.6.5, 9.6.5.1(A)(B)]

Exceptions:

- (1) Shutoff valves shall be permitted to be accessible located inside or under an appliance where such appliance is removed without removal of the shutoff valve.
- (2) Shutoff valves shall be permitted to be accessibly located inside wall heaters and wall furnaces listed for recessed installation where necessary maintenance is performed without removal of the shutoff valve.

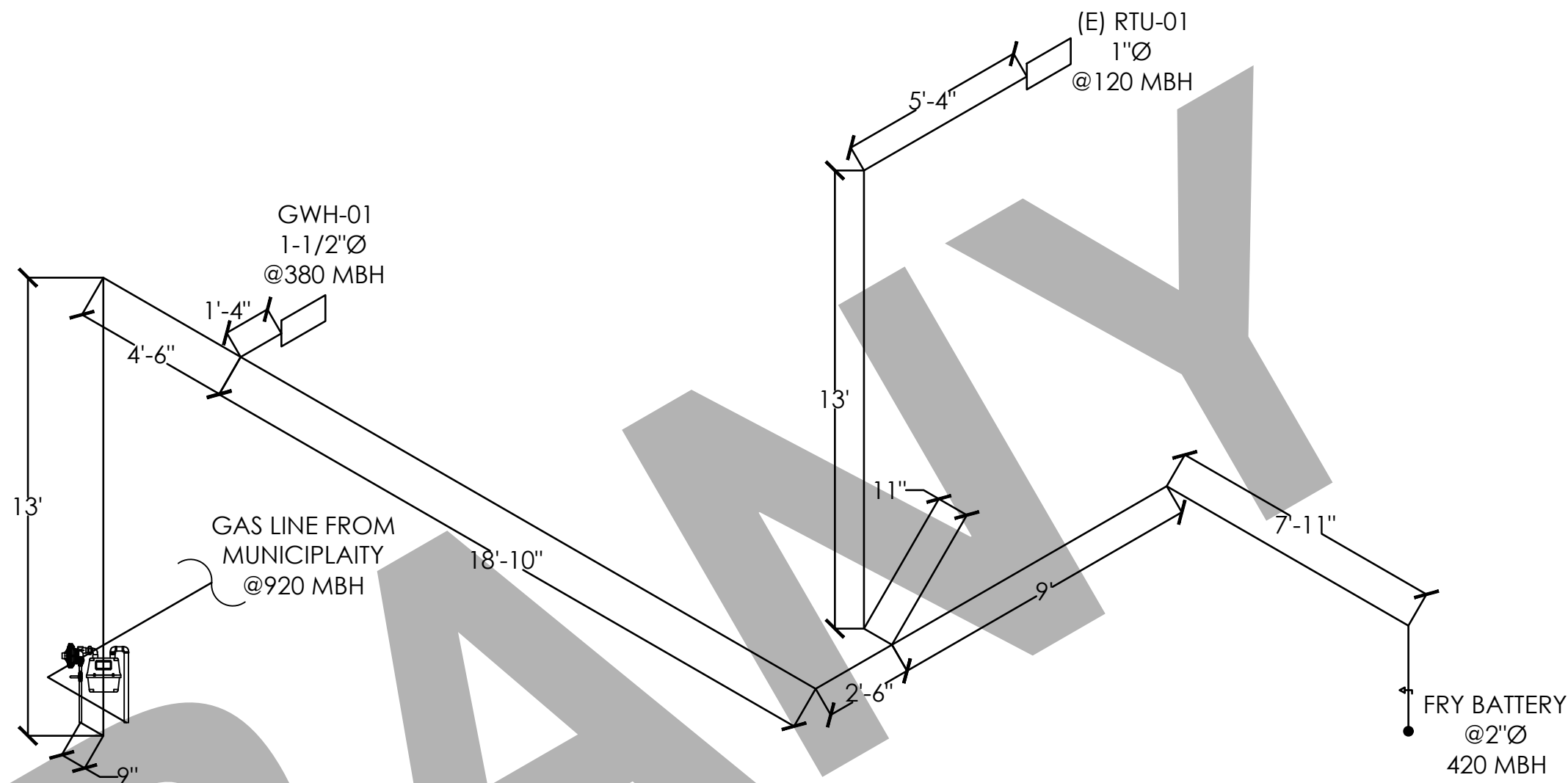
ALL GAS PIPES ARE METALLIC SHCD. 40

THE TOTAL GAS PIPE LENGTH FROM THE GAS METER TO THE FARTHEST EQUIPMENT IS APPRX. 124 FEET.

GAS UNITS AND MBH:

ITEM	MBH
GWH-01	380
RTU-01	120
FRY BATTERY	420
TOTAL =	920

ISOMETRIC GAS LAYOUT



GAS PIPING INSTALLATIONS

TABLE 1215.2(1)
SCHEDULE 40 METALLIC PIPE

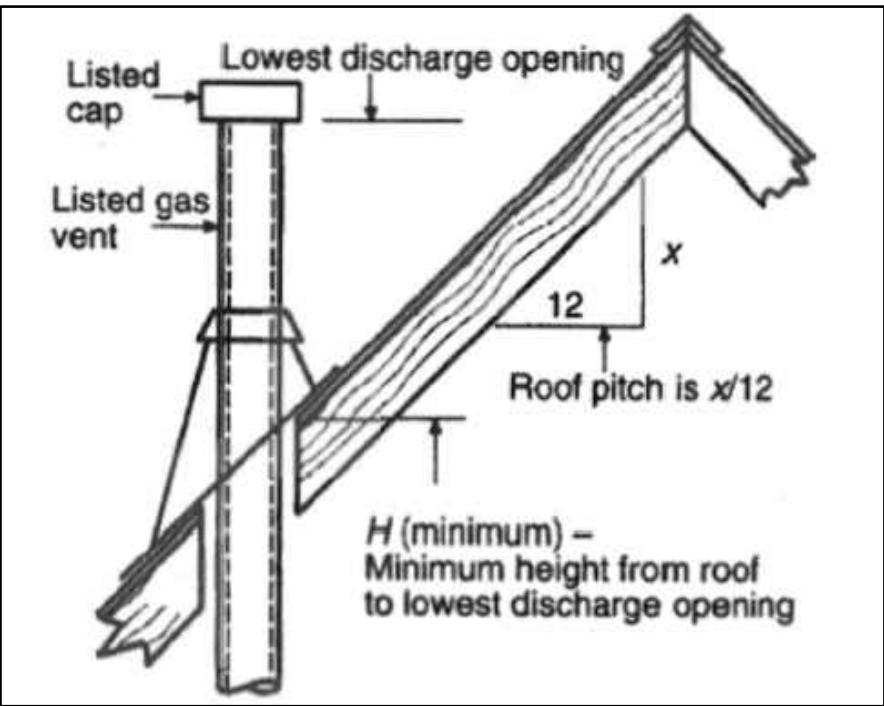
TABLE 1215.2(1) SCHEDULE 40 METALLIC PIPE																Gas Natural	
																Inlet Pressure Less than 2 psi	
																Pressure Drop 0.5 in. w.c.	
																Specific Gravity 0.60	
PIPE SIZE (inch)																	
Nominal	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	5	6	8	10	12			
Actual ID	0.622	0.824	1.049	1.380	1.610	2.067	2.469	3.068	4.026	5.047	6.065	7.981	10.020	11.938			
Length (ft)	Capacity in Cubic Feet of Gas Per Hour																
10	131	273	514	1,060	1,580	3,050	4,860	8,580	17,500	31,700	51,300	105,000	191,000	303,000			
20	90	188	353	726	1,090	2,090	3,340	5,900	12,000	21,800	35,300	72,400	132,000	208,000			
30	72	151	284	583	873	1,680	2,680	4,740	9,660	17,500	28,300	58,200	106,000	167,000			
40	62	129	243	499	747	1,440	2,290	4,050	8,270	15,000	24,200	49,800	90,400	143,000			
50	55	114	215	442	662	1,280	2,030	3,590	7,330	13,300	21,500	44,100	80,100	127,000			
60	50	104	195	400	600	1,160	1,840	3,260	6,640	12,000	19,500	40,000	72,600	115,000			
70	46	95	179	368	552	1,060	1,690	3,000	6,110	11,100	17,900	36,800	66,800	106,000			
80	42	89	167	343	514	989	1,580	2,790	5,680	10,300	16,700	34,200	62,100	98,400			
90	40	83	157	322	482	928	1,480	2,610	5,330	9,650	15,600	32,100	58,300	92,300			
100	38	79	148	304	455	877	1,400	2,470	5,040	9,110	14,800	30,300	55,100	87,200			
125	33	70	131	269	403	777	1,240	2,190	4,460	8,080	13,100	26,900	48,800	77,300			
150	30	63	119	244	366	704	1,120	1,980	4,050	7,320	11,900	24,300	44,200	70,000			
175	28	58	109	224	336	648	1,030	1,820	3,720	6,730	10,900	22,400	40,700	64,400			
200	26	54	102	209	313	602	960	1,700	3,460	6,260	10,100	20,800	37,900	59,900			
250	23	48	90	185	277	534	851	1,500	3,070	5,550	8,990	18,500	33,500	53,100			
300	21	43	82	168	251	484	771	1,360	2,780	5,030	8,150	16,700	30,400	48,100			
350	19	40	75	154	231	445	709	1,250	2,560	4,630	7,490	15,400	28,000	44,300			
400	18	37	70	143	215	414	660	1,170	2,380	4,310	6,970	14,300	26,000	41,200			
450	17	35	66	135	202	389	619	1,090	2,230	4,040	6,540	13,400	24,400	38,600			
500	16	33	62	127	191	367	585	1,030	2,110	3,820	6,180	12,700	23,100	36,500			
550	15	31	59	121	181	349	556	982	2,000	3,620	5,870	12,100	21,900	34,700			
600	14	30	56	115	173	333	530	937	1,910	3,460	5,600	11,500	20,900	33,100			
650	14	29	54	110	165	318	508	897	1,830	3,310	5,360	11,000	20,000	31,700			
700	13	27	52	106	159	306	488	862	1,760	3,180	5,150	10,600	19,200	30,400			
750	13	26	50	102	153	295	470	830	1,690	3,060	4,960	10,200	18,500	29,300			
800	12	26	48	99	148	285	454	802	1,640	2,960	4,790	9,840	17,900	28,300			
850	12	25	46	95	143	275	439	776	1,580	2,860	4,640	9,530	17,300	27,400			
900	11	24	45	93	139	267	426	752	1,530	2,780	4,500	9,240	16,800	26,600			
950	11	23	44	90	135	259	413	731	1,490	2,700	4,370	8,970	16,300	25,800			
1,000	11	23	43	87	131	252	402	711	1,450	2,620	4,250	8,720	15,800	25,100			
1,100	10	21	40	83	124	240	382	675	1,380	2,490	4,030	8,290	15,100	23,800			
1,200	NA	20	39	79	119	229	364	644	1,310	2,380	3,850	7,910	14,400	22,700			
1,300	NA	20	37	76	114	219	349	617	1,260	2,280	3,680	7,570	13,700	21,800			
1,400	NA	19	35	73	109	210	335	592	1,210	2,190	3,540	7,270	13,200	20,900			
1,500	NA	18	34	70	105	203	323	571	1,160	2,110	3,410	7,010	12,700	20,100			
1,600	NA	18	33	68	102	196	312	551	1,120	2,030	3,290	6,770	12,300	19,500			
1,700	NA	17	32	66	98	189	302	533	1,090	1,970	3,190	6,550	11,900	18,800			
1,800	NA	16	31	64	95	184	293	517	1,050	1,910	3,090	6,350	11,500	18,300			
1,900	NA	16	30	62	93	178	284	502	1,020	1,850	3,000	6,170	11,200	17,700			
2,000	NA	16	29	60	90	173	276	488	1,000	1,800	2,920	6,000	10,900	17,200			

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square inch = 6.895 kPa, 1-inch water column = 0.2488 kPa,
1 British thermal unit per hour = 0.2931 W, 1 cubic foot per hour = 0.0283 m3/h, 1 degree = 0.01745 rad.

Notes:

1. NA means a flow of less than 10 cfm.
2. All table entries have been rounded to three significant digits.

CALIFORNIA PLUMBING CODE 2022 ©



TERMINATION LOCATIONS FOR GAS VENTS
WITH LISTED CAPS 12 INCHES OR LESS IN SIZE
AT LEAST 8 FEET FROM A VERTICAL WALL

ROOF PITCH	H (minimum) (feet)
Flat to 6/12	1.0
Over 6/12 to 7/12	1.25
Over 7/12 to 8/12	1.5
Over 8/12 to 9/12	2.0
Over 9/12 to 10/12	2.5
Over 10/12 to 11/12	3.25
Over 11/12 to 12/12	4.0
Over 12/12 to 14/12	5.0
Over 14/12 to 16/12	6.0
Over 16/12 to 18/12	7.0
Over 18/12 to 20/12	7.5
Over 20/12 to 21/12	8.0

ROOF SLOPE HEIGHTS

CLIENT:

ADDRESS:

CONFIDENTIALITY STATEMENT:

ALL DRAWINGS AND WRITTEN MATERIALS
APPEARING HEREIN CONSTITUTE THE
ORIGINAL AND UNPUBLISHED WORK OF THE
DESIGNER AND THE SAME MAY NOT BE
DUPLICATED, USED OR DISCLOSED WITHOUT
CONSENT OF THE DESIGNER.

NOTES:

1. ALL DIMENSIONS HEREIN ARE IN IMPERIAL UNITS UNLESS STATED OTHERWISE.
2. THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL RELEVANT DESIGNER, ENGINEER OR SPECIALIST DRAWINGS AND SPECIFICATIONS.
3. THE CONTRACTOR MUST CHECK ALL DIMENSION AT SITE BEFORE COMMENCING WORK.
4. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY TEMPORARY SUPPORT TO THE BUILDING AND ANY ADJACENT STRUCTURES.

REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

TITLE:
**GAS CODE AND ROOM RISER
DIAGRAM**

PROJ. NO. PROJ. ENGR. SCALE © 24X36:
NTS

DRAWING NO.

REV.

P 4 . 0 1

Design calculation sheet

Project no:	Date:	03/04/2023	Sheet no.: 1 of 1	Computed by: M.J.															
Subject:	Hooting Santa Ana			Checked by:															
Hot Water Calculation				Approved by:															
<div>Application Type</div> <div>Hotel</div>																			
<div>Water Temperature</div> <div> <div>Tin = 50 °F = 10 °C</div> <div>Tout = 140 °F = 60 °C</div> <div>ΔT = 90 °F = 50 °C</div> </div>																			
<div>Fixture</div> <table border="1"> <thead> <tr> <th>Fixture</th> <th>GPH</th> <th>QTY.</th> </tr> </thead> <tbody> <tr> <td>Basin, Private lavatory</td> <td>2</td> <td>x 2 = 4 gph</td> </tr> <tr> <td>Kitchen Sink</td> <td>30</td> <td>x 3 = 90 gph</td> </tr> <tr> <td>Dishwasher</td> <td>125</td> <td>x 1 = 125 gph</td> </tr> <tr> <td>Service Sink</td> <td>30</td> <td>x 4 = 120 gph</td> </tr> </tbody> </table>					Fixture	GPH	QTY.	Basin, Private lavatory	2	x 2 = 4 gph	Kitchen Sink	30	x 3 = 90 gph	Dishwasher	125	x 1 = 125 gph	Service Sink	30	x 4 = 120 gph
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<div>Showers</div> <table border="1"> <thead> <tr> <th>Showers</th> <th>GPH</th> <th>Shower Factor</th> <th>GPH</th> <th>QTY.</th> </tr> </thead> <tbody> <tr> <td>Showers</td> <td>75</td> <td>x 1 =</td> <td>75</td> <td>x 1 = 75 gph</td> </tr> </tbody> </table>					Showers	GPH	Shower Factor	GPH	QTY.	Showers	75	x 1 =	75	x 1 = 75 gph					
Showers	GPH	Shower Factor	GPH	QTY.															
Showers	75	x 1 =	75	x 1 = 75 gph															
<div>Other</div> <table border="1"> <thead> <tr> <th>Other</th> <th>GPH</th> <th>QTY.</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>					Other	GPH	QTY.												
Other	GPH	QTY.																	
<div>Maximum Possible Demand</div> <div> <div>Maximum Possible Demand = 414 gph</div> <div>Demand Factor = 0.25 gph</div> </div>																			
<div>Maximum Probable Demand</div> <div> <div>Maximum Probable Demand = 103.5 gph</div> <div>Maximum Probable Demand = 1,73 gpm</div> <div>Heater Recovery Capacity = 0.11 L/s</div> <div>Heater Recovery Capacity = 1,73 gpm</div> </div>																			
<div>Storage Factor (Custom)</div> <div>Storage Factor (Custom) = 0.6</div>																			
<div>Storage Tank Capacity</div> <div> <div>Storage Tank Capacity = 62.1 gal</div> <div>Storage Tank Capacity = 235 Liters</div> </div>																			
<div>Heater or Coil</div> <div> <div>Heater or Coil = 500 x gpm x ΔT / Efficiency</div> <div>Capacity = 500 x 1,73 x 90 / 0.9 = 86,500 btu/hr</div> <div>Capacity = 25.4 kW</div> </div>																			
<div>Actual Selection</div> <div>Actual Selection = 26 kW</div>																			



Commercial Gas Tankless Water Heaters

TANKLESS HEAVY-DUTY COMMERCIAL MODELS

Designed specifically for heavy-duty commercial applications. Fully modulating, gas-fired, tankless, water heaters with sealed combustion (optional) and power vented flue. Can be installed either indoors or outdoors. Capable of supplying hot water for domestic hot water systems (directly or indirectly) and can be used with water storage tanks, recirculation systems, and/or combined domestic & heating applications.

PRIMARY HEAT EXCHANGER IS CONSTRUCTED OF COMMERCIAL-GRADE COPPER

- Stronger than standard copper and more resilient against erosion
- Copper provides 25x better heat transfer than stainless steel thus stabilizing outgoing water temperature quicker and reducing pressure drop across the heat exchanger.

CONTINUOUS MAXIMUM FLOW RATES UP TO 14.5 GPM EASY-LINK UP TO 4 UNITS

- Multi link up to 10 units with TM-MC01 multi unit controller

COMBINED INDOOR/OUTDOOR MODELS AVAILABLE IN NATURAL GAS OR PROPANE (LP) ASME MODELS AVAILABLE

LOW NOX EMISSIONS COMPLIES WITH LEAD FREE STANDARDS

SAFETY FEATURES:

- Built in Freeze Protection
- Manual Reset Hi Limit (Set at 194°F)
- Overheat Cutoff Fuse
- Inlet and Outlet Thermistors for Constant Temperature Monitoring
- Air Fuel Ratio Rod
- GFI Fuse & Surge Absorber
- Flame Sensor

VENTING AND COMBUSTION

- 5" Category III Stainless Steel
- Vertical or Horizontal Installation
- 50" Max Length, 5 elbows max (90° elbows = 5' equivalent length)
- Power Vent
- Electronic Ignition - No Pilot Light
- 5" Combustion Air Intake (with optional kit)

OPTIONAL ACCESSORIES

- Multi-Unit Controller
- Remote Temperature Controller
- Direct Vent Conversion Kit
- Pipe Cover
- Vent Cap
- Backflow Preventor

WARRANTY

- 6-year limited warranty on heat exchanger in commercial applications
- 5-year warranty on all parts



AT10-910-N
AT10-910-P
AT10-910-AN
AT10-910-AP



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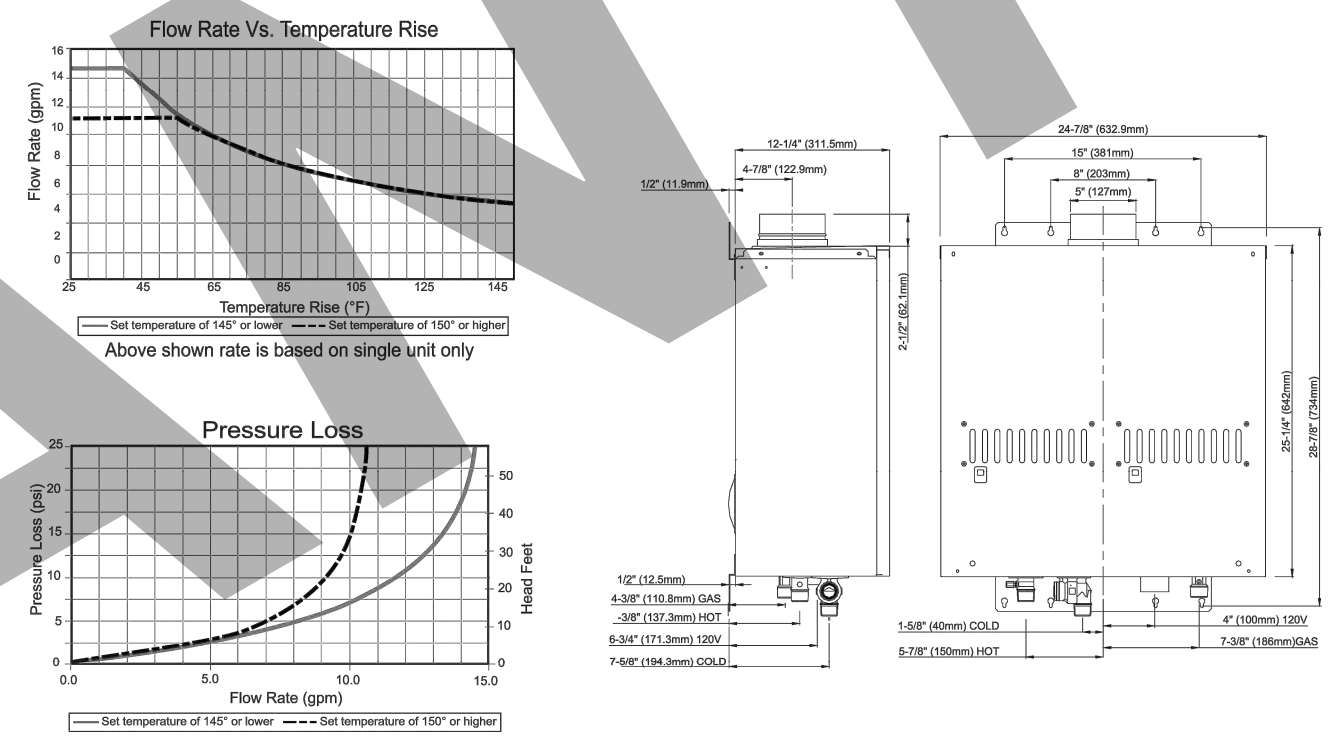


Commercial Gas Tankless Water Heaters

Model Number	Fuel Type	Gas Consumption Input		Thermal Efficiency	Inlet Gas Pressure		GPM***	Dimensions in Inches			Volt	AMP	Flue***	Intake	Hot/Cold Gas Conn.	Approx. Shipping Weight (lbs)
		Min. BTU/H	Max. BTU/H		Min. In. W.C.	Max. In. W.C.		Height	Width	Depth						
AT10-910-N	Natural	15,000	380,000	80%	4	10.4	0.5-14.5	25-1/4	24-7/8	12-3/4	120	1.48	5" O.D.	5" O.D.	1" NPT	113
AT10-910-P	Propane	15,000	380,000	82%	8	14	0.5-14.5	25-1/4	24-7/8	12-3/4	120	1.48	5" O.D.	5" O.D.	1" NPT	113
AT10-910-AN*	Natural	15,000	380,000	80%	4	10.4	0.5-14.5	25-1/4	24-7/8	12-3/4	120	1.48	5" O.D.	5" O.D.	1" NPT	113
AT10-910-AP*	Propane	15,000	380,000	82%	8	14	0.5-14.5	25-1/4	24-7/8	12-3/4	120	1.48	5" O.D.	5" O.D.	1" NPT	113

*ASME model
**Current numbers based on factory testing, 0.4 GPM required for continuous fire after initial ignition.
***150 psi water pressure. Pressure only relief valve requires (Min. 300,000 BTU/h, 150 PSI). Min. 40 PSI or above recommended for maximum flow.

*** Category II required



SPECIFICATION

Water heater(s) shall be Model _____ as manufactured by A. O. Smith. The water heater(s) shall be a copper coil integral fin and tube construction with quick release brass or bronze waterways. Heater(s) will be factory assembled and tested. The heater shall be vented with 5" Stainless Steel Category III vent pipe a distance not to exceed 50' (equivalent) feet terminating vertically or horizontally as prescribed. Intake air with optional direct vent kit may be of such material as PVC not to exceed a total of 50' (equivalent). The heater(s) shall be controlled by on-board solid state printed circuit board monitoring incoming and outgoing temperatures with factory-installed thermistors, sensing and controlling flow rate to set point temperature with control both air and gas mixture inputs to maintain thermal combustion efficiency. Unit also consists of ground fault interrupter, inline fusing, spark ignition and sensor system, aluminumized stainless steel burners, air-fuel ratio rod, Hi limit switch, modulating and proportional gas valves, freeze protection sensor and heating block and overhead cutoff fuses. The water heater(s) shall be CSA listed and meet the energy efficiency requirements of ASHRAE 90, 1b-1992.

For technical information, call 800-527-1953. A. O. Smith Corporation reserves the right to make product changes or improvements without prior notice.

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A05CG14001

Job Name _____		Contractor _____	
Job Location _____		Approval _____	
Engineer _____		Contractor's P.O. No. _____	
Approval _____		Representative _____	

Series 719 Double Check Valve Assemblies

Sizes: 1/2" - 2" (15 - 50mm)

Series 719 Double Check Valve Assemblies are designed to protect drinking water supplies from dangerous cross-connections in accordance with national plumbing codes and water authority requirements.

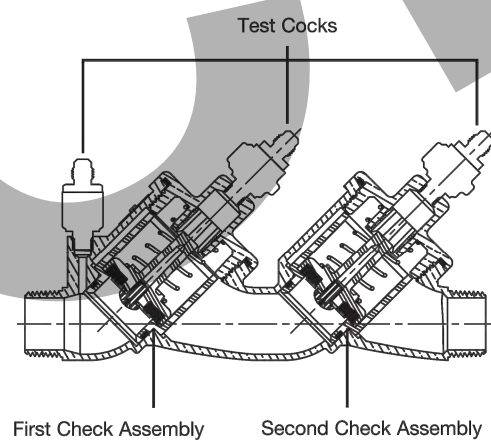
This series may be used in only those cross-connections identified by local inspection authorities as non-health hazard applications. Check with local authority having jurisdiction regarding vertical orientation, frequency of testing or other installation requirements. Series 719 meets the requirements of ASSE Std. 1015 and AWWA Std. C510.

Features

- Manufactured from bronze alloy
- Separate access, top entry check valve design
- Reversible seat disc rubber, extends check valve life
- Chloramine resistant elastomers
- Replaceable seats and seat discs
- Compact design
- Top mounted screwdriver slotted ball valve test cocks
- Low pressure drop
- 2" - 1" (15 - 25mm) have Tee handles
- No special tools required for servicing
- Plastic on plastic check guiding reduces potential binding due to mineral deposits

Specifications

Series 719 Double Check Valve Assembly shall be installed at each noted location. Provide assembly with integral shutoff valves that conform to ASSE/1015 and AWWA C510. The assembly shall have top entry bronze covered access points for each check assembly, screw driver slotted test cocks and require the use of no special tools for servicing. All wetted rubber parts shall be manufactured from silicone or chloramine resistant EPDM rubber. All valve seats and seat discs shall be replaceable. Seat discs shall be reversible to extend check valve life. Check valve guiding shall be plastic to plastic. The assembly shall be a Watts Series 719.



First Check Assembly Second Check Assembly

Now Available
WattsBox Insulated Enclosures.
For more information, refer to literature ES-WB.

NOTICE

Inquire with governing authorities for local installation requirements.

NOTICE

The information contained herein is not intended to replace the full product installation and safety information available or the experience of a trained product installer. You are required to thoroughly read all installation instructions and product safety information before beginning the installation of this product.

*The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.

Watts product specifications in U.S. customary units and metric are approximate and are provided for reference only. For precise measurements, please contact Watts Technical Service. Watts reserves the right to change or modify product design, construction, specifications, or materials without prior notice and without incurring any obligation to make such changes and modifications on Watts products previously or subsequently sold.



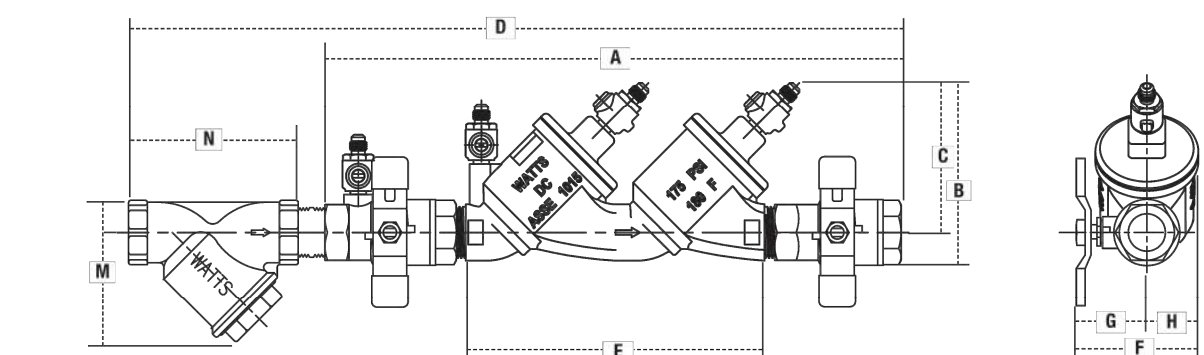
Available Models

- Suffix:
- S - bronze strainer
 - LF - without shutoff valves
 - SH - stainless steel ball valve handles
 - HC - 2 1/2" (65mm) inlet/outlet fire hydrant fittings for 2" (50mm) valve
 - QT - quarter-turn ball valves
 - CSF - testcock caps and tethers
 - AQT - street elbows with quarter-turn ball valves
- Prefix:
- U - union connections

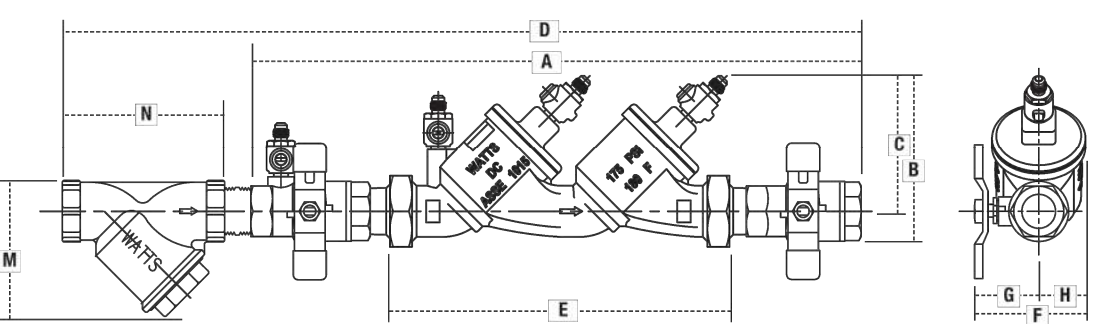
Pressure-Temperature

Operating Pressure: 175psi (12.1 bar)
Operating Temperature Range: 33°F - 180°F (0.5°C - 82°C)

Dimensions/Weights



7190T, 7190T-S																									
SIZE (IN)	DIMENSIONS				STRAINER DIMENSIONS								WEIGHT												
	A	B	C	D	E(F)	F	G	H	M	N	7190T	7190T-S													
1/2 <td>15<td>9 1/16<td>242<td>3 1/16<td>94<td>2 1/16<td>73<td>12 1/16<td>318<td>5 1/16<td>147<td>2 1/16<td>62<td>1 1/16<td>43<td>3/16<td>19<td>1 1/16<td>35<td>2 1/16<td>70<td>2.8<td>1.3<td>3.8<td>1.7</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	15 <td>9 1/16<td>242<td>3 1/16<td>94<td>2 1/16<td>73<td>12 1/16<td>318<td>5 1/16<td>147<td>2 1/16<td>62<td>1 1/16<td>43<td>3/16<td>19<td>1 1/16<td>35<td>2 1/16<td>70<td>2.8<td>1.3<td>3.8<td>1.7</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	9 1/16 <td>242<td>3 1/16<td>94<td>2 1/16<td>73<td>12 1/16<td>318<td>5 1/16<td>147<td>2 1/16<td>62<td>1 1/16<td>43<td>3/16<td>19<td>1 1/16<td>35<td>2 1/16<td>70<td>2.8<td>1.3<td>3.8<td>1.7</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	242 <td>3 1/16<td>94<td>2 1/16<td>73<td>12 1/16<td>318<td>5 1/16<td>147<td>2 1/16<td>62<td>1 1/16<td>43<td>3/16<td>19<td>1 1/16<td>35<td>2 1/16<td>70<td>2.8<td>1.3<td>3.8<td>1.7</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	3 1/16 <td>94<td>2 1/16<td>73<td>12 1/16<td>318<td>5 1/16<td>147<td>2 1/16<td>62<td>1 1/16<td>43<td>3/16<td>19<td>1 1/16<td>35<td>2 1/16<td>70<td>2.8<td>1.3<td>3.8<td>1.7</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	94 <td>2 1/16<td>73<td>12 1/16<td>318<td>5 1/16<td>147<td>2 1/16<td>62<td>1 1/16<td>43<td>3/16<td>19<td>1 1/16<td>35<td>2 1/16<td>70<td>2.8<td>1.3<td>3.8<td>1.7</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	2 1/16 <td>73<td>12 1/16<td>318<td>5 1/16<td>147<td>2 1/16<td>62<td>1 1/16<td>43<td>3/16<td>19<td>1 1/16<td>35<td>2 1/16<td>70<td>2.8<td>1.3<td>3.8<td>1.7</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	73 <td>12 1/16<td>318<td>5 1/16<td>147<td>2 1/16<td>62<td>1 1/16<td>43<td>3/16<td>19<td>1 1/16<td>35<td>2 1/16<td>70<td>2.8<td>1.3<td>3.8<td>1.7</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	12 1/16 <td>318<td>5 1/16<td>147<td>2 1/16<td>62<td>1 1/16<td>43<td>3/16<td>19<td>1 1/16<td>35<td>2 1/16<td>70<td>2.8<td>1.3<td>3.8<td>1.7</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	318 <td>5 1/16<td>147<td>2 1/16<td>62<td>1 1/16<td>43<td>3/16<td>19<td>1 1/16<td>35<td>2 1/16<td>70<td>2.8<td>1.3<td>3.8<td>1.7</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	5 1/16 <td>147<td>2 1/16<td>62<td>1 1/16<td>43<td>3/16<td>19<td>1 1/16<td>35<td>2 1/16<td>70<td>2.8<td>1.3<td>3.8<td>1.7</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	147 <td>2 1/16<td>62<td>1 1/16<td>43<td>3/16<td>19<td>1 1/16<td>35<td>2 1/16<td>70<td>2.8<td>1.3<td>3.8<td>1.7</td></td></td></td></td></td></td></td></td></td></td></td></td></td>	2 1/16 <td>62<td>1 1/16<td>43<td>3/16<td>19<td>1 1/16<td>35<td>2 1/16<td>70<td>2.8<td>1.3<td>3.8<td>1.7</td></td></td></td></td></td></td></td></td></td></td></td></td>	62 <td>1 1/16<td>43<td>3/16<td>19<td>1 1/16<td>35<td>2 1/16<td>70<td>2.8<td>1.3<td>3.8<td>1.7</td></td></td></td></td></td></td></td></td></td></td></td>	1 1/16 <td>43<td>3/16<td>19<td>1 1/16<td>35<td>2 1/16<td>70<td>2.8<td>1.3<td>3.8<td>1.7</td></td></td></td></td></td></td></td></td></td></td>	43 <td>3/16<td>19<td>1 1/16<td>35<td>2 1/16<td>70<td>2.8<td>1.3<td>3.8<td>1.7</td></td></td></td></td></td></td></td></td></td>	3/16 <td>19<td>1 1/16<td>35<td>2 1/16<td>70<td>2.8<td>1.3<td>3.8<td>1.7</td></td></td></td></td></td></td></td></td>	19 <td>1 1/16<td>35<td>2 1/16<td>70<td>2.8<td>1.3<td>3.8<td>1.7</td></td></td></td></td></td></td></td>	1 1/16 <td>35<td>2 1/16<td>70<td>2.8<td>1.3<td>3.8<td>1.7</td></td></td></td></td></td></td>	35 <td>2 1/16<td>70<td>2.8<td>1.3<td>3.8<td>1.7</td></td></td></td></td></td>	2 1/16 <td>70<td>2.8<td>1.3<td>3.8<td>1.7</td></td></td></td></td>	70 <td>2.8<td>1.3<td>3.8<td>1.7</td></td></td></td>	2.8 <td>1.3<td>3.8<td>1.7</td></td></td>	1.3 <td>3.8<td>1.7</td></td>	3.8 <td>1.7</td>	1.7
3/4 <td>20<td>12 1/16<td>307<td>4 1/16<td>108<td>3 1/16<td>88<td>15 1/16<td>393<td>7 1/16<td>195<td>3 1/16<td>79<td>2 1/16<td>52<td>1 1/16<td>27<td>1 1/16<td>41<td>3 1/16<td>81<td>4.7<td>2.1<td>6.4<td>2.9</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	20 <td>12 1/16<td>307<td>4 1/16<td>108<td>3 1/16<td>88<td>15 1/16<td>393<td>7 1/16<td>195<td>3 1/16<td>79<td>2 1/16<td>52<td>1 1/16<td>27<td>1 1/16<td>41<td>3 1/16<td>81<td>4.7<td>2.1<td>6.4<td>2.9</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	12 1/16 <td>307<td>4 1/16<td>108<td>3 1/16<td>88<td>15 1/16<td>393<td>7 1/16<td>195<td>3 1/16<td>79<td>2 1/16<td>52<td>1 1/16<td>27<td>1 1/16<td>41<td>3 1/16<td>81<td>4.7<td>2.1<td>6.4<td>2.9</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	307 <td>4 1/16<td>108<td>3 1/16<td>88<td>15 1/16<td>393<td>7 1/16<td>195<td>3 1/16<td>79<td>2 1/16<td>52<td>1 1/16<td>27<td>1 1/16<td>41<td>3 1/16<td>81<td>4.7<td>2.1<td>6.4<td>2.9</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	4 1/16 <td>108<td>3 1/16<td>88<td>15 1/16<td>393<td>7 1/16<td>195<td>3 1/16<td>79<td>2 1/16<td>52<td>1 1/16<td>27<td>1 1/16<td>41<td>3 1/16<td>81<td>4.7<td>2.1<td>6.4<td>2.9</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	108 <td>3 1/16<td>88<td>15 1/16<td>393<td>7 1/16<td>195<td>3 1/16<td>79<td>2 1/16<td>52<td>1 1/16<td>27<td>1 1/16<td>41<td>3 1/16<td>81<td>4.7<td>2.1<td>6.4<td>2.9</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	3 1/16 <td>88<td>15 1/16<td>393<td>7 1/16<td>195<td>3 1/16<td>79<td>2 1/16<td>52<td>1 1/16<td>27<td>1 1/16<td>41<td>3 1/16<td>81<td>4.7<td>2.1<td>6.4<td>2.9</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	88 <td>15 1/16<td>393<td>7 1/16<td>195<td>3 1/16<td>79<td>2 1/16<td>52<td>1 1/16<td>27<td>1 1/16<td>41<td>3 1/16<td>81<td>4.7<td>2.1<td>6.4<td>2.9</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	15 1/16 <td>393<td>7 1/16<td>195<td>3 1/16<td>79<td>2 1/16<td>52<td>1 1/16<td>27<td>1 1/16<td>41<td>3 1/16<td>81<td>4.7<td>2.1<td>6.4<td>2.9</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	393 <td>7 1/16<td>195<td>3 1/16<td>79<td>2 1/16<td>52<td>1 1/16<td>27<td>1 1/16<td>41<td>3 1/16<td>81<td>4.7<td>2.1<td>6.4<td>2.9</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	7 1/16 <td>195<td>3 1/16<td>79<td>2 1/16<td>52<td>1 1/16<td>27<td>1 1/16<td>41<td>3 1/16<td>81<td>4.7<td>2.1<td>6.4<td>2.9</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	195 <td>3 1/16<td>79<td>2 1/16<td>52<td>1 1/16<td>27<td>1 1/16<td>41<td>3 1/16<td>81<td>4.7<td>2.1<td>6.4<td>2.9</td></td></td></td></td></td></td></td></td></td></td></td></td></td>	3 1/16 <td>79<td>2 1/16<td>52<td>1 1/16<td>27<td>1 1/16<td>41<td>3 1/16<td>81<td>4.7<td>2.1<td>6.4<td>2.9</td></td></td></td></td></td></td></td></td></td></td></td></td>	79 <td>2 1/16<td>52<td>1 1/16<td>27<td>1 1/16<td>41<td>3 1/16<td>81<td>4.7<td>2.1<td>6.4<td>2.9</td></td></td></td></td></td></td></td></td></td></td></td>	2 1/16 <td>52<td>1 1/16<td>27<td>1 1/16<td>41<td>3 1/16<td>81<td>4.7<td>2.1<td>6.4<td>2.9</td></td></td></td></td></td></td></td></td></td></td>	52 <td>1 1/16<td>27<td>1 1/16<td>41<td>3 1/16<td>81<td>4.7<td>2.1<td>6.4<td>2.9</td></td></td></td></td></td></td></td></td></td>	1 1/16 <td>27<td>1 1/16<td>41<td>3 1/16<td>81<td>4.7<td>2.1<td>6.4<td>2.9</td></td></td></td></td></td></td></td></td>	27 <td>1 1/16<td>41<td>3 1/16<td>81<td>4.7<td>2.1<td>6.4<td>2.9</td></td></td></td></td></td></td></td>	1 1/16 <td>41<td>3 1/16<td>81<td>4.7<td>2.1<td>6.4<td>2.9</td></td></td></td></td></td></td>	41 <td>3 1/16<td>81<td>4.7<td>2.1<td>6.4<td>2.9</td></td></td></td></td></td>	3 1/16 <td>81<td>4.7<td>2.1<td>6.4<td>2.9</td></td></td></td></td>	81 <td>4.7<td>2.1<td>6.4<td>2.9</td></td></td></td>	4.7 <td>2.1<td>6.4<td>2.9</td></td></td>	2.1 <td>6.4<td>2.9</td></td>	6.4 <td>2.9</td>	2.9
1 <td>25<td>14 1/16<td>376<td>4 1/16<td>116<td>3 1/16<td>98<td>19 1/16<td>495<td>9 1/16<td>244<td>3 1/16<td>95<td>2 1/16<td>62<td>1 1/16<td>33<td>2 1/16<td>54<td>3 1/16<td>95<td>7.4<td>3.4<td>9.4<td>4.3</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	25 <td>14 1/16<td>376<td>4 1/16<td>116<td>3 1/16<td>98<td>19 1/16<td>495<td>9 1/16<td>244<td>3 1/16<td>95<td>2 1/16<td>62<td>1 1/16<td>33<td>2 1/16<td>54<td>3 1/16<td>95<td>7.4<td>3.4<td>9.4<td>4.3</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	14 1/16 <td>376<td>4 1/16<td>116<td>3 1/16<td>98<td>19 1/16<td>495<td>9 1/16<td>244<td>3 1/16<td>95<td>2 1/16<td>62<td>1 1/16<td>33<td>2 1/16<td>54<td>3 1/16<td>95<td>7.4<td>3.4<td>9.4<td>4.3</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	376 <td>4 1/16<td>116<td>3 1/16<td>98<td>19 1/16<td>495<td>9 1/16<td>244<td>3 1/16<td>95<td>2 1/16<td>62<td>1 1/16<td>33<td>2 1/16<td>54<td>3 1/16<td>95<td>7.4<td>3.4<td>9.4<td>4.3</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	4 1/16 <td>116<td>3 1/16<td>98<td>19 1/16<td>495<td>9 1/16<td>244<td>3 1/16<td>95<td>2 1/16<td>62<td>1 1/16<td>33<td>2 1/16<td>54<td>3 1/16<td>95<td>7.4<td>3.4<td>9.4<td>4.3</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	116 <td>3 1/16<td>98<td>19 1/16<td>495<td>9 1/16<td>244<td>3 1/16<td>95<td>2 1/16<td>62<td>1 1/16<td>33<td>2 1/16<td>54<td>3 1/16<td>95<td>7.4<td>3.4<td>9.4<td>4.3</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	3 1/16 <td>98<td>19 1/16<td>495<td>9 1/16<td>244<td>3 1/16<td>95<td>2 1/16<td>62<td>1 1/16<td>33<td>2 1/16<td>54<td>3 1/16<td>95<td>7.4<td>3.4<td>9.4<td>4.3</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	98 <td>19 1/16<td>495<td>9 1/16<td>244<td>3 1/16<td>95<td>2 1/16<td>62<td>1 1/16<td>33<td>2 1/16<td>54<td>3 1/16<td>95<td>7.4<td>3.4<td>9.4<td>4.3</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	19 1/16 <td>495<td>9 1/16<td>244<td>3 1/16<td>95<td>2 1/16<td>62<td>1 1/16<td>33<td>2 1/16<td>54<td>3 1/16<td>95<td>7.4<td>3.4<td>9.4<td>4.3</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	495 <td>9 1/16<td>244<td>3 1/16<td>95<td>2 1/16<td>62<td>1 1/16<td>33<td>2 1/16<td>54<td>3 1/16<td>95<td>7.4<td>3.4<td>9.4<td>4.3</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	9 1/16 <td>244<td>3 1/16<td>95<td>2 1/16<td>62<td>1 1/16<td>33<td>2 1/16<td>54<td>3 1/16<td>95<td>7.4<td>3.4<td>9.4<td>4.3</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	244 <td>3 1/16<td>95<td>2 1/16<td>62<td>1 1/16<td>33<td>2 1/16<td>54<td>3 1/16<td>95<td>7.4<td>3.4<td>9.4<td>4.3</td></td></td></td></td></td></td></td></td></td></td></td></td></td>	3 1/16 <td>95<td>2 1/16<td>62<td>1 1/16<td>33<td>2 1/16<td>54<td>3 1/16<td>95<td>7.4<td>3.4<td>9.4<td>4.3</td></td></td></td></td></td></td></td></td></td></td></td></td>	95 <td>2 1/16<td>62<td>1 1/16<td>33<td>2 1/16<td>54<td>3 1/16<td>95<td>7.4<td>3.4<td>9.4<td>4.3</td></td></td></td></td></td></td></td></td></td></td></td>	2 1/16 <td>62<td>1 1/16<td>33<td>2 1/16<td>54<td>3 1/16<td>95<td>7.4<td>3.4<td>9.4<td>4.3</td></td></td></td></td></td></td></td></td></td></td>	62 <td>1 1/16<td>33<td>2 1/16<td>54<td>3 1/16<td>95<td>7.4<td>3.4<td>9.4<td>4.3</td></td></td></td></td></td></td></td></td></td>	1 1/16 <td>33<td>2 1/16<td>54<td>3 1/16<td>95<td>7.4<td>3.4<td>9.4<td>4.3</td></td></td></td></td></td></td></td></td>	33 <td>2 1/16<td>54<td>3 1/16<td>95<td>7.4<td>3.4<td>9.4<td>4.3</td></td></td></td></td></td></td></td>	2 1/16 <td>54<td>3 1/16<td>95<td>7.4<td>3.4<td>9.4<td>4.3</td></td></td></td></td></td></td>	54 <td>3 1/16<td>95<td>7.4<td>3.4<td>9.4<td>4.3</td></td></td></td></td></td>	3 1/16 <td>95<td>7.4<td>3.4<td>9.4<td>4.3</td></td></td></td></td>	95 <td>7.4<td>3.4<td>9.4<td>4.3</td></td></td></td>	7.4 <td>3.4<td>9.4<td>4.3</td></td></td>	3.4 <td>9.4<td>4.3</td></td>	9.4 <td>4.3</td>	4.3
1 1/4 <td>32<td>18 1/16<td>480<td>6 1/16<td>156<td>5 1/16<td>129<td>24 1/16<td>610<td>11 1/16<td>297<td>4 1/16<td>108<td>2 1/16<td>67<td>1 1/16<td>41<td>2 1/16<td>64<td>4 1/16<td>113<td>14.0<td>6.3<td>18.0<td>8.1</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	32 <td>18 1/16<td>480<td>6 1/16<td>156<td>5 1/16<td>129<td>24 1/16<td>610<td>11 1/16<td>297<td>4 1/16<td>108<td>2 1/16<td>67<td>1 1/16<td>41<td>2 1/16<td>64<td>4 1/16<td>113<td>14.0<td>6.3<td>18.0<td>8.1</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	18 1/16 <td>480<td>6 1/16<td>156<td>5 1/16<td>129<td>24 1/16<td>610<td>11 1/16<td>297<td>4 1/16<td>108<td>2 1/16<td>67<td>1 1/16<td>41<td>2 1/16<td>64<td>4 1/16<td>113<td>14.0<td>6.3<td>18.0<td>8.1</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	480 <td>6 1/16<td>156<td>5 1/16<td>129<td>24 1/16<td>610<td>11 1/16<td>297<td>4 1/16<td>108<td>2 1/16<td>67<td>1 1/16<td>41<td>2 1/16<td>64<td>4 1/16<td>113<td>14.0<td>6.3<td>18.0<td>8.1</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	6 1/16 <td>156<td>5 1/16<td>129<td>24 1/16<td>610<td>11 1/16<td>297<td>4 1/16<td>108<td>2 1/16<td>67<td>1 1/16<td>41<td>2 1/16<td>64<td>4 1/16<td>113<td>14.0<td>6.3<td>18.0<td>8.1</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	156 <td>5 1/16<td>129<td>24 1/16<td>610<td>11 1/16<td>297<td>4 1/16<td>108<td>2 1/16<td>67<td>1 1/16<td>41<td>2 1/16<td>64<td>4 1/16<td>113<td>14.0<td>6.3<td>18.0<td>8.1</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	5 1/16 <td>129<td>24 1/16<td>610<td>11 1/16<td>297<td>4 1/16<td>108<td>2 1/16<td>67<td>1 1/16<td>41<td>2 1/16<td>64<td>4 1/16<td>113<td>14.0<td>6.3<td>18.0<td>8.1</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	129 <td>24 1/16<td>610<td>11 1/16<td>297<td>4 1/16<td>108<td>2 1/16<td>67<td>1 1/16<td>41<td>2 1/16<td>64<td>4 1/16<td>113<td>14.0<td>6.3<td>18.0<td>8.1</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	24 1/16 <td>610<td>11 1/16<td>297<td>4 1/16<td>108<td>2 1/16<td>67<td>1 1/16<td>41<td>2 1/16<td>64<td>4 1/16<td>113<td>14.0<td>6.3<td>18.0<td>8.1</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	610 <td>11 1/16<td>297<td>4 1/16<td>108<td>2 1/16<td>67<td>1 1/16<td>41<td>2 1/16<td>64<td>4 1/16<td>113<td>14.0<td>6.3<td>18.0<td>8.1</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	11 1/16 <td>297<td>4 1/16<td>108<td>2 1/16<td>67<td>1 1/16<td>41<td>2 1/16<td>64<td>4 1/16<td>113<td>14.0<td>6.3<td>18.0<td>8.1</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	297 <td>4 1/16<td>108<td>2 1/16<td>67<td>1 1/16<td>41<td>2 1/16<td>64<td>4 1/16<td>113<td>14.0<td>6.3<td>18.0<td>8.1</td></td></td></td></td></td></td></td></td></td></td></td></td></td>	4 1/16 <td>108<td>2 1/16<td>67<td>1 1/16<td>41<td>2 1/16<td>64<td>4 1/16<td>113<td>14.0<td>6.3<td>18.0<td>8.1</td></td></td></td></td></td></td></td></td></td></td></td></td>	108 <td>2 1/16<td>67<td>1 1/16<td>41<td>2 1/16<td>64<td>4 1/16<td>113<td>14.0<td>6.3<td>18.0<td>8.1</td></td></td></td></td></td></td></td></td></td></td></td>	2 1/16 <td>67<td>1 1/16<td>41<td>2 1/16<td>64<td>4 1/16<td>113<td>14.0<td>6.3<td>18.0<td>8.1</td></td></td></td></td></td></td></td></td></td></td>	67 <td>1 1/16<td>41<td>2 1/16<td>64<td>4 1/16<td>113<td>14.0<td>6.3<td>18.0<td>8.1</td></td></td></td></td></td></td></td></td></td>	1 1/16 <td>41<td>2 1/16<td>64<td>4 1/16<td>113<td>14.0<td>6.3<td>18.0<td>8.1</td></td></td></td></td></td></td></td></td>	41 <td>2 1/16<td>64<td>4 1/16<td>113<td>14.0<td>6.3<td>18.0<td>8.1</td></td></td></td></td></td></td></td>	2 1/16 <td>64<td>4 1/16<td>113<td>14.0<td>6.3<td>18.0<td>8.1</td></td></td></td></td></td></td>	64 <td>4 1/16<td>113<td>14.0<td>6.3<td>18.0<td>8.1</td></td></td></td></td></td>	4 1/16 <td>113<td>14.0<td>6.3<td>18.0<td>8.1</td></td></td></td></td>	113 <td>14.0<td>6.3<td>18.0<td>8.1</td></td></td></td>	14.0 <td>6.3<td>18.0<td>8.1</td></td></td>	6.3 <td>18.0<td>8.1</td></td>	18.0 <td>8.1</td>	8.1
1 1/2 <td>40<td>18 1/16<td>480<td>6 1/16<td>156<td>5 1/16<td>129<td>25 1/16<td>640<td>11 1/16<td>297<td>4 1/16<td>121<td>3 1/16<td>79<td>1 1/16<td>41<td>3<td>76<td>4 1/16<td>124<td>16.1<td>7.3<td>19.9<td>9.0</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	40 <td>18 1/16<td>480<td>6 1/16<td>156<td>5 1/16<td>129<td>25 1/16<td>640<td>11 1/16<td>297<td>4 1/16<td>121<td>3 1/16<td>79<td>1 1/16<td>41<td>3<td>76<td>4 1/16<td>124<td>16.1<td>7.3<td>19.9<td>9.0</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	18 1/16 <td>480<td>6 1/16<td>156<td>5 1/16<td>129<td>25 1/16<td>640<td>11 1/16<td>297<td>4 1/16<td>121<td>3 1/16<td>79<td>1 1/16<td>41<td>3<td>76<td>4 1/16<td>124<td>16.1<td>7.3<td>19.9<td>9.0</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	480 <td>6 1/16<td>156<td>5 1/16<td>129<td>25 1/16<td>640<td>11 1/16<td>297<td>4 1/16<td>121<td>3 1/16<td>79<td>1 1/16<td>41<td>3<td>76<td>4 1/16<td>124<td>16.1<td>7.3<td>19.9<td>9.0</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	6 1/16 <td>156<td>5 1/16<td>129<td>25 1/16<td>640<td>11 1/16<td>297<td>4 1/16<td>121<td>3 1/16<td>79<td>1 1/16<td>41<td>3<td>76<td>4 1/16<td>124<td>16.1<td>7.3<td>19.9<td>9.0</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	156 <td>5 1/16<td>129<td>25 1/16<td>640<td>11 1/16<td>297<td>4 1/16<td>121<td>3 1/16<td>79<td>1 1/16<td>41<td>3<td>76<td>4 1/16<td>124<td>16.1<td>7.3<td>19.9<td>9.0</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	5 1/16 <td>129<td>25 1/16<td>640<td>11 1/16<td>297<td>4 1/16<td>121<td>3 1/16<td>79<td>1 1/16<td>41<td>3<td>76<td>4 1/16<td>124<td>16.1<td>7.3<td>19.9<td>9.0</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	129 <td>25 1/16<td>640<td>11 1/16<td>297<td>4 1/16<td>121<td>3 1/16<td>79<td>1 1/16<td>41<td>3<td>76<td>4 1/16<td>124<td>16.1<td>7.3<td>19.9<td>9.0</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	25 1/16 <td>640<td>11 1/16<td>297<td>4 1/16<td>121<td>3 1/16<td>79<td>1 1/16<td>41<td>3<td>76<td>4 1/16<td>124<td>16.1<td>7.3<td>19.9<td>9.0</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	640 <td>11 1/16<td>297<td>4 1/16<td>121<td>3 1/16<td>79<td>1 1/16<td>41<td>3<td>76<td>4 1/16<td>124<td>16.1<td>7.3<td>19.9<td>9.0</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	11 1/16 <td>297<td>4 1/16<td>121<td>3 1/16<td>79<td>1 1/16<td>41<td>3<td>76<td>4 1/16<td>124<td>16.1<td>7.3<td>19.9<td>9.0</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	297 <td>4 1/16<td>121<td>3 1/16<td>79<td>1 1/16<td>41<td>3<td>76<td>4 1/16<td>124<td>16.1<td>7.3<td>19.9<td>9.0</td></td></td></td></td></td></td></td></td></td></td></td></td></td>	4 1/16 <td>121<td>3 1/16<td>79<td>1 1/16<td>41<td>3<td>76<td>4 1/16<td>124<td>16.1<td>7.3<td>19.9<td>9.0</td></td></td></td></td></td></td></td></td></td></td></td></td>	121 <td>3 1/16<td>79<td>1 1/16<td>41<td>3<td>76<td>4 1/16<td>124<td>16.1<td>7.3<td>19.9<td>9.0</td></td></td></td></td></td></td></td></td></td></td></td>	3 1/16 <td>79<td>1 1/16<td>41<td>3<td>76<td>4 1/16<td>124<td>16.1<td>7.3<td>19.9<td>9.0</td></td></td></td></td></td></td></td></td></td></td>	79 <td>1 1/16<td>41<td>3<td>76<td>4 1/16<td>124<td>16.1<td>7.3<td>19.9<td>9.0</td></td></td></td></td></td></td></td></td></td>	1 1/16 <td>41<td>3<td>76<td>4 1/16<td>124<td>16.1<td>7.3<td>19.9<td>9.0</td></td></td></td></td></td></td></td></td>	41 <td>3<td>76<td>4 1/16<td>124<td>16.1<td>7.3<td>19.9<td>9.0</td></td></td></td></td></td></td></td>	3 <td>76<td>4 1/16<td>124<td>16.1<td>7.3<td>19.9<td>9.0</td></td></td></td></td></td></td>	76 <td>4 1/16<td>124<td>16.1<td>7.3<td>19.9<td>9.0</td></td></td></td></td></td>	4 1/16 <td>124<td>16.1<td>7.3<td>19.9<td>9.0</td></td></td></td></td>	124 <td>16.1<td>7.3<td>19.9<td>9.0</td></td></td></td>	16.1 <td>7.3<td>19.9<td>9.0</td></td></td>	7.3 <td>19.9<td>9.0</td></td>	19.9 <td>9.0</td>	9.0
2 <td>50<td>21 1/16<td>538<td>7 1/16<td>179<td>5 1/16<td>142<td>28 1/16<td>735<td>13 1/16<td>340<td>5 1/16<td>137<td>3 1/16<td>87<td>1 1/16<td>49<td>3 1/16<td>90<td>5 1/16<td>151<td>25.7<td>11.6<td>33.4<td>15.2</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	50 <td>21 1/16<td>538<td>7 1/16<td>179<td>5 1/16<td>142<td>28 1/16<td>735<td>13 1/16<td>340<td>5 1/16<td>137<td>3 1/16<td>87<td>1 1/16<td>49<td>3 1/16<td>90<td>5 1/16<td>151<td>25.7<td>11.6<td>33.4<td>15.2</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	21 1/16 <td>538<td>7 1/16<td>179<td>5 1/16<td>142<td>28 1/16<td>735<td>13 1/16<td>340<td>5 1/16<td>137<td>3 1/16<td>87<td>1 1/16<td>49<td>3 1/16<td>90<td>5 1/16<td>151<td>25.7<td>11.6<td>33.4<td>15.2</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	538 <td>7 1/16<td>179<td>5 1/16<td>142<td>28 1/16<td>735<td>13 1/16<td>340<td>5 1/16<td>137<td>3 1/16<td>87<td>1 1/16<td>49<td>3 1/16<td>90<td>5 1/16<td>151<td>25.7<td>11.6<td>33.4<td>15.2</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	7 1/16 <td>179<td>5 1/16<td>142<td>28 1/16<td>735<td>13 1/16<td>340<td>5 1/16<td>137<td>3 1/16<td>87<td>1 1/16<td>49<td>3 1/16<td>90<td>5 1/16<td>151<td>25.7<td>11.6<td>33.4<td>15.2</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	179 <td>5 1/16<td>142<td>28 1/16<td>735<td>13 1/16<td>340<td>5 1/16<td>137<td>3 1/16<td>87<td>1 1/16<td>49<td>3 1/16<td>90<td>5 1/16<td>151<td>25.7<td>11.6<td>33.4<td>15.2</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	5 1/16 <td>142<td>28 1/16<td>735<td>13 1/16<td>340<td>5 1/16<td>137<td>3 1/16<td>87<td>1 1/16<td>49<td>3 1/16<td>90<td>5 1/16<td>151<td>25.7<td>11.6<td>33.4<td>15.2</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	142 <td>28 1/16<td>735<td>13 1/16<td>340<td>5 1/16<td>137<td>3 1/16<td>87<td>1 1/16<td>49<td>3 1/16<td>90<td>5 1/16<td>151<td>25.7<td>11.6<td>33.4<td>15.2</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	28 1/16 <td>735<td>13 1/16<td>340<td>5 1/16<td>137<td>3 1/16<td>87<td>1 1/16<td>49<td>3 1/16<td>90<td>5 1/16<td>151<td>25.7<td>11.6<td>33.4<td>15.2</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	735 <td>13 1/16<td>340<td>5 1/16<td>137<td>3 1/16<td>87<td>1 1/16<td>49<td>3 1/16<td>90<td>5 1/16<td>151<td>25.7<td>11.6<td>33.4<td>15.2</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	13 1/16 <td>340<td>5 1/16<td>137<td>3 1/16<td>87<td>1 1/16<td>49<td>3 1/16<td>90<td>5 1/16<td>151<td>25.7<td>11.6<td>33.4<td>15.2</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	340 <td>5 1/16<td>137<td>3 1/16<td>87<td>1 1/16<td>49<td>3 1/16<td>90<td>5 1/16<td>151<td>25.7<td>11.6<td>33.4<td>15.2</td></td></td></td></td></td></td></td></td></td></td></td></td></td>	5 1/16 <td>137<td>3 1/16<td>87<td>1 1/16<td>49<td>3 1/16<td>90<td>5 1/16<td>151<td>25.7<td>11.6<td>33.4<td>15.2</td></td></td></td></td></td></td></td></td></td></td></td></td>	137 <td>3 1/16<td>87<td>1 1/16<td>49<td>3 1/16<td>90<td>5 1/16<td>151<td>25.7<td>11.6<td>33.4<td>15.2</td></td></td></td></td></td></td></td></td></td></td></td>	3 1/16 <td>87<td>1 1/16<td>49<td>3 1/16<td>90<td>5 1/16<td>151<td>25.7<td>11.6<td>33.4<td>15.2</td></td></td></td></td></td></td></td></td></td></td>	87 <td>1 1/16<td>49<td>3 1/16<td>90<td>5 1/16<td>151<td>25.7<td>11.6<td>33.4<td>15.2</td></td></td></td></td></td></td></td></td></td>	1 1/16 <td>49<td>3 1/16<td>90<td>5 1/16<td>151<td>25.7<td>11.6<td>33.4<td>15.2</td></td></td></td></td></td></td></td></td>	49 <td>3 1/16<td>90<td>5 1/16<td>151<td>25.7<td>11.6<td>33.4<td>15.2</td></td></td></td></td></td></td></td>	3 1/16 <td>90<td>5 1/16<td>151<td>25.7<td>11.6<td>33.4<td>15.2</td></td></td></td></td></td></td>	90 <td>5 1/16<td>151<td>25.7<td>11.6<td>33.4<td>15.2</td></td></td></td></td></td>	5 1/16 <td>151<td>25.7<td>11.6<td>33.4<td>15.2</td></td></td></td></td>	151 <td>25.7<td>11.6<td>33.4<td>15.2</td></td></td></td>	25.7 <td>11.6<td>33.4<td>15.2</td></td></td>	11.6 <td>33.4<td>15.2</td></td>	33.4 <td>15.2</td>	15.2



U7190T, U7190T-S																								
SIZE (IN)	DIMENSIONS										STRAINER DIMENSIONS						WEIGHT							
	A	B	C	D	E (F)	F	G	H	M	N	U7190T	U7190T-S	Ags	Dgs	Ags	Dgs								
1/2	15	15 1/16	402	4 1/16	116	3 1/16	98	18 1/16	478	11 1/16	289	3 1/16	78	1 1/16	43	1 1/16	35	2 1/16	70	7.4	3.4	8.4	3.8	
3/4	20	18 1/16	412	4 1/16	116	3 1/16	98	19 1/16	498	11 1/16	287	3 1/16	86	2 1/16	52	1 1/16	33	2 1/16	81	7.9	3.6	9.7	4.4	
1	25	17 1/16	439	4 1/16	116	3 1/16	98	22	550	11 1/16	297	3 1/16	95	2 1/16	62	1 1/16	33	2 1/16	94	8.9	4.0	10.9	5.0	
1 1/4	32	20 1/16	530	6 1/16	156	5 1/16	129	26	660	15 1/16	390	4 1/16	108	2 1/16	67	1 1/16	41	2 1/16	64	17.6	8.0	21.6	9.8	
1 1/2	40	21 1/16	547	6 1/16	156	5 1/16	129	27 1/16	708	15 1/16	390	4 1/16	121	3 1/16	79	1 1/16	41	3	76	19.8	9.0	23.5	10.7	
2	50	24 1/16	621	7 1/16	179	5 1/16	142	32 1/16	817	16 1/16	425	5 1/16	137	3 1/16	87	1 1/16	49	3 1/16	90	5 1/16	30.0	13.6	37.7	17.1

719AQT

SIZE (IN)		DIMENSIONS																WEIGHT	
		A		B		C		D		E (F)		F		G		H			
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	kg	lbs
1/2	15	7 1/16	200	3 1/16	84	2 1/16	73	2 1/16	73	5 1/16	147	2 1/16	62	1 1/16	43	3/16	19	3.4	1.5
3/4	20	13 1/16	340	4 1/16	121	4 1/16	116	3 1/16	98	7 1/16	195	3 1/16	79	2 1/16	52	1 1/16	27	5.7	2.6
1	25	12 1/16	322	5	127	4 1/16	110	3 1/16	98	9 1/16	244	3 1/16	95	2 1/16	62	1 1/16	33	8.9	4.0
1 1/4	32	15 1/16	386	5 1/16	144	5 1/16	144	5 1/16	129	11 1/16	297	4 1/16	108	2 1/16	67	1 1/16	41	15.7	7.1
1 1/2	40	15 1/16	401	6 1/16	156	6 1/16	156	5 1/16	129	11 1/16	297	4 1/16	121	3 1/16	79	1 1/16	41	18.4	8.3
2	50	17 1/16	441	6 1/16	168	6 1/16	167	5 1/16	142	13 1/16	340	5 1/16	137	3 1/16	87	1 1/16	49	28.0	13.1

CLIENT:

ADDRESS:

CONFIDENTIALITY STATEMENT:

ALL DRAWINGS AND WRITTEN MATERIALS

APPEARING HEREIN CONSTITUTE THE

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DESIGNER AND THE SAME MAY NOT BE

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- THE CONTRACTOR MUST CHECK ALL DIMENSION AT SITE BEFORE COMMENCING WORK.
- THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY TEMPORARY SUPPORT TO THE BUILDING AND ANY ADJACENT STRUCTURES.

REV. NO.	DESCRIPTION	DATE	BY

CLIENT:

ADDRESS:

1935 E SEVENTEENTH ST.
SANTA ANA, CA

CONFIDENTIALITY STATEMENT:

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REV. NO.	DESCRIPTION	DATE	BY

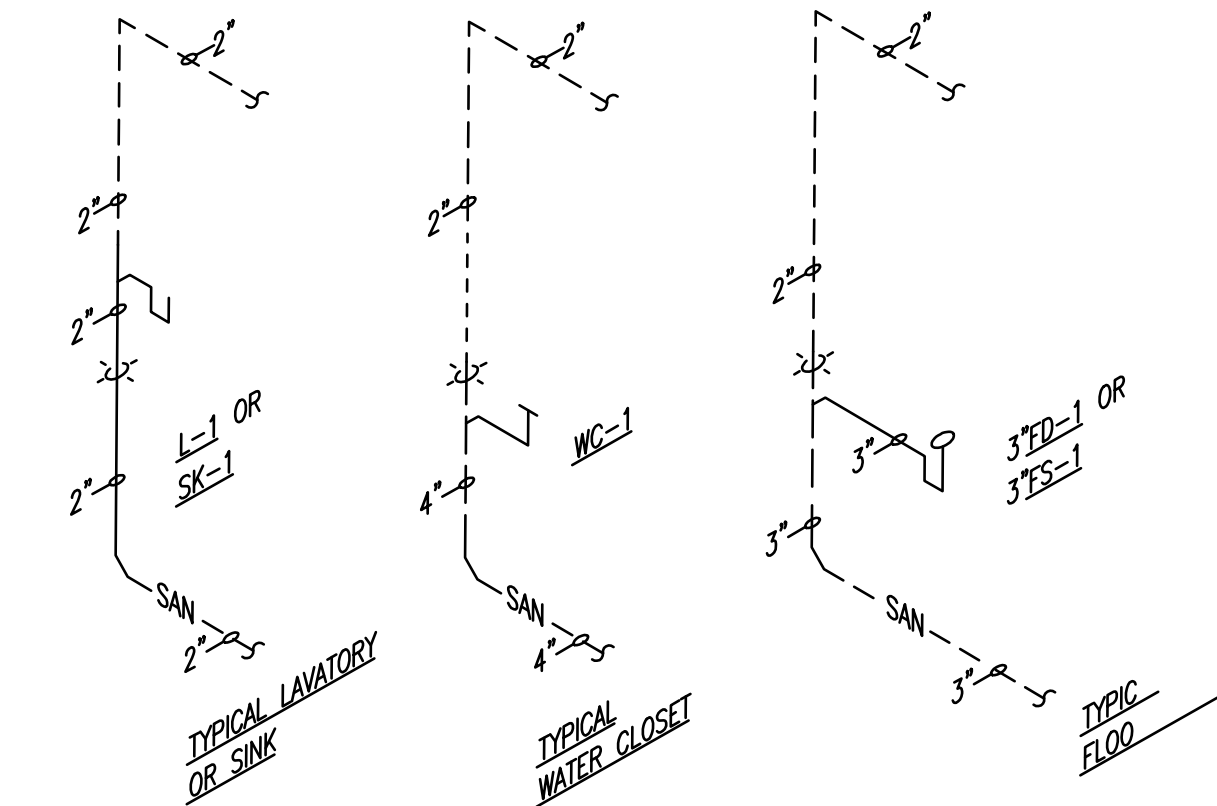
PROJECT:
HOOTS WINGS: TENANT IMPROVEMENT

TITLE:
PLUMBING GENERAL DETAILS

PROJ. NO.	PROJ. ENGR.	SCALE © 24X36:
		NTS

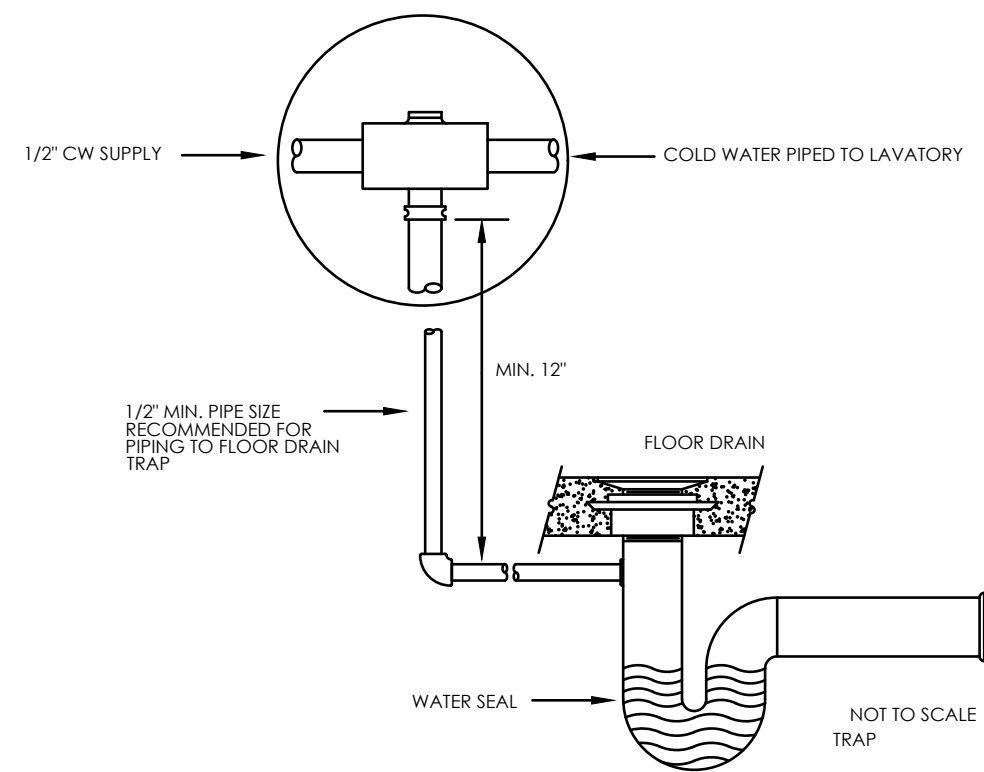
DRAWING NO. REV.

P 6 . 0 1

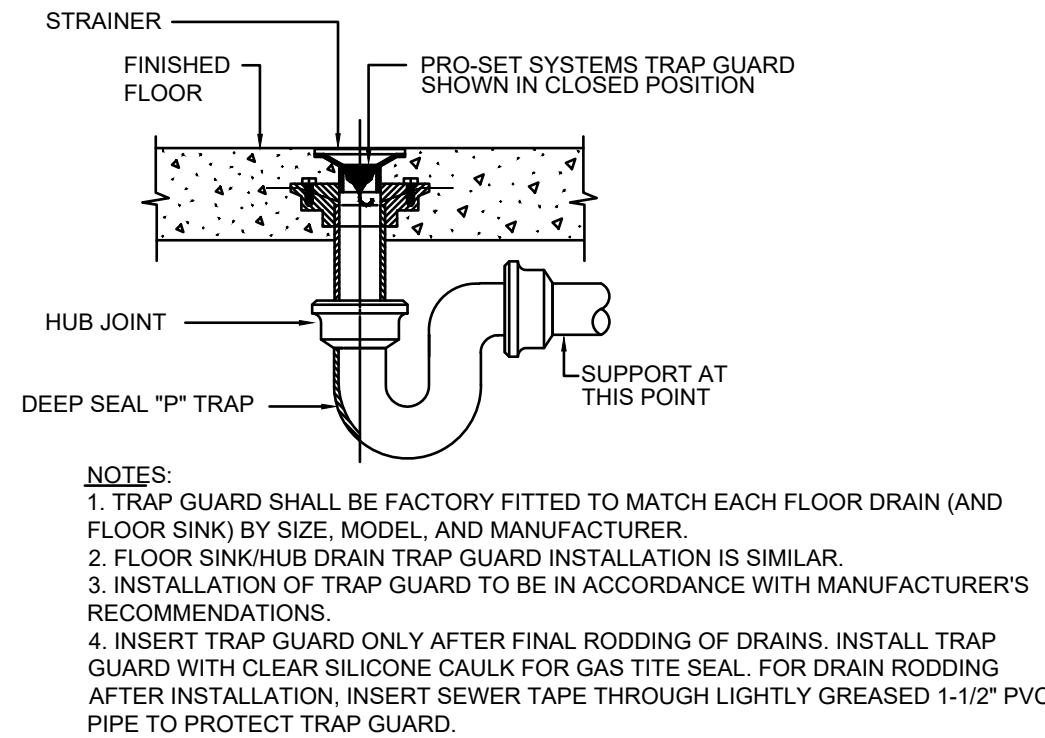


1 TYPICAL WASTE AND VENT RISERS

SCALE: NONE

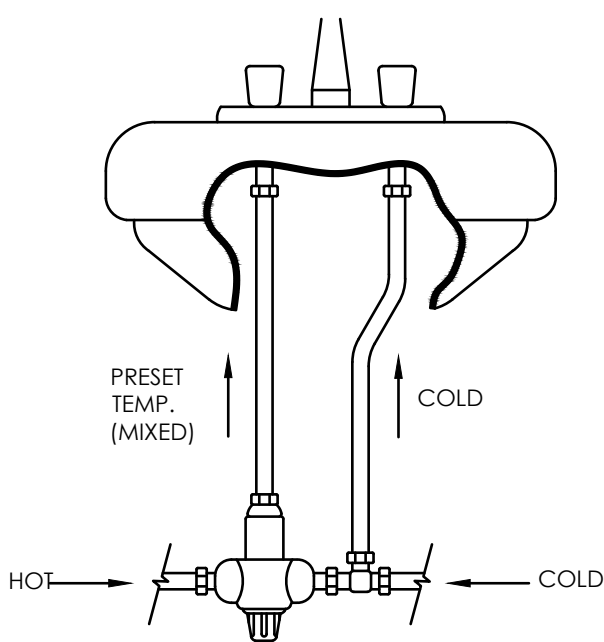


2 TRAP PRIMER



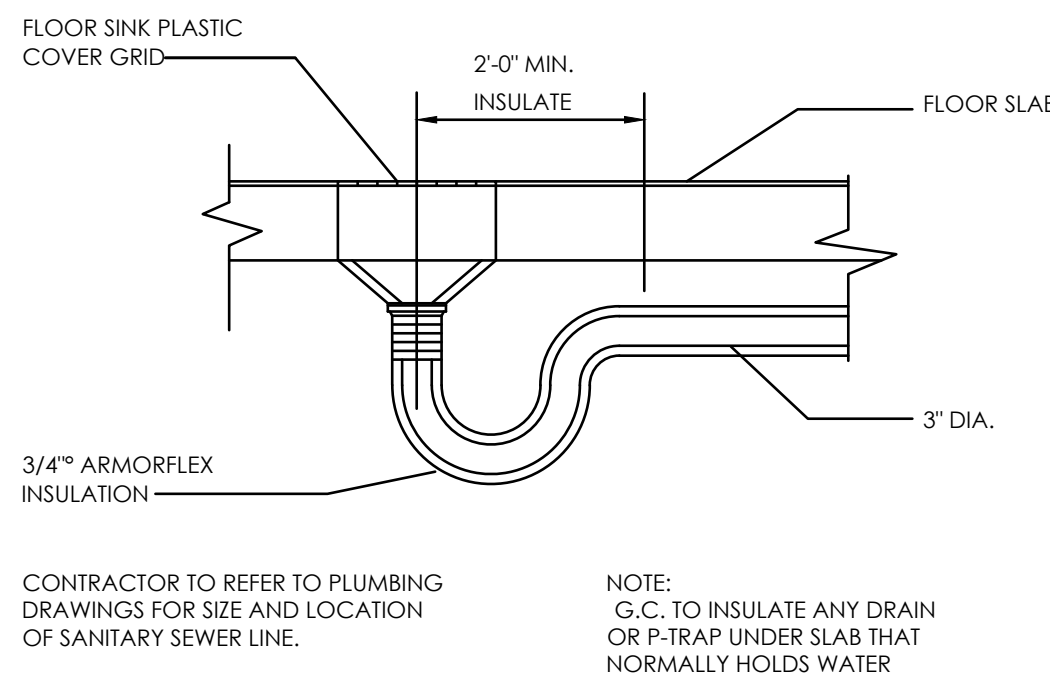
3 FLOOR DRAIN WITH TRAP SEAL PROTECTION

SCALE: NONE



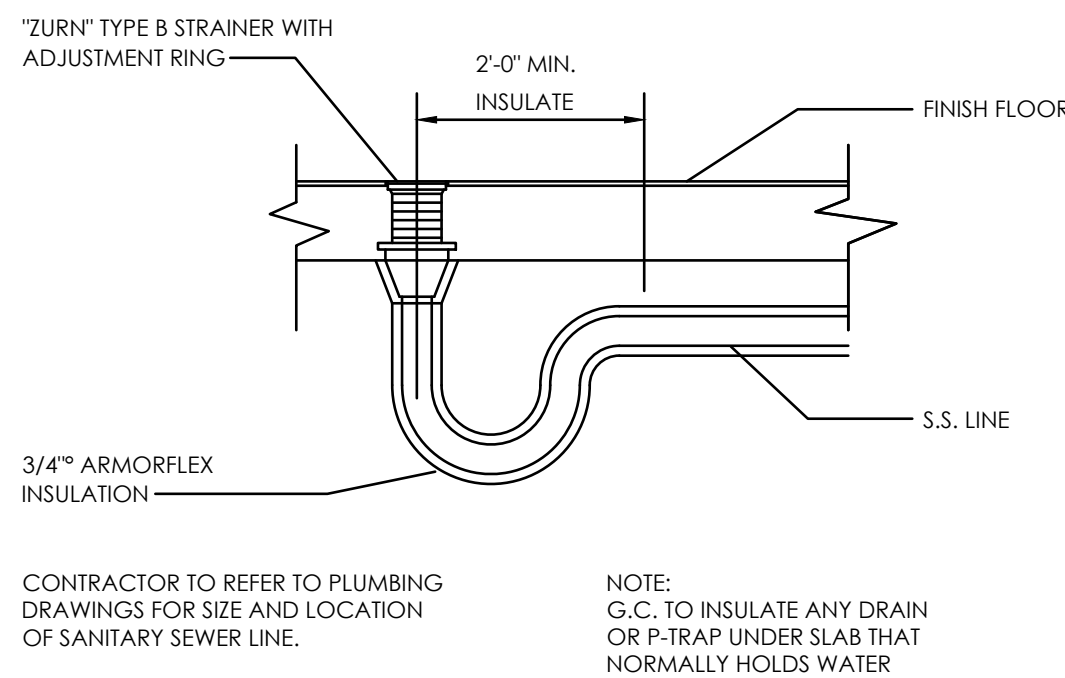
ANTI-SCALD MIXING VALVE

NO SCALE



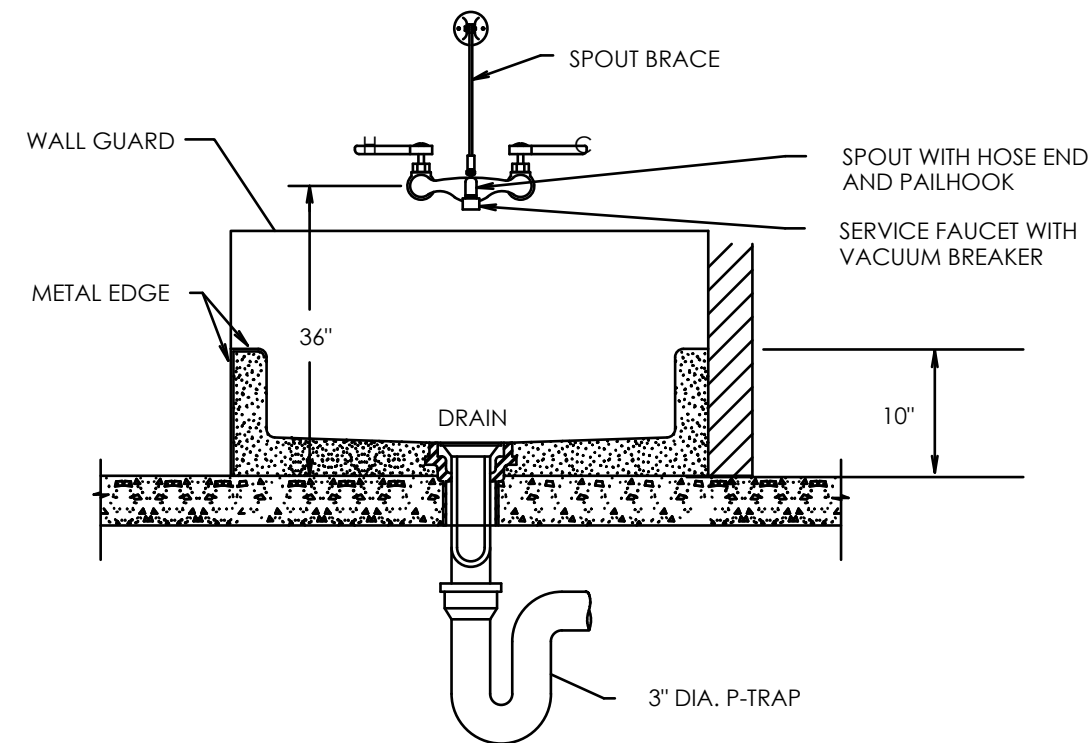
FLOOR SINK DETAIL

NO SCALE



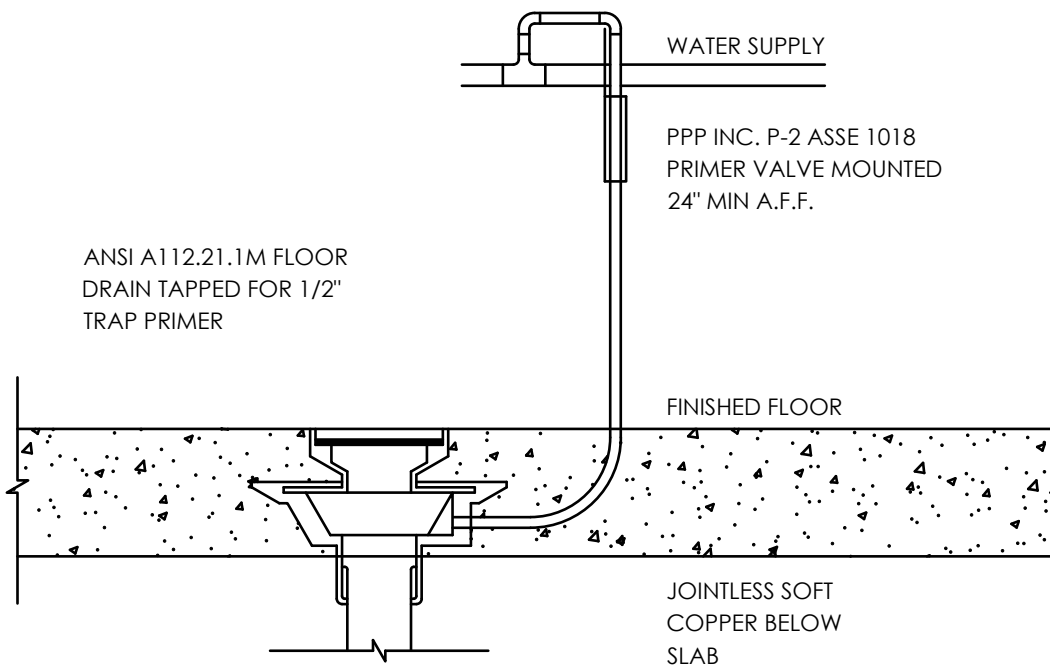
FLOOR DRAIN DETAIL

NO SCALE



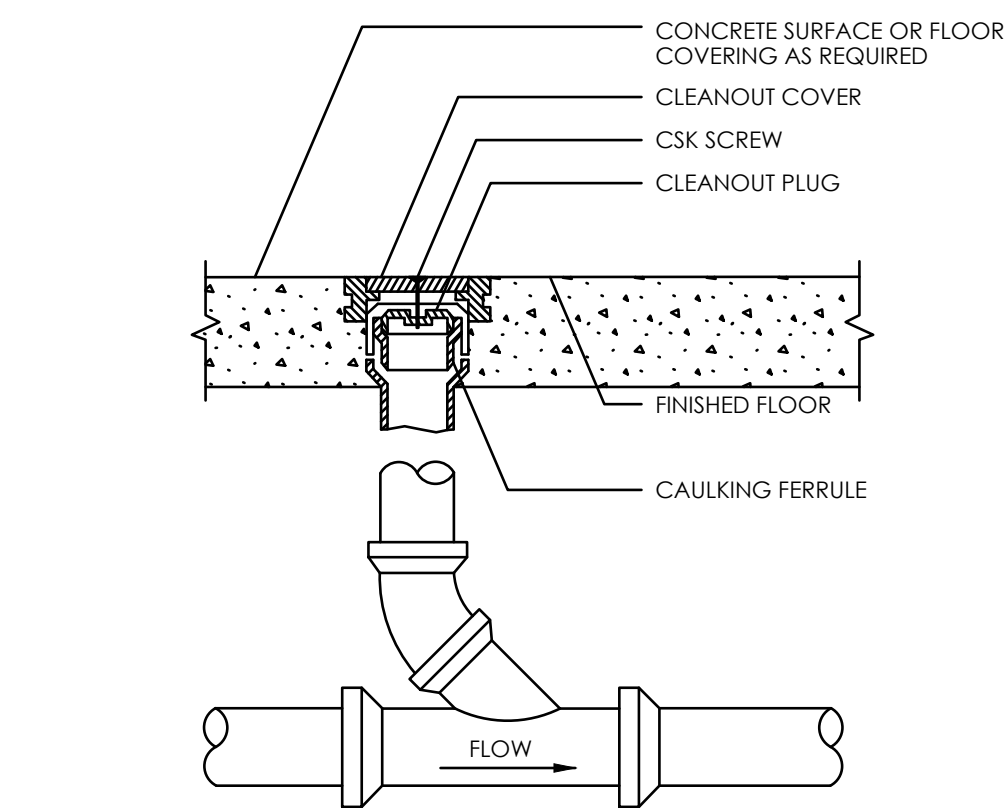
MOP SINK DETAIL

NO SCALE



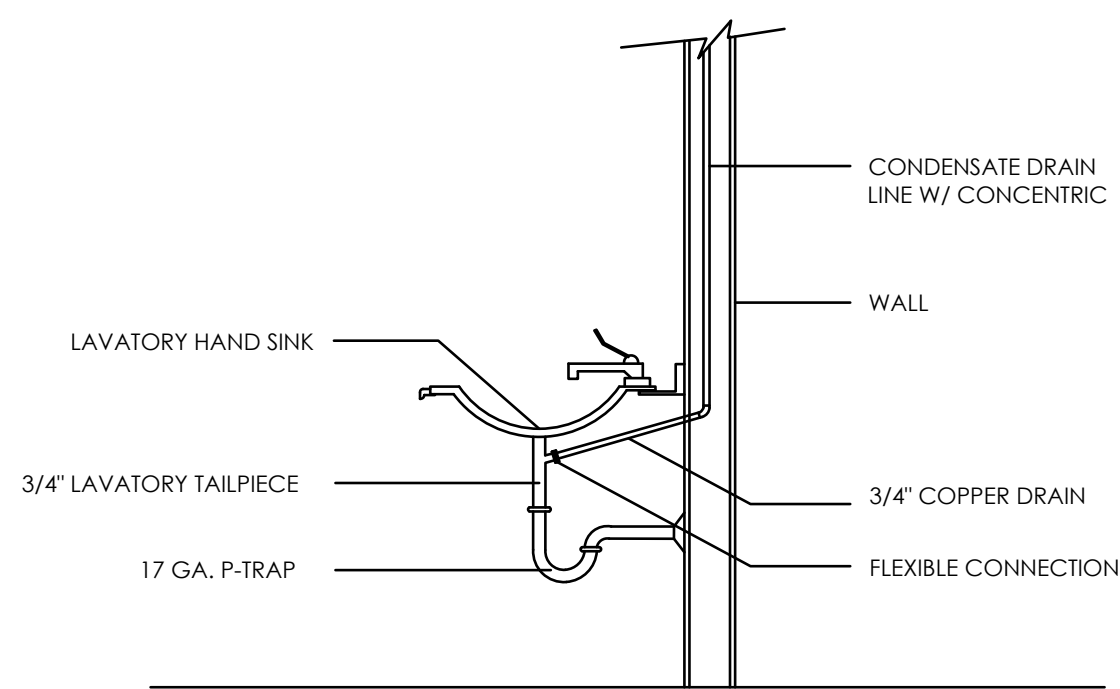
TRAP PRIMER DETAIL

NO SCALE



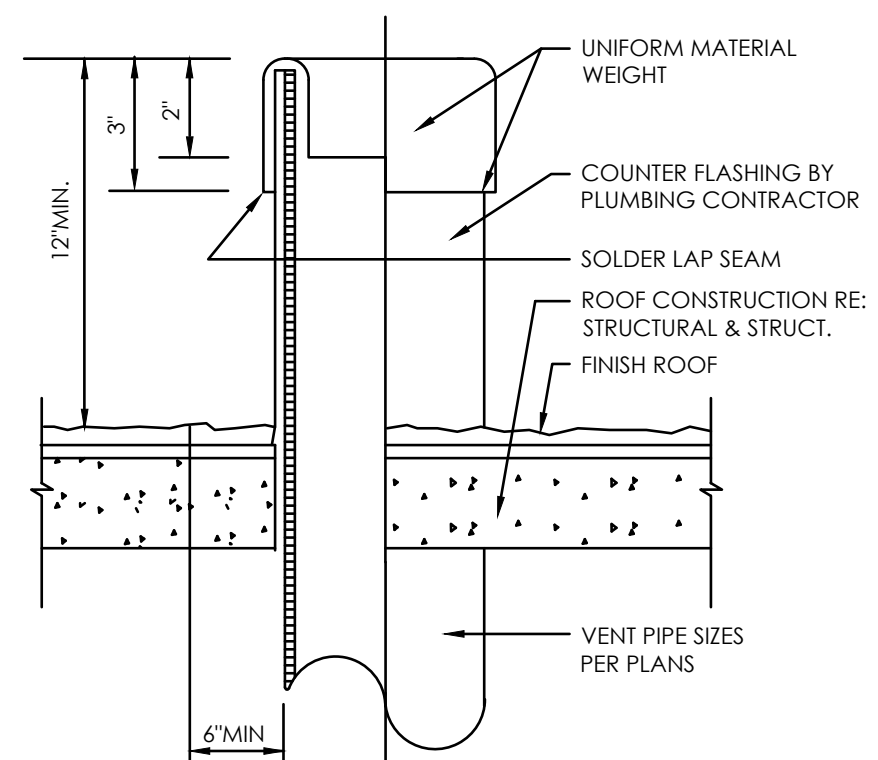
FLOOR CLEANOUT DETAIL

NO SCALE



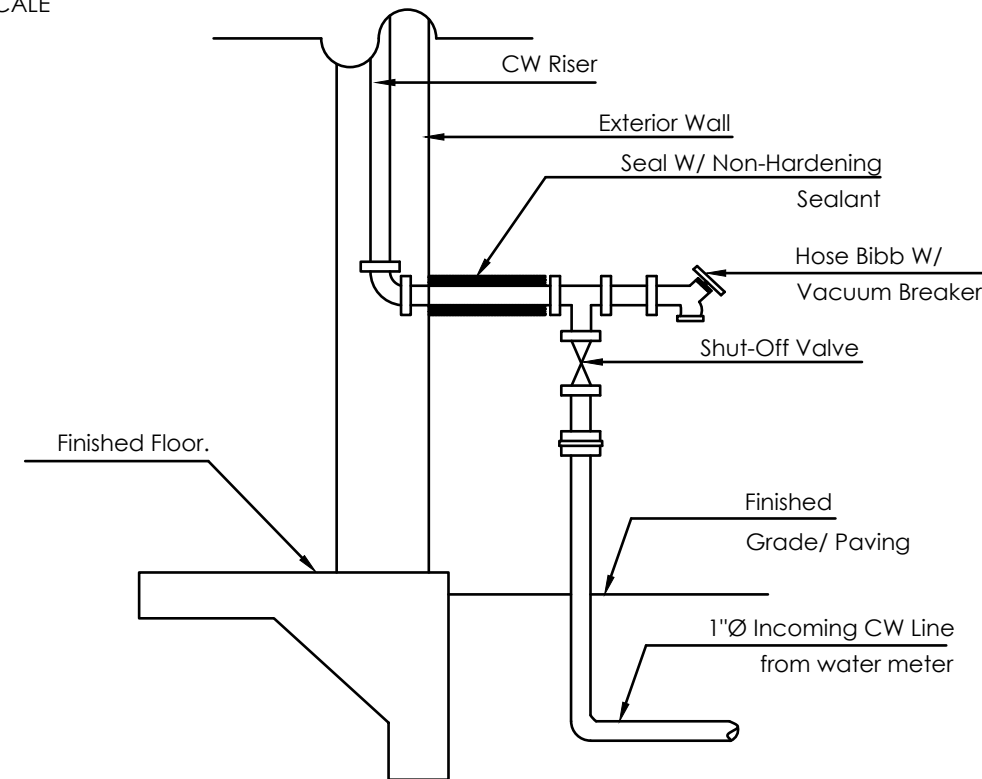
CONDENSATE DETAIL

NO SCALE



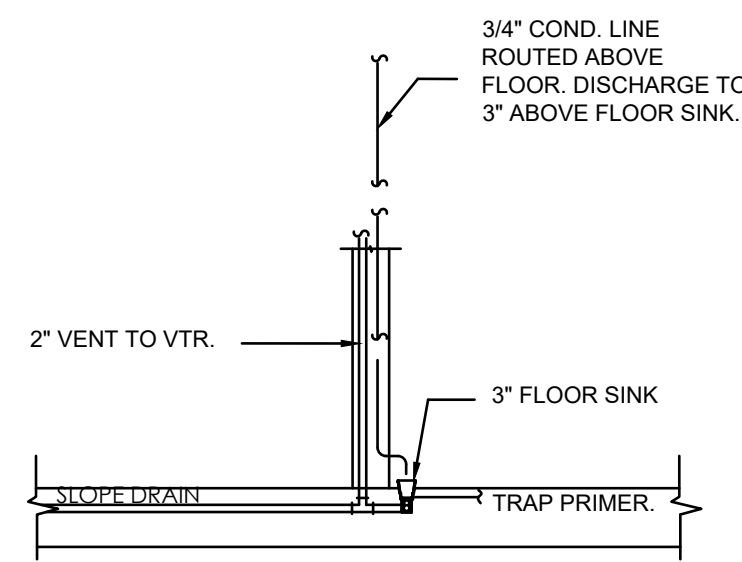
VENT THRU ROOF DETAIL

NO SCALE



WATER ENTRY DETAIL

NO SCALE



COND. ON FLOOR SINK DETAIL

NO SCALE

STATE OF CALIFORNIA

CALIFORNIA ENERGY COMMISSION

Electrical Power Distribution

CERTIFICATE OF COMPLIANCE

NRCC-ELC-E

Project Name:

Hoots Wings Santa Ana

Report Page:

(Page 1 of 4)

Project Address:

1935 E Seventeenth St

Date Prepared:

4/8/2023

A. GENERAL INFORMATION

01	Project Location (city)	Santa Ana	02	Climate Zone	8
03	Occupancy Types Within Project:	All Other OccupanciesRestaurantSupport Areas			

B. PROJECT SCOPE

This table includes electrical systems that are within the scope of the permit application.

01	02	03	04	05	06	07
Electrical Service Designation/ Description	Scope of Work ¹	Rating ² (kVA)	Utility Provided Metering System Exception to 130.5(a)/ 160.6(a) ³	System subject to CA Elec Code Article 517 Exception to 130.5(a)and (b)	Demand Response Controls	Provides power to dwelling units/common living areas only in multifamily occupancy
Main	Add/Alt to feeders and branch circuits only	50	<input type="checkbox"/>	<input type="checkbox"/>	Where required, demand response controls must be specified which are capable of receiving and automatically responding to at least one standards based messaging protocol which enables demand response after receiving a demand response signal. Sections 120.2/ 160.3, 130.1/ 160.5, and 130.3/ 160.5, and mechanical, indoor lighting, and sign lighting Certificate of Compliance documents will indicate when demand response controls are required.	<input type="checkbox"/>

¹FOOTNOTES: Adding only new feeders and branch circuits triggers Voltage Drop 130.5(c)/160.6(c), no other requirements from 130.5/160.6 are required.

² If common use areas in a multifamily are submetered, rating is for submeter size serving common use areas.

³ Applicable if the utility company is providing a metering system that indicates instantaneous kW demand and kWh for a utility-defined period.

Registration Number:

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

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Schema Version: rev 20220101

Documentation Software: EnergyPro

Compliance ID:

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STATE OF CALIFORNIA

CALIFORNIA ENERGY COMMISSION

Electrical Power Distribution

CERTIFICATE OF COMPLIANCE

NRCC-ELC-E

Project Name:

Hoots Wings Santa Ana

Report Page:

(Page 2 of 4)

Project Address:

1935 E Seventeenth St

Date Prepared:

4/8/2023

C. COMPLIANCE RESULTS

Results in this table are automatically calculated from data input and calculations in Tables F through I. Note: If any cell on this table says "COMPLIES with Exceptional Conditions" refer to Table D. Exceptional Conditions for guidance or see applicable Table referenced below.

01	02	03	04	05	06				
Service Electrical Metering 130.5(a)/ 160.6(a) (See Table F)	AND	Separation for Monitoring 130.5(b)/ 160.6(b) (See Table G)	AND	Voltage Drop 130.5(c)/ 160.6(c) (See Table H)	AND	Controlled Receptacles 130.5(d)/ 160.6(d) (See Table I)	AND	Electric Ready 160.9 (See Table J)	Compliance Results
Yes	AND	Yes	AND	Yes	AND	Yes	AND	Yes	COMPLIES

D. EXCEPTIONAL CONDITIONS

This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form.

E. ADDITIONAL REMARKS

This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

F. SERVICE ELECTRICAL METERING

This section does not apply to this project.

G. SEPARATION OF ELECTRICAL CIRCUITS FOR ENERGY MONITORING

This section does not apply to this project.

H. VOLTAGE DROP

This table includes entirely new or complete replacement electrical power distribution systems, or alterations that add, modify or replace both feeders and branch circuits to demonstrate compliance with 130.5(c)/ 160.6(c). For alterations, only the altered circuits must demonstrate compliance per 141.0(b)(2)iii/ 180.2(b)(4)ivc.

01	02	03	04	05
Electrical Service Designation/Description	Combined Voltage Drop on Installed Feeder/Branch Circuit Conductors Compliance Method	Location of Voltage Drop Calculations ¹	Sheet Number for Voltage Drop Calculations in Construction Documents	Field Inspector
				Pass
				Fail

Registration Number:

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STATE OF CALIFORNIA

CALIFORNIA ENERGY COMMISSION

Electrical Power Distribution

CERTIFICATE OF COMPLIANCE

NRCC-ELC-E

Project Name:

Hoots Wings Santa Ana

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Project Address:

1935 E Seventeenth St

Date Prepared:

4/8/2023

H. VOLTAGE DROP

Main	<input checked="" type="checkbox"/>	Voltage drop less than 5%	<input type="checkbox"/>	Permitted by CA Elec Code (Exception to 130.5(c)) ¹	Attached	<input type="checkbox"/>	<input type="checkbox"/>
------	-------------------------------------	---------------------------	--------------------------	--	----------	--------------------------	--------------------------

¹NOTES: If "Permitted by CA Elec Code" is selected under Compliance Method above, please indicate where the exception applies in the space provided below.

²FOOTNOTES: Voltage drop calculations may be attached to the permit application outside the construction documents if allowed by the Authority Having Jurisdiction. Select "attached" if applicable. If calculations will be the responsibility of the installing contractor, select "Contractor Responsible".

I. CIRCUIT CONTROLS FOR 120-VOLT RECEPTACLES AND CONTROLLED RECEPTACLES

This section does not apply to this project.

J. ELECTRIC READY BUILDINGS

This section does not apply to this project.

K. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Form/Title

NRCC-ELC-E - Must be submitted for all buildings

Registration Number:

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

Generated Date/Time:

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STATE OF CALIFORNIA

CALIFORNIA ENERGY COMMISSION

Electrical Power Distribution

CERTIFICATE OF COMPLIANCE

NRCC-ELC-E

Project Name:

Hoots Wings Santa Ana

Report Page:

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Project Address:

1935 E Seventeenth St

Date Prepared:

4/8/2023

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

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

Documentation Author Name:

Mohamad Nohayli

Documentation Author Signature:

Mohamad Nohayli

Company:

InnovChaz, Inc.

Signature Date:

2023-04-08

Address:

726 Foxborough

City/State/Zip:

Pleasanton CA 94566

CEA/HERS Certification Identification (if applicable):

Phone:

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:

Syed P. Alam

Responsible Designer Signature:

Syed Alam

Company:

Innoodez

Signature Date:

2023-04-08

Address:

726 Foxborough Pl

City/State/Zip:

Pleasanton CA 72223

License:

27087

Phone:

916-813-1752

Registration Number:

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

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STATE OF CALIFORNIA

CALIFORNIA ENERGY COMMISSION

Indoor Lighting

CERTIFICATE OF COMPLIANCE

NRCC-LTI-E

Project Name:

Hoots Wings Santa Ana

Report Page:

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Project Address:

1935 E Seventeenth St

Date Prepared:

4/8/2023

A. GENERAL INFORMATION

01	Project Location (city)	Santa Ana	04	Total Conditioned Floor Area (ft²)	1,375
02	Climate Zone	8	05	Total Unconditioned Floor Area (ft²)	0
03	Occupancy Types Within Project (select all that apply):	06 # of Stories (Habitable Above Grade) 1			
• Restaurant • Support Areas • All Other Occupancies					

B. PROJECT SCOPE

This table includes any lighting systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in 140.6 / 170.2(e) or 141.0(b)(2) / 180.2(b)(4) for alterations.

Scope of Work		Conditioned Spaces		Unconditioned Spaces	
01	02	03	04	05	
My Project Consists of (check all that apply):	Calculation Method	Area (ft²)	Calculation Method	Area (ft²)	
<input type="checkbox"/> New Lighting System					
<input type="checkbox"/> New Lighting System - Parking Garage					
<input checked="" type="checkbox"/> Altered Lighting System	Area Category Method	1375	Area Category Method	0	
Total Area of Work (ft²)		1375	0		

Registration Number:

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

Generated Date/Time:

Report Version: 2022.0.000
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STATE OF CALIFORNIA

CALIFORNIA ENERGY COMMISSION

Indoor Lighting

CERTIFICATE OF COMPLIANCE

NRCC-LTI-E

Project Name:

Hoots Wings Santa Ana

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1935 E Seventeenth St

Date Prepared:

4/8/2023

C. COMPLIANCE RESULTS

If any cell on this table says "DOES NOT COMPLY" or "COMPLIES with Exceptional Conditions" refer to Table D. for guidance.

Allowed Lighting Power per 140.6(b) / 170.2(e) (Watts)					Adjusted Lighting Power per 140.6(a) / 170.2(e) (Watts)			Compliance Results	
01	02	03	04	05	06	07	08		
Lighting in conditioned and unconditioned spaces must not be combined for compliance per 140.6(b) / 170.2(e)	Complete Building 140.6(c)1	Area Category 140.6(c)2 / 170.2(e)4	Area Category Additional 140.6(c)5 / 170.2(e)4B (+)	Tailored 140.6(c)3 / 170.2(e)4B (+)	Total Allowed (Watts)	Total Designed (Watts)	PAF Lighting Control Credits 140.6(a)2 / 170.2(e)1B (-)	Total Adjusted (Watts) *Includes Adjustments	05 must be >= 08 140.6 / 170.2(e)
Conditioned	958.8	0			= 959	= 586	0	= 586	COMPLIES
Unconditioned					=	=		=	
Controls Compliance (See Table H for Details)									COMPLIES
Rated Power Reduction Compliance (See Table Q for Details)									

D. EXCEPTIONAL CONDITIONS

This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form.

E. ADDITIONAL REMARKS

This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

Registration Number:

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

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1935 E Seventeenth St

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4/8/2023

F. INDOOR LIGHTING FIXTURE SCHEDULE

This table includes all planned permanent and portable lighting other than dwelling unit/ hotel/ motel room lighting. Multifamily dwelling unit and hotel/motel room lighting is documented in Table T. If using Table T to document lighting in multifamily common use areas providing shared provisions for living, eating, cooking or sanitation, those luminaires are not included here.

Designated Wattage: Conditioned Spaces

01	02	03	04	05	06	07	08	09	10
Name or Item Tag	Complete Luminaire Description	Modular (Track) Fixture	Small Aperture & Color Change ¹	Watts per luminaire ²	How is Wattage determined?	Total Number of Luminaires	Excluded per 140.6(a)3 / 170.2(e)2C	Design Watts	Field Inspector
L2	L2- Track Lighting	No	NA	10	Mfr. Spec	24	No	240	<input type="checkbox"/>
L3	L3-Becessed Mounted Spot	No	NA	11.5	Mfr. Spec	11	No	126.5	<input type="checkbox"/>
L6	L6-LED Lighting 2 x4	No	NA	20	Mfr. Spec	11	No	220	<input type="checkbox"/>
Total Designed Watts: CONDITIONED SPACES								586	

¹FOOTNOTE: Design Watts for small aperture and color changing luminaires which qualify per 140.6(a)4B / 170.2(e)2D is adjusted to be 75%/ 80% of their rated wattage. Table F automatically makes this adjustment, the permit applicant should enter full rated wattage in column 05.

²Authority Having Jurisdiction may ask for Luminaire cut sheets to confirm wattage used for compliance per 130.0(c) / 160.5(b). Wattage used must be the maximum rated for the luminaire, not the lamp.

G. MODULAR LIGHTING SYSTEMS

This section does not apply to this project.

H. INDOOR LIGHTING CONTROLS (Not including PAFs)

This table includes lighting controls for conditioned and unconditioned spaces.

Building Level Controls		02	03
01	Mandatory Demand Response 110.12(c)	Shut-off controls 130.1(c) / 160.5(b)4C	Field Inspector
NA 0.4,000W subject to multilevel		Whole Building Auto Time Switch	Pass
			Fail

Registration Number:

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

Generated Date/Time:

Report Version: 2022.0.000
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Compliance ID:

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STATE OF CALIFORNIA

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Indoor Lighting

CERTIFICATE OF COMPLIANCE

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Project Name:

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Report Page:

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Project Address:

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H. INDOOR LIGHTING CONTROLS (Not including PAFs)

Area Level Controls

04	05	06	07	08	09	10	11	12
Area Description	Complete Building or Area Category Primary Function Area	Manual Area Controls 130.1(a) / 160.5(b)4A	Multi-Level Controls 130.1(b) / 160.5(b)4B	Shut-Off Controls 130.1(c) / 160.5(b)4C	Primary/Sky lit Daylighting 130.1(d) / 160.5(b)4D	Secondary Daylighting 130.1(e) / 160.5(b)4D	Interlocked Systems 140.6(a)1/ 170.2(e)2A	Field Inspector
								Pass
Dining Room	Dining - Family	Readily Accessible	Dimmer	Occupancy Sensor	Included	No	<input type="checkbox"/>	<input type="checkbox"/>
Walk In Cooler	All Other Space Types	Readily Accessible	NA: Enclosed area <100SF	Occupancy Sensor	NA: Rm < 24sf Glazing	NA: Rm < 24sf Glazing	No	<input type="checkbox"/>
Walk in Freezer	All Other Space Types	Readily Accessible	NA: Enclosed area <100SF	Occupancy Sensor	NA: Rm < 24sf Glazing	NA: Rm < 24sf Glazing	No	<input type="checkbox"/>
Bath	Restroom	Readily Accessible	NA: Restrooms	Occupancy Sensor	NA: Rm < 24sf Glazing	NA: Rm < 24sf Glazing	No	<input type="checkbox"/>
Preparation Area	Kitchen/ Food Preparation	Readily Accessible	NA: General Use < 0.5M/3F	Occupancy Sensor	NA: Rm < 24sf Glazing	NA: Rm < 24sf Glazing	No	<input type="checkbox"/>
13								
Plan Sheet Showing Daylit Zones:								

I. LIGHTING POWER ALLOWANCE: COMPLETE BUILDING OR AREA CATEGORY METHODS

Each area complying using the Complete Building or Area Category Methods per 140.6(b) are included in this table. Column 06 indicates if additional lighting power allowances per 140.6(c) or adjustments per 140.6(a) are being used.

Conditioned Spaces					
01	02	03	04	05	06
Area Description	Complete Building or Area Category Primary Function Area	Allowed Density (W/ft²)	Area (ft²)	Allowed Wattage (Watts)	Additional Allowance / Adjustment Area Category
Preparation Area	Kitchen/ Food Preparation	0.95	514	488.3	No

Registration Number:

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STATE OF CALIFORNIA

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Project Name:

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Project Address:

1935 E Seventeenth St

Date Prepared:

4/8/2023

I. LIGHTING POWER ALLOWANCE: COMPLETE BUILDING OR AREA CATEGORY METHODS

Dining Room	Dining - Bar/Fine	0.45	640	288	No	No
Walk In Cooler freezer	Commercial Industrial Warehouse	1	111	111	No	No
Bath	Restroom	0.65	110	71.5	No	No
TOTALS:		1,375	958.8		See Tables J, or P for detail	

J. ADDITIONAL ALLOWANCE: AREA CATEGORY METHOD QUALIFYING LIGHTING SYSTEM

This section does not apply to this project.

K. TAILORED METHOD GENERAL LIGHTING POWER ALLOWANCE

This section does not apply to this project.

L. ADDITIONAL LIGHTING ALLOWANCE: TAILORED WALL DISPLAY

This section does not apply to this project.

M. ADDITIONAL LIGHTING ALLOWANCE: TAILORED FLOOR AND TASK LIGHTING

This section does not apply to this project.

N. ADDITIONAL LIGHTING ALLOWANCE: TAILORED DECORATIVE /SPECIAL EFFECTS

This section does not apply to this project.

O. ADDITIONAL LIGHTING ALLOWANCE: TAILORED VERY VALUABLE MERCHANDISE

This section does not apply to this project.

Registration Number:

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

Generated Date/Time:

Report Version: 2022.0.000
Schema Version: rev 20220101

Documentation Software: EnergyPro

Compliance ID:

EnergyPro-50207-0423-0218

Report Generated: 2023-04-08 13:52:52

CLIENT:

ADDRESS:

CONFIDENTIALITY STATEMENT:

ALL DRAWINGS AND WRITTEN MATERIALS

APPEARING HEREIN CONSTITUTE THE

ORIGINAL AND UNPUBLISHED WORK OF THE

DESIGNER AND THE SAME MAY NOT BE

DUPLICATED, USED OR DISCLOSED WITHOUT

CONSENT OF THE DESIGNER.

NOTES:

1. ALL DIMENSIONS HEREIN ARE IN IMPERIAL

UNITS UNLESS STATED OTHERWISE.

2. THESE DRAWINGS ARE TO BE READ IN

CONJUNCTION WITH ALL RELEVANT DESIGNER,

ENGINEER OR SPECIALIST DRAWINGS AND

SPECIFICATIONS.

3. THE CONTRACTOR MUST CHECK ALL

DIMENSION AT SITE BEFORE COMMENCING

WORK.

4. THE CONTRACTOR IS RESPONSIBLE FOR

PROVIDING ALL NECESSARY TEMPORARY

SUPPORT TO THE BUILDING AND ANY

ADJACENT STRUCTURES.

REV. NO. DESCRIPTION DATE BY

PROJECT:

TITLE:

T24.1

PROJ. NO. PROJ. ENGR. SCALE @ 24X36:

NTS

DRAWING NO.

REV.

T 2 4 . 1

STATE OF CALIFORNIA

Indoor Lighting

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

NRCC-LTI-4

Project Name: Hoots Wings Santa Ana

Report Page: (Page 6 of 6)

Project Address: 1935 E Seventeenth St

Date Prepared: 4/8/2023

P. POWER ADJUSTMENT: LIGHTING CONTROL CREDIT (POWER ADJUSTMENT FACTOR (PAF))

This section does not apply to this project.

Q. RATED POWER REDUCTION COMPLIANCE FOR ONE-FOR-ONE ALTERATIONS

This section does not apply to this project.

R. 80% LIGHTING POWER FOR ALL ALTERATIONS - CONTROLS EXCEPTIONS

This section does not apply to this project.

S. DAYLIGHT DESIGN POWER ADJUSTMENT FACTOR (PAF)

This section does not apply to this project.

T. DWELLING UNIT LIGHTING

This section does not apply to this project.

U. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Form/Title

NRCC-LTI-E - Must be submitted for all buildings

Registration Number:

Generated Date/Time:

Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

Report Version: 2022.0.000

Schema Version: rev 20220101

Compliance ID: EnergyPro-S0207-0423-0218

Report Generated: 2023-04-08 13:52:52

STATE OF CALIFORNIA

Indoor Lighting

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

NRCC-LTI-4

Project Name: Hoots Wings Santa Ana

Report Page: (Page 7 of 6)

Project Address: 1935 E Seventeenth St

Date Prepared: 4/8/2023

V. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

Form/Title

Systems/Spaces To Be Field Verified

NRCA-LTI-G2-A - Must be submitted for occupancy sensors and automatic time switch controls.

Whole Building Time Switch; Dining Room; Walk in Cooler; Walk in Freezer; Bath; Preparation Area; Dining Room.

NRCA-LTI-G3-A - Must be submitted for automatic daylight controls.

Registration Number:

Generated Date/Time:

Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

Report Version: 2022.0.000

Schema Version: rev 20220101

Compliance ID: EnergyPro-S0207-0423-0218

Report Generated: 2023-04-08 13:52:52

STATE OF CALIFORNIA

Indoor Lighting

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

NRCC-LTI-4

Project Name: Hoots Wings Santa Ana

Report Page: (Page 1 of 6)

Project Address: 1935 E Seventeenth St

Date Prepared: 4/8/2023

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

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

Documentation Author Name: Mohamed Nohayli

Signature Date: 2023-04-08

Company: InnoDev, Inc.

City/State/Zip: Pleasanton CA 94566

Responsible Designer Name: Syed P. Alam

Date Signed: 2023-04-08

Company: InnoDev

Address: 726 Foxborough

City/State/Zip: Pleasanton CA 94566

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: Syed P. Alam

Date Signed: 2023-04-08

Company: InnoDev

Address: 726 Foxborough PI

City/State/Zip: Pleasanton CA 94566

Registration Number:

Generated Date/Time:

Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

Report Version: 2022.0.000

Schema Version: rev 20220101

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Report Generated: 2023-04-08 13:52:52

STATE OF CALIFORNIA

Outdoor Lighting

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

NRCC-LTO-4

Project Name: Hoots Wings Santa Ana

Report Page: (Page 1 of 7)

Project Address: 1935 E Seventeenth St

Date Prepared: 4/8/2023

A. GENERAL INFORMATION

01 Project Location (City): Santa Ana

02 Climate Zone: 0

03 Outdoor Lighting Zone per Title 24 Part 1: 10.114 (a) as designated by Authority Having Jurisdiction (AHJ):

04 Total Illuminated Hardscape Area (ft²): 20

05 Occupancy Types within Project: 0

06 Support Areas: Warehouse

B. PROJECT SCOPE

This table includes outdoor lighting systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in 140.7 / 170.2(a)(6) or 141.0(a)(2) / 180.2(b)(4b) for alterations.

My Project Consists of:

01 New Lighting System

02 Must Comply with Allowances from 140.7 / 170.2(a)(6)

03 Altered Lighting System

04 Is your alteration increasing the connected lighting load (Watts)?

05 Yes

06 No

07 % of Existing Luminaires Being Altered¹

08 Sum Total of Luminaires Being Added or Altered

09 Calculation Method

10 < 100% 11 > 100% and < 50% 12 > 50%

Please proceed to Table F: Outdoor Lighting Fixture Schedule to define the project's luminaires.

¹ FOOTNOTES: % of Existing Luminaires Being Altered = (Sum Total of Luminaires Being Added or Altered / Existing Luminaires within the Scope of the Permit Application) x 100.

Registration Number:

Generated Date/Time:

Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

Report Version: 2022.0.000

Schema Version: rev 20220101

Compliance ID: EnergyPro-S0207-0423-0215

Report Generated: 2023-04-08 13:52:49

STATE OF CALIFORNIA

Outdoor Lighting

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

NRCC-LTO-4

Project Name: Hoots Wings Santa Ana

Report Page: (Page 2 of 7)

Project Address: 1935 E Seventeenth St

Date Prepared: 4/8/2023

C. COMPLIANCE RESULTS

Results in this table are automatically calculated from data input and calculations in Tables F through N. Note: If any cell on this table says "COMPLIES with Exceptional Conditions" refer to Table D: Exceptional Conditions for guidance or see applicable Table referenced below.

Calculations of Total Allowed Lighting Power (Watts) 140.7 / 170.2(a)(6) or 141.0(a)(2) / 180.2(b)(4b)

01 General Hardcape Allowance 140.7(a)(1) / 170.2(a)(6) (See Table I)

02 Per Application 140.7(a)(2) / 170.2(a)(6) (See Table I)

03 Sales Frontage 140.7(a)(3) (See Table K)

04 Ornamental 140.7(a)(4) (See Table L)

05 Per Specific Area 140.7(a)(5) / 170.2(a)(6) (See Table M)

06 Existing Power Allowance 141.0(a)(2) / 180.2(b)(4b) (See Table N)

07 Total Allowed (Watts)

08 Total Actual (Watts)

09 07 must be >= 08

252 + + + + + + = 252 > 25 COMPLIES

Shielding Compliance (See Table G for Details)

Controls Compliance (See Table H for Details)

D. EXCEPTIONAL CONDITIONS

This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form.

E. ADDITIONAL REMARKS

This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

Registration Number:

Generated Date/Time:

Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

Report Version: 2022.0.000

Schema Version: rev 20220101

Compliance ID: EnergyPro-S0207-0423-0215

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STATE OF CALIFORNIA

Outdoor Lighting

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

NRCC-LTO-4

Project Name: Hoots Wings Santa Ana

Report Page: (Page 3 of 7)

Project Address: 1935 E Seventeenth St

Date Prepared: 4/8/2023

F. OUTDOOR LIGHTING FIXTURE SCHEDULE

For new or altered lighting systems demonstrating compliance with 140.7 / 170.2(a)(6) all new luminaires being installed and any existing luminaires remaining or being moved within the spaces covered by the permit application are included in the Existing Power method per 141.0(a)(2). Only new luminaires being installed and replacement luminaires being installed as part of the project scope are included (i.e., existing luminaires remaining or existing luminaires being moved are not included). Outdoor lighting attached to multifamily buildings and controlled from the inside of a dwelling unit are included in Table H, and are not included here. All other multifamily outdoor lighting is included here.

Designated Wattage:

01 Name or Item Tag

02 Complete Luminaire Description

03 Watts per luminaire¹

04 How is Wattage determined?

05 Total Number Luminaires¹

06 Luminaire Status¹

07 Excluded per 140.7(a) / 170.2(a)(6)

08 Design Watts

09 Cutoff Req. > 6,000 initial lumen output 130.2(a) / 160.5(a)(1)²

10 Field Inspector

LS LS - Wall Source Linear Mfr. Spec New 25.2 NA: < 6200 lumens Pass Fail

Total Design Watts: 25

¹ NOTES: Selections with a * require a note in the space below explaining how compliance is achieved.
EX: Luminaire is lighting a statue. EXCEPTION 2 to 130.2(b)
² FOOTNOTES: Authority Having Jurisdiction may call for Luminaire cut sheets to confirm compliance per 130.2(c) / 160.5(b)
³ For linear luminaires, wattage should be indicated as W/ft instead of Watts/luminaire. Total linear feet should be indicated in column 05 instead of number of luminaires.
⁴ Select "New" for new luminaires in a new outdoor lighting project, or for added luminaires in an alteration. Select "Altered" for replacement luminaires in an alteration. Select "Existing to Remain" for existing luminaires within the project scope that are not being altered and are remaining. Select "Existing to be Removed" for existing luminaires which are being removed and are not part of the project scope.
⁵ Compliance with mandatory shielding requirements is required for luminaires with initial lumen output >= 6,200 unless exempted by 130.2(b)(5) / 160.5(c)

G. SHIELDING REQUIREMENTS (BUG)

This section does not apply to this project.

Registration Number:

Generated Date/Time:

Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

Report Version: 2022.0.000

Schema Version: rev 20220101

Compliance ID: EnergyPro-S0207-0423-0215

Report Generated: 2023-04-08 13:52:49

STATE OF CALIFORNIA

Outdoor Lighting

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

NRCC-LTO-4

Project Name: Hoots Wings Santa Ana

Report Page: (Page 4 of 7)

Project Address: 1935 E Seventeenth St

Date Prepared: 4/8/2023

H. OUTDOOR LIGHTING CONTROLS

This table demonstrates compliance with controls requirements for all new or altered luminaires installed as part of the permit application. For alteration projects, luminaires which are existing to remain (ie unaltered) and luminaires which are removed and reinstalled (wiring only) do not need to be included in this table even if they are within the spaces covered by the permit application. Outdoor lighting for nonresidential buildings, parking garages and common service areas in multifamily buildings must be documented separately from outdoor lighting attached to multifamily buildings and controlled from the inside of a dwelling unit.

Mandatory Controls for Nonresidential Occupancies, Parking Garages & Common Areas in Multifamily Buildings

01 Area Description

02 Shut-Off 130.2(c)(1) / 160.5(c)

03 Auto-Schedule 130.2(c)(3) / 160.5(c)

04 Motion Sensor 130.2(c)(3) / 160.5(c)

05 Field Inspector

Sign Light Photocentral Provided - EMCS NA Each Luminaire < 40 Watts

Outdoor Light Photocentral Provided

Pass Fail

FOOTNOTES: Text has been abbreviated, please refer to Table 160.5-A to confirm compliance with the specific light source technologies listed.
¹ Authority Having Jurisdiction may call for cut sheets or other documentation to confirm compliance of light source.
² recessed luminaires marked for use in fire-rated installations, and recessed luminaires installed in non-insulated ceilings are excepted from I and II.

Registration Number:

Generated Date/Time:

Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

Report Version: 2022.0.000

Schema Version: rev 20220101

Compliance ID: EnergyPro-S0207-0423-0215

Report Generated: 2023-04-08 13:52:49

STATE OF CALIFORNIA

Outdoor Lighting

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

NRCC-LTO-4

Project Name: Hoots Wings Santa Ana

Report Page: (Page 5 of 7)

Project Address: 1935 E Seventeenth St

Date Prepared: 4/8/2023

I. LIGHTING POWER ALLOWANCE (per 140.7 / 170.2(a))

This table includes areas using allowance calculations per 140.7 / 170.2(a). General Hardcape Allowance is per Table 140.7-A/ Table 170.2-A while "Use it or lose it" Allowances are per Table 140.7-A/ Table 170.2-A. Indicate which allowances are being used to expand sections for user input. Luminaires that qualify for one of the "Use it or lose it" allowances shall not qualify for another "Use it or lose it" allowance. Outdoor lighting attached to multifamily buildings and controlled from the inside of a dwelling unit are included in Table H, and are not included here. All other multifamily outdoor lighting is included here.

Calculated General Hardcape Lighting Power Allowance per Table 140.7-A for Nonresidential & Hotel/ Motel

01 "Use it or lose it" Allowance (select all that apply) (select all that apply)

02 General Hardcape Allowance Table 1 (below)

03 Per Application Table 1

04 Sales Frontage Table K

05 Ornamental Table L

06 Per Specific Area Table M

02 Area Description

03 Illuminated Area (ft²)

04 Area Wattage Allowance (AWA) (W/ft²)

05 Allowed Density (W/ft²)

06 Area Allowance (Watts)

07 Perimeter Length (ft)

08 Allowed Density (W/ft²)

09 Linear Allowance (Watts)

10 Total General AWA + LWA (Watts)

Walk Way - Main Entrance 20 0.021 0.4 10 0.2 2 2

Initial Wattage Allowance for Entire Site (Watts): 250

Instances of Initial Wattage Allowance (L2-C only):

Total General Hardcape Allowance (Watts): 252

J. LIGHTING ALLOWANCE: PER APPLICATION

This section does not apply to this project.

K. LIGHTING ALLOWANCE: SALES FRONTAGE

This section does not apply to this project.

L. LIGHTING ALLOWANCE: ORNAMENTAL

This section does not apply to this project.

Registration Number:

Generated Date/Time:

Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

Report Version: 2022.0.000

Schema Version: rev 20220101

Compliance ID: EnergyPro-S0207-0423-0215

Report Generated: 2023-04-08 13:52:49

STATE OF CALIFORNIA

Outdoor Lighting

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

NRCC-LTO-4

Project Name: Hoots Wings Santa Ana

Report Page: (Page 6 of 7)

Project Address: 1935 E Seventeenth St

Date Prepared: 4/8/2023

M. LIGHTING ALLOWANCE: PER SPECIFIC AREA

This section does not apply to this project.

N. EXISTING CONDITIONS POWER ALLOWANCE (alterations only)

This section does not apply to this project.

O. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Form/Title

NRCA-LTO-E - Must be submitted for all buildings

P. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

Form/Title

Systems/Spaces To Be Field Verified

NRCA-LTO-G2-A - Must be submitted for all outdoor lighting controls except for alterations where controls are added to <= 20 luminaires.

Sign Lights; Outdoor Lights;

Registration Number:

Generated Date/Time:

Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

Report Version: 2022.0.000

Schema Version: rev 20220101

Compliance ID: EnergyPro-S0207-0423-0215

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STATE OF CALIFORNIA

Outdoor Lighting

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

NRCC-LTO-4

Project Name: Hoots Wings Santa Ana

Report Page: (Page 7 of 7)

Project Address: 1935 E Seventeenth St

Date Prepared: 4/8/2023

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

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

Documentation Author Name: Mohamed Nohayli

Signature Date: 2023-04-08

Company: InnoDev, Inc.

City/State/Zip: Pleasanton CA 94566

Responsible Designer Name: Syed P. Alam

Date Signed: 2023-04-08

Company: InnoDev

Address: 726 Foxborough PI

City/State/Zip: Pleasanton CA 94566

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: Syed P. Alam

Date Signed: 2023-04-08

Company: InnoDev

Address: 726 Foxborough PI

City/State/Zip: Pleasanton CA 94566

Registration Number:

Generated Date/Time:

Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

Report Version: 2022.0.000

Schema Version: rev 20220101

Compliance ID: EnergyPro-S0207-0423-0215

Report Generated: 2023-04-08 13:52:49

CLIENT:

ADDRESS:

CONFIDENTIALITY STATEMENT:

ALL DRAWINGS AND WRITTEN MATERIALS

APPEARING HEREIN CONSTITUTE THE

ORIGINAL AND UNPUBLISHED WORK OF THE

DESIGNER AND THE SAME MAY NOT BE

DUPLICATED, USED OR DISCLOSED WITHOUT

CONSENT OF THE DESIGNER.

NOTES:

1. ALL DIMENSIONS HEREIN ARE IN IMPERIAL UNITS UNLESS STATED OTHERWISE.

2. THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL RELEVANT DESIGNER, ENGINEER OR SPECIALIST DRAWINGS AND SPECIFICATIONS.

3. THE CONTRACTOR MUST CHECK ALL DIMENSION AT SITE BEFORE COMMENCING WORK.

4. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY TEMPORARY SUPPORT TO THE BUILDING AND ANY ADJACENT STRUCTURES.

REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

TITLE:

T24.2

PROJ. NO.	PROJ. ENGR.	SCALE	24X36:
			NTS

DRAWING NO.	REV.

T 2 4 . 2

STATE OF CALIFORNIA

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

NRCC-LTS-4

This document is used to demonstrate compliance with requirements in 110.9, 110.12, 160.5, 130.3/160.5(d), 140.4/170.2(a) and 141.0(b)(2)(M)/180.2(b)(4) for sign lighting scopes using the prescriptive path. Exit signs and traffic signs are not required to comply with prescriptive requirements per exceptions to 140.4/170.2(a) and do not need to complete this compliance document.

Project Name:Hoos Wings Santa AnaReport Page:4/8/2023

Project Address:1935 E Seventeenth St, Date Prepared:

A. GENERAL INFORMATION	
01 Project Location (city)	Santa Ana
02 Climate Zone	8
03 Occupancy Types within Project	<div><input type="checkbox"/> Healthcare Facility</div> <div><input type="checkbox"/> Multifamily/MF-Mixed-use >= 4 stories (includes dormitory, senior living)</div>

B. PROJECT SCOPE

This table includes illuminated signs that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in 140.4/170.2(a) or 141.0(b)(2)(M)/180.2(b)(4) for alterations. Exit signs and traffic signs are not required to comply with prescriptive requirements per exceptions to 140.4/170.2(a) and do not need to complete this compliance document.

01	02	03	04	05
Name or Item Tag	Complete Sign Description	Sign Status ¹	Sign Type	Compliance Method ²
L6	Sign Light	New	Outdoor	Max Allowed Lighting Power

¹FOOTNOTE: Sign alterations that increase the connected lighting load, replace and rewire more than 50% of the ballasts, or relocate the sign to a different location must comply with 140.4/170.2(a). See 141.0(b)(2)(M)/180.2(b)(4) for more details.

²The ENERGY VERIFIED Label compliance method is only applicable if the sign has a permanent, factory-installed, ENERGY VERIFIED label certified by UL or comparable, confirming the sign complies with 140.4/170.2(a). Note that using an ENERGY VERIFIED label is an optional compliance path, not a mandatory requirement. See the toolbox for more details.

Registration Number:

Generated Date/Time:

Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

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STATE OF CALIFORNIA

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

NRCC-MCH-4

This document is used to demonstrate compliance for mechanical systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in 140.4, or 141.0(b)(2) for alterations.

Project Name:Hoos Wings Santa AnaReport Page:4/8/2023

Project Address:1935 E Seventeenth St, Date Prepared:

A. GENERAL INFORMATION	
01 Project Location (city)	Santa Ana
02 Climate Zone	8
03 Occupancy Types Within Project:	1
• Restaurants • Support Areas • All Other Occupancies	

B. PROJECT SCOPE

This table includes mechanical systems or components that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in 140.4, 170.2(b) or 141.0(b)(2) and 180.2(b)(2) for alterations.

02		03	
Air System(s)		Wet System Components	
<div><input checked="" type="checkbox"/> Heating Air System</div>		<div><input type="checkbox"/> Water Economizer</div>	
<div><input checked="" type="checkbox"/> Cooling Air System</div>		<div><input type="checkbox"/> Air Economizer</div>	
<div><input type="checkbox"/> Mechanical Controls</div>		<div><input type="checkbox"/> Electric Resistance Heat</div>	
<div><input checked="" type="checkbox"/> Mechanical Controls (existing to remain, altered or new)</div>		<div><input type="checkbox"/> Fan Systems</div>	
		<div><input type="checkbox"/> Cooling Towers</div>	
		<div><input type="checkbox"/> Ductwork (existing to remain, altered or new)</div>	
		<div><input checked="" type="checkbox"/> Ventilation</div>	
		<div><input type="checkbox"/> Boilers</div>	
		<div><input type="checkbox"/> Zonal Systems/ Terminal Boxes</div>	

Registration Number:

Generated Date/Time:

Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

Report Version: 2023.0.000
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Compliance ID: EnergyPro-S0207-0423-0217
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STATE OF CALIFORNIA

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

NRCC-MCH-4

Project Name:Hoos Wings Santa AnaReport Page:4/8/2023

Project Address:1935 E Seventeenth St, Date Prepared:

J. VENTILATION AND INDOOR AIR QUALITY									
Space Name or Item Tag	Mechanical Ventilation Required per 120.1(c)(3) & 160.2(c)(3)				Exh. Vent per 120.1(c)(4) & 160.2(c)(4)		DCV or Sensor Controls per 120.1(c)(5), 120.1(c)(6), and 120.1(c)(3) 160.2(c)(5D) 160.2(c)(5E) 160.2(c)(7)(C)		
	Occupancy Type ^a	Conditioned Floor Area (ft ²)	# of Shower heads/ toilets	# of people ^b	Required Min OA CFM	provided per Design CFM			
Preparation Area	Kitchen (cooking)	514		77.1	359.8	0	DCV	NA: Not required per 120.1(c)(3)	
							Occ Sensor	NA: Not required space type	
Dining Room	Restaurant Dining Rooms	640		320	0	0	DCV	NA: Not required per 120.1(c)(3)	
							Occ Sensor	NA: Not required space type	
Walk In Cooler Freezer	Warehouse	111		0	0	0	DCV	NA: Not required per 120.1(c)(3)	
							Occ Sensor	NA: Not required space type	
Bath	Toilet, public	110		0	0	50	DCV	NA: Not required per 120.1(c)(3)	
							Occ Sensor	NA: Not required space type	
17	Total System Required Min OA CFM				397	18	Ventilation for this System Complies ^c		Yes

¹ FOOTNOTES: System CFM should include both mechanical and natural ventilation for the zone/system

² Air filtration requirements apply to the following three system types per 120.1(c)(1A): space conditioning systems utilizing ducts to supply air to occupiable space; supply-only ventilation systems providing outside air to occupiable space; supply side of balanced ventilation systems including heat recovery and energy recovery ventilation systems providing outside air to occupiable space.

³ Uniform Mechanical Code may have more stringent ventilation requirements; the most stringent code requirement takes precedence.

⁴ See Standards Tables 120.1.4 and 120.1.4.

⁵ For lecture halls with fixed seating, the expected number of occupants shall be determined in accordance with the California Building Code.

Registration Number:

Generated Date/Time:

Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

Report Version: 2023.0.000
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STATE OF CALIFORNIA

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

NRCC-LTS-4

Project Name:Hoos Wings Santa AnaReport Page:4/8/2023

Project Address:1935 E Seventeenth St, Date Prepared:

C. COMPLIANCE RESULTS									
Results in this table are automatically calculated from data input and calculations in Tables B through H. Note: If any cell on this table says "COMPLIES with Exceptional Conditions" refer to Table D. Exceptional Conditions for guidance or see applicable Table referenced below.									
01	02	03	04		05	06	07		
Name or Item Tag (See Table B)	Complete Sign Description (See Table B)	Total Allowed (Watts) (See Table F)	2	Total Designed (Watts) (See Table F)	OR	Compliant Light Sources (See Table G)	OR	ENERGY VERIFIED Label (See Table H)	Compliance Results
L6	Sign Light	240	2	25.2	OR				COMPLIES
					Controls Compliance (See Table F/G/H for Details)				COMPLIES

D. EXCEPTIONAL CONDITIONS

This table is auto-filled with unavailable comments because of selections made or data entered in tables throughout the form.

E. ADDITIONAL REMARKS

This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

F. MAXIMUM ALLOWED LIGHTING POWER AND CONTROLS

This table includes illuminated signs using the Maximum Allowed Lighting Power compliance method per 140.8(a)/170.2(e) as indicated on Table B of this compliance document. It also demonstrates compliance with mandatory controls requirements from 130.3/160.5(d) by indicating control types for each sign.

01	02	03	04	05	06	07	08	09
Name or Item Tag	Complete Sign Description	Illumination Method	Sign Area (ft ²)	Allowed Density (W/ft ²)	Allowance (Watts)	Design Watts	Mandatory Controls	Field Inspector
L6	Sign Light	Internally	20	12	240	25.2	Shut-Off Dimming Automatic Time Switch + Photocontrol (outdoor)	Pass Fail

¹ NOTES: Controls with a * require a note in the space below explaining how compliance is achieved. EX: Sign within tunnel illuminated day and night. EXCEPTION to 130.3(a)(2A).

² FOOTNOTE: Demand response controls are only required for an Electronic Message Center having a new connected lighting power load greater than 15 kW per 110.12(f)

Registration Number:

Generated Date/Time:

Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

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STATE OF CALIFORNIA

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

NRCC-MCH-4

Project Name:Hoos Wings Santa AnaReport Page:4/8/2023

Project Address:1935 E Seventeenth St, Date Prepared:

C. COMPLIANCE RESULTS									
Table C will indicate if the project data input into the compliance document is compliant with mechanical requirements. This table is not editable by the user. If this table says "DOES NOT COMPLY" or "COMPLIES with Exceptional Conditions" refer to Table D, or the table indicated as not compliant for guidance.									
System Summary	Pumps	Fans/ Economizer	System Controls	AND	Terminal Box Controls	AND	Distribution	AND	Exhaust Towers
110.1, 110.2, 140.4, 170.2(c)	140.4(k), 170.2(c)(4)	140.4(c), 140.4(h), 170.2(c)	110.2, 120.2, 140.4(f), 170.2(c)	AND	140.4(g), 170.2(c)(4)(8)	AND	120.3, 140.4(i), 160.2, 160.3	AND	Exhaust Towers 110.1(c)(7), 140.4(k)(6)
(See Table F)	(See Table G)	(See Table H)	(See Table I)	(See Table J)	(See Table K)	(See Table L)	(See Table M)	(See Table N)	COMPLIES
AND	AND	AND	Yes	AND	Yes	AND	AND	AND	COMPLIES
Mandatory Measures Compliance (See Table C for Details)									

D. EXCEPTIONAL CONDITIONS

This table is auto-filled with unavailable comments because of selections made or data entered in tables throughout the form.

E. ADDITIONAL REMARKS

This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

F. HVAC SYSTEM SUMMARY (DRY & WET SYSTEMS)					
Space Conditioning System Information					
01	02	03	04	05	06
System Name	Quantity	System Serving	System Status	Space Type	Utilizing Recovered Heat

Registration Number:

Generated Date/Time:

Documentation Software: EnergyPro

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J. VENTILATION AND INDOOR AIR QUALITY									
¹ 120.2(c)(3) requires systems serving rooms that are required by 130.1(c) to have lighting occupancy sensing controls to also have occupancy sensing zone controls for ventilation. Examples of spaces which require lighting occupancy sensors include offices 2500' or smaller, multipurpose rooms less than 1,000 ft ² , classrooms, conference rooms, restrooms, aisles and open areas in warehouses, library book stock aisles, corridors, stairwells, parking garages, and loading and unloading zones, unless excepted by 130.1(c).									
Multifamily Dwelling Unit Ventilation Systems									
<input type="checkbox"/> Check the box if the system is using continuous ventilation to meet the ventilation requirements per 160.2(b)(2)(A)(v2)									
19	20	21	22	23	24	25	26	27	
						Ventilation per Design			
Space Name or Item Tag	Conditioned Floor Area (ft ²)	# of Bedrooms	# of Dwelling Units	Required Min OA CFM ¹	Supply Air CFM	Exhaust CFM	Local Exhaust		Air Filtration per 120.1(c) & 160.2(b)(1)
28	Is this a balanced system?				29	Meeting Outside Air Requirements?			
² FOOTNOTES: Uniform Mechanical Code may have more stringent ventilation requirements; the most stringent code requirement takes precedence.									
³ Kitchen range hood will be verified per NAE 18.1 to confirm model is rated by HVH or AHAM.									
⁴ Air filtration requirements apply to the following three system types per 120.1(c)(1A): space conditioning systems utilizing ducts to supply air to occupiable space; supply-only ventilation systems providing outside air to occupiable space; supply side of balanced ventilation systems including heat recovery and energy recovery ventilation systems providing outside air to occupiable space.									
⁵ A balanced ventilation system provides ventilation airflow to each dwelling-unit at a rate equal to or greater than the required minimum rate, but not more than twenty percent.									

K. TERMINAL BOX CONTROLS

This section does not apply to this project.

L. DISTRIBUTION (DUCTWORK AND PIPING)

This section does not apply to this project.

M. COOLING TOWERS

This section does not apply to this project.

Registration Number:

Generated Date/Time:

Documentation Software: EnergyPro

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STATE OF CALIFORNIA

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NRCC-LTS-4

Project Name:Hoos Wings Santa AnaReport Page:4/8/2023

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G. LIGHT SOURCES AND CONTROLS

This section does not apply to this project.

H. ENERGY VERIFIED LABELED SIGNS AND CONTROLS

This section does not apply to this project.

I. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Form/Title

NRCC-LTS-4 - Must be submitted for all buildings

J. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

There are no forms required for this project.

Registration Number:

Generated Date/Time:

Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

Report Version: 2023.0.000
Schema Version: rev 20220101

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STATE OF CALIFORNIA

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

NRCC-MCH-4

Project Name:Hoos Wings Santa AnaReport Page:4/8/2023

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F. HVAC SYSTEM SUMMARY (DRY & WET SYSTEMS)										
Dry System Equipment Sizing (includes air conditioners, condensers, heat pumps, VRF, furnaces and unit heaters and DOAS systems)										
01	02	03	04	05	06	07	08	09	10	11
Name or Item Tag	Equipment Category per Tables 110.2, 140.4(a)(2) and 170.2(c)(3A)	Equipment Type per Tables 110.2 and Title 20	Smallest Size Available ¹ 140.4(a) and 170.2(c)	Per Design (kBtu/h)	Rated (kBtu/h)	Supp. Heating Output (kBtu/h)	Sensible Per Design (kBtu/h)	Rated (kBtu/h)	Total Heating Load (kBtu/h)	Sensible Cooling Load (kBtu/h)
¹ FOOTNOTES: Equipment shall be the smallest size, within the available options of the desired equipment line, necessary to meet the design heating and cooling loads of the building per 140.4(a) and 170.2(c)(2). Healthcare facilities are excepted.										
² It is common practice to show rated output capacity on the equipment schedule. Sensible cooling output comes from specification sheet tables.										
³ If equipment is heating only, leave cooling output and load blank. If equipment is cooling only, leave heating output and load blank.										
⁴ Authority Having Jurisdiction may ask for load calculations used for compliance per 140.4(a) and 170.2(c).										

G. PUMPS

This section does not apply to this project.

H. FAN SYSTEMS & AIR ECONOMIZERS

This section does not apply to this project.

Registration Number:

Generated Date/Time:

Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

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STATE OF CALIFORNIA

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

NRCC-MCH-4

Project Name:Hoos Wings Santa AnaReport Page:4/8/2023

Project Address:1935 E Seventeenth St, Date Prepared:

I. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Form/Title

NRCC-MCH-01-E - Must be submitted for all buildings

J. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

There are no NRCCV forms required for this project.

K. DECLARATION OF REQUIRED CERTIFICATES OF VERIFICATION

There are no NRCCV forms required for this project.

L. MANDATORY MEASURES DOCUMENTATION LOCATION	
This table is used to indicate where mandatory measures are documented in the plan set or construction documentation.	
01	02
Compliance with Mandatory Measures documented through MCH	Yes
Mandatory Measures Note Block	Plan sheet or construction document location
	M-Sheets

Registration Number:

Generated Date/Time:

Documentation Software: EnergyPro

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STATE OF CALIFORNIA

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

NRCC-LTS-4

Project Name:Hoos Wings Santa AnaReport Page:4/8/2023

Project Address:1935 E Seventeenth St, Date Prepared:

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

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

Documentation Author Name: Mohamed Nohayti	Documentation Author Signature: Mohamed Nohayti
Signature Date: 2023-04-08	Signature Date: 2023-04-08
Company: HKS, Inc.	Company: HKS, Inc.
Address: 726 Foxborough PI	Address: 726 Foxborough PI
City/State/Zip: Pleasanton CA 94566	City/State/Zip: Pleasanton CA 94566
Phone: 916-813-4752	Phone: 916-813-4752

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 a duly licensed professional engineer or architect under the laws of the State of California.
- 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 6, 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: Syed P. Alam	Responsible Designer Signature: Syed P. Alam
Signature Date: 2023-04-08	Signature Date: 2023-04-08
Company: HKS, Inc.	Company: HKS, Inc.
Address: 726 Foxborough PI	Address: 726 Foxborough PI
City/State/Zip: Pleasanton CA 94566	City/State/Zip: Pleasanton CA 94566

STATE OF CALIFORNIA

Domestic Water Heating System

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

NRCC-PLB-E

This document is used to demonstrate compliance for nonresidential occupancies with requirements in 110.1, 110.3, 120.3, and 140.5, and with requirements in 141.0 for additions and alterations, for domestic water heating scopes using the prescriptive path. For high-rise residential and hotel/motel occupancies compliance is demonstrated with requirements in 110.1, 110.3, 160.4 and 170.2(d), and with requirements 180.1 for additions and 180.2 for alterations.

Project Name:Hoots Wings Santa AnaReport Page:(Page 1 of 6)

Project Address:1935 E Seventeenth StDate Prepared:4/8/2023

A. GENERAL INFORMATION

01	Project Location (city)	Santa Ana	02	Climate Zone	8
03 Occupancy Types Within Project (select all that apply):					
• Restaurant • Support Areas • All Other Occupancies					

B. PROJECT SCOPE

This table includes domestic water heating systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive paths outlined in 140./170.2(d) and 141.0(a)/180.1, or 141.0(b)(2)/180.2 for additions or alterations. Solar water heating systems are documented on the NRCC-SAB compliance document. Combined hydronic water heating systems are documented on the NRCC-MCH compliance document.

01	02	03
My project consists of (check all that apply):	System Type ^{1,2}	System Components
<input checked="" type="checkbox"/> New system (DHW system being installed for the first time in newly constructed building)	Individual System (serving nonresidential spaces)	<input checked="" type="checkbox"/> Equipment <input checked="" type="checkbox"/> Distribution <input checked="" type="checkbox"/> Controls
<input type="checkbox"/> System Alteration (equipment, distribution or controls)		<input type="checkbox"/> Equipment <input type="checkbox"/> Distribution <input type="checkbox"/> Controls

¹FOOTNOTES: Point of use water heaters, or other non-central systems used to serve nonresidential spaces, are considered individual systems.

² Dwelling units refers to hotel/motel guest rooms and units in a multifamily residential occupancy.

³ DHW systems serving 2 or more dwelling units are considered "Central Systems" for multifamily occupancies

C. COMPLIANCE RESULTS

Table C will indicate if the project data input into the compliance document is compliant with water heating requirements. If this table says "DOES NOT COMPLY" or "COMPLIES with Exceptional Conditions" refer to Table D, or the table indicated as not compliant for guidance.

01	02	03	04
Domestic Hot Water Equipment	Distribution Systems	Controls	Compliance Results
Table F	Table G	Table H	
Yes	Yes	Yes	

COMPLIES

D. EXCEPTIONAL CONDITIONS

This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form.

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STATE OF CALIFORNIA

Domestic Water Heating System

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

NRCC-PLB-E

Project Name:Hoots Wings Santa AnaReport Page:(Page 2 of 6)

Project Address:1935 E Seventeenth StDate Prepared:4/8/2023

E. ADDITIONAL REMARKS

This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

F. DOMESTIC HOT WATER EQUIPMENT

This table is used to demonstrate compliance with mandatory equipment requirements in 110.1 and 110.3. Compliance with prescriptive requirements in 140.5(c) / 170.2(d) must also be demonstrated and with 141.0 / 180.1/ 180.2 for addition and alteration scopes.

Equipment Schedule: Water Heating Efficiency and Standby Loss

03		04		05		06		
System Name	Standard Gas Tankless	Exception to 140.5(c)/170.2(d)3		<input type="checkbox"/>	Gas Service Water Heating System >= 1MMBtu/h ¹	Capacity-weighted Average Efficiency %		
07	08	09	10	11	12	13	14	15
Name or Item Tag	Equipment Type	Volume (gal)	Rated Input Capacity (Btu/h)	Max GPM/ First Hour Rating (FHR)	Rated Efficiency	Minimum Efficiency Required	Efficiency Unit	Designed Standby Loss
Standard Gas Tankless	Commercial Gas Instantaneous Water Heater	1	380,000	FHR >=75	0.82	0.81	UEF	

¹FOOTNOTE: In systems >= 1MMBtu/h with multiple units, gas water heaters with input capacity > 100,000 Btu/h may meet 90% UEF requirements via an input capacity-weighted average.

Water Heating Equipment All Occupancies

	Yes	No	Not Applicable	Requirement
18	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Unfired storage tank insulation shall have Internal + External >=R-16 OR External >=R-3.5. Label required per 110.3(c)3.
19	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	New state buildings 60% of energy for service water heating from site solar energy or recovered energy per 110.3(c)5
20	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Isolation valves for instantaneous water heater with input rating >6.8 kBtUH or 2 kW has been specified per 110.3(c)6
21	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	School buildings < 25,000 ft² and < 4 stories must install a heat pump water heating system per 140.5(a)1. Water heating systems serving an individual bathroom space may be an instantaneous electric water heater.

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Project Name:Hoots Wings Santa AnaReport Page:(Page 3 of 6)

Project Address:1935 E Seventeenth StDate Prepared:4/8/2023

G. DOMESTIC HOT WATER DISTRIBUTION SYSTEM

This table is used to demonstrate compliance for nonresidential occupancies with distribution requirements in 120.3 and 140.5. For multifamily and hotel/motel occupancies, compliance is demonstrated with requirements 110.3(c), 160.4, 170.2(d).

Mandatory Pipe Insulation All Occupancies

13	<input type="checkbox"/>	For systems serving dwelling units, pipe insulation must meet the minimum insulation requirements in Table 160.4-A (see below) except: <ul style="list-style-type: none">Piping that penetrates framing members shall not be required to have pipe insulation for the distance of the framing penetration. Piping that penetrates metal framing shall use grommets, plugs, wrapping or other insulating material to assure that no contact is made with the metal framing. Insulation shall abut securely against all framing membersPiping installed in interior or exterior walls shall not be required to have pipe insulation if all of the requirements are met for compliance with Quality Insulation Installation (QII) as specified in the Reference Residential Appendix RA3.5Piping surrounded with a minimum of 1 inch of wall insulation, 2 inches of crawlspace insulation, or 4 inches of attic insulation, shall not be required to have pipe insulation.
14	<input checked="" type="checkbox"/>	For systems serving nonresidential spaces, pipe insulation for the following applications is specified to comply with Table 120.3-A (see below) per 120.3: <ul style="list-style-type: none">Recirculating system piping, including supply and return piping of the water heaterThe first 8 ft of hot and cold outlet piping, including between storage tank and heat trap, for a nonrecirculating storage systemPipes that are externally heated
15	<input type="checkbox"/>	Insulation shall be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind. Insulation exposed to weather shall be installed with a cover suitable for outdoor service per 120.3(b) / 160.4(f). Pipe insulation buried below grade must be installed in a water proof and non-crushable casing or sleeve.

TABLE 120.3-A / 160.4-A PIPE INSULATION THICKNESS

Fluid Temperature Range (°F)	Conductivity Range (Btu-in per hour per ft² per °F)	Insulation Mean Rating Temp (°F)	Nominal Pipe Diameter (in)			
			< 1	1 to < 1.5	1.5 to < 4	1.5 to < 4 Multifamily & Hotel/Motel
105-140	0.22 - 0.28	100	1.0 in or R-7.7	1.5 in or R-12.5	1.5 in or R-11	2.0 in or R-16

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STATE OF CALIFORNIA

Domestic Water Heating System

CALIFORNIA ENERGY COMMISSION

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Project Name:Hoots Wings Santa AnaReport Page:(Page 4 of 6)

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H. DOMESTIC HOT WATER CONTROLS

This table is used to demonstrate compliance with control requirements in 110.3 for all occupancies. For multifamily residential and hotel/motel occupancies, compliance is also demonstrated with requirements in 160.4(e) / 170.2(d).

	Yes	No	Not Applicable	Requirement
01	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Construction documents require manufacturer certification that service water heating systems are equipped with automatic temperature controls capable of adjusting temperature settings per 110.3(a).
02	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Systems with capacity > 167,000 BTUH equipped with outlet temperature controls per 110.3(c)1 unless covered by California Plumbing Code 613.0.
03	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Controls for circulating pumps or electrical heat trace systems are capable of automatically turning off the system per §110.3(c)2 unless systems serves healthcare facility.
04	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	For recirculation systems serving multiple dwelling units, design includes automatic pump controls per 170.2(d) or 180.1(b)3 for additions.
05	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	For recirculation systems serving individual dwelling units, design includes manual on/off controls as specified in Reference Appendix RA4.4.9 per 170.2(d).
06	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Combustion air positive shut-off shall be provided per 160.4(3) on all newly installed commercial boilers as follows: <ul style="list-style-type: none">Boilers with input capacity >= 2.5 MMBtu/h, in which the boiler is designed to operate with a nonpositive vent static pressureBoilers where one stack serves two or more boilers with a total combined input capacity per stack of 2.5 MMBtu/h.
07	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Boiler combustion air fans with motor >= 10 hp shall meet one of the following <ul style="list-style-type: none">The fan motor shall be driven by a variable speed drive ORThe fan motor shall include controls that limit the fan motor demand to <=30% of the total design wattage at 50% of the design air volume.
08	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Newly installed boilers with an input capacity (dgtge)/ 5MMBtu/h and a steady state full-load combustion efficiency < 90% shall maintain excess (stack)gas oxygen concentrations <= 5% by volume on a dry basis over firing rates of 20-100%. Combustion air volume shall be controlled with respect to firing rate or flue gas oxygen concentration. Use of a common gas and combustion air control linkage or jack shaft is prohibited.

I. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Form/Title

NRCC-PLB-E - Must be submitted for all buildings

Registration Number:CA Building Energy Efficiency Standards - 2022 Nonresidential ComplianceGenerated Date/Time:Report Version: 2022.0.000Documentation Software: EnergyProSchema Version: rev 20220101Compliance ID: EnergyPro-50207-0423-0213Report Generated: 2023-04-08 13:52:49

STATE OF CALIFORNIA

Domestic Water Heating System

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

NRCC-PLB-E

Project Name:Hoots Wings Santa AnaReport Page:(Page 5 of 6)

Project Address:1935 E Seventeenth StDate Prepared:4/8/2023

J. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

There are no forms required for this project.

K. DECLARATION OF REQUIRED CERTIFICATES OF VERIFICATION

There are no forms required for this project.

Registration Number:CA Building Energy Efficiency Standards - 2022 Nonresidential ComplianceGenerated Date/Time:Report Version: 2022.0.000Documentation Software: EnergyProSchema Version: rev 20220101Compliance ID: EnergyPro-50207-0423-0213Report Generated: 2023-04-08 13:52:49

STATE OF CALIFORNIA

Domestic Water Heating System

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CERTIFICATE OF COMPLIANCE

NRCC-PLB-E

Project Name:Hoots Wings Santa AnaReport Page:(Page 6 of 6)

Project Address:1935 E Seventeenth StDate Prepared:4/8/2023

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

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

Documentation Author Name:Mohamad Nohayli

Documentation Author Signature:Mohamad Nohayli

Company:InnoDex, Inc.

Signature Date:2023-04-08

Address:726 FoxbroughPleasanton CA 94566

CEA/HERS Certification Identification (if applicable):

Phone:

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:Syed P. Alam

Responsible Designer Signature:Syed Alam

Company:InnoDex

Date Signed:2023-04-08

Address:726 Foxbrough PIPleasanton CA 94566

License:27087

City/State/Zip:726 Foxbrough PIPleasanton CA 94566

Phone:916-813-1752

Registration Number:CA Building Energy Efficiency Standards - 2022 Nonresidential ComplianceGenerated Date/Time:Report Version: 2022.0.000Documentation Software: EnergyProSchema Version: rev 20220101Compliance ID: EnergyPro-50207-0423-0213Report Generated: 2023-04-08 13:52:49

CLIENT:

ADDRESS:

CONFIDENTIALITY STATEMENT:

ALL DRAWINGS AND WRITTEN MATERIALS APPEARING HEREIN CONSTITUTE THE ORIGINAL AND UNPUBLISHED WORK OF THE DESIGNER AND THE SAME MAY NOT BE DUPLICATED, USED OR DISCLOSED WITHOUT CONSENT OF THE DESIGNER.

NOTES:

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

TITLE:

T24.4

PROJ. NO.

PROJ. ENGR.

SCALE @ 24X36:

NTS

DRAWING NO.

REV.

T 2 4 . 4

STATE OF CALIFORNIA

CALIFORNIA ENERGY COMMISSION

Process Systems

CERTIFICATE OF COMPLIANCE

NRCC-PRC-E

This form is used to document any process systems that are within the scope of the permit application and are demonstrating compliance with mandatory requirements in 120.6/ 160.7 or prescriptive requirements in 140.9. This compliance document is used for newly constructed, addition and alteration projects.

Project Name: Hoots Wings Santa Ana

Report Page: (Page 1 of 6)

Project Address: 1935 E Seventeenth St.

Date Prepared: 4/8/2023

A. GENERAL INFORMATION

01	Project Location (city)	Santa Ana	04	Total Conditioned Floor Area	1375
02	Climate Zone	8	05	Total Unconditioned Floor Area	0
03	Occupancy Types Within Project:		06	# of Stories (Habitable Above Grade)	1

• Restaurant • Support Areas • All Other Occupancies

B. PROJECT SCOPE

This table includes process systems that are within the scope of the permit application and are demonstrating compliance with mandatory requirements in 120.6 / 160.7 or prescriptive requirements in 140.9.

My project consists of: (check all that apply):

01	02
<input type="checkbox"/> Refrigerated Spaces <3,000 ft² Total (no Title 24, P16 requirements)	<input type="checkbox"/> Escalator & Moving Walkway Speed Controls (mandatory 120.6(g))
<input type="checkbox"/> Refrigerated Spaces >=3,000 ft² Total (mandatory 120.6(a))	<input type="checkbox"/> Computer Rooms (mandatory 120.6(j) and prescriptive 140.9(a))¹
<input type="checkbox"/> Food /Beverage Stores >8,000 ft² cfa (mandatory 120.6(b))	<input checked="" type="checkbox"/> Commercial Kitchen Ventilation/Exhaust (prescriptive 140.9(b))¹
<input type="checkbox"/> Enclosed Parking Garage Exhaust >=10,000 cfm (mandatory 120.6(c))	<input type="checkbox"/> Laboratory Exhaust/Factory Exhaust & Fume Hood (prescriptive 140.9(c))¹
<input type="checkbox"/> Newly Installed Process Boilers (mandatory 120.6(d))	<input type="checkbox"/> Pool/Spa (mandatory 110.4 / 160.7)
<input type="checkbox"/> Compressed Air Systems Combined HP >= 25 (mandatory 120.6(e))	<input type="checkbox"/> Controlled Environment Horticulture (mandatory 120.6(h))
<input type="checkbox"/> Elevator Lighting & Ventilation Controls (mandatory 120.6(f) / 160.7)	<input type="checkbox"/> New Steam Traps (mandatory 120.6(i))

¹ FOOTNOTES: These building features can comply using the performance method. If using the performance method for these features, compliance should be demonstrated on the NRCC-PRC-E.

Registration Number:

Generated Date/Time:

Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

Report Version: 2022.0.000
Schema Version: rev 20220101

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Project Name: Hoots Wings Santa Ana

Report Page: (Page 1 of 6)

Project Address: 1935 E Seventeenth St.

Date Prepared: 4/8/2023

I. PROCESS BOILER

This section does not apply to this project.

J. COMPRESSED AIR SYSTEMS

This section does not apply to this project.

K. ELEVATOR LIGHTING AND VENTILATION

This section does not apply to this project.

L. ESCALATORS AND MOVING WALKWAYS SPEED CONTROLS

This section does not apply to this project.

M. COMPUTER ROOM SYSTEM SUMMARY

This section does not apply to this project.

N. COMMERCIAL KITCHEN EXHAUST AND VENTILATION

This table contains all new and replacement hoods being installed within the scope of the permit application. Table N is used to demonstrate compliance with prescriptive requirements found in 140.9(b).

Kitchen Ventilation 140.9(b)2

01	<input type="checkbox"/>	Existing kitchen hoods not being replaced as part of an addition or alteration (do not need to meet requirements)
Requirements		
02	Replacement Air to Hood Compliance Method 140.9(b)1A	
03	Providing replacement air directly to the hood(s) that does not exceed 10% of the hood(s) exhaust rate	
03	Mechanically cooled or heated makeup air delivered to any space with a kitchen hood is designed per 140.9(b)2A to not exceed the greater of: The supply flow required to meet the space heating and cooling load	
04	Location that is supplying transfer air:	

Registration Number:

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Project Name: Hoots Wings Santa Ana

Report Page: (Page 5 of 6)

Project Address: 1935 E Seventeenth St.

Date Prepared: 4/8/2023

S. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Form/Title

NRCC-PRC-01-E, Covered Process

T. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

There are no NRCA forms required for this project.

Registration Number:

Generated Date/Time:

Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

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Project Name: Hoots Wings Santa Ana

Report Page: (Page 2 of 6)

Project Address: 1935 E Seventeenth St.

Date Prepared: 4/8/2023

C. COMPLIANCE RESULTS

Results in this table are automatically calculated from data input and calculations in Tables F through R. Note: If any cell on this table says "COMPLIES with Exceptional Conditions" refer to Table D. Exceptional Conditions for guidance or see applicable Table referenced below.

01	02	03	04	05	06	07	08	09	10	11	12	13	14
Refrigerated Warehouse / Space 120.6(a) (See Table F)	Commercial Refrigeration 120.6(b) (See Table G)	Parking Garage Exhaust 120.6(c) (See Table H)	Process Boilers 120.6(d) (See Table I)	Compressed Air Systems 120.6(e) (See Table J)	Elevators 120.6(f) / Moving Walkways 120.6(g) (See Table K)	Escalators & Moving Walkways 120.6(h) (See Table L)	Computer Rooms 140.9(a) (See Table M)	Commercial Kitchens 140.9(b) (See Table N)	Laboratory/ Factory Exhaust 140.9(c) (See Table O)	Controlled Environment Horticulture 120.6(h) (See Table Q)	Steam Traps 160.7 (See Table R)	Multifamily Pool/Spa 160.7 (See Table R)	Compliance Results
								Yes					COMPLIES

D. EXCEPTIONAL CONDITIONS

This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form.

E. ADDITIONAL REMARKS

This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

F. REFRIGERATED WAREHOUSES/SPACES

This section does not apply to this project.

G. COMMERCIAL REFRIGERATION

This section does not apply to this project.

H. ENCLOSED PARKING GARAGE EXHAUST

This section does not apply to this project.

Registration Number:

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Project Name: Hoots Wings Santa Ana

Report Page: (Page 4 of 6)

Project Address: 1935 E Seventeenth St.

Date Prepared: 4/8/2023

N. COMMERCIAL KITCHEN EXHAUST AND VENTILATION

The kitchen/ dining facility has a total Type I and Type II kitchen hood exhaust airflow > 5000 cfm and is designed to have one of the following per 140.9(b)2B:
Demand ventilation system(s) on at least 75% of the exhaust air per 140.9(b)2Bii

Kitchen Exhaust: Airflow Rate 140.9(b)1B

01	Kitchen Name or Item Tag	Kitchen	Compliance Method per 140.9(b)1B	Type I hood design exhaust rates do not exceed the maximum allowed per §140.9(b)1 as documented below		
02	03	04	05	06	07	08
Name or Item Tag	Hood Type¹	Hood Style¹	Hood Length (ft)	Equipment Duty	Design Hood Exhaust Rate: CFM	Max Hood Exhaust Rate Allowed CFM
KEF	Type I	Wall-mounted Canopy	13	Medium Duty	2800	2730

¹FOOTNOTES: Type II hoods do not have a max hood exhaust air rate per 140.9(b)1B

O. LABORATORY AND FACTORY EXHAUST AND FUME HOODS

This section does not apply to this project.

P. CONTROLLED ENVIRONMENT HORTICULTURE

This section does not apply to this project.

Q. STEAM TRAPS IN INDUSTRIAL FACILITIES

This section does not apply to this project.

R. Pool & SPAs

This section does not apply to this project.

Registration Number:

Generated Date/Time:

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Project Name: Hoots Wings Santa Ana

Report Page: (Page 6 of 6)

Project Address: 1935 E Seventeenth St.

Date Prepared: 4/8/2023

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

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

Documentation Author Name: Mohamad Nohayil

Documentation Author Signature: Mohamad Nohayil

Company: InnoDez, Inc.

Signature Date: 2023-04-08

Address: 726 Foxbrough

City/State/Zip: Pleasanton CA 94566

CEA/ HERS Certification Identification (if applicable):

Phone:

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: Syed P. Alam

Responsible Designer Signature: Syed Alam

Company: InnoDez

Date Signed: 2023-04-08

Address: 726 Foxbrough Pl

City/State/Zip: Pleasanton CA 94566

Phone: 916-813-1752

Registration Number:

Generated Date/Time:

Documentation Software: EnergyPro

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HVAC SYSTEM HEATING AND COOLING LOADS SUMMARY

Project Name: Hoots Wings Santa Ana

System Name: RTU-01

Date: 4/8/2023

Floor Area: 1,375

ENGINEERING CHECKS

Number of Systems: 1

Heating System

Output per System: 120,000

Total Output (Btu/h): 120,000

Output (Btu/h/sqft): 87.3

Cooling System

Output per System: 80,000

Total Output (Btu/h): 80,000

Total Output (Tons): 6.7

Total Output (Btu/h/sqft): 58.2

Total Output (sqft/Ton): 206.3

Air System

CFM per System: 2,600

Airflow (cfm): 2,600

Airflow (cfm/sqft): 1.89

Airflow (cfm/Ton): 390.0

Outside Air (%): 14.6%

Outside Air (cfm/sqft): 0.28

TIME OF SYSTEM PEAK: Jul 2 PM

Jan 1 AM

SYSTEM LOAD

COIL COOLING PEAK

CFM: 2,771

Sensible: 48,376

Latent: 3,438

COIL HTG. PEAK

CFM: 685

Sensible: 26,836

Total Room Loads

Return Vented Lighting

Return Air Ducts

Return Fan

Ventilation

Supply Fan

Supply Air Ducts

TOTAL SYSTEM LOAD

64,858

4,517

39,275

HEATING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Heating Peak)

Outside Air: 33 °F

Heating Coil: 64 °F

Supply Fan: 105 °F

Room: 106 °F

Room: 70 °F

COOLING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Cooling Peak)

Outside Air: 90 / 68 °F

Cooling Coil: 77 / 62 °F

Supply Fan: 55 / 54 °F

Room: 58 / 55 °F

Room: 74 / 61 °F

CLIENT:

ADDRESS:

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

TITLE:

T24.5

PROJ. NO.	PROJ. ENGR.	SCALE	24X36:
			NTS
DRAWING NO.		REV.	
T 2 4 . 5			