MECHANICAL SPECIFICATIONS

PROVIDE EQUIPMENT INDICATED ON THE DRAWINGS, AND AS REQUIRED FOR A COMPLETE FUNCTIONING SYSTEM. DEFINITIONS: FURNISH MEANS TO SUPPLY AND DELIVER TO PROJECT SITE, READY FOR INSTALLATION. INSTALL MEANS TO PLACE IN POSITION AND MAKE CONNECTIONS FOR SERVICE OR USE. PROVIDE MEANS TO FURNISH AND INSTALL, COMPLETE AND READY FOR INTENDED USE. WARRANTY: PROVIDE LABOR AND MATERIALS TO REPAIR OR REPLACE DEFECTIVE PARTS AND MATERIALS AS REQUIRED FOR ONE YEAR AFTER SUBSTANTIAL COMPLETION OR OWNER ACCEPTANCE OF THE COMPLETED PROJECT. PROVIDE A SEPARATE LINE ITEM DEDUCT AMOUNT ON THE PROPOSAL FORM TO DELETE WARRANTY SERVICE, AT THE OWNER'S OPTION. 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 90º 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, BOLDED SYNTHETIC BEARINGS, WITH 3/8" SQUARE PLATED STEEL CONTROL SHAFT. LINKAGES SHALL BE CONCEALED IN THE FRAME. OPERATING SHAFT SHALL EXTEND BEYOND FRAME AND DUCT TO A LOCKING QUADRANT WITH ADJUSTABLE LEVER. MAXIMUM BLADE WIDTH SHALL NOT EXCEED 6".

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

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.
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.
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.
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 2019 CALIFORNIA BUILDING CODE.
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 ELECTICAL CONTRACTOR. COORDINATE LOCATIONS OF ALL DIFFUSERS, REGISTERS, AND GRILLES WITH ARCHITECTURAL PLANS, ELECTRICAL LIGHTING PLANS AND ARCHITECTURAL ELEVATIONS.
6. DETAILS FOR EQUIPMENT PADS, PLATFORMS, AND FLASHINGS SHALL BE AS INDICATED BY THE ARCHITECTURAL/STRUCTURAL/CIVIL DRAWINGS, UNLESS NOTED OTHERWISE.
7. ALL EQUIPMENT, DUCTS, PIPING, SUPPORTS, AND OTHER DEVICES OUTSIDE OF THE BUILDING OR EXPOSED TO WEATHER, SHALL BE COMPLETELY WEATHER-PROOFED.
8. OUTSIDE AIR INTAKES SHALL BE AT LEAST 10 FT. AWAY OR 3 FT. BELOW ANY VENT OR EXHAUST DISCHARGE.
9. ALL DUCT SIZES ARE CLEAR INSIDE DIMENSIONS. DUCTWORK SHALL BE CONSTRUCTED, ERECTED, INSULATED AND TESTED IN ACCORDANCE CHAPTER 6 OF THE 2019 CALIFORNIA MECHANICAL CODE.
10. ALL EXHAUST FANS SHALL BE EQUIPED WITH A BACK DRAFT DAMPER.
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 MECHANICIAL CODE. DUCTS NOT REQUIRING DAMPERS SHALL COMPLY WITH SECTION 714 & 717 OF THE 2019 CALIFORNIA BUILDING CODE.
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 2019 CALIFORNIA MECHANICAL CODE.
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.
14. INSTALL ALL LOW VOLTAGE HVAC CONTROL WIRE AND DEVICES PER PLAN. ALL WIRE SHALL BE IN CONDUIT PROVIDED AND INSTALLED BY THE ELECTICAL CONTRACTOR UNLESS NOTEDED OTHERWISE.
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.
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).
17. PROVIDE ONE YEAR WARRANTY ON ALL LABOR, PARTS AND MATERIALS.
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

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.

1) DUCTS FOR KITCHEN COOKTOPS OR RANGES SHALL BE SHOWN OF METAL WITH A SMOOTH INTERIOR.

a) DUCTS FOR DOMESTIC CLOTHES DRYERS SHALL BE INSTALLED IN ACCORDANCE WITH CMC 504.0.

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.

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.

LEGEND

AxB		DUCT WORK (WIDTHxDEPTH)
AxB		LINED DUCT WORK (WIDTHxDEPTH DIMENSIONS ARE FOR I.D.)
		SUPPLY DUCT, SECTION
		RETURN DUCT, SECTION
		EXHAUST DUCT, SECTION
R. OR D.		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
D.L.	DL	DOOR LOUVER
U.C.	UC	UNDER CUT DOOR
	VAV	VARIABLE AIR VOLUME
T		THERMOSTAT
S		DUCT SMOKE DECTECTOR
	T/B	TO BELOW
	F/B	FROM BELOW
	T/A	TO ABOVE
	F/A	FROM ABOVE

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 REPRESNENTATIVE 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.
4. 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.

MECHANICAL LIST OF DRAWINGS (LoD):

SHEET TAG	TITLE	SCALE
M 0.00	MECH GENERAL NOTES AND SPECIFICATIONS.	NTS
M 0.01	MECHANICAL CODE CHECKING.	NTS
M 1.01	MAIN FLOOR - MECHANICAL LAYOUT.	3/8"=1'-0"
M 1.02	ROOF PLAN - MECHANICAL LAYOUT.	3/8"=1'-0"
M 2.01	MECHANICAL EQUIPMENT SCHEDULE.	NTS
M 3.01	HEAT LOADS AND VENTILATION.	NTS
M 4.01	MECHANICAL EQUIPMENT DATA SHEETS.	NTS
M 5.01	MECHANICAL GENERAL DETAILS.	NTS

CLIENT:

ADDRESS:

155 NORTH JACKSON AVENUE
SAN JOSE, CALIFORNIA

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:
DOCTOR TRAN DENTAL OFFICE TENANT IMPROVEMENTS.

TITLE:
MECH GENERAL NOTES AND SPECIFICATIONS

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

DRAWING NO.: **M 0 . 0 0**

REV.:

CALIFORNIA MECHANICAL CODE CHECKING:

DUCT SIZING, THICKNESS & INSULATION

PLEASE REFER TO TABLE 506.2(1) FOR MINIMUM S HEET 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 (0.5m^2) need not exceed R-2; those 5 square feet (0.5m^2) 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 though 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.m^2)] 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 ⅛ 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	¾
21 – 40	1
41 – 90	1 ¼
91 – 125	1 ½
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 ¼ of an inch (6.4 mm) openings, and shall have not more than ½ 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 ¼ 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 abut ting public way, sidewalk, street, alley, or driveway.

MECHANICAL SCOPE OF WORK:

1- ROOFTOP UNIT AND ALL RELATED SUPPLY, RETURN DUCTS AND SUPPLY AND RETURN AIR OUTLETS TO REMAIN THE SAME.

2- EXHAUST FAN FROM BATH 1 AND 2 TO REMAIN THE SAME.

3- KITCHENETTE EXHAUST FAN TO BE ADDED.

4- FLUE GAS FROM DRYER TO BE ADDED WITH A MAXIMUM LENGTH OF 12 FEET AND 2 ELBOWS.

SCHEDULE FOR DENTAL EQUIPMENT / TOOLS:

1- WATER BOTTLES WILL BE USED, NO NEED FOR WATER PLUMBING, NO NEED FOR BACKFLOW PREVENTER, WATER FILTRATION SYSTEM

2- AIRTECH, AIRSTAR 40 ULTRA AIR COMPRESSOR, 220 V, 20 A, 3-5 USERS. DIMENSIONS: 33.25"H x 35.5" W x 22.5" D.

3- AIRTECH, VACSTAR 80H DUAL VACUUM PUMP, WITH HYDROMISER. REQUIRES 2 x 220 V, 20 A FOR EACH PUMP, OR 1 x 220 V, 40 A SINGLE OHASE WITH 10 AWG WIRE. DIMENTIONS: 25"H x 28"W x 16"D. 5 to 7 USERS.

4- REMOTE WATER CONTROL VALVE WITH FILTER AND STEP DOWN TRANSFORMER OF 120 V TO 24 V TO REMOTELY CONTROL THE WATER FLOW TO VACUUM PUMPS.

5- AIRTECH CP-4 CONTROL PANEL TO REMOTELY CONTROL 1x AIR, 1 x H2O AND 2 x VAC, 24 LOW VOLTAGE SWITCHES WITH LIGHT.

6- SOLMETEX, NXT HG5 AMALGAM SEPARATOR
(1-10) CHAIRS (DROPSHIP)

GAS CLOTHES DRYER:

502.1 Exhaust Opening Protection. Exhaust openings terminating to the outdoors shall be covered with a corrosion-resistant screen having not less than ¼ of an inch (6.4 mm) openings, and shall have not more than ½ of an inch (12.7 mm) openings.
Exception: Clothes dryers.

504.4 Clothes Dryers. A clothes dryer exhaust duct shall not be connected to a vent connector, gas vent, chimney, and shall not terminate into a crawl space, attic, or other concealed space. Exhaust ducts shall not be assembled with screws or other fastening means that extend into the duct and that are capable of catching lint, and that reduce the efficiency of the exhaust system.

504.4.1 Provisions for Makeup Air. Make up air shall be provided in accordance with the following:

(1) Makeup air shall be provided for Type 1 clothes dryers in accordance with the manufacturer's instructions. [NFPA 54: 10.4.3.1] Where a closet is designed for the installation of a clothes dryer, an opening of not less than 100 square inches (0.065 m^2) for makeup air shall be provided in the door or by other approved means.

(2) Provision for makeup air shall be provided for Type 2 clothes dryers, with a free area of not less than 1 square inch (0.0006 m^2) for each 1000 British thermal units per hour (Btu/g)(0.293 kW) total input rating of the dryer(s) installed [NFPA 54:10.4.3.2].

504.4.2.1 Length Limitation
Unless otherwise permitted or required by the dryer manufacturer's instructions and approved by the Authority Having Jurisdiction, domestic dryer moisture exhaust ducts shall not exceed a total combined horizontal and vertical length of 14 feet (4267 mm), including two 90 degree (1.57 rad) elbows. A length of 2 feet (610 mm) shall be deducted for each 90 degree (1.57 rad) elbow in excess of two

504.4.3.1 Exhaust Ducts for Type 2 Clothes Dryers. Exhaust ducts for Type 2 clothes dryers shall comply with the following:

(1) Exhaust ducts for Type 2 clothes dryers shall comply with Section 504.4. [NFPA 54:10.4.5.1]

(2) Exhaust ducts for Type 2 clothes dryers shall be constructed of sheet metal or other noncombustible material. Such ducts shall be equivalent in strength and corrosion resistance to ducts 0.0195 of an inch (0.4953 mm) thick. [NFPA 54:10.4.5.2]

(3) Type 2 clothes dryers shall be equipped or installed with lint-controling means. [NFPA 54:10.4.5.3]

(4) Exhaust ducts for Type 2 clothes dryers shall be installed with a clearance of not less than 6 inches (152 mm) from adjacent combustible material. Where exhaust ducts for Type 2 clothes dryers are installed with reduced clearances, the adjacent combustible material shall be protected in accordance with Table 303.10.1. [NFPA 54:10.4.5.4]

(5) Where ducts pass through walls, floors, or partitions, the space around the duct shall be sealed with noncombustible material. [NFPA 54:10.4.5.4]

CLIENT:

ADDRESS:
155 NORTH JACKSON AVENUE
SAN JOSE, CALIFORNIA

NOTES:

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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:
DOCTOR TRAN DENTAL OFFICE TENANT IMPROVEMENTS.

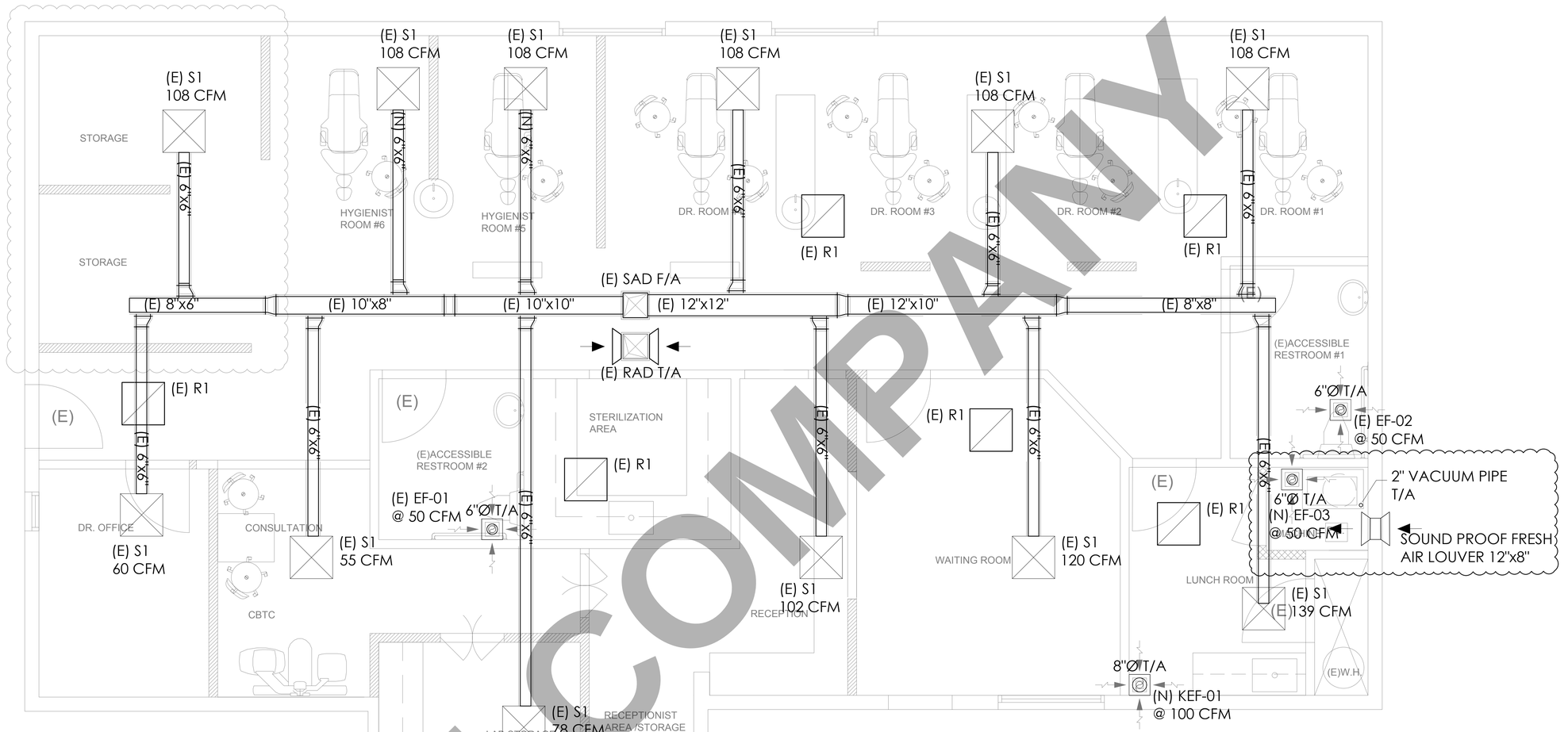
TITLE:
MECHANICAL CODE CHECKING.

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

DRAWING NO.
M0.01

REV.

ALL AIR OUTLETS LOCATION AND DUCTING TO REMAIN THE SAME



4"Ø DRYER
VENT T/A

MAXIMUM LENGTH TO BE 12 FEET
WITH 2 ELBOWS.

5.1.3.7.7 Medical-Surgical Vacuum Exhaust.
5.1.3.7.7.1
The medical-surgical vacuum pumps shall exhaust in a manner and location that minimizes the hazards of noise and contamination to the facility and its environment.
5.1.3.7.7.2
The exhaust shall be located as follows:
· (1)Outdoors
· (2)At least 7.5 m (25 ft) from any door, window, air intake, or other openings in buildings or places of public assembly
· (3)At a level different from air intakes
· (4)Where prevailing winds, adjacent buildings, topography, or other influences will not
divert the exhaust into occupied areas or prevent dispersion of the exhaust
5.1.3.7.7.3
The end of the exhaust shall be turned down and screened or otherwise be protected
against the entry of vermin, debris, or precipitation by screening fabricated or composed of a non-corroding material.
5.1.3.7.7.4
Vacuum exhaust shall be labeled in accordance with 5.1.11.1 with any method that would distinguish it as a vacuum exhaust.

GENERAL NOTES:

1. MECHANICAL CONTRACTOR TO COORDINATE ROUTING AND LOCATION OF MECHANICAL COMPONENTS AND EQUIPMENT WITH ALL OTHER TRADES AND EXISTING FIELD CONDITIONS PRIOR TO PERFORMING WORK.
2. CONTRACTOR TO CUT AND PATCH AS REQUIRED TO PERFORM THE WORK.
3. ACCESS DOORS ARE REQUIRED FOR ANY COMPONENT REQUIRING ACCESS ABOVE HARD LID CEILINGS. COORDINATE SIZE, LOCATION AND FINISH WITH ARCHITECT PRIOR TO PERFORMING WORK.
4. REFER TO THE DIAGRAMS THAT APPLY TO THIS SHEET WHICH PROVIDE GENERAL GUIDANCE FOR INSTALLATION THOUGH NOT ALL COMPONENTS AND ACCESSORIES MAY BE SHOWN.
5. 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.
6. COORDINATE AND CONFIRM BORDER, FRAME, FINISH, AND LOCATION WITH ARCHITECT PRIOR TO ORDERING.
7. ANY PENETRATIONS THROUGH WALL STUDS, FLOOR JOISTS, OR ROOF TO BE IN ACCORDANCE WITH THE LATEST ADOPTED BUILDING CODE.
8. DUCT DIMENSIONS SHOWN ARE CLEAR INSIDE DIMENSIONS.
9. CONTRACTOR TO CONFIRM ADEQUATE RETURN AIR PATH BACK TO MAIN AIR HANDLING UNIT.

CLIENT:

ADDRESS:

155 NORTH JACKSON AVENUE
SAN JOSE, CALIFORNIA

NOTES:

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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

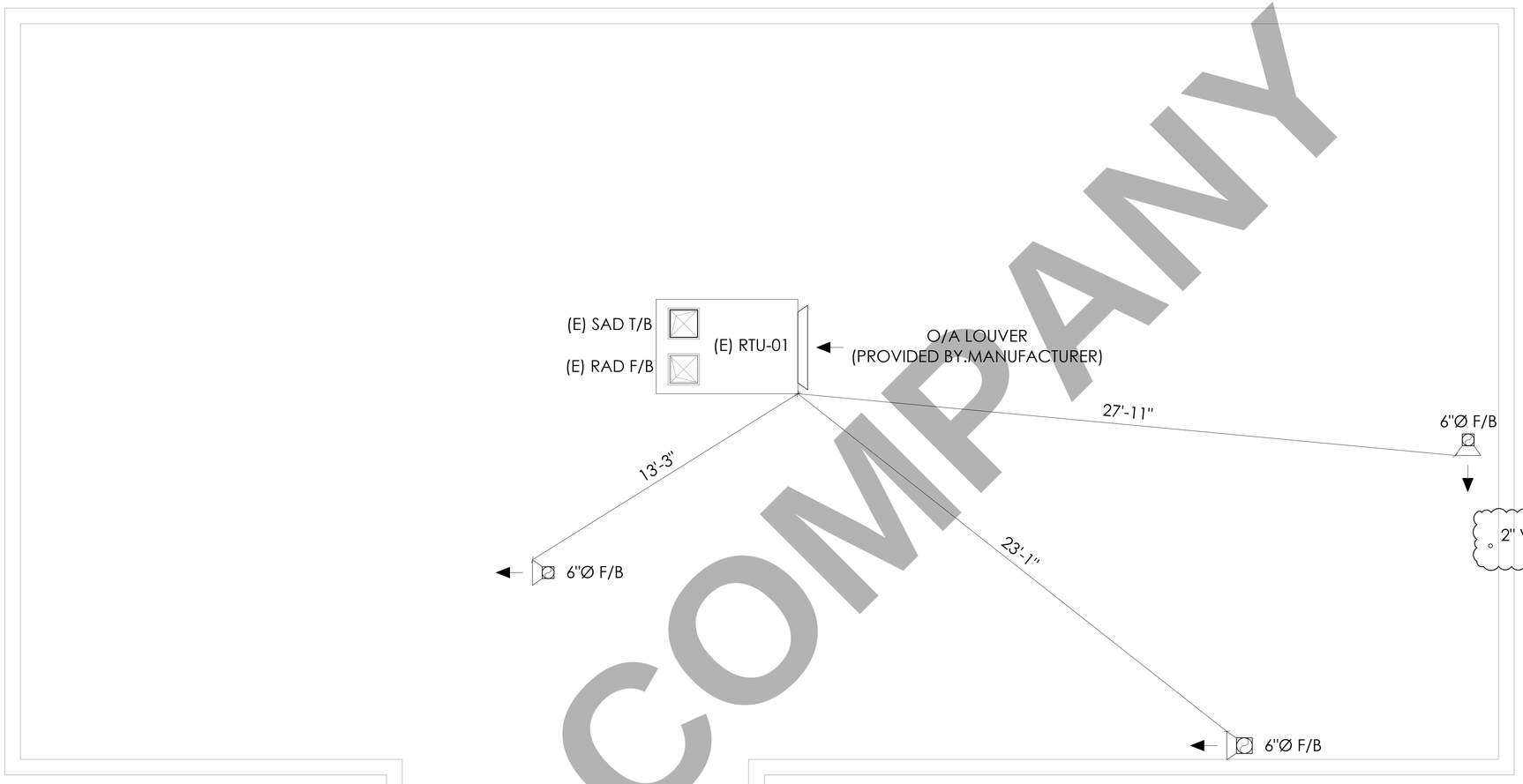
PROJECT:
DOCTOR TRAN DENTAL OFFICE TENANT IMPROVEMENTS.

TITLE:
MECH. LAYOUTS AND EQUIPMENT SCHEDULE.

PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36:
		3/8"=1'-0"

DRAWING NO.
M 1 . 0 1

REV.



ROOF PLAN

GENERAL NOTES:

1. MECHANICAL CONTRACTOR TO COORDINATE ROUTING AND LOCATION OF MECHANICAL COMPONENTS AND EQUIPMENT WITH ALL OTHER TRADES AND EXISTING FIELD CONDITIONS PRIOR TO PERFORMING WORK.
2. CONTRACTOR TO CUT AND PATCH AS REQUIRED TO PERFORM THE WORK.
3. ACCESS DOORS ARE REQUIRED FOR ANY COMPONENT REQUIRING ACCESS ABOVE HARD LID CEILINGS. COORDINATE SIZE, LOCATION AND FINISH WITH ARCHITECT PRIOR TO PERFORMING WORK.
4. REFER TO THE DIAGRAMS THAT APPLY TO THIS SHEET WHICH PROVIDE GENERAL GUIDANCE FOR INSTALLATION THOUGH NOT ALL COMPONENTS AND ACCESSORIES MAY BE SHOWN.
5. 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.
6. COORDINATE AND CONFIRM BORDER, FRAME, FINISH, AND LOCATION WITH ARCHITECT PRIOR TO ORDERING.
7. ANY PENETRATIONS THROUGH WALL STUDS, FLOOR JOISTS, OR ROOF TO BE IN ACCORDANCE WITH THE LATEST ADOPTED BUILDING CODE.
8. DUCT DIMENSIONS SHOWN ARE CLEAR INSIDE DIMENSIONS.
9. CONTRACTOR TO CONFIRM ADEQUATE RETURN AIR PATH BACK TO MAIN AIR HANDLING UNIT.

CLIENT:

ADDRESS:

155 NORTH JACKSON AVENUE
SAN JOSE, CALIFORNIA

NOTES:

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:
DOCTOR TRAN DENTAL OFFICE TENANT IMPROVEMENTS.

TITLE:
ROOF PLAN, MECHANICAL LAYOUT.

PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36:
		3/8"=1'-0"

DRAWING NO.
M 1 . 0 2

REV.

SCHEDULE No. 1

ROOF-TOP UNIT SCHEDULE

TAG	LOCATION / SERVE	MANUF.	MODEL	NOMINAL COOLING CAPACITY	SEER / EER	HEATING CAPACITY (MBH)			BLOWER DATA			ELECTRICAL DATA			ACCESSORIES
						INPUT	OUTPUT	EFF. %	SUPPLY	ESP	ECON. O/A %	MOCP	MCA	V/PH/Hz	
(E) RTU-01	ROOF / MAIN FLOOR	LENNOX	LRP16GX36-720VP	3.0 TONS	SEER 16.0 EER 12.0	72 MBH	58.4 MBH	81 %	1,200 CFM	250 Pa	52%	60	41.7	208/3/60	CHECK NOTES BELOW 1 TO 5

1. BELT DRIVE BOTTOM DISCHARGE.
2. PROVIDE 14"ROOF CURB, NON-FUSED DISCONNECT SWITCH.
3. PROVIDE HAIL GUARDS.
4. PROVIDE TEMPERATURE ECONOMIZER, BAROMETRIC RELIEF DAMPER AND WEATHER HOOD.
5. COMMERCIAL PROGRAMMABLE THERMOSTAT, 2-STAGE HEATING, 2-STAGE COOLING, 7-DAY PROGRAMMABLE.

SCHEDULE No. 2
FAN SCHEDULE

TAG	(E) EF-01,02, (N) EF-3	KEF-01
LOCATION	BATHROOMS, MECH. ROOM	LUNCH ROOM
SELECTED FLOW (CFM)	50	100
ESP (IN. W.C)	0.25"	0.25"
ELECTRICAL (V / PH / HZ)	120 / 1 / 60	120 / 1 / 60
POWER / Amps	25 W	25 W
MOTOR SPEED (RPS)	MULTI SPEED	MULTI SPEED
FAN TYPE	CEILING FANS	CEILING FANS
MANUFACTURER	PANASONIC	PANASONIC
MODEL	WHISPER FV-0511VKS2	WHISPER FV-0511VKS2

NOTES:

1. PROVIDE UL LISTING.
2. PROVIDE ENERGY STAR COMPLIANCE.
3. INTERLOCK WITH WALL SWITCH.
4. PROVIDE MOTOR WITH THERMAL OVERLOADS.

SCHEDULE No. 3
AIR OUTLETS

TAG	DESCRIPTION	MANUFACTURER	MODEL	MOUNTING
S1	SUPPLY DIFFUSER	TITUS	24in. x 24in.	Duct Mounted
R1	RETURN DIFFUSER	TITUS	24in. x 24in.	-

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.

CLIENT:

ADDRESS:

155 NORTH JACKSON AVENUE
SAN JOSE, CALIFORNIA

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:
DOCTOR TRAN DENTAL OFFICE TENANT IMPROVEMENTS.

TITLE:
MECHANICAL EQUIPMENT SCHEDULE.

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

DRAWING NO.
M 2 . 0 1

REV.

Air System Sizing Summary for (E) RTU-01

Project Name: 155 N Dental
Prepared by: MJ
09/23/2022
06:51PM

Air System Information

Air System Name	(E) RTU-01	Number of zones	1
Equipment Class	PKG ROOF	Floor Area	1839.0 ft²
Air System Type	SZCAV	Location	Los Angeles LAX, California

Sizing Calculation Information

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

Central Cooling Coil Sizing Data

Total coil load	2.8	Tons	Load occurs at	Aug 1400	
Total coil load	34.0	MBH	OA DB / WB	84.7 / 63.9	°F
Sensible coil load	34.0	MBH	Entering DB / WB	79.4 / 63.3	°F
Coil CFM at Aug 1400	1638	CFM	Leaving DB / WB	60.1 / 56.2	°F
Max block CFM	1638	CFM	Coil ADP	58.0	°F
Sum of peak zone CFM	1638	CFM	Bypass Factor	0.100	
Sensible heat ratio	1.000		Resulting RH	48	%
CFM/Ton	578.6		Design supply temp.	58.0	°F
ft²/Ton	649.4		Zone T-stat Check	1 of 1	OK
BTU/(hr·ft²)	18.5		Max zone temperature deviation	0.0	°F
Water flow @ 10.0 °F rise	N/A				

Central Heating Coil Sizing Data

Max coil load	28.2	MBH	Load occurs at	Des Htg	
Coil CFM at Des Htg	1638	CFM	BTU/(hr·ft²)	15.3	
Max coil CFM	1638	CFM	Ent. DB / Lvg DB	59.6 / 75.6	°F
Water flow @ 20.0 °F drop	N/A				

Supply Fan Sizing Data

Actual max CFM	1638	CFM	Fan motor BHP	0.00	BHP
Standard CFM	1632	CFM	Fan motor kW	0.00	kW
Actual max CFM/ft²	0.89	CFM/ft²	Fan static	0.00	in wg

Outdoor Ventilation Air Data

Design airflow CFM	625	CFM	CFM/person	19.53	CFM/person
CFM/ft²	0.34	CFM/ft²			

Zone Sizing Summary for (E) RTU-01

Project Name: 155 N Dental
Prepared by: MJ
09/23/2022
06:51PM

Air System Information

Air System Name	(E) RTU-01	Number of zones	1
Equipment Class	PKG ROOF	Floor Area	1839.0 ft²
Air System Type	SZCAV	Location	Los Angeles LAX, California

Sizing Calculation Information

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

Zone Terminal Sizing Data

Zone Name	Design Supply Airflow (CFM)	Minimum Supply Airflow (CFM)	Zone CFM/ft²	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	1638	1638	0.89	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	28.8	Aug 1400	10.2	1839.0

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							
Hygienist Room Area	1	15.3	Jul 1500	838	5.6	1040.0	0.81
Dr. Office	1	1.8	Sep 1000	96	0.9	86.0	1.12
Consultation	1	1.5	Oct 1300	84	0.4	117.0	0.72
Lab Storage	1	2.5	Sep 1500	134	0.9	100.0	1.34
Reception	1	1.3	Oct 1300	72	0.5	125.0	0.58
Sterilization Area	1	0.8	Jun 1300	42	0.1	71.0	0.59
Waiting Room	1	3.0	Oct 1300	165	0.8	179.0	0.92
Lunch Room	1	3.8	Sep 1100	207	1.1	121.0	1.71

Ventilation Sizing Summary for (E) RTU-01

Project Name: 155 N Dental
Prepared by: MJ
09/23/2022
06:51PM

1. Summary

Ventilation Sizing Method: Sum of Space OA Airflows
Design Ventilation Airflow Rate: 625 CFM

2. Space Ventilation Analysis

Zone Name / Space Name	Mult.	Floor Area (ft²)	Maximum Occupants	Maximum Supply Air (CFM)	Required Outdoor Air (CFM/person)	Required Outdoor Air (CFM/ft²)	Required Outdoor Air (CFM)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (CFM)
Zone 1									
Hygienist Room Area	1	1040.0	20.0	838.2	0.00	0.00	385.0	0.0	385.0
Dr. Office	1	86.0	1.0	96.3	0.00	0.00	10.0	0.0	10.0
Consultation	1	117.0	1.0	83.8	0.00	0.00	12.0	0.0	12.0
Lab Storage	1	100.0	3.0	134.3	0.00	0.00	48.0	0.0	48.0
Reception	1	125.0	0.0	72.1	0.00	0.00	18.0	0.0	18.0
Sterilization Area	1	71.0	1.0	41.8	0.00	0.00	24.0	0.0	24.0
Waiting Room	1	179.0	4.0	165.3	0.00	0.00	78.0	0.0	78.0
Lunch Room	1	121.0	2.0	206.6	0.00	0.00	50.0	0.0	50.0
Totals (incl. Space Multipliers)				**1638.3**					**625.0**

2019 CMC - TABLE 702.1: VENTILATION RATES

Space Name	AREA (FT2)	CFM/FT	CFM-A	OCC. 1000 FT2	CFM/PERS.	# OF PERS.	CFM-B	TOTAL CFM
Hygienist Rooms Area	1,040	0.12	125	50	5	52	260	**385**
Dr. Office	86	0.06	5	5	5	1	5	**10**
Consultation	117	0.06	7	5	5	1	5	**12**
Lab Storage	100	0.18	18	25	10	3	30	**48**
Reception	125	0.06	8	10	5	2	10	**18**
Sterilization Area	71	0.00	0	0	0	0	0	**24**
Waiting Room	179	0.06	11	50	7.5	9	68	**78**
Lunch Room	121	0.12	15	50	5	7	35	**50**
TOTAL =	**1,839**	**-**	**188**	**195**	**-**	**75**	**413**	**624**

STERILIZATION ROOM
O/A ACH = 2
AREA = 71 FT2
VOLUME = 710 FT3
MIN. O/A RATE = 24 CFM

AIR BALANCING:

THE ROOFTOP UNIT WILL PROVIDE A MAXIMUM AIR FLOW OF 650 CFM FROM OUTSIDE TO COVER THE VENTILATION RATES NEEDED.

EXHAUST FAN EF-01, EF-02 , EF-03 & KEF-01 TO EXHAUST 250 CFM.

AIR BALANCE: 650 CFM - 250 CFM = 400 CFM.

A MOTORIZED DAMPER WILL BE ADDED ON THE RETURN DUCT TO REMOVE THE ADDITIONAL AIR FLOW TO KEEP THE BUILDING SLIGHTLY POSITIVE.

CLIENT:

ADDRESS:

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:
DOCTOR TRAN DENTAL OFFICE TENANT IMPROVEMENTS.

TITLE:
MECHANICAL HEAT LOADS AND VENTLATION.

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

DRAWING NO.
M 3 . 0 1

REV.

PACKAGED GAS / ELECTRIC
LRP16GE / LRP16GX

LENNOX

Residential - Two-Stage Compressor - Variable Speed Blower - 60Hz

RESIDENTIAL PRODUCT SPECIFICATIONS

Bulletin No. 210773
September 2019
Supersedes October 2018

SEER - 16.00
AFUE - 81%
2 to 5 Tons
Cooling Capacity - 23,800 to 57,000 Btuh
Input Gas Heating Capacity - 72,000 to 126,000 Btuh

MODEL NUMBER IDENTIFICATION

L RP 16 GE 36 - 090 V P - 1 - A

- Brand: L = Lennox
- Product Type: RP = Residential Packaged Unit
- Nominal SEER: 16 = 16 SEER
- Unit Type: GE = Gas/Electric Unit; GX = Low NOx Gas/Electric Unit
- Nominal Cooling Capacity: 24 = 2 tons; 36 = 3 tons; 48 = 4 tons; 60 = 5 tons
- Nominal Heating Capacity Input: 072 = 72,000 Btuh; 090 = 90,000 Btuh; 108 = 108,000 Btuh; 126 = 126,000 Btuh
- Blower: V = Variable Speed Blower Motor
- Voltage: P = 208/230V-1phase-60hz
- Major Revision Sequence: 1 = 1st Generation
- Minor Revision Sequence: A = 1st Generation

SPECIFICATIONS

General Data	Model No.	LRP16GE24	LRP16GE36	LRP16GE48	LRP16GE60
	Model No. - Low NOx	LRP16XE24	LRP16GX36	LRP16GX48	LRP16GX60
	Nominal Tonnage	2	3	4	5
Gas Heat Available - See Page 8		-72	-72, -90	-108	-126
Cooling Performance	Total cooling capacity - Btuh	23,800	35,400	47,500	57,000
	Total Unit Watts	1900	2950	3960	4750
	[1] SEER (Btuh/Watt)	16.0	16.0	16.0	16.0
	EER (Btuh/Watt)	12.5	12.0	12.0	12.0
	[2] Sound Rating Number (dB)	74	75	75	74
Refrigerant	Type	R-410A	R-410A	R-410A	R-410A
	Charge	5 lbs. 7 oz.	5 lbs. 12 oz.	6 lbs. 10 oz.	9 lbs. 1 oz.
Condensate drain size (fpt) - in.		3/4	3/4	3/4	3/4
Outdoor Coil	Net Face Area - sq. ft.	14.6	16.4	19.5	19.1
	Tube Dia. - in. and No. of Rows	5/16 – 1	5/16 – 1	5/16 – 1	5/16 – 2
	Fins per inch	26	26	26	22
Outdoor Coil Fan	Motor horsepower	1/6	1/6	1/4	1/4
	Dia. - in. and No. of blades	22 – 3	22 – 3	24 – 3	24 – 3
Indoor Coil	Net Face Area - sq. ft.	4.4	4.4	6.8	6.8
	Tube Dia. - in. and No. of rows	3/8 – 3	3/8 – 3	3/8 – 3	3/8 – 3
	Fins per in.	15	15	15	15
Indoor Blower	Blower wheel size dia. x width - in.	10 x 6	10 x 8	10 x 10	12 x 9
	Motor horsepower	1/2	1/2	3/4	1
Net weight of basic unit - lbs.		375	384	486	522
Shipping weight of basic unit (1 Pkg.) - lbs.		445	456	528	595
Electrical characteristics (60 hz)		208/230V-1ph-60Hz			

ELECTRICAL DATA

Line voltage data - 60hz 1 phase		208/230V	208/230V	208/230V	208/230V
[3] Maximum overcurrent protection (amps)		25	35	50	60
[4] Minimum Circuit Ampacity		17.0	22.7	31.2	41.7
Compressor	Rated load amps	11.7	15.3	21.2	28.8
	Locked rotor amps	58.3	83.0	104.0	152.9
Outdoor Coil Fan Motor	Full load amps	1.0	1.0	1.7	1.7
	Locked rotor amps	1.9	1.9	3.2	3.2
Indoor Blower Motor	Full load amps	1.1	2.3	3.1	4.0
	Locked rotor amps	4.3	4.3	6.8	9.1

NOTE - Extremes of operating range are plus and minus 10% of line voltage.
[1] AHRI Certified to AHRI Standard 210/240; 95°F outdoor air temperature, 80°F db/67°F wb entering evaporator air.
[2] Sound Rating Number rated in accordance with test conditions included in AHRI Standard 270.
[3] HACR type circuit breaker or fuse.
[4] Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

SPECIFICATIONS - GAS HEAT

General Data	Model No.	LRP16GE24 LRP16GX24 LRP16GE36 LRP16GX36	LRP16GE36 LRP16GX36	LRP16GE48 LRP16GX48	LRP16GE60 LRP16GX60
	Heating Input	-072	-090	-108	-126
Heating Capacity Btuh	First Stage - Input	54,000	67,500	81,000	94,500
	Output	43,500	54,500	65,500	76,500
	Second Stage - Input	72,000	90,000	108,000	126,000
	Output	58,000	73,000	88,000	102,000
[1] AFUE		81%	81%	81%	81%
Temperature Rise - °F	First Stage	35 - 45	35 - 45	45 - 55	45 - 55
	Second Stage	45 - 55	45 - 55	50 - 60	50 - 60
Gas Supply Connection (FPT) - in.		1/2	1/2	1/2	1/2
Min. Recommended Gas Supply Pressure		5 in. w.g. Natural Gas; 11 in. w.g. LPG/Propane			

OPTIONAL ACCESSORIES - ORDER SEPARATELY

LPG/Propane Conversion Kit	15C55	15C55	15C55	15C55

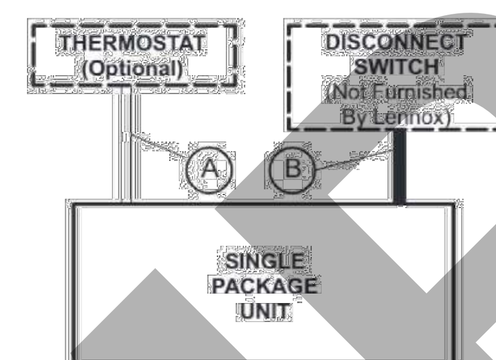
[1] Annual Fuel Utilization Efficiency based on U.S. DOE test procedures and FTC labeling regulations.

HIGH ALTITUDE DERATE

Units may be installed at altitudes up to 4500 feet above sea level without any modification At altitudes above 4500 feet, units must be derated 4% for every 1000 feet above sea level. Example - At an altitude of 6000 feet the unit would require a derate of 24%.

NOTE - This is the only permissible derate for these units.

FIELD WIRING



A – Seven Wire Low Voltage (Electronic)

B – Two Wire Power (See Electrical Data Table)

– Field Wiring Not Furnished –

Panasonic

WhisperGreen® Select™ Connected Ventilation Fans

WhisperGreen Select

Fan Only Models: FV-0511VK2, FV-0511VKS2, FV-1115VK2

Fan/Light Models: FV-0511VKL2, FV-0511VKSL2, FV-1115VKL2

HEALTHY AIR, HEALTHY HOME
True Flow ratings at **0.375"** static pressure provide powerful airflow to assure code compliant, healthy homes.

KEY FEATURES

- Precision, whole-house ventilation solution ideal for use in the bathroom, laundry room, sun room, basement or garage
- Helps assure good indoor air quality for a healthy home and healthy living
- Operates as a standalone fan or as part of the Cosmos™ Healthy Home System through two-way wireless communication
- Customizable, connected fan and fan/dimmable LED light combinations
- Pick-A-Flow airflow selector (50-80-110 or 110-130-150 CFM models) combined with SmartFlow™ technology simplifies the selection process and ensures optimum performance to meet code and reduce callbacks
- Elegant grille design complements the aesthetics of any room
- Single-hinged Flex-Z Fast™ bracket provides flexible, fast and easy installation
- Can be used to comply with ASHRAE 62.2, LEED, CALGreen, IAP, California Title 24, WA Ventilation Code and ENERGY STAR for Homes 3.0

ADDITIONAL BENEFITS

- Ideal IAQ solution for green builders
- Environmentally friendly 26 gauge housing using Zinc-Aluminum-Magnesium (ZAM) coating
- Integrated 4" or 6" dual duct adapter enhances installation options / Fits in 2 x 8 construction
- Built-in metal flange provides blocking for penetrations through drywall as an air barrier, and assists with the decrease in leakage in the building envelope during blower door testing
- Suitable for installation in ceilings insulated up to R60
- Dual access junction box simplifies wiring in tight spaces
- UL Listed for tub/shower enclosure when GFCI protected
- UL Listed for use with the Panasonic Ceiling Radiation Damper (model # PC-RD05C5)
- 6-year warranty on ECM motor, 5 years on LED, 3 years on parts

*Industry research indicates static pressure in typical installations ranges from 0.20" to 0.375".

reinventingventing.com

Most Efficient 2021 ENERGY STAR www.energystar.gov

One Connected Fan. Endless Possibilities.

The customizable IAQ solution for virtually any space

For over 25 years, Panasonic has developed innovative solutions that promote better indoor air quality and healthy home building. On our mission to help you build healthy homes, WhisperGreen® Select™ offers a powerful connected IAQ solution that delivers healthy indoor air quality for healthy living in any space. Now even more versatile, it operates as a standalone fan or as part of the Cosmos™ Healthy Home System through two-way wireless communication.

WHISPERGREEN SELECT™ IS AS EASY AS 1-2-3!

Step 1: Select a Base Fan Model

Select a base model to start building the perfect IAQ solution that satisfies your ventilation design requirements.

Fan	Fan/Light
FV-0511VK2: 50 to 110 CFM single speed	FV-0511VKL2: 50 to 110 CFM single speed + LED Light
FV-0511VKS2: 30 to 110 CFM pre-installed multi-speed	FV-0511VKSL2: 30 to 110 CFM pre-installed multi-speed + LED Light
FV-1115VK2: 50 to 150 CFM single speed	FV-1115VKL2: 50 to 150 CFM single speed + LED Light

Pick-A-Flow™ Airflow Technology
Pick-A-Flow™ Airflow Selector – one fan, you choose the CFM. Provides the unique ability to select your required airflow (50-80-110 and 110-130-150 CFM models) with the simple flip of a switch.

Step 2: Select Value Added Features

WhisperGreen Select™ offers a unique set of three patented modules that allow you to further customize your fan:

Multi-Speed with Time Delay (FV-VS15VK1) – 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, then elevates to a maximum level of operation when the wall switch is turned on, or when the SmartAction® 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.

SmartAction® Motion Sensor (FV-MSVK1) – Automatically activates when someone enters the room. Once the settings have been applied, the fan becomes truly automatic, making it ideal for people with disabilities and assisted living environments such as nursing homes and retirement communities. This module also activates an automatic 20-minute delay off timer for the fan.

Condensation Sensor (FV-CSVK1) – Helps control bathroom condensation to prevent mold and mildew. Advanced 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 (30% to 80%, in 10% increments) 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 an automatic 20-minute delay off timer for the fan.

Multi-Speed with Time Delay (FV-VS15VK1) | SmartAction® Motion Sensor (FV-MSVK1) | Condensation Sensor (FV-CSVK1)

Step 3: Install Your Ideal Fan with the New! Flex-Z Fast™ Installation System

Single-hinged articulating joints to easily position bracket in between the joist and/or through ceiling hole. → Easily position bracket in between the joist or ceiling hole. → Extend bracket to desired length.

Ingeniously designed installation bracket provides flexible, fast and easy installation for all your new construction or renovation projects.

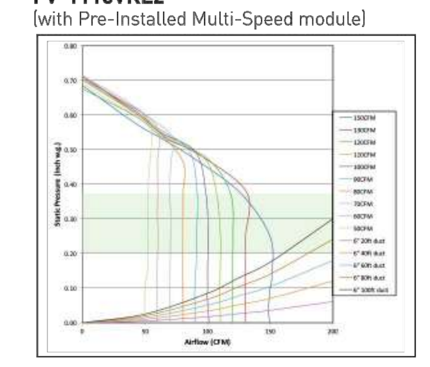
Superior Installed Performance up to 0.375" and Certified Quiet Operation at 0.25" Static Pressure

Although ASHRAE, ENERGY STAR®, LEED for Homes, and HVI have set the industry standard for performance measurement at 0.1" and 0.25", WhisperGreen® Select™ fans provide powerful CFM output at 0.375" that is more representative of typical installations. Sones have also been certified at 0.25" to provide a more realistic, installed value, so they are quiet under pressure and after installation.

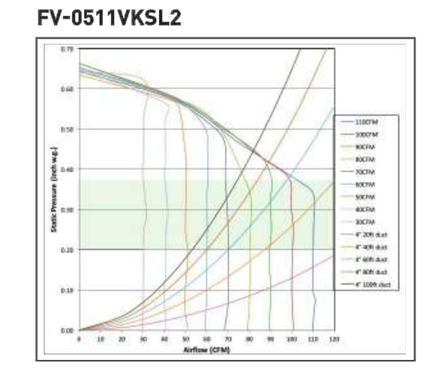
WhisperGreen Select

HEALTHY AIR, HEALTHY HOME
True Flow ratings at **0.375"** static pressure provide powerful airflow to assure code compliant, healthy homes.

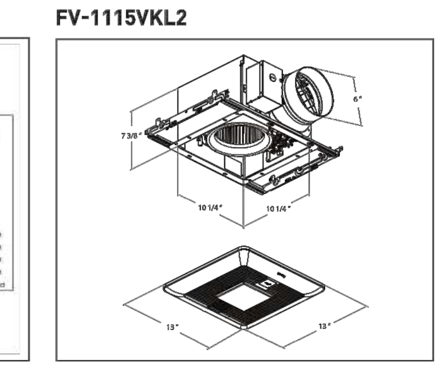
FV-1115VKL2 (with Pre-Installed Multi-Speed module)



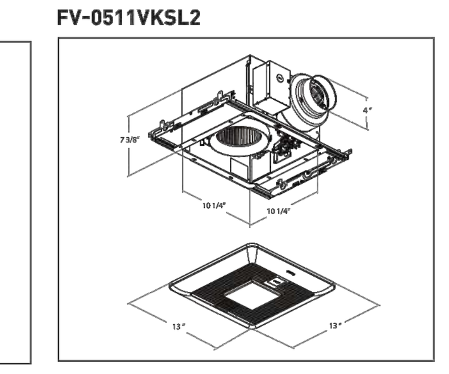
FV-0511VKSL2



FV-1115VKL2



FV-0511VKSL2



WhisperGreen® Select™ (Fan/LED Light) – Base Fan with LED Light – FV-0511VKL2 / FV-1115VKL2

Characteristics (HVI tested data for 0.1" S.P.)

Characteristics	FV-0511VKL2									FV-1115VKL2													
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
Air Volume (CFM)	110	110	103	80	80	78	50	50	50	150	150	127	130	130	131	110	110	107	110	110	103	100	101
Noise (sones)	0.4	0.8	-	<0.3	0.5	-	<0.3	0.4	-	0.4	0.8	-	<0.3	0.5	-	<0.3	0.3	-	0.4	0.8	-	<0.3	0.8
Power Consumption (watts)	10.5	15.8	19.4	5.3	9.9	13.8	3.2	6.2	9.9	14.9	22.5	23.8	10.4	17.9	25.4	7.5	13.4	18.8	10.5	15.8	19.4	8.2	13.6
Energy Efficiency (CFM/Watt)	10.5	6.9	5.2	15.3	8.2	5.6	15.7	8.1	5.1	10.1	6.7	5.3	12.5	7.2	5.1	14.6	8.2	5.7	10.5	6.9	5.2	12.2	7.4
Speed (RPM)	958	1203	1375	811	1127	1341	730	1066	1281	722	951	1105	682	932	1113	648	916	1108	958	1203	1375	908	1194
Amps (Current)	0.11	0.16	0.19	0.06	0.10	0.14	0.04	0.07	1066	0.15	0.22	0.23	0.11	0.18	0.25	0.08	0.14	0.19	0.11	0.16	0.19	0.09	0.14

WhisperGreen® Select™ (Fan/LED Light) – Base Fan with LED Light and Pre-Installed Multi-Speed – FV-0511VKSL2

Characteristics	FV-0511VKSL2																					
Static Pressure in inches w.g.	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)	99	90	90	90	80	80	78	70	70	69	60	60	60	50	50	50	40	41	40	30	30	30
Noise (sones)	-	<0.3	0.6	-	<0.3	0.5	-	<0.3	0.5	-	<0.3	0.4	-	<0.3	0.4	-	<0.3	0.4	-	<0.3	0.4	-
Power Consumption (watts)	18.0	6.7	11.6	15.9	5.3	9.9	13.8	4.6	8.7	12.3	3.7	7.2	10.4	3.2	6.2	9.9	2.7	5.5	8.1	2.5	4.8	7.0
Energy Efficiency (CFM/Watt)	5.5	13.5	7.8	5.7	15.3	8.2	5.6	15.8	8.4	5.8	16.2	8.4	5.8	15.7	8.1	5.1	14.8	7.4	4.9	12.0	6.3	4.3
Speed (RPM)	1372	868	1160	1357	811	1127	1341	785	1118	1321	750	1082	1282	730	1066	1281	710	1062	1275	720	1067	1272
Amps (Current)	0.18	0.08	0.12	0.16	0.06	0.10	0.14	0.06	0.10	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

WhisperGreen® Select™ (Fan/LED Light) – Base Fan with LED Light and Multi-speed Plug 'N Play Module – FV-0511VKL2 + FV-VS15VK1

Characteristics	FV-0511VKL2 + FV-VS15VK1																										
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
Air Volume (CFM)	110	110	103	100	101	99	90	90	90	80	80	78	70	70	69	60	60	60	50	50	50	40	41	40	30	30	30
Noise (sones)	0.4	0.8	-	<0.3	0.8	-	<0.3	0.6	-	<0.3	0.5	-	<0.3	0.5	-	<0.3	0.4	-	<0.3	0.4	-	<0.3	0.4	-	<0.3	0.4	-
Power Consumption (watts)	10.5	15.8	19.4	8.2	13.6	18.0	6.7	11.6	15.9	5.3	9.9	13.8	4.6	8.7	12.3	3.7	7.2	10.4	3.2	6.2	9.9	2.7	5.5	8.1	2.5	4.8	7.0
Energy Efficiency (CFM/Watt)	10.5	6.9	5.2	12.2	7.4	5.5	13.5	7.8	5.7	15.3	8.2	5.6	15.8	8.4	5.8	16.2	8.4	5.8	15.7	8.1	5.1	14.8	7.4	4.9	12.0	6.3	4.3
Speed (RPM)	958	1203	1375	908	1194	1372	868	1160	1357	811	1127	1341	785	1118	1321	750	1082	1282	730	1066	1281	710	1062	1275	720	1067	1272
Amps (Current)	0.11	0.16	0.19	0.09	0.14	0.18	0.08	0.12	0.16	0.06	0.10	0.14	0.06	0.10	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

Specifications		FV-0511VKL2	FV-1115VKL2	FV-0511VKSL2	FV-0511VKL2 + FV-VS15VK1
Characteristics	MAX. Amps (Current)	0.19	0.23	0.19	0.19
	Power Rating (V/Hz)	120/60	120/60	120/60	120/60
Specifications	Motor Type	ECM	ECM	ECM	DC
	Type of Motor Bearing	Ball	Ball	Ball	Ball
	Thermal Fuse Protection	Yes	Yes	Yes	Yes
	Blower Wheel Type	Sirocco	Sirocco	Sirocco	Sirocco
	ENERGY STAR Qualified	Yes	Yes	Yes	Yes
Installation	Duct Diameter (Inches)	4 & 6	6	4 & 6	4" or 6"
	Mounting Opening (Inches sq.)	10-1/2	10-1/2	10-1/2	10-1/2"
	Grille Size (Inches sq.)	13	13	13	13"
Light Specifications	Lamp Watts	10	10	10W	10.0
	Lumens (lm)	700lm per lamp*	700lm per lamp*	700lm per lamp*	700
	Lumens Per Watt (LPW)	70LPW	70LPW*	70LPW*	70
	Color Rendering Index	90	90	90	90
	Color Temperature (Kelvin)	3,000K	3,000K	3,000K	3,000
	Rated Life (hours)	50,000	50,000	50,000	50,000
	Lamp Model #	N/A	N/A	N/A	N/A
	Type of Lamp Socket	LED Chip	LED chip	LED chip	LED chip
Night Light Specs	Night Light Watts	0.2	0.2	0.2	0.2
Shipping	Gross Weight (lbs)	12.4	12.55	12.5	12.5
Approved Code/ Standard/ Regulation	UL tub/Shower Enclosure	Yes	Yes	Yes	Yes
	Washington VIAQ Code	Yes	Yes	Yes	Yes
	Wall installation	No	No	No	No
	California Title 24 Compliant	Yes	Yes	Yes	Yes
	Mfg in ISO 9001 Certified Facility	Yes	Yes	Yes	Yes

*Industry research indicates static pressure in typical installations ranges from 0.20" to 0.375".

c UL us CALGreen HVI CERTIFIED

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Panasonic Life Solutions Company of America
IAQ Division
Two Riverfront Plaza
Newark, NJ 07102
us.panasonic.com/ventfans

For Order Information
PHONE: 866-292-7299
FAX: 888-553-0723
ventfans@us.panasonic.com

Design and specifications subject to change without notice.

IAQ20170SS-r2

CLIENT:

ADDRESS:
155 NORTH JACKSON AVENUE
SAN JOSE, CALIFORNIA

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:
DOCTOR TRAN DENTAL OFFICE TENANT IMPROVEMENTS.

TITLE:
MECHANICAL EQUIPMENT DATA SHEETS.

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

DRAWING NO.: **M 4 . 0 1**

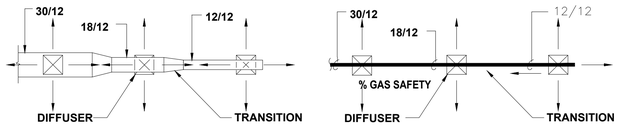
REV.:

GENERAL NOTES

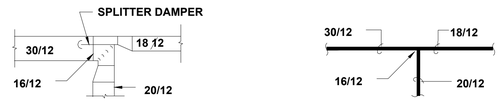
1. MECHANICAL CONTRACTOR SHALL EXAMINE ALL OTHER SPECIFICATIONS, DRAWINGS AND ALL FEATURES OF BUILDING CONSTRUCTION WHICH MAY AFFECT HIS WORK AND SHALL B GOVERNED BY THESE AND OTHER SPECIFICATIONS, INCLUDIN THE GENERAL CONDITIONS AND PARTICULAR INSTRUCTIONS T ALL BIDDER AND SUPPLIERS .
2. ALL WORK SHALL 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,ANDAIR 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

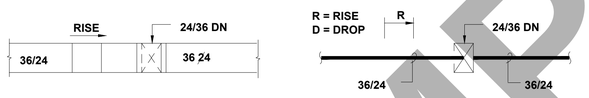
TRANSITIONS



MAIN BRANCH TAKE-OFFS

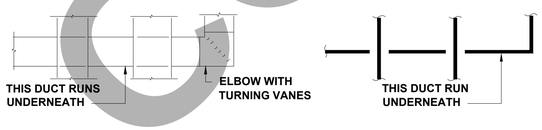


RISERS

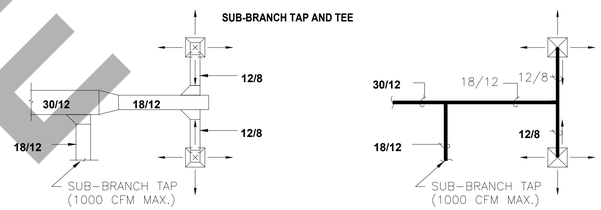


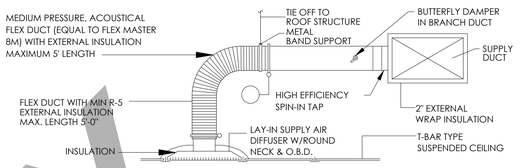
SIDEWALL REGISTERS

DUCT CROSSOVERS

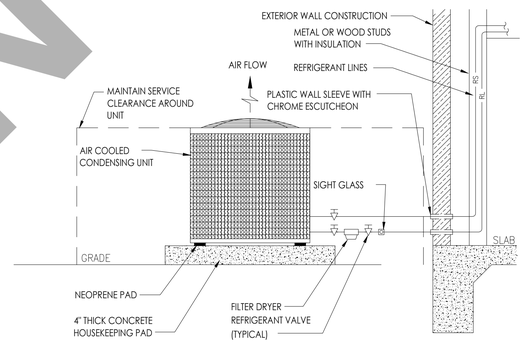


SUB-BRANCH TAP AND TEE

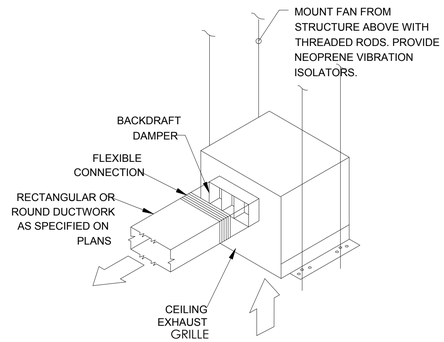




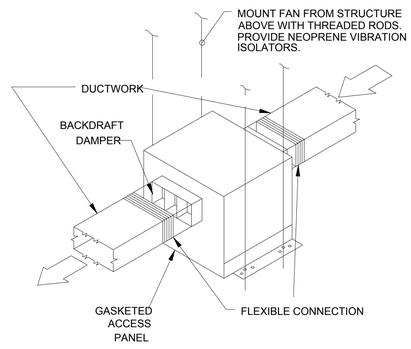
SUPPLY AIR DIFFUSER CONNECTION



OUTSIDE AIR CONDITIONER



CEILING EXHAUST FAN DETAIL



IN-LINE FAN DETAIL

CLIENT:

ADDRESS:

155 NORTH JACKSON AVENUE
SAN JOSE, CALIFORNIA

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:
DOCTOR TRAN DENTAL OFFICE TENANT IMPROVEMENTS.

TITLE:
MECHANICAL GENERAL DETAILS.

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

DRAWING NO.
M 5 . 0 1

REV.

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 2019 CALIFORNIA PLUMBING CODE, 2019 CALIFORNIA BUILDING CODE, 2019 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.
5 REPORT ANY DISCREPANCIES, IN WRITING, TO THE ENGINEER PRIOR TO COMMENCEMENT OF WORK.
4. 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.
7. 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 2019 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 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 COMTAMINATION.
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	ABBRV	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	CA	COMPRESSED AIR
	FCO	FLOOR CLEANOUT
	WCO	WALL CLEANOUT
	FD	FLOOR DRAIN
	FS	FLOOR SINK
	TP	TRAP PRIMER & TRAP PRIMER PIPING
	SOV	SHUT-OFF VALVE
	CV	CHECK VALVE
	PRV	BACKFLOW PREVENTER W SOV'S
	T & P	
	DN	PIPE DOWN
	UP	PIPE UP
	POC	POINT OF CONNECTION
7	-	PLUMBING NOTE CALL-OUT
	ABV	ABOVE
	AFF	ABOVE FINISH FLOOR
	AP	ACCESS PANEL
	BEL	BELOW
	BLDG	BUILDING
	CLG	CEILING
	CONT	CONTINUATION
	EL	ELEVATION
	FIN	FINISH
	FL	FLOOR
	GR	GRADE
	NTS	NOT TO SCALE
	OC	ON CENTER
	S= %	SLOPE AT A PERCENTAGE
	SHT	SHEET
	TYP	TYPICAL
	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 34" 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 fireplace(s) shall be a direct-vent sealed- combustion type. Woodstove or pellet stoves must be US 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.

PLUMBING LIST OF DRAWINGS (LoD):

SHEET TAG	TITLE	SCALE
P 0.00	PLUMBING GENERAL NOTES AND SPECIFICATIONS.	NTS
P 0.01	PLUMBING CODE CHECKING.	NTS
P 1.01	MAIN FLOOR - WATER SUPPLY LAYOUT.	3/8"=1'-0"
P 2.01	MAIN FLOOR - SEWER LAYOUT.	3/8"=1'-0"
P 3.01	VACUUM SYSTEM PLAN	3/8"=1'-0"
P 3.02	VACUUM SYSTEM CALCULATION	NTS
P 3.03	COMPRESSED AIR SYSTEM PLAN	3/8"=1'-0"
P 3.04	COMPRESSED AIR CALCULATION	NTS
P 3.05	VACCUM PUMP SPECS	NTS
P 4.01	MAIN FLOOR. W.S. VACUUM AND AIR COMBINED LAYOUT	3/8"=1'-0"
P 5.01	HOT WATER CALCULATION AND DATA SHEETS.	NTS
P 6.01	VACUUM AND COMPRESSOR DATASHEET	NTS
P 7.01	PLUMBING GENERAL DETAILS.	NTS

VENT LINE
SEWER LINE
COMPRESSED AIR LINE
VACUUM LINE
COLD WATER LINE
HOT WATER LINE

CLIENT:

ADDRESS:

155 NORTH JACKSON AVENUE
SAN JOSE, CALIFORNIA

CONFIDENTIALITY STATEMENT:

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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:
DOCTOR TRAN DENTAL OFFICE TENANT IMPROVEMENTS.

TITLE:
PLUMBING GENERAL NOTES AND SPECIFICATIONS

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

DRAWING NO.
P 0.00

REV.

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 ½ 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	¾ inch and smaller, 10 feet; 1 inch and smaller, 12 feet	Every floor, not to exceed 25 feet[5]
Steel Pipe for Gas	Threaded or Welded	½ inch, 6 feet; ¾ inch and 1 inch, 8 feet; 1 ¼ inches and larger, 10 feet	½ inch, 6 feet; ¾ inch and 1 inch, 8 feet; 1 ¼ inches every floor level
Schedule 40 PVC and ABS DWV	Solvent Cemented	All sizes, 4 feet; allow for expansion every 30 feet[3]	Base and each floor; provide mid-story guides; provide for expansion every 30 feet
CPVC	Solvent Cemented	1 inch and smaller, 3 feet; 1 ¼ inches and larger, 4 feet	Base and each floor; provide mid-story guides
CPVC-AL-CPVC	Solvent Cemented	½ inch, 5 feet; ¾ 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 ¼ inches and larger, 4 feet	Base and each floor; provide mid-story guides
PEX-AL-PEX	Metal Insert and Metal compression	½ inch, ¾ inch, 1 inch — All sizes 98 inches	Base and each floor; provide mid-story guides
PE-AL-PE	Metal Insert and Metal compression	½ inch, ¾ inch, 1 inch — All sizes 98 inches	Base and each floor; provide mid-story guides
PE-RT	Insert and Compression	1 inch and smaller, 32 inches; 1 ¼ inches and larger, 4 feet	Base and each floor; provide mid-story guides
Polypropylene (PP)	Fusion weld (socket, but, saddle, electrofusion), threaded (metal threads only), or mechanical	1 inch and smaller, 32 inches; 1 ¼ 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 build ing 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 con necting 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 equiva- lent sweep. Branches, or other approved fittings of equiva- lent sweep. Branches or offsets of 60 degrees (1.05 rad) shall be permitted to be used where installed in a true vertical posi- tion.

707.4 Location. Each horizontal drainage pipe shall be provided with a cleanout at its upper terminal, and each run of piping, that s 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

707.5 Cleaning. Each cleanout shall be installed so that it opens to allow cleaning in the direction of flow of the soil or waste or at right angles thereto and, except in the case of wye branch and end-of-line cleanouts, shall be installed vertically above the flow line of the pipe.

708.0 Grade of Horizontal Drainage Piping.

708.1 General. Horizontal drainage piping shall be run in practical alignment and a uniform slope of not less than ¼ inch per foot (20.8 mm/m) or 2 percent toward the point of disposal provided that, where it is impractical due to the depth of the street sewer, to the structural features, or to the arrangement of a building or structure to obtain a slope of ¼ inch per foot (20.8 mm/m) or 2 percent, such pipe or piping 4 inches (100 mm) or larger in diameter shall be permitted to have a slope of not less than ⅛ inch per foot (10.4 mm/m) or 1 percent, where first approved by the Authority Having Jurisdiction.

TABLE 721.1
MINIMUM HORIZONTAL DISTANCE REQUIRED FROM BUILDING SEWER (feet)

Buildings or structures[1]	2
Property line adjoing private property	Clear[2]
Water supply wells	50[3]
Streams	50
On-site domestic water service line	1[4]
Public water main	10[5, 6]

WATER CONVERSION & WATER CONSUMPTION:

WATER CONSERVING PLUMBING FIXTURES AND FITTINGS		
Plumbing fixtures and fittings shall comply with the following: (2019 CGBSC, California Plumbing Code (CPC) and Table 1401.1 of the CPC)		
4303.1.1	All Water closets: <1.28 gal/flush Tank type water closet shall be certified to the performance criteria of the U.S. EPA WaterSense Specification for Tank-type Toilets.	
4303.1.2	Urinals: <0.5 gal/flush	
4303.1.3.1	Single showerheads: <1.8 gpm @ 80 psi	
4303.1.3.2	Multiple showerheads: combined flow rate of all showerheads and/or other shower outlets controlled by a single valve shall not exceed 1.8 gpm @ 80 psi or only one shower outlet is to be in operation at a time.	
4303.1.4.1	Residential Lavatory Faucets: 0.8 gpm @ 20 psi < **Flow Rate** <1.2 gpm @ 60 psi	
4303.1.4.2	Lavatory Faucets in common and Public Use Areas (outside of dwellings or sleeping units) in residential buildings: <0.5 gpm @ 60 psi	
4303.1.4.3	Metering Faucets: <0.25 gallons per cycle	
4303.1.4.4	Kitchen Faucets: <1.8 gpm @ 60 psi; Maximum Flow Rate of 1.8 gpm	
PLUMBING FIXTURE CERTIFICATION REQUIRED: A plumbing fixture certification must be completed and signed by either a licensed general contractor, or a plumbing subcontractor, or the building owner certifying the flow rate of the fixtures installed. A copy of the certification can be obtained from the development services department.		

407.3 Limitation of Hot water Temperature for Public Lavatories. Hot water delivered from public-use lavatories shall be limited to a maximum temperature of 120°F (49°C) by a device that complies with ASSE 1070/ASME A112.1070/CSA B125.70. The water heater thermostat shall not be considered a control for meeting this provision.

407.5 Waste Outlet. Lavatories shall have a waste outlet and fixtures tailpiece not less than 1 ¼ inches (32 mm) in diameter.

409.4 Limitation of Hot Water in Bathtubs and Whirlpool Bathtubs. The maximum hot water temperature discharging from the bathtub and whirlpool bathtub filler shall be limited to 120°F (49°C) by a device that complies with ASSE 1070/ASME A112.1070/CSA B125.70. The water heater thermostat shall not be considered a control for meeting this provision.

WATER HEATER:

504.2 Vent. Water heaters of other than the direct-vent type shall be located as close as practical to the chimney or gas vent.

507.2 Seismic provisions. *Water heaters shall be anchored or strapped to resist horizontal displacement due to earthquake motion. Strapping shall be at points within the upper one third (⅓) and lower one-third (⅓) of its vertical dimensions. At the lower point, a minimum distance of four (4) inches (102 mm) shall be maintained above the controls with the strapping.*

507.4 Ground Support. A water heater supported from the earth shall rest on level concrete or other approved base extending not less than 3 inches (76 mm) above the adjoining ground level.

507.5 Drainage Pan. Where a water heater is located in an attic, in or on an attic ceiling assembly, floor-ceiling assembly, or floor-subfloor assembly where damage results from a leaking water heater, a watertight pan of corrosion-resistant materials shall be installed beneath the water heater with not less than ¾ of an inch (20 mm) diameter drain to an approved location. Such pan shall be not less than 1 ½ (38 mm) in depth.

507.13 Installation in Residential Garages. Appliances in residential garages and in adjacent spaces that open to the garage and are not part of the living space of a dwelling unit shall be installed so that all burners and burner-ignition devices are located not less than 18 inches (457 mm) above the floor unless listed as flammable vapor ignition resistant. [NFPA 54:9.1.10.1]

508.4.4 Lighting and Convenience Outlet. A permanent 120 V receptacle outlet and a lighting fixture shall be installed near the appliance. The switch controlling the lighting fixture shall be located at the entrance to the passageway. [NFPA 54:9.5.3]

508.2.1 Installation at roof: Clearance. Appliances shall be installed on a well-drained surface of the roof. At least 6 feet (1829 mm) of clearance shall be available between any part of the appliance, and the edge of a roof or similar hazard, or rigidly fixed rails, guards, parapets, or other building structures at least 42 inches (1067 mm) in height shall be provided on the exposed side. [NFPA 54:9.4.2.2]

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.

909.1 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 ¼ 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.

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 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.

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.

1405.0 Noncombustible Piping Installations.

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.

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

SIZE OF PIPE (inches)	1 ¼	1 ½	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[5]	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 [6]										
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 ¼ inch per foot (20.8 mm/m) slope, For ⅛ 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 ¼ 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.

PLUMBING SCOPE OF WORK:

1-ALTERATION AND ADDITION OF COLD AND HOT WATER PIPE, VALVE AND CONNECTION TO COVER ALL NEW PLUMBING FIXTURES.
2- ALTERATION AND ADDITION OF SEWER AND VENT PIPE AND CONNECTION TO COVER ALL NEW PLUMBING FIXTURES.
3- ADD NEW VACUUM AND COMPRESSED AIR PIPE FROM THE MECH ROOM TO EACH DENTAL CHAIR ALONG WITH ALL FITTINGS, VALVES AND ACCESSORIES.

SCHEDULE FOR DENTAL EQUIPMENT / TOOLS:

1- WATER BOTTLES WILL BE USED, NO NEED FOR WATER PLUMBING, NO NEED FOR BACKFLOW PREVENTER, WATER FILTRATION SYSTEM

2- AIRTECH, AIRSTAR 40 ULTRA AIR COMPRESSOR, 220 V, 20 A, 3-5 USERS. DIMENSIONS: 33.25"H x 35.5" W x 22.5" D.

3- AIRTECH, VACSTAR 80H DUAL VACUUM PUMP, WITH HYDROMISER. REQUIRES 2 x 220 V, 20 A FOR EACH PUMP, OR 1 x 220 V, 40 A SINGLE OHASE WITH 10 AWG WIRE. DIMENTIONS: 25"H x 28"W x 16"D. 5 to 7 USERS.

4- REMOTE WATER CONTROL VALVE WITH FILTER AND STEP DOWN TRANSFORMER OF 120 V TO 24 V TO REMOTELY CONTROL THE WATER FLOW TO VACUUM PUMPS.

5- AIRTECH CP-4 CONTROL PANEL TO REMOTELY CONTROL 1x AIR, 1 x H2O AND 2 x VAC, 24 LOW VOLTAGE SWITCHES WITH LIGHT.

6- SOLMETEX, NXT HG5 AMALGAM SEPARATOR (1-10) CHAIRS (DROPSHIP)

CLIENT:

ADDRESS:

155 NORTH JACKSON AVENUE
SAN JOSE, CALIFORNIA

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REV. NO.	DESCRIPTION	DATE	BY

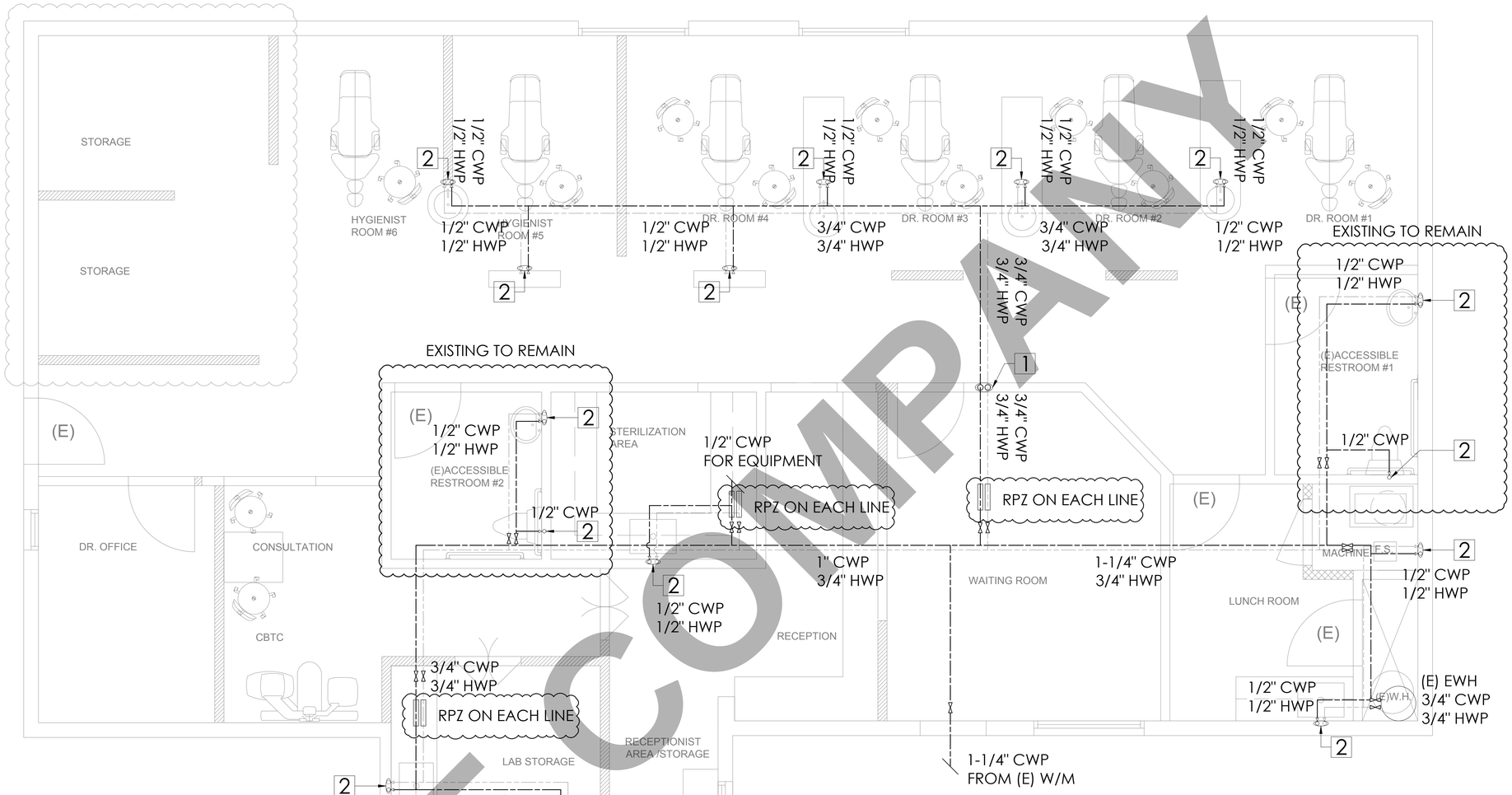
PROJECT:
DOCTOR TRAN DENTAL OFFICE TENANT IMPROVEMENTS.

TITLE:
PLUMBING CODE CHECKING.

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

DRAWING NO.
P 0 . 0 1

REV.



GENERAL NOTES:

1. 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.
2. PRIOR TO PERFORMING WORK, CONTRACTOR TO COORDINATE PIPE ROUTING WITH ALL OTHER TRADES AND EXISTING FIELD CONDITIONS.
3. REFER TO MECHANICAL PLANS FOR PLUMBING SPECIFICATION OF MATERIAL, INSULATION AND INSTALLATION REQUIREMENTS.
4. CONTRACTOR IS RESPONSIBLE FOR ROUGH-IN COORDINATION AND LOCATIONS. REFER TO ARCHITECTURAL PLANS FOR LOCATIONS AND FIXTURES.
5. CONTRACTOR IS RESPONSIBLE FOR ANY REQUIRED CUTTING AND PATCHING.
6. 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.
7. ALL PLUMBING FIXTURES SHALL BE OF WATER CONSERVATION TYPE AS REQUIRED BY LOCAL AUTHORITY HAVING JURISDICTION.
8. ALL WATER PIPING SHALL BE INSTALLED ON INTERIOR SIDE OF THE BUILDING WALL INSULATION.
9. 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.
10. 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.
11. ALL CONDENSATE DRAIN PIPING SHALL BE SLOPED AT $\frac{1}{8}$" PER FOOT AND PROVIDE ACCESSIBLE CLEANOUTS AT ALL CHANGES OF DIRECTION.
12. VENTS THAT TERMINATE AT THE ROOF SHALL BE A MINIMUM OF 10' FROM ANY FRESH AIR INTAKE.
13. 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.

WATER SUPPLY SHEET NOTES:

1 — DCW & DHW DROP IN WALL.

2 — DCW/DHW/RHW TO FIXTURE CONNECTION.

COLD WATER LINE

HOT WATER LINE

FROM 2019 CPC - TABLE 610.3:
WATER SUPPLY FIXTURE UNITS LOADS:

FIXTURE	W.S.F.U	QTY.	TOTAL W.S.F.U
HANDWASH	1.5	5	7.5
KITCHEN SINK	1.5	1	1.5
WATER CLOSET	2.5	3	7.5
LAVATORY	1.0	4	4.0
MOP SINK	2.0	1	2.0
WASHING MACHINE	4.0	1	4.0
TOTAL BUILDING WSFU =			**26.5**

AS PER 2019 CPC - TABE 610.4:
THE LONGEST RUN IS APPROX. 150 FT,
AND W/M PRESSURE RANGE 30-45 PSI.
- MAIN CWP SIZE NOT LESS THAN 1-1/4"
- WATER METER SIZE NOT LESS THAN 1-1/2".

SCHEDULE No. 1
ELECTRIC WATER HEATER SCHEDULE

TAG	(E) EWH-01
LOCATION	CORNER CLOSET
MANUFACTURER	AOSMITH
MODEL	E6-19C15SV
TYPE	ELECTRICAL
RATED STORAGE (GAL.)	19.0
POWER (W)	1,500
APPROX. WEIGHT (lbs)	85
HEIGHT x DIAMETER (IN.)	25 x 18
WATER CONNECTION SIZE	3/4"

CLIENT:

ADDRESS:

155 NORTH JACKSON AVENUE
SAN JOSE, CALIFORNIA

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REV. NO.	DESCRIPTION	DATE	BY

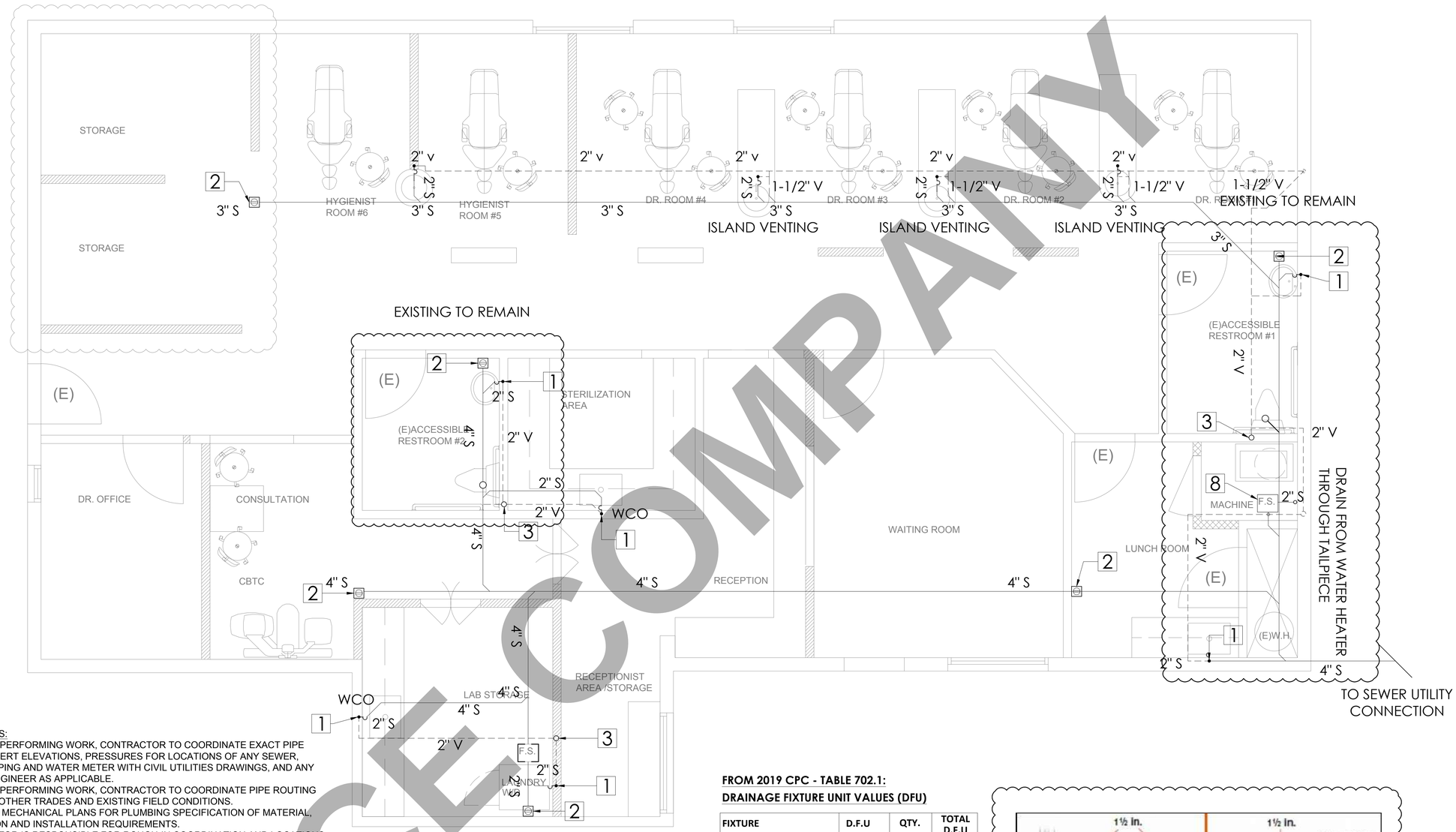
PROJECT:
DOCTOR TRAN DENTAL OFFICE TENANT IMPROVEMENTS.

TITLE:
MAIN FLOOR, COMBINED WATER SUPPLY LAYOUT

PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36:
		3/8"=1'-0"

DRAWING NO.
P 1 . 0 1

REV.



GENERAL NOTES:

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2. PRIOR TO PERFORMING WORK, CONTRACTOR TO COORDINATE PIPE ROUTING WITH ALL OTHER TRADES AND EXISTING FIELD CONDITIONS.
3. REFER TO MECHANICAL PLANS FOR PLUMBING SPECIFICATION OF MATERIAL, INSULATION AND INSTALLATION REQUIREMENTS.
4. CONTRACTOR IS RESPONSIBLE FOR ROUGH-IN COORDINATION AND LOCATIONS. REFER TO ARCHITECTURAL PLANS FOR LOCATIONS AND FIXTURES.
5. CONTRACTOR IS RESPONSIBLE FOR ANY REQUIRED CUTTING AND PATCHING.
6. 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.
7. ALL PLUMBING FIXTURES SHALL BE OF WATER CONSERVATION TYPE AS REQUIRED BY LOCAL AUTHORITY HAVING JURISDICTION.
8. ALL WATER PIPING SHALL BE INSTALLED ON INTERIOR SIDE OF THE BUILDING WALL INSULATION.
9. 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.
10. 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.
11. ALL CONDENSATE DRAIN PIPING SHALL BE SLOPED AT $\frac{1}{8}$" PER FOOT AND PROVIDE ACCESSIBLE CLEANOUTS AT ALL CHANGES OF DIRECTION.
12. VENTS THAT TERMINATE AT THE ROOF SHALL BE A MINIMUM OF 10' FROM ANY FRESH AIR INTAKE.
13. 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:

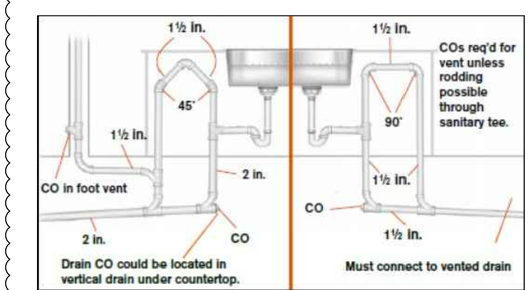
1. WASTE DROP AND 2" VENT RISE.
2. 4" FLOOR CLEAN-OUT.
3. 3" VENT STACK TO ABOVE.
4. 3" FLOOR DRAIN.
5. 4" SOIL DROP FROM ABOVE.
6. WASTE DROP
7. SOIL DROP AND 4"VENT RISE.
8. FLOOR SINK WITH INDIRECT WASTE

FROM 2019 CPC - TABLE 702.1:
DRAINAGE FIXTURE UNIT VALUES (DFU)

FIXTURE	D.F.U	QTY.	TOTAL D.F.U
MOP SINK	3.0	1	3.0
KITCHEN SINK	2.0	1	2.0
WATER CLOSET	3.0	3	9.0
LAVATORY	1.0	3	3.0
HANDWASH	1.0	5	5.0
WASHING MACHINE	3.0	1	3.0
TOTAL BUILDING DFU =			**25.0**

VENT LINE

SEWER LINE



ISLAND VENTING DETAIL

CLIENT:

ADDRESS:

155 NORTH JACKSON AVENUE
SAN JOSE, CALIFORNIA

NOTES:

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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

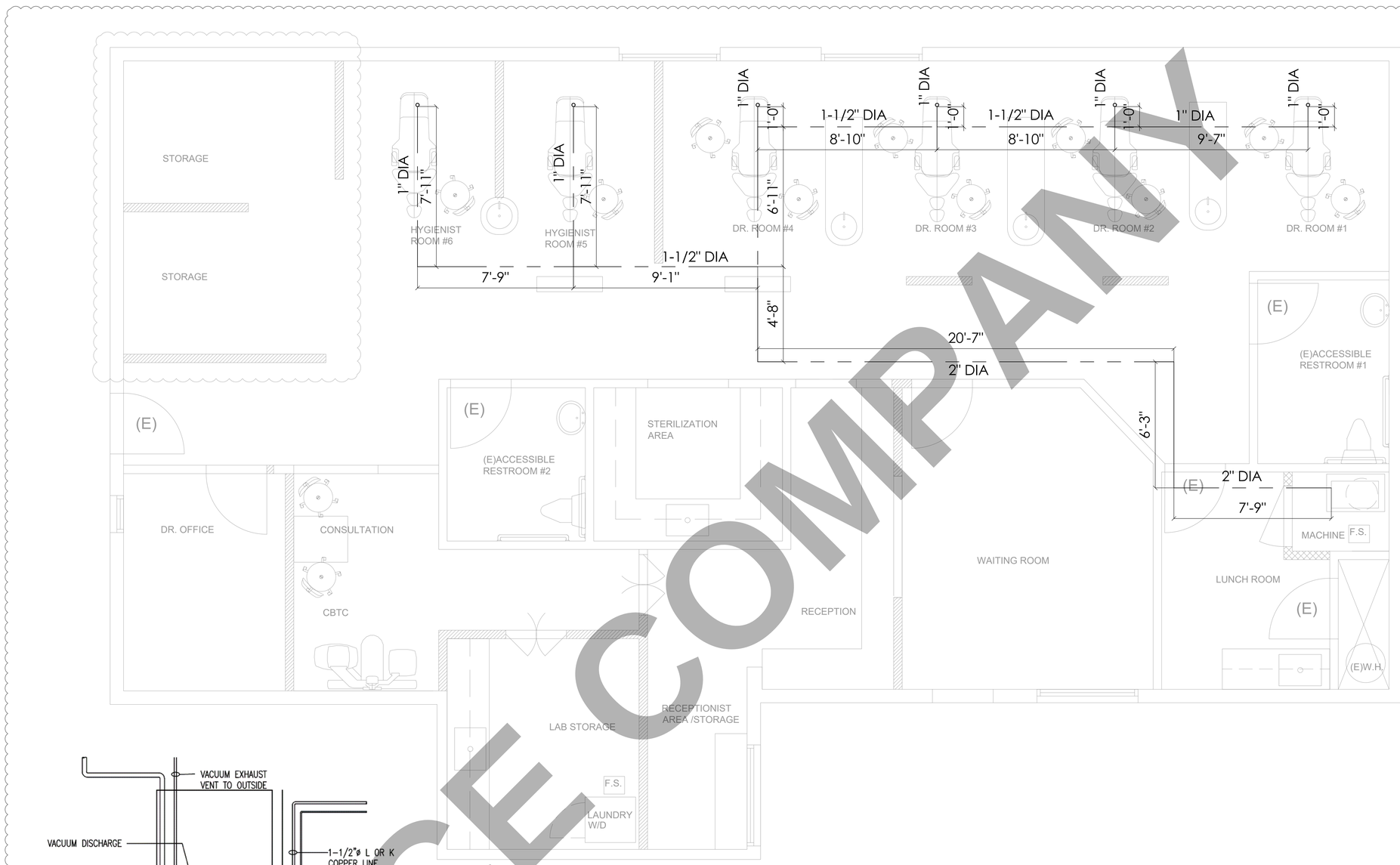
PROJECT:
DOCTOR TRAN DENTAL OFFICE TENANT IMPROVEMENTS.

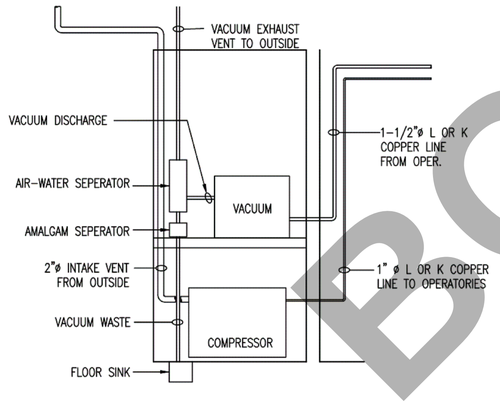
TITLE:
MAIN FLOOR SEWER LAYOUT

PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36:
		3/8"=1'-0"

DRAWING NO.
P 2 . 0 1

REV.





VACUUM PUMP AND COMPRESSOR DETAIL

VACUUM LINE

REFER TO ELECTRICAL SHEET FOR POWER FOR DENTAL EQUIPMENT

VACUUM PIPE MATERIAL TO BE COPPER TYPE L

CLIENT:

ADDRESS:

155 NORTH JACKSON AVENUE
SAN JOSE, CALIFORNIA

NOTES:

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REV. NO	DESCRIPTION	DATE	BY

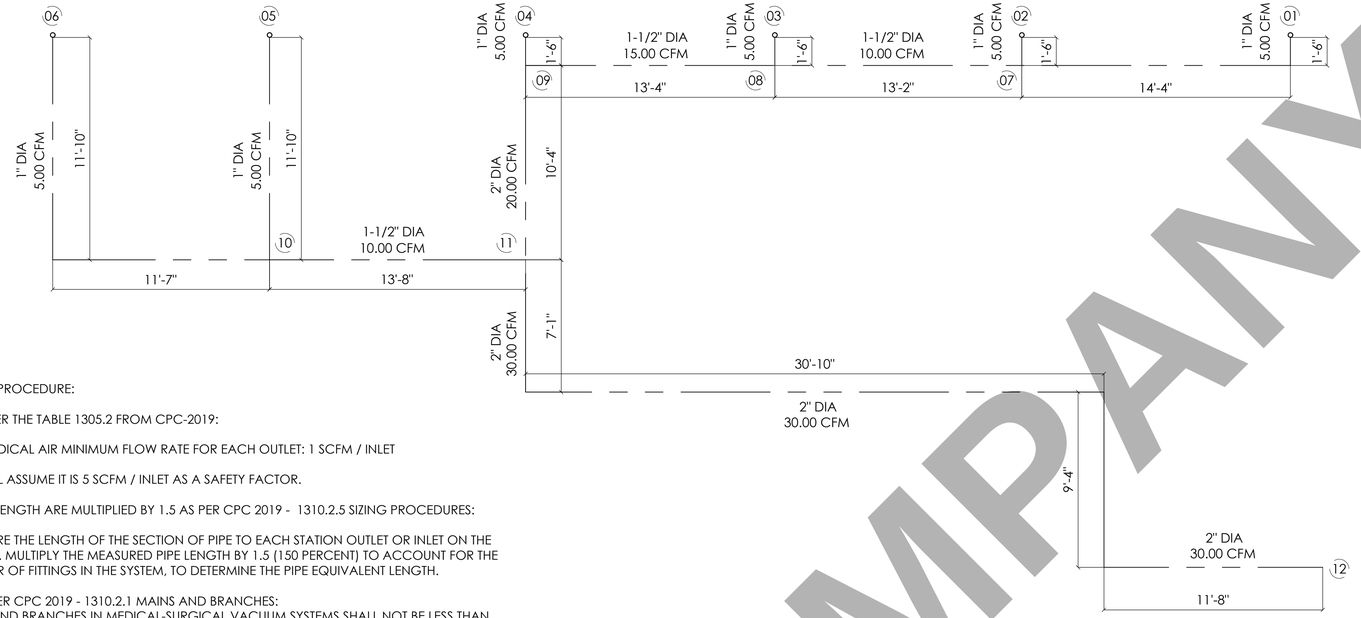
PROJECT:
DOCTOR TRAN DENTAL OFFICE TENANT IMPROVEMENTS.

TITLE:
VACCUM SYSTEM PLAN

PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36:
		3/8"=1'-0"

DRAWING NO.
P 3 . 0 1

REV.



SIZING PROCEDURE:

1) AS PER THE TABLE 1305.2 FROM CPC-2019:

THE MEDICAL AIR MINIMUM FLOW RATE FOR EACH OUTLET: 1 SCFM / INLET

WE WILL ASSUME IT IS 5 SCFM / INLET AS A SAFETY FACTOR.

2) ALL LENGTH ARE MULTIPLIED BY 1.5 AS PER CPC 2019 - 1310.2.5 SIZING PROCEDURES:

MEASURE THE LENGTH OF THE SECTION OF PIPE TO EACH STATION OUTLET OR INLET ON THE SYSTEM. MULTIPLY THE MEASURED PIPE LENGTH BY 1.5 (150 PERCENT) TO ACCOUNT FOR THE NUMBER OF FITTINGS IN THE SYSTEM, TO DETERMINE THE PIPE EQUIVALENT LENGTH.

3) AS PER CPC 2019 - 1310.2.1 MAINS AND BRANCHES:
MAIN AND BRANCHES IN MEDICAL-SURGICAL VACUUM SYSTEMS SHALL NOT BE LESS THAN DN 20 (NPS 3/4") (7/8" O.D.)

AS PER 5.1.11 STANDARD DESIGNATION COLORS AND OPERATION PRESSURE FOR VACUUM:

WHITE / BLACK STANDARD GAUGE PRESSURE: 15 in. to 30 in. HgV

5.1.3.7.2 Vacuum Pumps.
5.1.3.7.2.1

Vacuum pumps shall be constructed of materials deemed suitable by the manufacturer.
5.1.3.7.2.2

Anti-vibration mountings shall be installed for vacuum pumps as required by equipment dynamics or location and in accordance with the manufacturer's recommendations.
5.1.3.7.2.3

Flexible connectors shall connect the vacuum pumps with their intake and outlet piping.

5.1.3.7.7 Medical-Surgical Vacuum Exhaust.
5.1.3.7.7.1

The medical-surgical vacuum pumps shall exhaust in a manner and location that minimizes the hazards of noise and contamination to the facility and its environment.

5.1.3.7.7.2

The exhaust shall be located as follows:

- **(1)Outdoors**
- **(2)At least 7.5 m (25 ft) from any door, window, air intake, or other openings in buildings or places of public assembly**
- **(3)At a level different from air intakes**
- **(4)Where prevailing winds, adjacent buildings, topography, or other influences will not divert the exhaust into occupied areas or prevent dispersion of the exhaust**

5.1.3.7.7.3

The end of the exhaust shall be turned down and screened or otherwise be protected against the entry of vermin, debris, or precipitation by screening fabricated or composed of a non-corroding material.

5.1.3.7.7.4

Vacuum exhaust shall be labeled in accordance with 5.1.11.1 with any method that would distinguish it as a vacuum exhaust.

VACCUM PIPE SIZING: (BASED ON CPC 2019 - TABLE 1310.2.1(6):

TAG	FLOW RATE (SCFM)	PIPE SIZE	SECTION LENGTH	PRESSURE DROP (IN Of. MERCURY) PER 100 FEET	P.D. (IN OF MERCURY)
01-07	5.00	1" DIA	15'-10"	0.534	0.0854
02-07	5.00	1" DIA	1'-6"	0.534	0.0090
07-08	10.00	1-1/2" DIA	13'-2"	0.242	0.0319
03-08	5.00	1" DIA	1'-6"	0.534	0.0090
08-09	15.00	1-1/2" DIA	13'-4"	0.471	0.0632
04-09	5.00	1" DIA	1'-6"	0.534	0.0090
09-11	20.00	2" DIA	10'-4"	0.202	0.0211
06-10	5.00	1" DIA	23'-5"	0.534	0.1255
05-10	5.00	1" DIA	11'-10"	0.534	0.0641
10-11	10.00	1-1/2" DIA	13'-8"	0.242	0.0334
11-12	30.00	2" DIA	59'	0.438	0.2583
TOTAL PRESSURE LOSS: (INCHES OF MERCURY)					0.7099

BASED ON CPC-2019, TABLE 1310.2.2(1):
THE MAXIMUM PERMITTED PRESSURE LOSS FOR MEDICAL VACUUM IS EQUAL TO 4 INCH OF MERCURY.

15.3.3.2.1 General.
Any of the following systems shall be permitted to be located together in the same room:

- **(1) Medical air compressor supply sources.**
- **(2) Dental air compressor sources and reserve headers.**
- **(3) Dental-surgical vacuum sources.**
- **(4) Dental vacuum sources.**
- **(5) WAGD sources.**
- **(6) Any other compressor, vacuum pump, or electrically powered machinery.**

A dental vacuum system is not intended for medical-surgical vacuum applications. A wet piping system is designed to accommodate liquid, air-gas, and solids through the service inlet. A dry piping system is designed to accommodate air-gas only through the service inlet, with liquids and solids being trapped before entering the system. ***[See Figure A.15.3.3.5(a) through Figure A.15.3.3.5(d).]***

CLIENT:

ADDRESS:

155 NORTH JACKSON AVENUE
SAN JOSE, CALIFORNIA

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REV. NO	DESCRIPTION	DATE	BY

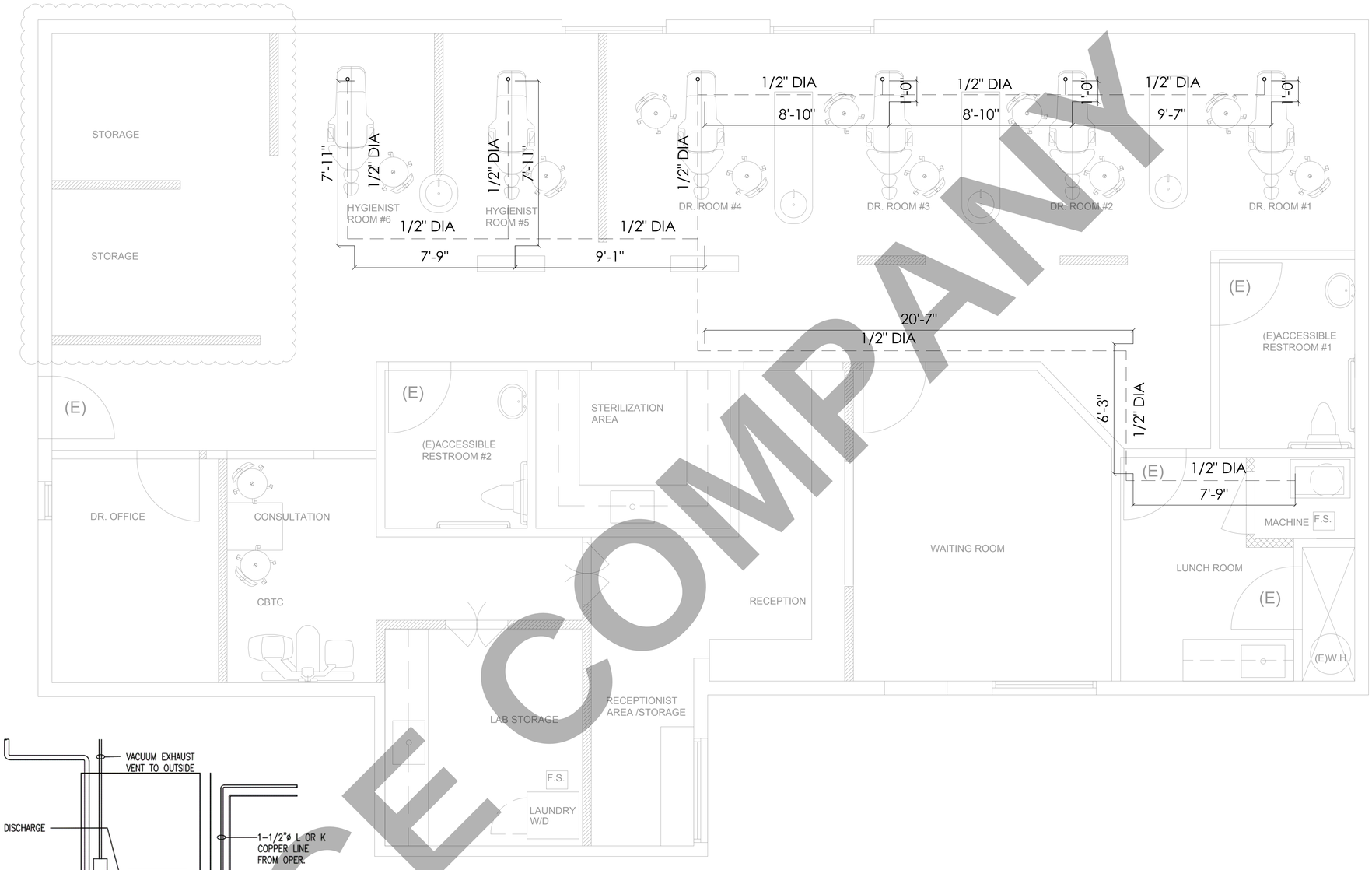
PROJECT:
DOCTOR TRAN DENTAL OFFICE TENANT IMPROVEMENTS.

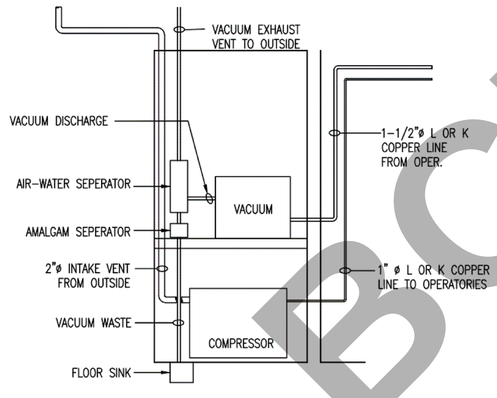
TITLE:
VACUUM SYSTEM CALCULATION

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

DRAWING NO.
P 3 . 0 2

REV.





VACUUM PUMP AND COMPRESSOR DETAIL

REFER TO ELECTRICAL SHEET FOR POWER FOR DENTAL EQUIPMENT

COMPRESSED AIR PIPE MATERIAL TO BE COPPER TYPE L

CLIENT:

ADDRESS:

155 NORTH JACKSON AVENUE
SAN JOSE, CALIFORNIA

NOTES:

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REV. NO	DESCRIPTION	DATE	BY

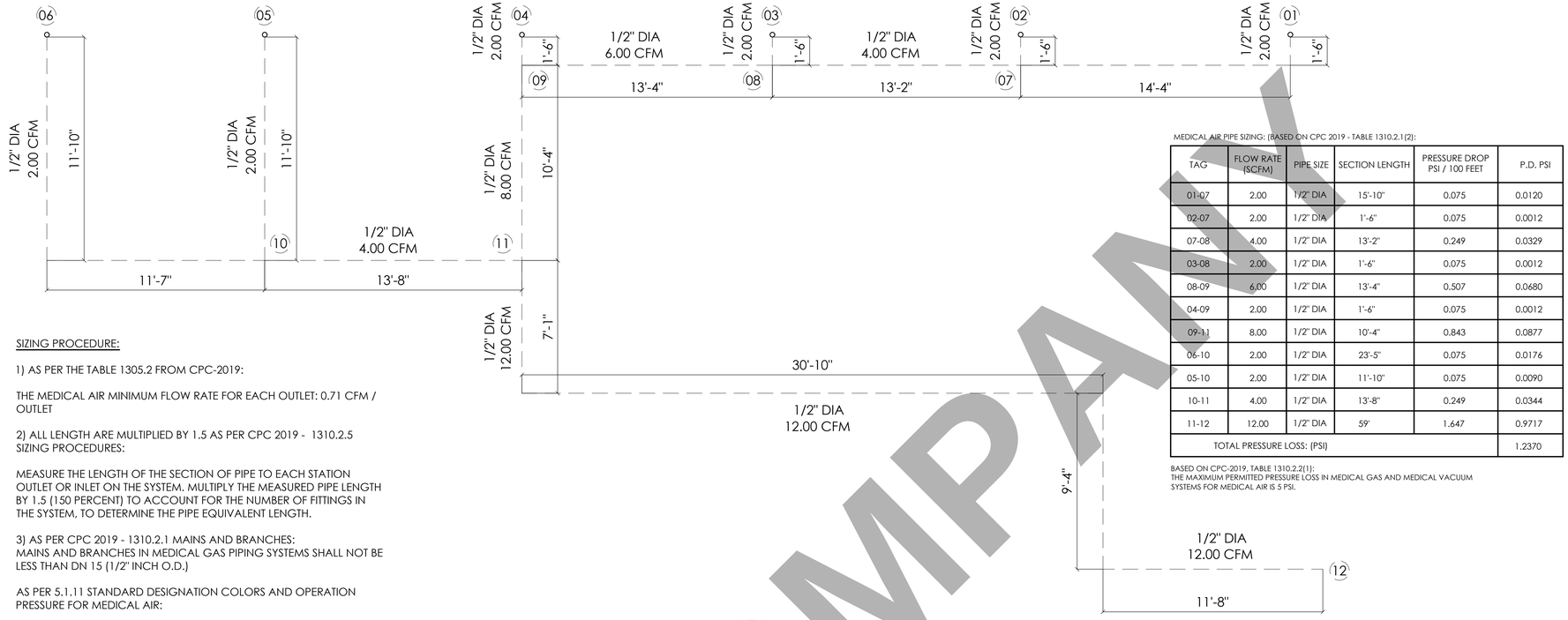
PROJECT:
DOCTOR TRAN DENTAL OFFICE TENANT IMPROVEMENTS.

TITLE:
COMPRESSED AIR SYSTEM PLAN

PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36:
		3/8"=1'-0"

DRAWING NO.
P 3 . 0 3

REV.



MEDICAL AIR PIPE SIZING: (BASED ON CPC 2019 - TABLE 1310.2.1(2):

TAG	FLOW RATE (SCFM)	PIPE SIZE	SECTION LENGTH	PRESSURE DROP PSI / 100 FEET	P.D. PSI
01-07	2.00	1/2" DIA	15'-10"	0.075	0.0120
02-07	2.00	1/2" DIA	1'-6"	0.075	0.0012
07-08	4.00	1/2" DIA	13'-2"	0.249	0.0329
03-08	2.00	1/2" DIA	1'-6"	0.075	0.0012
08-09	6.00	1/2" DIA	13'-4"	0.507	0.0680
04-09	2.00	1/2" DIA	1'-6"	0.075	0.0012
09-11	8.00	1/2" DIA	10'-4"	0.843	0.0877
06-10	2.00	1/2" DIA	23'-5"	0.075	0.0176
05-10	2.00	1/2" DIA	11'-10"	0.075	0.0090
10-11	4.00	1/2" DIA	13'-8"	0.249	0.0344
11-12	12.00	1/2" DIA	59'	1.647	0.9717
TOTAL PRESSURE LOSS: (PSI)					1.2370

BASED ON CPC-2019, TABLE 1310.2.2(1):
THE MAXIMUM PERMITTED PRESSURE LOSS IN MEDICAL GAS AND MEDICAL VACUUM SYSTEMS FOR MEDICAL AIR IS 5 PSI.

SIZING PROCEDURE:

1) AS PER THE TABLE 1305.2 FROM CPC-2019:

THE MEDICAL AIR MINIMUM FLOW RATE FOR EACH OUTLET: 0.71 CFM / OUTLET

2) ALL LENGTH ARE MULTIPLIED BY 1.5 AS PER CPC 2019 - 1310.2.5 SIZING PROCEDURES:

MEASURE THE LENGTH OF THE SECTION OF PIPE TO EACH STATION OUTLET OR INLET ON THE SYSTEM. MULTIPLY THE MEASURED PIPE LENGTH BY 1.5 (150 PERCENT) TO ACCOUNT FOR THE NUMBER OF FITTINGS IN THE SYSTEM, TO DETERMINE THE PIPE EQUIVALENT LENGTH.

3) AS PER CPC 2019 - 1310.2.1 MAINS AND BRANCHES:
MAINS AND BRANCHES IN MEDICAL GAS PIPING SYSTEMS SHALL NOT BE LESS THAN DN 15 (1/2" INCH O.D.)

AS PER 5.1.11 STANDARD DESIGNATION COLORS AND OPERATION PRESSURE FOR MEDICAL AIR:

YELLOW / BLACK COLOR

& STANDARD GAUGE PRESSURE: 50-55 PSI

15.3.3.2.1 General.

Any of the following systems shall be permitted to be located together in the same room:

- (1) Medical air compressor supply sources.
- (2) Dental air compressor sources and reserve headers.
- (3) Dental-surgical vacuum sources.
- (4) Dental vacuum sources.
- (5) WAGD sources.
- (6) Any other compressor, vacuum pump, or electrically powered machinery.

15.3.3.4.2.1

Dental air compressor units shall include dental air compressors, vibration isolation, air receivers, coalescent air filters, adsorption dryers, exhaust silencer/filters, moisture indicators, and service access manifolds, electrical disconnects, motor wiring, and controls.

15.3.3.4.2.2

Air compressors shall be scroll dental, reciprocating dental, or the oil-free dental types.

15.3.3.7.2.1 General.

Pipe, fittings, and joints in piping for dental compressed air systems shall be in accordance with 15.3.3.7.2.2 through 15.3.3.7.2.5.
15.3.3.7.2.2 Pipe.

Pipe under 15.3.3.7.2 shall comply with the following:

- (1) ASTM B88, *Standard Specification for Seamless Copper Water Tube,* Type L or K
- (2) ASTM B819, *Standard Specification for Seamless Copper Tube for Medical Gas Systems,* Type L or K

(3) ASTM B280, *Standard Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service,* ACR tube (O.D. size)

5.1.3.6.3* Medical Air Compressor Supply Sources.

5.1.3.6.3.1 Location.

Medical air compressor systems shall be located per 5.1.3.3 as follows:

- (1) Indoors in a dedicated mechanical equipment area, adequately ventilated and with any required utilities (e.g., electricity, drains, lighting)
- (2) In a room ventilated per 5.1.3.3.3.3
- (3) For air-cooled equipment, in a room designed to maintain the ambient temperature range as recommended by the manufacturer

5.1.3.6.3.2 Required Components.

Medical air compressor systems shall consist of the following:

- (1) Components complying with 5.1.3.6.3.4 through 5.1.3.6.3.8, arranged per 5.1.3.6.3.9
- (2) Automatic means to prevent backflow from all on-cycle compressors through all off-cycle compressors
- (3) Manual shutoff valve to isolate each compressor from the centrally piped system and from other compressors for maintenance or repair without loss of pressure in the system
- (4) Intake filter-muffler(s) of the dry type
- (5) Pressure relief valve(s) set at 50 percent above line pressure
- (6) Piping and components between the compressor and the source shutoff valve that do not contribute to contaminant levels
- (7) Except as defined in 5.1.3.6.3.2(1) through (6), materials and devices used between the medical air intake and the medical air source valve that are of any design or construction appropriate for the service as determined by the manufacturer

5.1.3.6.3.10* Electrical Power and Control.

(A)A Medical air source systems shall be controlled to ensure continuous supply of medical air at pressures consistent with Table 5.1.11 under all conditions of system use as follows:

- (1) Automatic activation of compressor(s) as necessary to supply the demand.
- (2) Managing the operation to equalize wear on all compressors. Where this equalization is achieved manually, the facility staff shall arrange a schedule for manual alternation.

(A) Controls shall provide the following functions:

- (1) Where medical air source systems having two or more compressors employ any electrical circuit device that upon failure could prevent supply of medical air, the controls shall be provided with an automatically activated alternative method for ensuring supply (e.g., redundant component(s), an alternate electrical supply path, or other equivalent method).
- (2) Control circuits shall be arranged in such a manner that isolation of one compressor or component from the system (e.g., for maintenance or repair) does not interrupt the operation of other compressor(s) or component(s).
- (3) Automatic restart function shall be included, such that the supply of medical air will resume normally after power interruption without manual intervention

5.1.3.6.3.11 Compressor Intake.

(A) The medical air compressors shall draw their air from a source of clean air.
(B) The medical air intake shall be located a minimum of 7.6 m (25 ft) from ventilating system exhausts, fuel storage vents, combustion vents, plumbing vents, vacuum and WAGD discharges, or areas that can collect vehicular exhausts or other noxious fumes.
(C) The medical air intake shall be located a minimum of 6 m (20 ft) above ground level.

5.1.3.6.3.12 Operating Alarms and Local Signals.

Medical air systems shall be monitored for conditions that can affect air quality during use or in the event of failure, based on the type of compressor(s) used in the system.

CLIENT:

ADDRESS:

155 NORTH JACKSON AVENUE
SAN JOSE, CALIFORNIA

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REV. NO	DESCRIPTION	DATE	BY

PROJECT:
DOCTOR TRAN DENTAL OFFICE TENANT IMPROVEMENTS.

TITLE:
COMPRESSED AIR SYSTEM CALCULATION

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

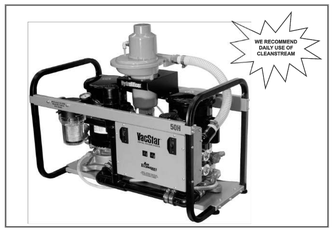
DRAWING NO.
P 3 . 0 4

REV.

VacStar™

DENTAL VACUUM SYSTEM

PART NUMBERS: VS20, VS40, VS50, VS50H, VS80 AND VS80H



USER'S MANUAL

AIR TECHNIQUES equipped for life

ISO 9001 ISO 13485 FDA GMP COMPLIANT

WARRANTY

The **VacStar**™ is warranted to be free from defects in material and workmanship from the date of installation for a period of twenty-four (24) months.

Any item returned to our factory through an Air Techniques Authorized Dealer, will be repaired or replaced at our option at no charge provided that our inspection shall indicate it to have been defective. Dealer labor, shipping and handling charges are not covered by this warranty.

This warranty does not apply to damage due to shipping, misuse, careless handling or repairs by other than authorized service personnel. Warranty is void if equipment is installed or serviced by other than dealer service personnel authorized by Air Techniques. Air Techniques, Inc. is not liable for indirect or consequential damages or loss of any nature in connection with this equipment.

This warranty is in lieu of all other warranties expressed or implied. No representative or person is authorized to assume for us any liability in connection with the sale of our equipment.

ON-LINE WARRANTY REGISTRATION

Quickly and easily register your new **VacStar**™ on-line. Just have your product model and serial numbers available. Then go to the Air Techniques website, **www.airtechniques.com**, click the **register a product link** and complete the registration form. This on-line registration ensures a record for the warranty period and helps Air Techniques keep you informed of product updates and other valuable information.

SAFETY INSTRUCTIONS

Use of the **VacStar**™ not in conformance with the instructions specified in this manual may result in permanent failure of the unit.

WARNING: To prevent fire or electrical shock, do not expose this appliance to rain in or moisture.
All user serviceable items are described in the maintenance section.
Manufacturing date code on serial number label is in the format Month YYYY.

ATTENTION USERS:

Alerts users to important Operating and Maintenance instructions. Read carefully to avoid any problems.

Warns users that uninsulated voltage within the unit may be of sufficient magnitude to cause electric shock.

I ON / O OFF — Indicates the ON and OFF position for the Equipment power switch.

Indicates the ON and OFF position for the Equipment power switch.

CE — Indicates that the equipment complies with the Medical Device Directive 93/42/EEC.

CLASSIFIED C UL US — MEDICAL ELECTRICAL EQUIPMENT
WITH RESPECT TO ELECTRICAL SHOCK, FIRE, MECHANICAL AND OTHER HAZARDS ONLY IN ACCORDANCE WITH UL60601-1, CAN/CSA C22.2 NO.601.1 M90.

EC REP — Medical Device Safety Service GmbH, Schiffgraben 41, 30175 Hannover, Germany

SIZING GUIDE

Choosing the correct size **VacStar**™ for your practice depends on the number of HVE (High Volume Evacuator) and SE (Saliva Ejector) users anticipated. To assure optimum vacuum, the vacuum demands should not exceed the number of HVE and SE users shown in the chart below:

Recommended Number of Simultaneous Users

VacStar 20 HVE's + SE's	VacStar 40 HVE's + SE's	*VacStar 50 & 50H HVE's + SE's	*VacStar 80 & 80H HVE's + SE's
2 + 0	3 + 0	4 + 0	7 + 0
1 + 1	2 + 2	3 + 2	6 + 1
0 + 4	1 + 4	2 + 4	5 + 3
	0 + 6	1 + 5	4 + 4
			3 + 6
			2 + 8
			1 + 10
			0 + 13

NOTES:
HVE = High Volume Evacuator
SE = Saliva Ejector
* These combinations apply if both pumps are running together.
If only one pump is running, use the Sizing Guide for VacStar 20 or 40.

OPTIONAL IN-LINE FILTER KIT

Since larger quantities of particulates may occur initially when a VacStar is replacing another vacuum pump, an optional In-Line Filter is recommended to be installed at the intake connection (see Key Parts). This In-Line Filter is designed to collect larger quantities of particulates from the discharge BEFORE it flows into the VacStar. The larger quantities of debris is mainly due to the VacStar's increased pulling power and the effectiveness of the CleanStream Evacuation System Cleaner's ability to break down proteinaceous deposits and synthetic debris that have accumulated in the existing vacuum lines.

Use the In-Line Filter Kit P/N 55078 for single vacuum pump units VS20 and VS40. The kit part number for twin pump units (VS50, VS50H, VS80 and VS80H) is 55079. Refer to the Maintenance Section for recommended maintenance requirements.

OPERATING INFORMATION

- ❑ **AT THE START OF THE DAY**
  Always TURN ON THE WATER before TURNING ON THE POWER.
- ❑ The VacStar may be turned on/off from a single, convenient location within the dental suite using a Remote Control Panel (See Optional Accessories).
- ❑ The vacuum level is factory preset at 10 In Hg (inches of mercury). This is the reading on the gauge when all HVE's (High Volume Evacuator) and SE's (Saliva Ejector) are CLOSED. Should this setting be too high for your needs, contact your dealer to readjust the setting.
- ❑ It is recommended that the system run continuously during the day. However, the VacStar can be turned off if suction is not required for a period of 15 minutes or longer.
- ❑ If one pump is being operated at a time, it is important to alternate pumps on an every other day schedule so that the pumps are used evenly.
- ❑ **AT THE END OF THE DAY**
  Always TURN THE POWER OFF, then TURN THE WATER OFF.

KEY PARTS IDENTIFICATION - SINGLE PUMPS

Figure 1. VacStar 20 and 40 Parts Location

NOTE: VACSTAR 20 shown. VACSTAR 40 is similar except main power connection is made via provided hospital grade NEMA 6-15P line cord.

KEY PARTS IDENTIFICATION - DUAL PUMPS

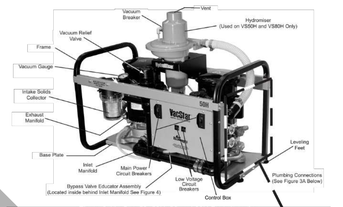


Figure 2. VacStar 50, 50H, 80 and 80H Parts Location

NOTE: VACSTAR 50H Shown, Other Models are Similar

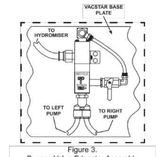


Figure 3.
Bypass Valve Educator Assembly

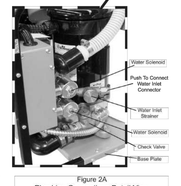


Figure 2A.
Plumbing Connections Detail View

INSTALLATION INFORMATION

- ❑ **Plumbing (water) lines**
  - To assure that the **VacStar**™ provides optimum vacuum, incoming water pressure must be maintained between 20 and 100 psi.
  - If heavy combinations of particulates exist in the incoming water, an in-line filter should be installed. (See Accessories/Options for the Remote Control Water Valve.) This will prevent the VacStar's water inlet filter from clogging too frequently.
  - Incoming water temperature should be between 40° and 75°F.
  - Water connection location is shown in Fig. 1 and 2a (water inlet connection).
- ❑ **Suction**
  - For VacStar 20 and 40, suction hose is connected at suction intake, found on intake solids collector assembly. See Fig. 1.
  - For VacStar twin pump units, suction hose is connected at suction intake, found on intake solids collector assembly. See Fig. 2.
- ❑ **Drain lines**
  - For VacStar 20 and 40 without a HydroMiser or an Air/Water Separator, see Fig. 4.
  - For VacStars without a HydroMiser or an Air/Water Separator, the effluent should be discharged into an open drain or a closed vented drain. See Fig. 5.
  - For VacStars with a HydroMiser (see Fig. 6) or an Air/Water Separator (see Fig. 7), gases should be vented out according to code. The waste water (with particulates) from the operatories can be discharged via an open drain or a closed vented drain.

Note: For VacStars without a HydroMiser, the drain may be up to 36" above the unit.

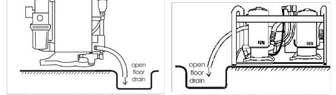


Figure 4. VacStar 20, 40 without a HydroMiser or Air/Water Separator

Figure 5. VacStar 50, 80 without a HydroMiser or Air/Water Separator

INSTALLATION INFORMATION

Figures 6, 7 and 8 show the typical installations of the dual **VacStar**™ models 50, 50H, 80 and 80H. Install the **VacStar**™ by referring to the figure corresponding to the system to be installed. Single **VacStar**™ models 20 and 40 are installed in the same manner. Make sure that all notes, warnings and requirements are followed.

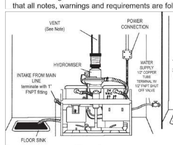


Figure 6.
VacStar with Built-In HydroMiser

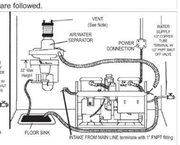
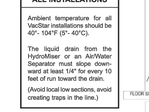


Figure 7.
VacStar with Wall Mounted Air/Water Separator



Note: For all installations, vent to outside with 2-inch schedule 40 pipe.

WARNING:
CONDENSATION OF WATER WILL OCCUR IN VENT PIPING. AVOID ACCUMULATION OF WATER IN VENT, SLOPE PIPING TOWARD SEPARATOR.

- ❑ **Wall-mounted HydroMiser**
  If the existing drain is higher than the HydroMiser outlet, the HydroMiser must be mounted so that its outlet is above the drain. The HydroMiser can be installed up to 36" above the base of the VacStar with the HydroMiser Wall Mount Kit (#55087).

IMPORTANT NOTE: ALL INSTALLATIONS

Ambient temperature for all VacStar installations should be 40°- 104°F (5°- 40°C).

The liquid drain from the HydroMiser or an Air/Water Separator must slope downward at least 1/4" for every 10 feet of run toward the drain.

(Avoid local low sections, avoid creating traps in the line.)

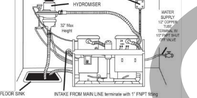


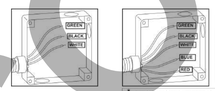
Figure 8. VacStar with Wall-Mounted HydroMiser

INSTALLATION INFORMATION

- ❑ **Electric**
  - VacStar 20, 50, 50H, 80, 80H must be wired directly from an electrical box that complies with local electrical codes to the VacStar's Electrical Connection Box. See Figure. 10.
  - All VS40 VacStars are wired with a provided hospital grade NEMA 6-15P line cord and requires a hospital-grade 6-15R receptacle.
  - If the voltage falls below the minimum 105V or 205V or above the maximum 125V or 240V during operation, a Buck/Boost Transformer must be installed.

Figure 9. VacStar Electrical Junction Box - Interior View VacStar 20 (Factory Set for 230 V)

ALL INSTALLATIONS MUST CONFORM TO LOCAL CODES



Dual Circuit *	
Pumps	Power Leads
RIGHT	(L1) BLACK (L2) WHITE
LEFT	(L1) RED (L2) BLUE

* For Single Circuit, connect Black and Red wires together (L1) and White and Blue wires together (L2).

VacStar 20 Handy Box Connection — *VacStar 50, 50H, 80, 80H Handy Box Connection*

Figure 10. VacStar Electrical Box Connection

PRODUCT SPECIFICATIONS/DIMENSIONS

Spec/Dimension	VacStar Models					
ELECTRICAL	**VS20**	**VS40**	**VS50**	**VS50H**	**VS80**	**VS80H**
Voltage Rating	*115/230	230	230	230	230	230
Voltage Minimum/Maximum	*110/125 / 205/240	205/240	205/240	205/240	205/240	205/240
Full Load Amps	*16/8	13.4	16	16	26.8	26.8
WATER Inlet Water Pressure (PSI)	20 - 100	20 - 100	20 - 100	20 - 100	20 - 100	20 - 100
Flow Rate Per Pump (gal/min) w/HydroMiser	0.12	0.18	N/A	0.12	N/A	0.18
Flow Rate Per Pump (gal/min) w/o HydroMiser	0.50	0.75	0.50	N/A	0.75	N/A
Water Temperature (°F)	40 - 75	40 - 75	40 - 75	40 - 75	40 - 75	40 - 75
VACUUM LEVEL Preset at Factory (In Hg)	10	10	10	10	10	10
SHIPPING WEIGHT (lbs)	68	85	160	170	200	210
DIMENSIONS Inches (HxWxD)	14 x 11x 11	17 x 11 x 11	22 x 28 x 16	25 x 28 x 16	22 x 28 16	25 x 28 x 16

* VacStar 20 may be converted from 230 Volts (Factory Set) to 115 Volts at installation site. See Figure 9.

SITE REQUIREMENTS

Environment Conditions:	
Operating Conditions	Indoor use at altitudes up to 2000m Temperature 5 to 40° C (41 to 104° F). Maximum relative humidity 80% for temperatures up to 31° C, decreasing linearly to 50% relative humidity at 40° C. Supply voltage fluctuation of +/- 10% of nominal voltage.
IEC 60601-1 Classification	Not suitable for use in the presence of a flammable anesthetics mixture with air or with oxygen or nitrous oxide. Class I Installation Category Ordinary equipment (IPXO). Does not protect against ingress of water. Unit is suitable for continuous operation.

SITE REQUIREMENTS

Requirement	VacStar Models					
ELECTRICAL	**VS20**	**VS40**	**VS50**	**VS50H**	**VS80**	**VS80H**
Minimum Circuit Breaker Rating	20A/115V / 15A/230V	20A	30A	30A	2 ea. 20A or 1 ea. 40A	2 ea. 20A or 1 ea. 40A
Wire Size AWG (Minimum Gauge)	10(115V) / 12(230V)	12	10	15	2 ea. 12 or 1 ea. #8	2 ea. 12 or 1 ea. #8
PLUMBING						
Minimum CFM @ 0" Hg	16	22	32	32	44	44
Air Exhaust	2" schedule 40 pipe	2" schedule 40 pipe	2" schedule 40 pipe	2" schedule 40 pipe	2" schedule 40 pipe	2" schedule 40 pipe
Ambient Temperature	40 - 104°F (5 - 40°C)	40 - 104°F (5 - 40°C)	40 - 104°F (5 - 40°C)	40 - 104°F (5 - 40°C)	40 - 104°F (5 - 40°C)	40 - 104°F (5 - 40°C)
Overhead Plumbing Main Line Minimum/Maximum Inside Diameter (inches)	1 / 1½	1½ / 2	1¼ / 1½	1¼ / 1½	1½ / 2	1½ / 2
End Fitting Maximum	3/4" FNPT	3/4" FNPT	1" FNPT	1" FNPT	1" FNPT	1" FNPT
Riser Diameter Overhead Main Line	½" ID	½" ID	½" ID	½" ID	½" ID	½" ID
Floor Plumbing Main Line Minimum/Maximum Inside Diameter (inches)	1 / 1½	1½ / 2	1¼ / 1½	1¼ / 1½	1½ / 2	1½ / 2
End Fitting Maximum	3/4" FNPT	3/4" FNPT	1" FNPT	1" FNPT	1" FNPT	1" FNPT
Branch Line Diameter Minimum/Maximum Inside Diameter (inches)	3/4 / 1¼	1 / 1¼	1 / 1¼	1 / 1¼	1 / 1¼	1 / 1¼

NOTE: Suction piping must slope at least a ¼" for each 10 feet of run towards the pump.
Use PVC Schedule 40 or Copper Type M.
ALL INSTALLATIONS MUST CONFORM TO LOCAL CODES

REPLACEMENT/REORDER

DESCRIPTION	MODEL	PART NUMBER
Solids Collector Replacement Kit	VacStar 20, 40	55680 (3/4 inch)
	VacStar 50, 50H, 80, 80H	55094 (1 inch)
In-Line Filter Replacement Kit	All VacStar Models	55094

TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	POSSIBLE SOLUTIONS
1. Low suction.	a. Water filter or solids collector clogged. b. Check valves are stuck. c. Low water pressure. d. HydroMiser water recycler is clogged. e. HydroMiser clogged. f. Solenoids not operating. g. Restricted air exhaust.	a. Clean/replace filter and/or collector. b. Use a system cleaner like CleanStream; turn vacuum on and off to free check valve. If valve remains stuck, call your authorized Air Techniques dealer for repair service. c. Raise water pressure. d. Open bypass valve to run VacStar. Call your authorized Air Techniques dealer for repair service. e. Call your authorized Air Techniques dealer for repair service. f. Open bypass valve to run VacStar. Call your authorized Air Techniques dealer for repair service. g. Check air exhaust pipe size to make sure it conforms to specification; check for and clear possible restrictions in air exhaust system.
2 No suction.	a. Pumps off. b. Pumps not running. c. Inlet check valves stuck closed. d. Water inlet filter and/or solids collector clogged. e. Suction hose collapsed. f. Solenoids not operating. g. Water off.	a. Turn pumps on. b. Call your authorized Air Techniques dealer for repair service. c. Call your authorized Air Techniques dealer for repair service. d. Clean/replace filter. e. Hose needs to be replaced, call your authorized Air Techniques dealer for repair service. f. Call your authorized Air Techniques dealer for repair service. g. Turn water on via water inlet valve.
3. Excessive suction.	a. Relief valve stuck closed. b. Relief valve filter clogged. c. Relief valve set too high.	a. Call your authorized Air Techniques dealer for repair service. b. Call your authorized Air Techniques dealer for repair service. c. Lower Relief valve setting.
4 Pumps do not run	a. Main circuit breakers off. b. Electrical problem.	a. Turn main circuit breakers on. b. Call your authorized Air Techniques dealer for repair service.
5 Noisy pumps.	a. Inadequate water supply. b. HydroMiser eductor clogged. c. Drain line collapsed. d. Solenoids not operating.	a. Call plumber to improve water supply system. b. Call your authorized Air Techniques dealer for repair service. c. Hose needs to be replaced. Call your authorized Air Techniques dealer for repair service. d. Call your authorized Air Techniques dealer for repair service.

ACCESSORIES/OPTIONS

The following lists the description, part number, the applicable model and description for accessory components and options available to maintain and expand the **VacStar**™ System to meet your professional needs. Contact your Air Techniques Dealer for information.

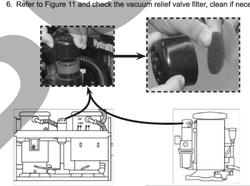
Description	Model	Part Number
HydroMiser Wall Mount Kit	VacStar 50H, 80H	55087
Remote Control Panels with 24V switches	VacStar 20, 40	53250 or 53251
	VacStar 50, 50H, 80, 80H	53113 or 53149
Remote Control Water Valve, with filter	All VacStar Models	53020 (24V) - 3 4" pipe 53020-1 (115V) - 3 4" pipe 53170 (24V) - 1" pipe 53171 (115V) - 1" pipe
HydroMiser Kit	VacStar 20	H-2
	VacStar 40	H-4
	VacStar 50	56041
	VacStar 80	56042
Air/Water Separator	VacStar 20, 40, 50, 80	55540
In-Line Filter Kit	VacStar 20, 40	55078 - 3 4" pipe
	VacStar 50, 50H, 80, 80H	55079 - 1" pipe
CleanStream Evacuation System Cleaner	All VacStar Models	07660 Starter Kit 57640 1 Box of 32 Packets

MAINTENANCE

Like all precision products, your **VacStar**™ requires a certain amount of care on a regularly scheduled basis. A well-organized maintenance program aids dependable equipment operation and reduces problems to a minimum. Routine checks help to detect general overall wear, and replacement of parts can often be made before a problem occurs.

Consequently, we have established minimum maintenance requirements listed below that include routine inspections and the replacement of parts. Adherence to this recommended maintenance schedule will ensure that the equipment will continue performing at its best with uninterrupted service.

- ❑ **Daily Maintenance - Clean vacuum lines**
  Flush all vacuum lines and tubing in the dental system with CleanStream Evacuation System Cleaner.
- ❑ **Routine Inspection - Monthly**
  1. Check tubing for kinks or cracks.
  2. Check for abnormal noises and leaks.
  3. Dual Units: Make sure both motors are running.
  4. Check exterior surfaces for dirt and debris, clean if necessary.
  5. Make sure that no flammable, corrosive, or combustible materials are stored in the equipment room (especially in the area around the equipment).
  6. Refer to Figure 11 and check the vacuum relief valve filter, clean if necessary.



Twin VacStar — Single VacStar

Figure 11. Vacuum Relief Valve Filter Location

MAINTENANCE

Caution: Solids collector may contain biologically hazardous material. Wear protective gloves. Dispose of waste in approved bio-hazard container.

Important: When a VacStar is replacing another vacuum pump, clean the collector DAILY during the first week of operation since larger quantities of particulates may initially occur.
A worn or missing gasket and/or failure to tightly screw the bowl to the solids collector body will cause poor suction due to air leakage.

DO NOT OPERATE THE VACSTAR WITHOUT THE SCREEN INSIDE THE FILTER BOWL.

- ❑ **Intake Solids Collector Replacement - Monthly**
  Refer to Figure 12 and using the replacement kit listed below for the specific **VacStar**™ models, replace the solids bowl, screen and gasket. Do the same replacement if using an optional in-line filter.

VacStar Model	Solids Collector Kit Part No.	Optional In-Line Filter Kit Part No.
VS20 & VS40	55680	55094
VS50, VS50H, VS80 & VS80H	55094	55094

Replacement Procedure

1. Turn off the power and water supply.
2. Unscrew the solids bowl (counter clock-wise) and remove the screen and gasket. Dispose of all three items.
3. Assemble a new bowl, screen and gasket included in the Solids Collector Replacement Kit.
4. Install the new solids collector by screwing the bowl into the solids collector body.

Figure 12. Intake Solids Collector Location

MAINTENANCE

- ❑ **Check/Clean Solenoid Water Inlet Strainer - Semi-Annually**
  Check the Inlet Strainer for dirt and debris by performing the following steps.
  1. Turn off the power and water supply to the equipment.
  2. Use a 1 3/16 inch wrench to unscrew (turn counter clockwise) the cover nut.
  3. Remove the cover nut and strainer.
  4. Inspect the strainer and clean as necessary.

VacStar Models VS20 and VS40

VacStar Models VS50, VS50H, VS80 and VS80H

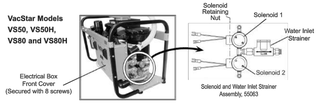
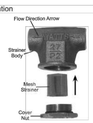


Figure 13. Water Inlet Strainer Location

Assembling the Water Inlet Strainer (All Models)

1. Orienting the assembly with the cover nut facing down as shown, seat strainer into the cover nut.
2. Insert the strainer up into the strainer body and tighten the cover nut.
3. Make sure the strainer stays perpendicular to the strainer body.
4. Push up and tighten the cover nut making sure not over tighten.



CLIENT:

ADDRESS:

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SAN JOSE, CALIFORNIA

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REV. NO	DESCRIPTION	DATE	BY

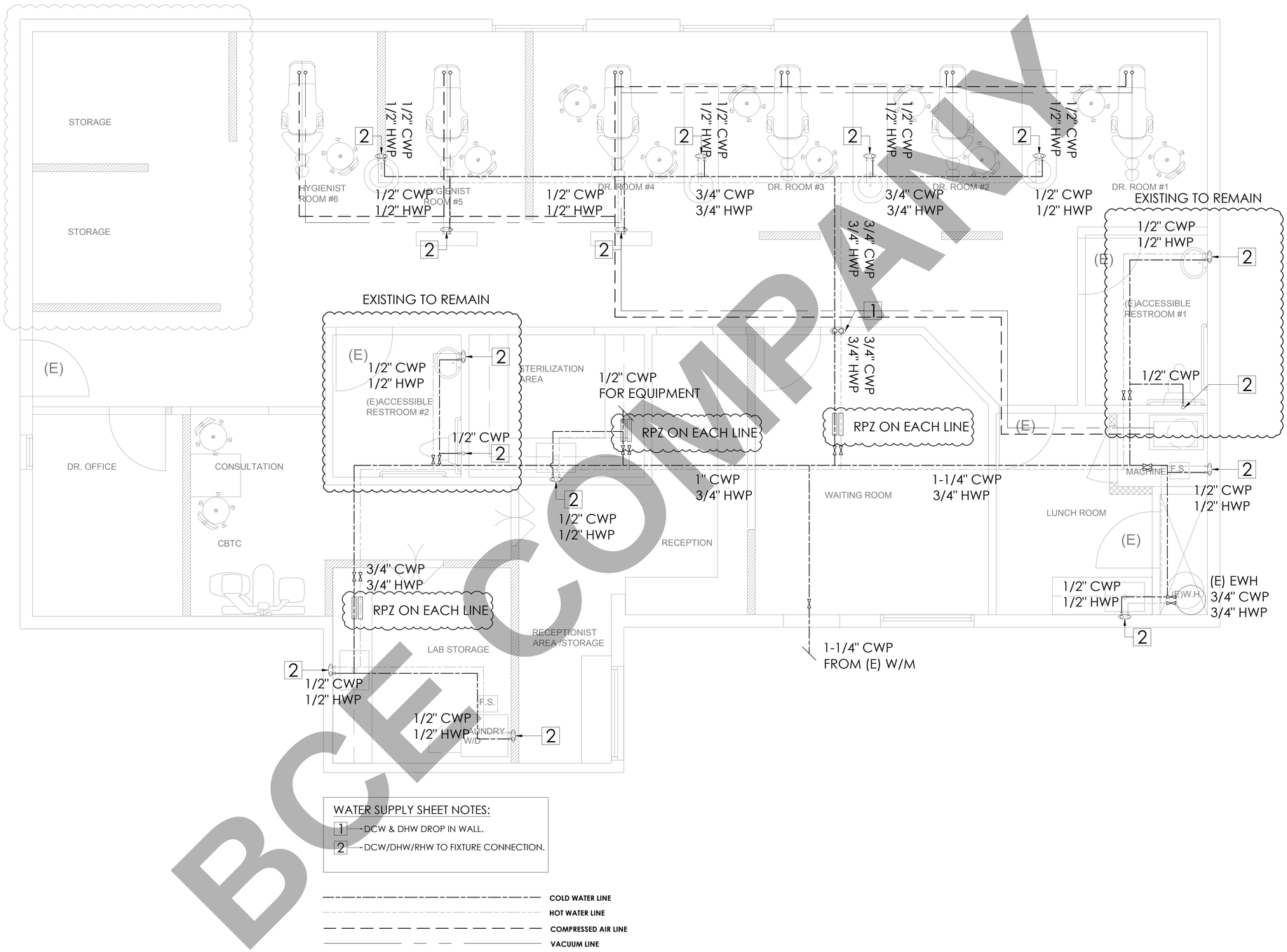
PROJECT:
DOCTOR TRAN DENTAL OFFICE TENANT IMPROVEMENTS.

TITLE:
VACUUM PUMP SPECS

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

DRAWING NO.
P 3 . 0 4

REV.



WATER SUPPLY SHEET NOTES:

1 — DCW & DHW DROP IN WALL.

2 — DCW/DHW/RHW TO FIXTURE CONNECTION.

COLD WATER LINE

HOT WATER LINE

COMPRESSED AIR LINE

VACUUM LINE

CLIENT:

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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:
DOCTOR TRAN DENTAL OFFICE TENANT IMPROVEMENTS.

TITLE:
MAIN FLOOR, W.S, VACUUM AND AIR COMBINED LAYOUT

PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36:
		3/8"=1'-0"

DRAWING NO.
P 4 . 0 1

REV.

Design calculation sheet

Project no:	Date: 2022.09.23	Sheet no.: 1 of 1	Computed by:	MJ	
Subject: 155 N Dental			Checked by:	MN	
Hot Water Calculation			Approved by:	MN	

Application Type: Office Building

Water Temperature

Tin	=	50	°F	=	10	°C
Tout	=	140	°F	=	60	°C
⌂T	=	90	°F	=	50	°C

Fixture	GPH		QTY.			
Kitchen Sink	20	x	1	=	20	gph
Basin, Public lavatory	6	x	4	=	24	gph
Service Sink	20	x	3	=	60	gph

Showers	GPH		Shower Factor		GPH		QTY.			
Showers	30	x	1	=	30	x		=	0	gph

Other	GPH	QTY.

Maximum Possible Demand	=	104	gph
Demand Factor **(Custom)**	=	0.3	gph
Maximum Probable Demand	=	31.2	gph
Maximum Probable Demand	=	0.52	gpm
	=	0.03	L/s
Heater Recovery Capacity	=	0.52	gpm
Storage Factor **(Custom)**	=	0.6	
Storage Tank Capacity	=	18.72	gal
		70.8	liters
Actual Selection		71	Liters

Heater or Coil	=	500	x	gpm	x	⌂T	/	Efficiency			
Capacity	=	500	x	0.52	x	90	/	0.9	=	26,000	btu/hr
									=	7.7	kW
						Actual Selection			=	8	kW

RE: [EXTERNAL] Re: plan reviews for medical waste generators

From: swpadmin (swpadmin@deh.scgov.org)
To: simon@1110architect.com
Date: Friday, January 20, 2023 at 09:58 AM PST

Hi Simon,

We do not review plans for dental office. Once you get approval from building department and complete construction, contact our office so we can issue an invoice for operating permit at that time.

Thanks,
Sally

From: simon lin <simon@1110architect.com>
Sent: Thursday, January 19, 2023 5:10 PM
To: swpadmin <swpadmin@deh.scgov.org>
Subject: Re: [EXTERNAL] Re: plan reviews for medical waste generators

Thank you, Sally,

For now, should we wait for the plan review comment, or for the invoice ?

Regards,

Simon Lin
Architect

408.505.3805
Eleven Ten Architects
simon@1110architect.com | http://www.1110architect.com

On Thursday, January 19, 2023 at 01:29:34 PM PST, swpadmin <swpadmin@deh.scgov.org> wrote:

Hi Simon,

Service Request number **SR0870973** has been assigned for your project. Please be sure to re-submit the application form when the facility is ready to operate. Our office will issue an invoice for permit at that time.

Thank you.

Sally Lee, REHS
Senior Environmental Health Specialist
County of Santa Clara
Department of Environmental Health
Solid/Medical Waste Programs
1555 Berger Drive, Suite 300, San Jose, CA 95112-2716
T: 408-918-2925 | F: 408-280-6479
www.scwaste.org

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From: simon lin <simon@1110architect.com>
Sent: Tuesday, January 17, 2023 3:17 PM
To: swpadmin <swpadmin@deh.scgov.org>
Subject: Re: [EXTERNAL] Re: plan reviews for medical waste generators

Hi Sally

Attached please find the

SMALL QUANTITY MEDICAL WASTE GENERATOR PERMIT APPLICATION

Please confirm it's receipt on your end.

Question: Is Solid Waste going to send us some form of clearance,
or are they going to check this "Not Required" in a common system ,
so the Building Dept would know the Solid Waste doesn't need to be involved ?

Thanks,

Simon Lin
Architect

408.505.3805
Eleven Ten Architects
simon@1110architect.com | http://www.1110architect.com

On Monday, January 16, 2023 at 11:14:30 AM PST, swpadmin <swpadmin@deh.scgov.org> wrote:

Hi Simon,

Per Hazmat Division, they don't need to get involved at this point.

Please submit the SQG application that we emailed you before when the facility is built and ready to operate.

Thank you.

Sally

From: swpadmin
Sent: Friday, January 6, 2023 3:59 PM
To: simon lin <simon@1110architect.com>
Cc: Jorgensen, Nicole <Nicole.Jorgensen@deh.scgov.org>; Lee, Sally <sally.lee@deh.scgov.org>
Subject: RE: [EXTERNAL] Re: plan reviews for medical waste generators

Hi Simon,

Please see my responses in red below.

A1. Installation of X-ray equipment requires County Health approval prior to building permit issuance. Otherwise please indicate "No X-ray equipment proposed" on the cover sheet.

We have other comments from the Building dept to related to DEH

DEH Solid Waste Program does not review plans for medical waste facility. However, you may want to contact our Hazardous Materials Compliance Division for their requirements on X-ray equipment.

Could you let us know what the typical applications a dental office is required to file?

Typically, when the dental office is ready to operate, Solid Waste Program will require this permit application for small quantity generators (SQG). When we receive the application, we will also forward a copy to HMCD to process.

5. P0.00- Proof of approval is required by Environmental Services prior to approval of plumbing plans. https://www.sanjoseca.gov/your-government/environment/water-utilities/stormwater/businesses-environmental-regulations-inspection-programs/wastewater-plan-checks-432 and Dental wastewater discharge permit is required. https://www.sanjoseca.gov/home/showpublisheddocument/32649/637589209794300000

It looks like Building Department wanted you to contact the City Environmental Services for this requirement, not County DEH.

6. P0.00- Proof of approval is required by the Health prior to approval of plumbing plans. https://solidwaste.scgov.org/sites/g/files/exjcdb761/files/MV_HM_App_HMCD122_Fillable.pdf
In this case, if you fill out the application form, we can generate a project number for you to submit to the City to show that we are aware of the project. However, we will not issue the permit until the facility is ready to operate.

Please let me know if you have further questions.

Sally Lee, REHS
Senior Environmental Health Specialist
County of Santa Clara
Department of Environmental Health
Solid/Medical Waste Programs
1555 Berger Drive, Suite 300, San Jose, CA 95112-2716
T: 408-918-2925 | F: 408-280-6479
www.scwaste.org

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From: simon lin <simon@1110architect.com>
Sent: Thursday, January 5, 2023 3:55 PM
To: swpadmin <swpadmin@deh.scgov.org>; Jorgensen, Nicole <Nicole.Jorgensen@deh.scgov.org>
Subject: [EXTERNAL] Re: plan reviews for medical waste generators

Hi Nicole

Attached please find the Architectural and Plumbing plans for this project.

In addition to the previous comment

A1. Installation of X-ray equipment requires County Health approval prior to building permit issuance. Otherwise please indicate "No X-ray equipment proposed" on the cover sheet.

We have other comments from the Building dept to related to DEH

Could you let us know what the typical applications a dental office is required to file?

5. P0.00- Proof of approval is required by Environmental Services prior to approval of plumbing plans. https://www.sanjoseca.gov/your-government/environment/water-utilities/stormwater/businesses-environmental-regulations-inspection-programs/wastewater-plan-checks-432
and Dental wastewater discharge permit is required. https://www.sanjoseca.gov/home/showpublisheddocument/32649/637589209794300000

6. P0.00- Proof of approval is required by the Health prior to approval of plumbing plans. https://solidwaste.scgov.org/sites/g/files/exjcdb761/files/MV_HM_App_HMCD122_Fillable.pdf

Thanks,

Simon Lin
Architect

408.505.3805
Eleven Ten Architects
simon@1110architect.com | http://www.1110architect.com

On Wednesday, December 14, 2022 at 11:19:42 AM PST, Jorgensen, Nicole <nicole.jorgensen@deh.scgov.org> wrote:

Simon,

We do not conduct plan reviews for medical waste generators.

To meet the plan review sign-off requirements of the City, please submit a health permit application for proposed medical waste generator for less than 200lb of peak month waste or this application for greater than 200lb to swpadmin@cep.scgov.org

Once the permit application is reviewed and processed, our office will issue you a Service request number (SR#).

This SR# will serve as the signoff for the project.

Once construction is complete, have the applicant notify us to bill for, and issue the permit.

Please let me know if you have any other questions.

Nicole Jorgensen, REHS
Solid Waste Program
Department of Environmental Health
Santa Clara County
1555 Berger Drive, Suite 300
San Jose, CA 95112
(408) 918-3492
nicole.jorgensen@deh.scgov.org

For more information on FREE COVID-19 Testing visit: http://sccfreetest.org

To express a complaint or concern about an organization visit: Error! Hyperlink reference not valid.

For More Information on Environmental Health Guidance for Coronavirus visit us at: http://EHInfo.org/coronavirus

COVID-19 Community Levels | CDC

SMARTER Plan - Coronavirus COVID-19 Response (ca.gov)

Specifications

Nominal Capacity: (?)	19	Type:	POU
Limited Warranty Tank:	6 years	Height:	25"
Limited Warranty Parts:	6 years	Diameter:	18"
Max Wattage:	1500	Width:	18"
Water Connection Location:	Top	Depth:	18"
Water Connection Size:	3/4"	Weight:	"
T&P Relief Valve:	Yes		

CLIENT:

ADDRESS:

155 NORTH JACKSON AVENUE
SAN JOSE, CALIFORNIA

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:
DOCTOR TRAN DENTAL OFFICE TENANT IMPROVEMENTS.

TITLE:
HOT WATER CALCULATION AND DATA SHEETS.

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

DRAWING NO.
P 5 . 0 1

REV.

EQUIPMENT

AirStar® NEO Air Compressors

AirStar 10 NEO
PN AS10NEO

AirStar 30 NEO
PN AS30NEO

AirStar 50 NEO
PN AS50NEO

AirStar 70 NEO
PN AS70NEO

PART NO.	DESCRIPTION	PRICE
AS10NEO	**AirStar 10 NEO;** Max. 2 Simultaneous Users; 1.0HP, Single, 120 V	**$ 6,695.00**
AS21NEO	**AirStar 21 NEO;** Max. 3 Simultaneous Users; 1.6HP, Single, 120 V	**$ 7,495.00**
AS22NEO	**AirStar 22 NEO;** Max. 3 Simultaneous Users; 1.6HP, Single, 220 V	**$ 7,495.00**
AS30NEO	**AirStar 30 NEO;** Max. 4 Simultaneous Users; 1.0HP, Twin, 220 V	**$ 9,695.00**
AS40NEO	**AirStar 40 NEO;** Max. 5 Simultaneous Users; 1.0HP, Single & 1.6HP, SIngle, 220 V	**$ 10,595.00**
AS50NEO	**AirStar 50 NEO;** Max. 7 Simultaneous Users; 1.6HP, Twin, 220 V	**$ 11,795.00**
AS70NEO	**AirStar 70 NEO;** Max. 10 Simultaneous Users; 1.6HP, Triple, 220 V	**$ 15,895.00**

Recommend using Preventative Maintenance Kits found on page 32.

VacStar® NEO Wet Vacuums

VacStar 40 NEO
PN VS40NEO

VacStar 80 NEO
PN VS80NEO

Warranty: All VacStar products feature a 5 year limited warranty on components.

Specifications	VS20NEO	VS40NEO	VS50NEO	VS80NEO
Max. Users	2	3	4	7
# of Motors	1	1	2	2
Water Flow Rate (gpm)	0.13	0.13	0.26	0.26
Voltage Rating (V)	220	220	220	220
Voltage (Min/Max)♦	198/242	198/242	198/242	198/242
Panel Breaker (A)	15	20	15 (x2) 30	20 (x2) 40
Weight (Lbs)	65	65	165	165
Dimensions W x H x D (inches)	12 x 18.5 x 12	12 x 18.5 x 12	28 x 21 x 17	28 x 21 x 17

♦ *See Page 44 on Buck/Boost Transformer if voltage is near or outside of min/max ratings.*

**ALL VACUUM AND COMPRESSED AIR PIPE SIZING AND INSTALLATION SHALL FOLLOW NFPA 96 AND CPC 2019 CODE.
MANUFACTURER TO MAKE THAT THESE CODES SHALL BE ADOPTED WHEN DESIGNED, INSTALLING AND COMMISSIONING THE SYSTEM.**

CLIENT:

ADDRESS:

**155 NORTH JACKSON AVENUE
SAN JOSE, CALIFORNIA**

NOTES:

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REV. NO.	DESCRIPTION	DATE	BY

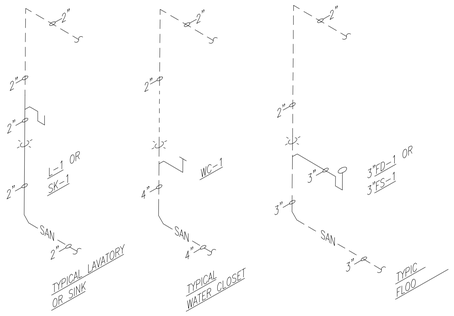
PROJECT:
DOCTOR TRAN DENTAL OFFICE TENANT IMPROVEMENTS.

TITLE:
VACUUM AND COMPRESSOR DATASHEET

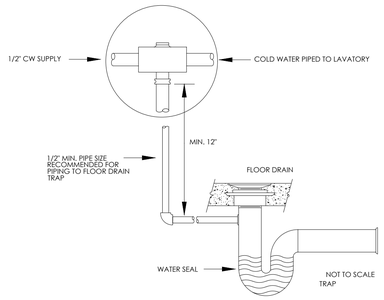
PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36:
		NTS

DRAWING NO.
P 6 . 0 1

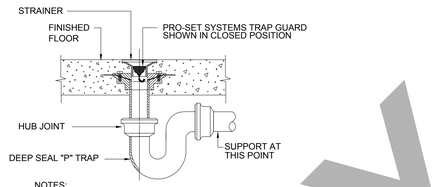
REV.



1 **TYPICAL WASTE AND VENT RISERS**
SCALE: NONE

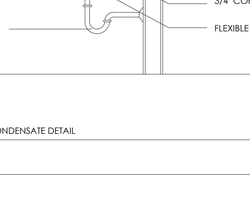


2 TRAP PRIMER

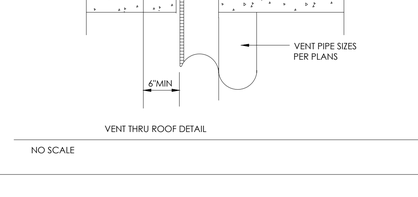


NOTES:
1. TRAP GUARD SHALL BE FACTORY FITTED TO MATCH EACH FLOOR DRAIN (AND FLOOR SINK) BY SIZE, MODEL, AND MANUFACTURER.
2. FLOOR SINK/HUB DRAIN TRAP GUARD INSTALLATION IS SIMILAR.
3. INSTALLATION OF TRAP GUARD TO BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
4. INSERT TRAP GUARD ONLY AFTER FINAL RODDING OF DRAINS. INSTALL TRAP GUARD WITH CLEAR SILICONE CAULK FOR GAS TITE SEAL. FOR DRAIN RODDING AFTER INSTALLATION, INSERT SEWER TAPE THROUGH LIGHTLY GREASED 1-1/2" PVC PIPE TO PROTECT TRAP GUARD.

3 **FLOOR DRAIN WITH TRAP SEAL PROTECTION**
SCALE: NONE



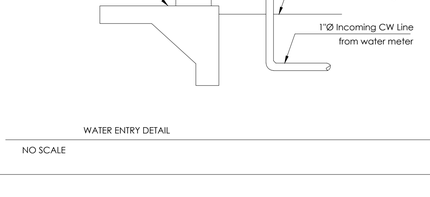
ANTI-SCALD MIXING VALVE
NO SCALE



CONTRACTOR TO REFER TO PLUMBING DRAWINGS FOR SIZE AND LOCATION OF SANITARY SEWER LINE.

NOTE:
G.C. TO INSULATE ANY DRAIN OR P-TRAP UNDER SLAB THAT NORMALLY HOLDS WATER

FLOOR SINK DETAIL
NO SCALE



CONTRACTOR TO REFER TO PLUMBING DRAWINGS FOR SIZE AND LOCATION OF SANITARY SEWER LINE.

NOTE:
G.C. TO INSULATE ANY DRAIN OR P-TRAP UNDER SLAB THAT NORMALLY HOLDS WATER

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

CLIENT:

ADDRESS:

155 NORTH JACKSON AVENUE
SAN JOSE, CALIFORNIA

NOTES:

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:
DOCTOR TRAN DENTAL OFFICE TENANT IMPROVEMENTS.

TITLE:
PLUMBING GENERAL DETAILS

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

DRAWING NO.
P 7 . 0 1

REV.

STATE OF CALIFORNIA
Mechanical Systems
NRCC-MCH-E
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-MCH-E
Project Name:	155 N Jackson Ave STE 102 TI	Report Page:	(Page 1 of 7)
Project Address:	155 N Jackson Ave STE 102	Date Prepared:	10/3/2022

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 §140.6, or §141.0(b)2 for alterations.

A. GENERAL INFORMATION

01	Project Location (city)	San Jose	04	Total Conditioned Floor Area	2560
02	Climate Zone	4	05	Total Unconditioned Floor Area	0
03	Occupancy Types Within Project:		06	# of Stories (Habitable Above Grade)	1
☒	Office (B)	☐ Retail (M)	☐	Non-refrigerated Warehouse (S)	
☐	Hotel/ Motel Guest Rooms (R-1)	☐ School (E)	☒	Healthcare Facility (I)	
☐	High-Rise Residential (R-2/R-3)	☐ Relocatable Class Bldg (E)	☒	Other (write in)	See Table J

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 §140.6, or §141.0(b)2 for alterations.

01	02	03
Air System(s)	Wet System Components	Dry System Components
☐ Heating Air System	☐ Water Economizer	☐ Air Economizer
☐ Cooling Air System	☐ Pumps	☐ Electric Resistance Heat
Mechanical Controls	☐ System Piping	☐ Fan Systems
☒ Mechanical Controls (existing to remain, altered or new)	☐ Cooling Towers	☐ Ductwork (existing to remain, altered or new)
	☐ Chillers	☒ Ventilation
	☐ Boilers	☐ Zonal Systems/ Terminal Boxes

ALERT! Healthcare facilities must be ventilated in accordance with Chapter 4 of the CMC as amended by OSHPD and do not need to show compliance with Title 24, Part 6 ventilation requirements in Table J.

Registration Number: | Registration Date/Time: | Registration Provider: Energysoft

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance | Report Version: 2019.1.003 Schema Version: rev 20200601 | Report Generated: 2022-10-03 09:06:12

STATE OF CALIFORNIA
Mechanical Systems
NRCC-MCH-E
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-MCH-E
Project Name:	155 N Jackson Ave STE 102 TI	Report Page:	(Page 2 of 7)
Project Address:	155 N Jackson Ave STE 102	Date Prepared:	10/3/2022

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.

01		02		03		04		05		06		07		08	09
System Summary §110.1, §110.2, §140.4	AND	Pumps §140.4(k)	AND	Fans/ Economizers §140.4(c), §140.4(e)	AND	System Controls §110.2, §120.2, §140.4(f)	AND	Ventilation §120.1	AND	Terminal Box Controls §140.4(d)	AND	Distribution §120.3, §140.4(l)	AND	Cooling Towers §110.2(e)2	Compliance Results
(See Table F)		(See Table G)		(See Table H)		(See Table I)		(See Table J)		(See Table K)		(See Table L)		(See Table M)	
	AND		AND		AND	Yes	AND	Yes	AND		AND		AND		COMPLIES
Mandatory Measures Compliance (See Table Q for Details)															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. HVAC SYSTEM SUMMARY (DRY & WET SYSTEMS)

This section does not apply to this project.

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: | Registration Date/Time: | Registration Provider: Energysoft

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance | Report Version: 2019.1.003 Schema Version: rev 20200601 | Report Generated: 2022-10-03 09:06:12

STATE OF CALIFORNIA
Mechanical Systems
NRCC-MCH-E
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-MCH-E
Project Name:	155 N Jackson Ave STE 102 TI	Report Page:	(Page 3 of 7)
Project Address:	155 N Jackson Ave STE 102	Date Prepared:	10/3/2022

I. SYSTEM CONTROLS

This table is used to demonstrate compliance with mandatory controls in §110.2 and §120.2 and prescriptive controls in §140.4(f) and (n) or requirements in §141.0(b)2E for altered space conditioning systems.

01	02	03	04	05	06	07	08	09
System Name	System Zoning	Conditioned Floor Area Being Served (ft²)	Thermostats §110.2(b) & (c)[1], §120.2(a)or §141.0(b)2E	Shut-Off Controls §120.2(e)	Isolation Zone Controls §120.2(a)	Demand Response §110.12 and §120.2(b)	Supply Air Temp. Reset §140.4(f)	Window Interlocks per §140.4(n)

[1]FOOTNOTES: Gravity gas wall heaters, gravity floor heaters, gravity room heaters, non-central electric heaters, fireplaces or decorative gas appliances, wood stoves are not required to have setback thermostats.

*Notes: Controls with a * require a note in the space below explaining how compliance is achieved. EX: system 1: SA Temp Reset: Exempt because zones compliant with §140.4(d) ; EXCEPTION 1 to §140.4(f)

J. VENTILATION AND INDOOR AIR QUALITY

This table is used to demonstrate compliance with mandatory ventilation requirements in §120.1 and §120.2(e)3B for all nonresidential, high-rise residential and hotel/motel occupancies. For alterations, only ventilation systems being altered within the scope of the permit application need to be documented in this table. In lieu of this table, the required outdoor ventilation rates and airflows may be shown on the plans or the calculations can be presented in a spreadsheet.

01	☐	Check the box if the project is showing ventilation calculations on the plans, or attaching the calculations instead of completing this table.
02	☒	Check this box if the project included Nonresidential or Hotel/Motel spaces
	☐	Check this box if the project included new or altered high-rise residential dwelling units.
03	☐	Check the box if the project is using natural ventilation in any nonresidential or hotel/motel spaces to meet required ventilation rates per §120.1(c)2.

Nonresidential and Hotel/ Motel Ventilation Systems

04	05			06		07
System Name	(E) HVAC System (RTU-01)	System Design OA CFM Airflow[3]	194	System Design Transfer Air CFM	0	Air Filtration per §120.1(c) and §141.0(b)2 [2] Provided per §120.1(c) (NR and Hotel/Motel))

08	09	10	11	12	13	14	15	16
	Mechanical Ventilation Required per §120.1(c)3 [1]				Exh. Vent per §120.1(c)4			
Space Name ot Item Tag	Occupancy Type[4]	Conditioned Floor Area (ft²)	# of Shower/ heads/ toilets	# of people[5]	Required Min OA CFM	Required Min CFM	Provided per Design CFM	DCV or Sensor Controls per §120.1(d)3, §120.1(d)5, and §120.1(e)3 [6]

Registration Number: | Registration Date/Time: | Registration Provider: Energysoft

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance | Report Version: 2019.1.003 Schema Version: rev 20200601 | Report Generated: 2022-10-03 09:06:12

STATE OF CALIFORNIA
Mechanical Systems
NRCC-MCH-E
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-MCH-E
Project Name:	155 N Jackson Ave STE 102 TI	Report Page:	(Page 4 of 7)
Project Address:	155 N Jackson Ave STE 102	Date Prepared:	10/3/2022

J. VENTILATION AND INDOOR AIR QUALITY

Restrooms	Toilet, public	168	2		0	140	140	DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Not required space type
Hygienist Rooms Area	All others	1040			156	0	0	DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Not required space type
Dr. Office	Office space	86			12.9	0	0	DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Not required space type
Consultation	All others	117			17.6	0	0	DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Not required space type
Lab Storage	All others	100			15	0	0	DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Not required space type
Sterilization Area	All others	71			10.6	0	0	DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Not required space type
Reception	Reception area	125			18.8	0	0	DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Not required space type

Registration Number: | Registration Date/Time: | Registration Provider: Energysoft

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance | Report Version: 2019.1.003 Schema Version: rev 20200601 | Report Generated: 2022-10-03 09:06:12

STATE OF CALIFORNIA
Mechanical Systems
NRCC-MCH-E
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-MCH-E
Project Name:	155 N Jackson Ave STE 102 TI	Report Page:	(Page 5 of 7)
Project Address:	155 N Jackson Ave STE 102	Date Prepared:	10/3/2022

J. VENTILATION AND INDOOR AIR QUALITY

Waiting Room	All others	179			26.8	0	0	DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Not required space type
Lunch Room	Break room	121			60.5	0	0	DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Not required space type
Corridor	Corridor	553			83	0	0	DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Not required space type
17	Total System Required Min OA CFM				401	18	Ventilation for this System Complies?		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-A and 120.1-B.*

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

[6] *§120.2(e)3 requires systems serving rooms that are required by §130.1(c)4 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 250ft² or smaller, multipurpose rooms less than 1,000 ft², classrooms, conference rooms, restrooms, aisles and open areas in warehouses, library book stack aisles, corridors, stairwells, parking garages, and loading and unloading zones, unless excepted by §130.1(c).*

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.

Registration Number: | Registration Date/Time: | Registration Provider: Energysoft

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance | Report Version: 2019.1.003 Schema Version: rev 20200601 | Report Generated: 2022-10-03 09:06:12

STATE OF CALIFORNIA
Mechanical Systems
NRCC-MCH-E
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-MCH-E
Project Name:	155 N Jackson Ave STE 102 TI	Report Page:	(Page 6 of 7)
Project Address:	155 N Jackson Ave STE 102	Date Prepared:	10/3/2022

M. COOLING TOWERS

This section does not apply to this project.

N. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, please explain why in Table E Additional Remarks. These documents must be provided to the building inspector during construction and can be found online at https://www.energy.ca.gov/title24/2019standards/2019_compliance_documents/Nonresidential_Documents/NRCI/

Form/Title	Field Inspector Pass	Field Inspector Fail
NRCI-MCH-01-E - Must be submitted for all buildings	☐	☐

O. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

There are no NRCA forms required for this project.

P. DECLARATION OF REQUIRED CERTIFICATES OF VERIFICATION

There are no NRCV forms required for this project.

Q. 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 Mandatory Measures Note Block	Yes	M-Sheets

Registration Number: | Registration Date/Time: | Registration Provider: Energysoft

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance | Report Version: 2019.1.003 Schema Version: rev 20200601 | Report Generated: 2022-10-03 09:06:12

STATE OF CALIFORNIA
Mechanical Systems
NRCC-MCH-E
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-MCH-E
Project Name:	155 N Jackson Ave STE 102 TI	Report Page:	(Page 7 of 7)
Project Address:	155 N Jackson Ave STE 102	Date Prepared:	10/3/2022

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

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

Documentation Author Name: Viranchi Shah	Documentation Author Signature: Viranchi Shah
Company: www.gettitle24.com	Signature Date: 10/3/2022
Address: 14730 Beach Blvd.	CEA/ HERS Certification Identification (if applicable):
City/State/Zip: La Mirada CA 90638	Phone: 7148884736

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 Alam	Responsible Designer Signature: Syed Alam
Company: InnoDez	Date Signed: 2022-10-03
Address: 726 Foxbrough Pl	License: 27987
City/State/Zip: Pleasanton CA 94566	Phone:

Registration Number: | Registration Date/Time: | Registration Provider: Energysoft

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance | Report Version: 2019.1.003 Schema Version: rev 20200601 | Report Generated: 2022-10-03 09:06:12

HVAC SYSTEM HEATING AND COOLING LOADS SUMMARY

Project Name	Date
155 N Jackson Ave STE 102 TI	10/3/2022
System Name	Floor Area
(E) HVAC System (RTU-01)	2,560

ENGINEERING CHECKS

Number of Systems	1
Heating System	
Output per System	36,000
Total Output (Btuh)	36,000
Output (Btuh/sqft)	14.1
Cooling System	
Output per System	36,000
Total Output (Btuh)	36,000
Total Output (Tons)	3.0
Total Output (Btuh/sqft)	14.1
Total Output (sqft/Ton)	853.3
Air System	
CFM per System	1,200
Airflow (cfm)	1,200
Airflow (cfm/sqft)	0.47
Airflow (cfm/Ton)	400.0
Outside Air (%)	16.2%
Outside Air (cfm/sqft)	0.08
Note: values above given at ARI conditions	

SYSTEM LOAD

	COIL COOLING PEAK CFM	Sensible	Latent	COIL HTG. PEAK CFM	Sensible
Total Room Loads	3,330	64,577	1,192	1,122	42,745
Return Vented Lighting		0			
Return Air Ducts		3,229			2,137
Return Fan		0			0
Ventilation	194	1,717	476	194	7,801
Supply Fan		3,035			-3,035
Supply Air Ducts		3,229			2,137
TOTAL SYSTEM LOAD		75,786	1,667		51,786

HVAC EQUIPMENT SELECTION

Packaged Fau/AC (LENNOX LRP16QX36-720VP)	35,513	18	36,000
Total Adjusted System Output (Adjusted for Peak Design conditions)	35,513	18	36,000
TIME OF SYSTEM PEAK		Jul 2 PM	Jan 1 AM

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

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

CLIENT:

ADDRESS:
155 NORTH JACKSON AVENUE
SAN JOSE, CALIFORNIA

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:
DOCTOR TRAN DENTAL OFFICE TENANT IMPROVEMENTS.

TITLE:
T24-02

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

DRAWING NO.: T 2 4 - 2

REV.:

LIST OF SYMBOLS AND SERVICES

	LED REESSED MOUNTED LIGHTING UNIT 50VA SIMILAR TO Commercial Electric 1 ft. x 4 ft. 50-Watt Dimmable White Integrated LED Edge-Lit Deco Panel Ceiling Flushmount Light with Color Changing CCT. B07G4B864M
	2X4 FT LED Flat Panel Light,75W,7800 lm,5000K Daylight White,Drop Ceiling Flat Panel Light,Recessed Edge-Lit ETL Listed. BY Greensun BRAND WYZM B08L7KJDKT
	Globe Electric 91126 6" Ultra Slim LED Integrated Recessed Lighting Kit, 12 Watts, Energy Star, IC Rated, Dimmable, Wet Rated, White, 6.31" Hole Size, LED Recessed Lighting, Bathroom Lights
EO / EO	WALL MOUNTED / FLOOR MOUNTED ELECTRICAL OUTLETS
S S_3	LIGHT SWITCH - WALL MOUNTED @ +48" AFF UNLESS NOTED SUBSCRIPTS: 2 = 2-POLE SWITCH 3 = 3 WAY SWITCH 4 = 4 WAY SWITCH D = DIMMER SWITCH K = KEY OPERATED SWITCH M = COMBINED WITH OCCUPANCY SENSOR P = SWITCH WITH PILOT LIGHT T = WITH TIMER
EXIT	WALL MOUNTED NON DIRECTIONAL EXIT LIGHT. SHALL BE EQUIPPED WITH BATTERY WITH MINIMUM 90 MINUTES AUTONOMY.
	WALL MOUNTED UNIDIRECTIONAL EXIT LIGHT. SHALL BE EQUIPPED WITH BATTERY WITH MINIMUM 90 MINUTES AUTONOMY.
	WALL MOUNTED BIDIRECTIONAL EXIT LIGHT. SHALL BE EQUIPPED WITH BATTERY WITH MINIMUM 90 MINUTES AUTONOMY.
	120/208V, 3PH, PANEL BOARD
	ceiling EXHAUST FAN EXHAUST FAN
	DUPLEX RECEPTACLE - WALL MOUNTED @ +18" AFF UNLESS NOTED
YxXXA	NON-FUSED DISCONNECT SWITCH - SIZE AS INDICATED
SD/CMD	HARDWIRED INTERLOCKED SMOKE DETECTOR AND CARBON MONOXIDE ALARM WITH BATTERY BACKUP
	WALL MOUNTED EMERGENCY LIGHT. SHALL BE EQUIPPED WITH BATTERY WITH MINIMUM 90 MINUTES AUTONOMY.
DS	CEILING MOUNTED DAYLIGHT SENSOR
———	CONDUITS IN CEILING
— — — — —	CONDUITS UNDER TILES

INSTALLATION HEIGHTS:
- h1: 23.622 inches.
- h2: 43.3071 inches.
- h3: 47.2441 inches.
- h4: 70.86 inches.
- h5: 94.48 inches.
- h6: 60 inches.

ELECTRICAL ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
A/C	AMP INTERRUPTING CURRENT
AL	ALUMINUM
ATS	AUTOMATIC TRANSFER SWITCH
BFG	BELOW FINISHED GRADE
BKBD	BACKBOARD
C	CONDUIT
CU	COPPER
DB	DISTRIBUTION BOARD
(E)	EXISTING TO REMAIN
EA	EACH
EM	EMERGENCY
EMCS	ENERGY MANAGEMENT CONTROL SYSTEM
EWC	ELECTRIC WATER COOLER
F	FUSE (DUAL ELEMENT, TIME DELAY)
FBO	FINISHED BY OTHERS
FPN	FUSE PER NAMEPLATE
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GND	GROUND
W.P	WEATHER PROOF
HOA	HAND-OFF-AUTOMATIC
HP	HORSEPOWER
IG	ISOLATED GROUND
JBOX	JUNCTION BOX
KVA	KILOVOLT-AMPS
KW	KILOWATT
MCC	MOTOR CONTROL CENTER
MPC	MINI POWER CENTER
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRIC CODE
NF	NON-FUSED
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NO	NOT TO SCALE
PB	PULLBOX
PNL	PANEL BOARD
(R)	EXISTING TO BE RELOCATED
RGS	RIGID GALVANIZED STEEL
SWBD	SWITCH BOARD
SQFT	SQUARE FEET
TL	TWISTLOCK
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION
TVP	TYPICAL
UG	UNDERGROUND
UMC	UNIFORM MECHANICAL CODE
UON	UNLESS OTHERWISE NOTED
UPS	UNINTERRUPTABLE POWER
V	VOLTS
VA	VOLT-AMPS
V/PH/A	VOLTS/PHASE/AMPS
V/PH/HZ	VOLTS/PHASE/HERTZ
VFD	CARIABLE FREQUENCY DRIVE - PROVIDED BY MECHANICAL
WP	WEATHER PROOF (NEMA 3R)
(X)	EXISTING TO BE REMOVED
XFMR	TRANSFORMER
XP	EXPLOSION PROOF

GENERAL NOTES:

1. 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

2. THE ELECTRICAL INSTALLATION SHALL MEET THE APPROVAL OF THE LOCAL GOVERNING AUTHORITIES AND THE OWNER'S REPRESENTATIVE PRIOR TO ACCEPTANCE.

3. 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.

4. 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.

5. 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.

6. 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.

7. 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.

8. ALL CONDUITS IN PUBLIC SHALL BE CONCEALED UNLESS NOTED OTHERWISE.

SCOPE OF WORK

PROVIDE ELECTRICAL DRAWINGS FOR A TENANT IMPROVEMENT PROJECT THAT IS CHANGED FROM NORMAL OFFICES TO DENTAL OFFICES.
WE HAVE EXISTING METERS AND PANEL BOARD. THE BRANCH CIRCUITS DISTRIBUTION IN THE EXISTING PANEL BOARD CIRCUITING IS CHANGED BASED ON NEW PARTITIONING AND USE.
EXISTING PANEL RATING IS STILL THE SAME, SO NO ADDITIONAL LOAD TO THE MAIN PANEL.

APPLICABLE CODES:
2019 California Building Code,
2019 California Electrical Code,
2019 California Building Energy Efficiency Standards.
2019 City of San Jose Reach Code.

2

CLIENT:

ADDRESS:

155 NORTH JACKSON AVENUE
SAN JOSE, CALIFORNIA

NOTES:

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REV. NO.	DESCRIPTION	DATE	BY
02	CITY COMMENTS	3/23	A.B

PROJECT:
DOCTOR TRAN DENTAL OFFICE TENANT IMPROVEMENTS.

TITLE:
ELECTRICAL GENERAL NOTES AND LEGENDS

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

DRAWING NO.
E 0 . 0 0

REV.

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, JACCUZZI 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.

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 GASKETING, INVERTED LENS, AND FOOD SERVICE RATING FOR ALL FIXTURES LOCATED IN FOOD SERVICE AREAS.
17. FLUORESCENT LUMINARIES 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 FLUORESCHENT LAMPS SHALL BE OF A LOW MERCURY DESIGN, HAVE A MINIMUM CRI RATING OF 85 AND 3500K COLOR TEMPERATURE UNLESS NOTED OTHERWISE.

CLIENT:

ADDRESS:

155 NORTH JACKSON AVENUE
SAN JOSE, CALIFORNIA

CONFIDENTIALITY STATEMENT:

NOTES:

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REV. NO.	DESCRIPTION	DATE	BY
02	CITY COMMENTS	3/23	A.B

PROJECT:
DOCTOR TRAN DENTAL OFFICE TENANT IMPROVEMENTS.

TITLE:
ELECTRICAL SPECIFICATION

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

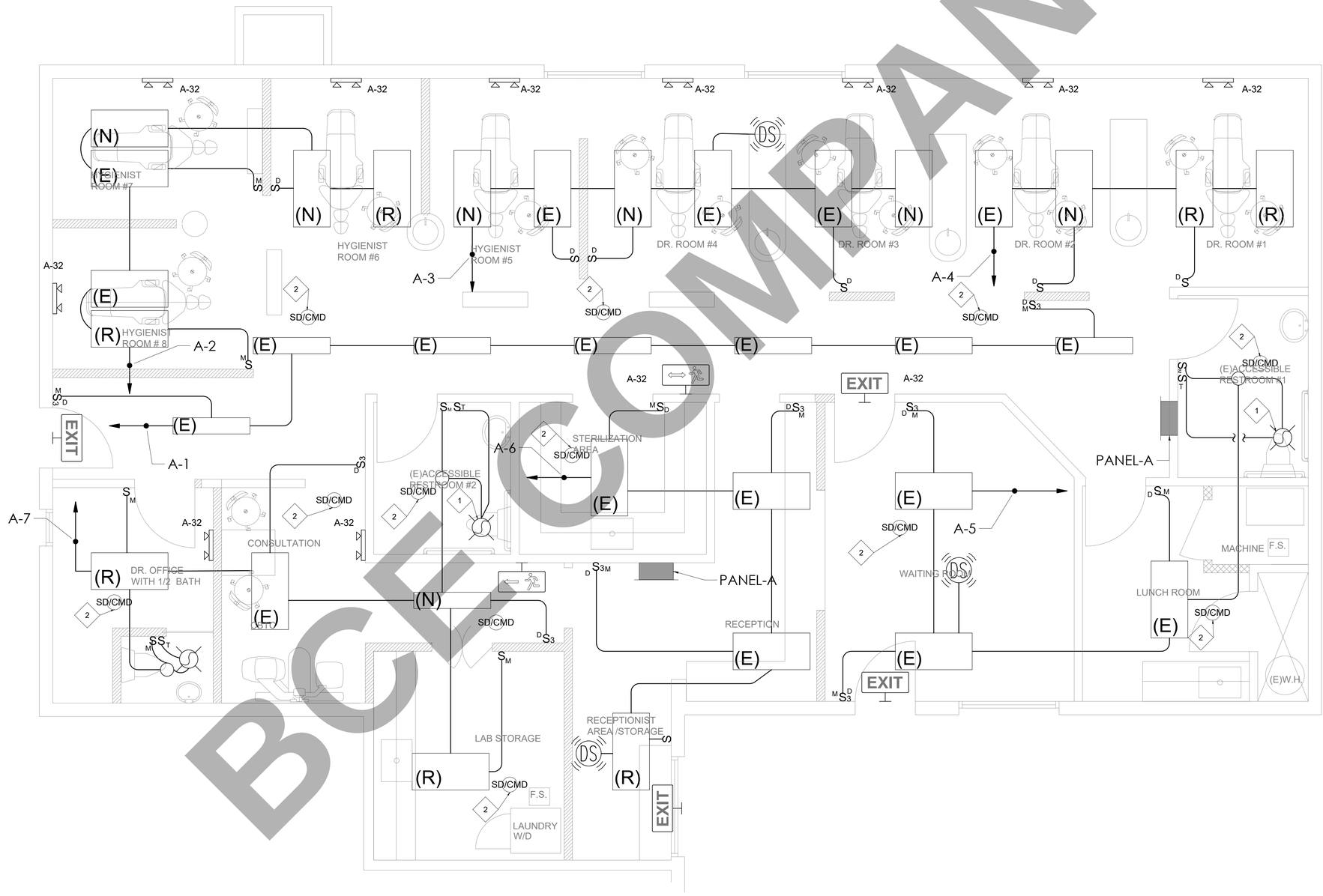
DRAWING NO.
E 1 . 0 0

REV.

SHEET NOTES:

1. PROVIDE HEAVY DUTY JUNCTION BOX, FLUSH IN CEILING (OR WALL) FOR EXHAUST FANS THAT TURNS ON WHEN THE TIMER SWITCH OF THIS FAN IS TURNED ON

2. FURNISH AND INSTALL SMOKE OR COMBINATION SMOKE AND CARBON MONOXIDE DETECTOR AS REQUIRED. INTERLOCK WITH OTHER DETECTORS



CLIENT:

ADDRESS:

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SAN JOSE, CALIFORNIA

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REV. NO.	DESCRIPTION	DATE	BY
02	CITY COMMENTS	3/23	A.B

PROJECT:
DOCTOR TRAN DENTAL OFFICE TENANT IMPROVEMENTS.

TITLE:
LIGHTING LAYOUT

PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36:
		3/8"=1'=0"

DRAWING NO.
E 2 . 0 0

REV.

GENERAL NOTES

1. 406.12 TAMPER-RESISTANT RECEPTACLES. ALL 15- AND 20-AMPERE, 125- AND 250-VOLT NONLOCKING-TYPE RECEPTACLES IN THE AREAS SPECIFIED IN 406.12(1) THROUGH (7) SHALL BE LISTED TAMPER-RESISTANT RECEPTACLES.

   (1) DWELLING UNITS IN ALL AREAS SPECIFIED IN 210.52 AND 550.13

   (2) GUEST ROOMS AND GUEST SUITES OF HOTELS AND MOTELS

   (3) CHILD CARE FACILITIES

   (4) PRESCHOOLS AND ELEMENTARY EDUCATION FACILITIES

   (5) BUSINESS OFFICES, CORRIDORS, WAITING ROOMS AND THE LIKE IN CLINICS, MEDICAL AND DENTAL OFFICES AND OUTPATIENT FACILITIES

   (6) SUBSET OF ASSEMBLY OCCUPANCIES DESCRIBED IN 518.2 TO INCLUDE PLACES OF WAITING TRANSPORTATION, GYMNASIUMS, SKATING RINKS, AND AUDITORIUMS

   (7) DORMITORIES

2. LISTED TAMPER-RESISTANT RECEPTACLES SHALL BE PROVIDED WHERE REPLACEMENTS ARE MADE AT RECEPTACLE OUTLETS THAT ARE REQUIRED TO BE TAMPER-RESISTANT ELSEWHERE IN THIS CODE, EXCEPT WHERE A NON-GROUNDING RECEPTACLE IS REPLACED WITH ANOTHER NON-GROUNDING RECEPTACLE.

3. Wiring in patient care spaces shall comply with 517.13(A) and (B).
   (A) Wiring Methods
   All branch circuits serving patient care spaces shall be provided with an effective ground-fault current path by installation in a metal raceway system or a cable having a metallic armor or sheath assembly. The metal raceway system, metallic cable armor, or sheath assembly shall itself qualify as an equipment grounding conductor in accordance with 250.118.

   (B) Insulated Equipment Grounding Conductors and Insulated Equipment Bonding Jumpers
   (1) General
   The following shall be directly connected to an insulated copper equipment grounding conductor that is clearly identified along its entire length by green insulation and installed with the branch circuit conductors in the wiring methods as provided in 517.13(A):
   a.The grounding terminals of all receptacles other than isolated ground receptacles
   b.Metal outlet boxes, metal device boxes, or metal enclosures
   c.All non-current-carrying conductive surfaces of fixed electrical equipment likely to become energized that are subject to personal contact, operating at over 100 volts

   Exception No. 1: For other than isolated ground receptacles, an insulated equipment bonding jumper that directly connects to the equipment grounding conductor is permitted to connect the box and receptacle(s) to the equipment grounding conductor. Isolated ground receptacles shall be connected in accordance with 517.16.

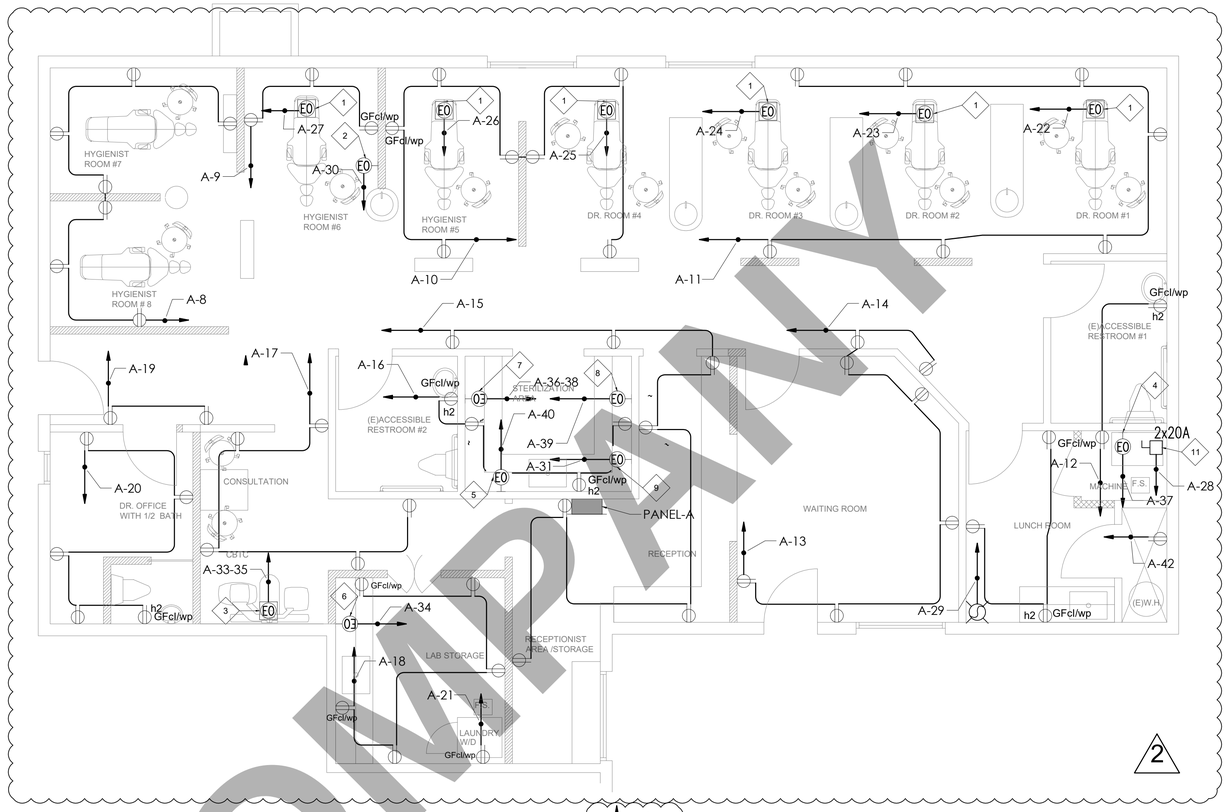
   Exception No. 2: Metal faceplates shall be permitted to be connected to the equipment grounding conductor by means of a metal mounting screw(s) securing the faceplate to a grounded outlet box or grounded wiring device.

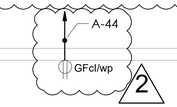
   Exception No. 3: Luminaires more than 2.3 m (71/2 ft) above the floor and switches located outside of the patient care vicinity shall be permitted to be connected to an equipment grounding return path complying with 517.13(A) or (B).

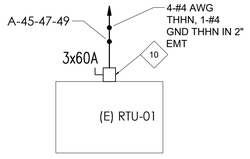
4. (2) Sizing
   Equipment grounding conductors and equipment bonding jumpers shall be sized in accordance with 250.122.

SHEET NOTES:

1. Belmont Dental Light model HLU AND Belmont Dental Chair BEL-20N
2. Belmont X-ray
3. Gendex CBCT
4. Vacuum form
5. Midmark M11 UltraClave
6. One pano Xray machine
7. M7 SpeedClave
8. Statim 5000
9. Ultrasonic cleaner Tuttnauer Clean & Simple
10. Provide non-fused NEMA 3R disconnect switch for RTU
11. Provide non-fused NEMA 3R disconnect switch for Electric Water Heater







ROOF PLAN

CLIENT:

ADDRESS:

155 NORTH JACKSON AVENUE
SAN JOSE, CALIFORNIA

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REV. NO.	DESCRIPTION	DATE	BY
02	CITY COMMENTS	3/23	A.B

PROJECT:
DOCTOR TRAN DENTAL OFFICE TENANT IMPROVEMENTS.

TITLE:
POWER LAYOUT

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

DRAWING NO.
E 3 . 0 0

REV.

Location: OFFICE

*	LOAD SUMMARY	CL	DF	CONNECTED LOAD A	B	C	DEMAND TOTAL
L	Lighting	2.73	1.25	1.40	0.75	0.58	3.41
R	Convenience Recept	30.04	0.40	10.10	11.16	8.78	12.02
H	Heating (Space)	1.50	1.25		1.50		1.50
C	Cooling		1.00				
A	HVAC	15.00	1.00	5.00	5.00	5.00	15.00
P	Process		1.00				
O	Other Continuous		1.25				
K	Kitchen	2.00	0.65		1.20	0.80	1.30
N	Noncontinuous		1.00				
M	Motor		1.00				
	Total	51.27		16.50	19.61	15.16	33.23

Total Demand Load (KVA)	33.23
Total Demand Current (A)	92.23
Min. Feeder Ampacity (A)	115.28

PANEL A

PANELBOARD DESIGNATION

SYSTEM VOLTAGE	208/120V, 3ϕ, 4W
BUS SIZE	150
SYSTEM TYPE	NORMAL
FEEDER PROT	150A-3P C/B Bus Plug
CONDUCTOR SIZE	1/0 AWG - #6G CU
CONDUCTOR/PHASE	1
MAINS	150A MCB
SCCR	FULLY RATED
MCB RATING	80%
GROUND FAULT	NO
FEEDER LENGTH (FT)	150
FEEDER V. DROP (%)	2.289
FAULT CURRENT	
KAIC RATING	10
ENCLOSURE	TYPE 1

*	DESCRIPTION		WIRE	GRD	CB	KVA	A	B	C	KVA	CB	WIRE	GRD	DESCRIPTION	*	
1	Lighting Corridor	L	2X 12 AWG	- #12G	15A-1P	0.35	0.80			0.45	15A-1P	2X 12 AWG	- #12G	Lighting Rooms-6-7-8	L	2
3	Lighting rooms-3-4-5	L	2X 12 AWG	- #12G	15A-1P	0.45		0.75		0.30	15A-1P	2X 12 AWG	- #12G	Lighting Rooms-1-2	L	4
5	Lighting Restroom-Waiting Room-Lunch Room	L	2X 12 AWG	- #12G	15A-1P	0.28			0.58	0.30	15A-1P	2X 12 AWG	- #12G	Lighting Reception-Sterilization	L	6
7	Lighting Consultation-Dr Office-Restroom	L	2X 12 AWG	- #12G	15A-1P	0.30	1.56			1.26	20A-1P	2X 10 AWG	- #10G	Receptacles Storage	R	8
9	Receptacles Room-6	R	2X 10 AWG	- #10G	20A-1P	0.54		1.80		1.26	20A-1P	2X 10 AWG	- #10G	Receptacles Room-4-5	R	10
11	Receptacles Room-1-2-3	R	2X 10 AWG	- #10G	20A-1P	1.26			1.98	0.72	20A-1P	2X 10 AWG	- #10G	Receptacles Restroom	R	12
13	Receptacles lunch Room-MOP	R	2X 10 AWG	- #10G	20A-1P	0.72	1.98			1.26	20A-1P	2X 10 AWG	- #10G	Receptacles Waiting Room	R	14
15	Receptacles Reception-Corridor	R	2X 10 AWG	- #10G	20A-1P	1.26		2.34		1.08	20A-1P	2X 10 AWG	- #10G	Receptacles Sterilization-Restroom	R	16
17	Receptacles Consultation	R	2X 10 AWG	- #10G	20A-1P	0.90			1.80	0.90	20A-1P	2X 10 AWG	- #10G	Receptacles Lab	R	18
19	Receptacles Computer & Printer	R	2X 10 AWG	- #10G	20A-1P	0.80	1.70			0.90	20A-1P	2X 10 AWG	- #10G	Receptacles Dr Office	R	20
21	Laundry	K	2X 10 AWG	- #10G	20A-1P	1.20		1.70		0.50	20A-1P	2X 10 AWG	- #10G	Dental Chair-1	R	22
23	Dental Chair-2	R	2X 10 AWG	- #10G	20A-1P	0.50			1.00	0.50	20A-1P	2X 10 AWG	- #10G	Dental Chair-3	R	24
25	Dental Chair-4	R	2X 10 AWG	- #10G	20A-1P	0.50	1.00			0.50	20A-1P	2X 10 AWG	- #10G	Dental Chair-5	R	26
27	Dental Chair-6	R	2X 10 AWG	- #10G	20A-1P	0.50		2.00		1.50	20A-1P	2X 10 AWG	- #10G	EWH	H	28
29	KEF	K	2X 10 AWG	- #10G	20A-1P	0.05			1.35	1.30	20A-1P	2X 10 AWG	- #10G	X-Ray-1	R	30
31	Ultrasonic cleaner Tuttnauer Clean & Simple	R	2X 10 AWG	- #10G	20A-1P	0.80	1.10			0.30	15A-1P	2X 12 AWG	- #12G	EMERGENCY AND EXIT SIGNS	L	32
33	CBCT	R	3X 8 AWG	- #8G	25A-2P	1.92		3.42		1.50	20A-1P	2X 10 AWG	- #10G	Vacuum Forming Machine	R	34
35		R				1.92			2.70	0.78	40A-2P	3X 10 AWG	- #10G	Ultraclave	R	36
37	Pano-Xray	R	2X 8 AWG	- #8G	30A-1P	2.40	3.18			0.78	20A-1P				R	38
39	SpeedClave	R	2X 10 AWG	- #10G	20A-1P	1.20		2.60		1.40	40A-2P	2X 6 AWG	- #6G	Statim 5000	R	40
41	SPACE								0.75	0.75	20A-1P	2X 10 AWG	- #10G	Microwave	K	42
43	SPACE						0.18			0.18	20A-1P	2X 10 AWG	- #10G	Receptacles Roof	R	44
45	RTU-01	A	4X 4 AWG	- #4G	60A-3P	5.00		5.00						SPACE		46
47		A				5.00			5.00		20A-1P	2X 10 AWG	- #10G	SPARE		48
49		A				5.00	5.00				20A-1P	2X 10 AWG	- #10G	SPARE		50
	(KVA)															
	Total Connected Load					16.50	19.61	15.16								

Available Fault Current Calculation

Utility Fault Current 42,000 amperes — kVA = ; E = 480

I = kVA x 1000 = trans. FLA / E x 1.732 — trans. FLA = 0

I_{sca} = **trans. FLA x 100 x PF / transformer Z** = — PF = 90% ; Z = 3.00%

I_{sca} = ampere short-circuit current RMS symmetrical. — I_{sca} = 0 amperes

Point to Point Method — Three Phase 208/120

'f' factor = 1.732 x L x I / N x C x E L-N — Length (distance) FEET (ASC) L = 100 — Copper in Metal Raceway

I_{sca} = 42,000 ; # conductors per phase N = 2

Phase conductor constant C = 19,704 **Phase Conductor** 350 kcmil

Volt Line to Line E_{L-L} = **208** Volt ; f = 0.887

Neutral conductor constant C = 19,704 **Neutral Conductor** 350 kcmil

Volt Line to Neutral E_{L-N} = **120** Volt

Multiplier f = 2.307

M = 1 / 1 + f — Line to Line M = 0.530 ; Line to Neutral M = 0.302

I_{sca} **x M =** fault current at terminals of main disconnect L- L = **22,252 amperes**

I_{sca} **x M =** fault current at terminals of main disconnect L- N = **12,699 amperes**

Fault Current from Service Equipment to Panel A — Copper in Metal Raceway — Three Phase

'f' factor = 1.732 x L x I / N x C x E L-N — Length (distance) L = 150 — (ASC) I_{sca} = 22,252 Phase 12,699 Neutral

conductors per phase N = 1

Phase conductor constant C = 8,925 **Phase Conductor** 1/0

Volt Line to Line E_{L-L} = **208** Volt ; f = 3.114

Neutral conductor constant C = 8,925 **Neutral Conductor** 1/0

Volt Line to Neutral E_{L-N} = **120** Volt

Multiplier f = 3.080

M = 1 / 1 + f — Line to Line M = 0.243 ; Line to Neutral M = 0.245

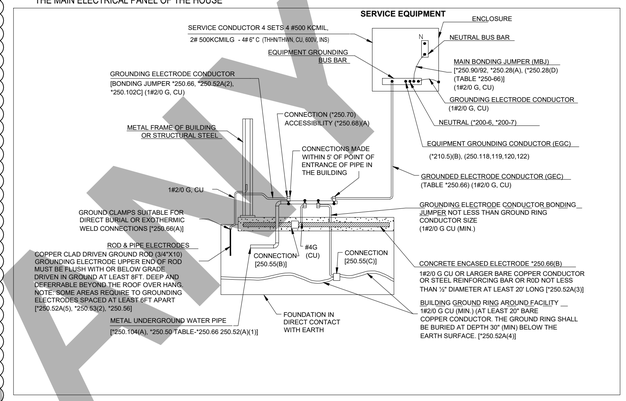
I_{sca} **x M = fault current at terminal of the panel L- L =** **5,409 amperes**

I_{sca} **x M = fault current at terminal of the panel L-N =** **3,112 amperes**

Calculation does not include motor contribution

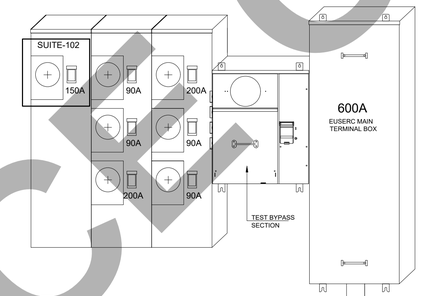
2

UFER GROUND NOTE :
ALL STEEL REBARS MEASURING 1/2 " OR MORE IN DIAMETER AND 20 ' OR LONGER IN LENGTH THAT IS ENCASED IN NOT LESS THAN 2 INCHES OF CONCRETE SHALL BE BONDED TO THE BUILDING'S GROUNDING ELECTRODE SYSTEM IN ACCORDANCE WITH CEC 250 (ELECTRICAL SUB CODE) SECTION 250.52(A)(3). THE "UFER" GROUND CAN BE 20 L.F. OF #2 OR #4 COPPER WIRING LAID INSIDE THE FOOTING AND THE SAME WIRE IS LONG ENOUGH TO REACH TO THE LOCATION OF THE MAIN ELECTRICAL PANEL OF THE HOUSE. UFER GROUND CAN BE (1) L-SHAPED PIECE OF #4 STEEL REBAR CONNECTED TO THE OTHER STEEL REBAR IN THE FOOTING AND STICKING OUT IN SUFFICIENT LENGTH FOR CONNECTION AT THE LOCATION OF THE MAIN ELECTRICAL PANEL OF THE HOUSE



DETAIL "G" OF GROUNDING ELECTRODE SYSTEM (*250.50) & GROUNDING ELECTRODES (*250.52) AS SERVICE

SCALE: NTS



CLIENT:

ADDRESS:

155 NORTH JACKSON AVENUE
SAN JOSE, CALIFORNIA

CONFIDENTIALITY STATEMENT:

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REV. NO.	DESCRIPTION	DATE	BY
02	CITY COMMENTS	3/23	A.B

PROJECT:
DOCTOR TRAN DENTAL OFFICE TENANT IMPROVEMENTS.

TITLE:
PANEL BOARD & SINGLE LINE DIAGRAM

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

DRAWING NO.
E 4 . 0 0

REV.

STATE OF CALIFORNIA

Electrical Power Distribution

NRCC-ELC-E — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-ELC-E
This document is used to demonstrate compliance with mandatory requirements in §130.5, for electrical systems in newly constructed nonresidential, high-rise residential and hotel/motel occupancies. Additions and alterations to electrical service systems in these occupancies will also use this document to demonstrate compliance per §141.0(a) or §141.0(b)2P for alterations..			
Project Name:	155 N Jackson Ave STE 102 TI	**Report Page:**	**(Page 1 of 4)**
Project Address:	155 N Jackson Ave STE 102	**Date Prepared:**	5/15/2023

A. GENERAL INFORMATION

01	Project Location (city)	San Jose
02	Occupancy Types Within Project:	

● Healthcare Facility ● Office ● Support Areas ● : See Table I

B. PROJECT SCOPE

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

01		02	03	04	05
Electrical Service Designation/Description		Scope of Work[1]	Rating (kVA)	Utility Provided Metering System Exception to §130.5(a) [2]	System subject to CA Elec Code Article 517 Exception to §130.5(a)and (b)
		Add/Alt to feeders and branch circuits only	50	☐	☐
06	Demand Response Controls	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, §130.1 and §130.3 and compliance documents NRCC-MCH, NRCC-LTI and NRCC-LTS will indicate when demand response controls are required.			

[1]*FOOTNOTES: Adding only new feeders and branch circuits triggers Voltage Drop 130.5(c), no other requirements from 130.5 are required.*
[2] *Applicable if the utility company is providing a metering system that indicates instantaneous kW demand and kWh for a utility-defined period.*

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
Service Electrical Metering §130.5(a) (See Table F)	AND	Separation for Monitoring §130.5(b) (See Table G)	AND	Voltage Drop §130.5(c) (See Table H)	AND	Controlled Receptacles §130.5(d) (See Table I)	
Yes	AND	Yes	AND	Yes	AND	Yes	COMPLIES

Registration Number: | Registration Date/Time: | Registration Provider: Energysoft
CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance | Report Version: 2019.1.003 Schema Version: rev 20200601 | Report Generated: 2023-05-15 13:21:47

STATE OF CALIFORNIA

Electrical Power Distribution

NRCC-ELC-E — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-ELC-E
Project Name:	155 N Jackson Ave STE 102 TI	**Report Page:**	**(Page 2 of 4)**
Project Address:	155 N Jackson Ave STE 102	**Date Prepared:**	5/15/2023

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 is 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). For alterations, only the altered circuits must demonstrate compliance per §141.0(b)2Piii

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
	☒	Voltage drop less than 5%	☐	Permitted by CA Elec Code (Exception to 130.5(c))*	Attached		☐	☐

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

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STATE OF CALIFORNIA

Electrical Power Distribution

NRCC-ELC-E — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-ELC-E
Project Name:	155 N Jackson Ave STE 102 TI	**Report Page:**	**(Page 3 of 4)**
Project Address:	155 N Jackson Ave STE 102	**Date Prepared:**	5/15/2023

J. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Selections have been made based on information provided in this document. If any selection have been changed by permit applicant, an explanation should be included in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and can be found online at https://www.energy.ca.gov/title24/2019standards/2019_compliance_documents/Nonresidential_Documents/NRCI/

Form/Title	Field Inspector Pass	Fail
NRCI-ELC-01-E - Must be submitted for all buildings	☐	☐

K. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

There are no Certificates of Acceptance applicable to electrical power distribution requirements.

Registration Number: | Registration Date/Time: | Registration Provider: Energysoft
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STATE OF CALIFORNIA

Electrical Power Distribution

NRCC-ELC-E — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-ELC-E
Project Name:	155 N Jackson Ave STE 102 TI	**Report Page:**	**(Page 4 of 4)**
Project Address:	155 N Jackson Ave STE 102	**Date Prepared:**	5/15/2023

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

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

Documentation Author Name: Syed P. Alam	Documentation Author Signature: **Syed P. Alam**
Company: InnoDez, Inc.	Signature Date: **2023.05.15**
Address: 726 Foxbrough pl	CEA/ HERS Certification Identification (if applicable):
City/State/Zip: Pleasanton CA 94566	Phone: 9168321752

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: Gregory Michael Dillett	Responsible Designer Signature: **Gregory Dillett**
Company: Innodez	Date Signed: 2023-05-15
Address: 22 Chatel drive	License: 21635
City/State/Zip: Little Rock AR 72223	Phone: 479-313-2632

Registration Number: | Registration Date/Time: | Registration Provider: Energysoft
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STATE OF CALIFORNIA

Indoor Lighting

NRCC-LTI-E — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-LTI-E
This document is used to demonstrate compliance with requirements in §110.9, §110.12(c), §130.0, §130.1, §140.6 and §141.0(b)2 for indoor lighting scopes using the prescriptive path.			
Project Name:	155 N Jackson Ave STE 102 TI	**Report Page:**	**(Page 1 of 8)**
Project Address:	155 N Jackson Ave STE 102	**Date Prepared:**	5/15/2023

A. GENERAL INFORMATION

01	Project Location (city)	San Jose	04	Total Conditioned Floor Area (ft^2)	2,560
02	Climate Zone	4	05	Total Unconditioned Floor Area (ft^2)	0
03	Occupancy Types Within Project (select all that apply):		06	# of Stories (Habitable Above Grade)	1

● Healthcare Facility ● Office ● Support Areas ● : See Table I

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 or §141.0(b)2 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 (ft^2)	Calculation Method	Area (ft^2)
☐ New Lighting System				
☐ New Lighting System - Parking Garage				
☒ Altered Lighting System	Area Category Method	2560	Area Category Method	0
Total Area of Work (ft^2)	2560		0	

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STATE OF CALIFORNIA

Indoor Lighting

NRCC-LTI-E — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-LTI-E
Project Name:	155 N Jackson Ave STE 102 TI	**Report Page:**	**(Page 2 of 8)**
Project Address:	155 N Jackson Ave STE 102	**Date Prepared:**	5/15/2023

C. COMPLIANCE RESULTS

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

Lighting in conditioned and unconditioned spaces must not be combined for compliance per §140.6(b)1	Allowed Lighting Power per §140.6(b) (Watts) 01 Complete Building §140.6(c)1 (See Table I)	02 Area Category §140.6(c)2 (See Table I)	03 Area Category Additional §140.6(c)2G (+) (See Table J)	04 Tailored §140.6(c)3 (+) (See Table K)		05 **Total Allowed** (Watts)		Adjusted Lighting Power per §140.6(a) (Watts) 06 Total Designed (Watts) (See Table F)	07 Adjustments PAF Lighting Control Credits §140.6(a)2 (-) (See Table P)		08 **Total Adjusted** (Watts) *Includes Adjustments	Compliance Results 09 **05 must be >= 08 §140.6**
Conditioned		2,202	0		=	2,202	≥	1,212	0	=	1212	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.

F. INDOOR LIGHTING FIXTURE SCHEDULE

This table includes all permanent designed lighting and all portable lighting in offices.

Designed Wattage: Conditioned Spaces

01 Name or Item Tag	02 Complete Luminaire Description	03 Modular (Track) Fixture	04 Small Aperture & Color Change[1]	05 Watts per luminaire[2]	06 How is Wattage determined	07 Total Number of Luminaires	08 Excluded per §140.6(a)3	09 Design Watts	10 Field Inspector Pass	Fail
A	2 x 4 Surface Mounted LED Light 39W	No	No	39	Mfr. Spec	26	No	1,014	☐	☐

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STATE OF CALIFORNIA

Indoor Lighting

NRCC-LTI-E — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-LTI-E
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Project Address:	155 N Jackson Ave STE 102	**Date Prepared:**	5/15/2023

F. INDOOR LIGHTING FIXTURE SCHEDULE

B	1 x 4 Surface Mounted LED Light 18W	No	No	18	Mfr. Spec	8	No	144	☐	☐
C	Recessed LED Light 12W	No	No	12	Mfr. Spec	3	No	36	☐	☐
D	Non Directional Exit Light 3W	No	No	3	Mfr. Spec	4	No	12	☐	☐
E	Uni Directional Exit Light 3W	No	No	3	Mfr. Spec	1	No	3	☐	☐
F	Bi-Directional Exit Light 3W	No	No	3	Mfr. Spec	1	No	3	☐	☐
							Total Designed Watts: CONDITIONED SPACES	1,212		

[1]*FOOTNOTE: Design Watts for small aperture and color changing luminaires which qualify per §140.6(a)4B is adjusted to be 75% of their rated wattage. Table F automatically makes this adjustment, the permit applicant should enter full rated wattage in column 05.*
[2]*Authority Having Jurisdiction may ask for Luminaire cut sheets to confirm wattage used for compliance per §130.0(c) 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. When a control having a * is shown, the notes section of this table provides more detail on how compliance is achieved. The lighting controls section of the Compliance Summary Table on the first page will show "DOES NOT COMPLY" if the notes are left blank.*

Building Level Controls

01 Mandatory Demand Response §110.12(c)	02 Shut-off controls §130.1(c)	03 Field Inspector Pass	Fail
Not Required <= 10,000 SF	See Area/Space Level Controls	☐	☐

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H. INDOOR LIGHTING CONTROLS (Not including PAFs)

Area Level Controls

04 Area Description	05 Complete Building or Area Category Primary Function Area	06 Area Controls §130.1(a)	07 Multi-Level Controls §130.1(b)	08 Shut-Off Controls §130.1(c)	09 Primary/Sky lit Daylighting §130.1(d)	10 Secondary Daylighting §140.6(d)	11 Interlocked Systems §140.6(a)1	12 Field Inspector Pass	Fail
Hygienist Rooms Area	Exam/Treatment Room	Manual ON/OFF	Dimmer	Other	N/A	N/A	No	☐	☐
Dr. Office	Office 250 square feet or less	Manual ON/OFF	Exempt*	Other	N/A	N/A	No	☐	☐
Consultation	Exam/Treatment Room	Manual ON/OFF	Dimmer	Other	N/A	N/A	No	☐	☐
Lab Storage	Medical Supply Room	Manual ON/OFF	Exempt*	Other	N/A	N/A	No	☐	☐
Restrooms	Restrooms	Manual ON/OFF	Exempt*	Occupancy Sensor	N/A	N/A	No	☐	☐
Sterilization Area	Medical Supply Room	Manual ON/OFF	Exempt*	Other	N/A	N/A	No	☐	☐
Reception	Lounge Breakroom or Waiting Area	Manual ON/OFF	Dimmer	Other	N/A	N/A	No	☐	☐
Waiting Room	Lounge Breakroom or Waiting Area	Manual ON/OFF	Exempt*	Other	N/A	N/A	No	☐	☐
Lunch Room	Lounge Breakroom or Waiting Area	Manual ON/OFF	Exempt*	Other	N/A	N/A	No	☐	☐
Corridor	Corridor Area	Manual ON/OFF	Exempt*	Other	N/A	N/A	No	☐	☐

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H. INDOOR LIGHTING CONTROLS (Not including PAFs)

*NOTES: Controls with a * require a note in the space below explaining how compliance is achieved. *EX: Conference 1: Primary/Skylight Daylighting: Exempt because less than 120 watts of general lighting; EXCEPTION 1 to §130.1(d)2*		13 Plan Sheet Showing Daylit Zones:
Hygienist Rooms Area		
Dr. Office	Area <100SF	
Consultation		
Lab Storage	Connected Load<0.5W/SF	
Restrooms	Restrooms	
Sterilization Area	Area <100SF	
Reception		
Waiting Room	Connected Load<0.5W/SF	
Lunch Room	Connected Load<0.5W/SF	
Corridor	Connected Load<0.5W/SF	

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

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

Area Description	Complete Building or Area Category Primary Function Area	Allowed Density (W/ft^2)	Area (ft^2)	Allowed Wattage (Watts)	Additional Allowance / Adjustment: Area Category	PAF
Restrooms	Restrooms	0.65	168	109.2	No	No
Hygienist Rooms Area	Exam/Treatment Room	1.15	1,040	1,196	No	No
Dr. Office	Office 250 square feet or less	0.7	86	60.2	No	No
Consultation	Exam/Treatment Room	1.15	117	134.5	No	No
Lab Storage	Medical Supply Room	0.55	100	55	No	No
Sterilization Area	Medical Supply Room	0.55	71	39.1	No	No
Reception	Lounge Breakroom or Waiting Area	0.65	125	81.2	No	No
Waiting Room	Lounge Breakroom or Waiting Area	0.65	179	116.4	No	No
Lunch Room	Lounge Breakroom or Waiting Area	0.65	121	78.6	No	No
Corridor	Corridor Area	0.6	553	331.8	No	No
		TOTALS:	2,560	2,202	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 ORNAMENTAL/SPECIAL EFFECTS

This section does not apply to this project.

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O. ADDITIONAL LIGHTING ALLOWANCE: TAILORED VERY VALUABLE MERCHANDISE

This section does not apply to this project.

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

This section does not apply to this project.

Q. RATED POWER REDUCTION COMPLIANCE FOR 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. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

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Form/Title	Field Inspector Pass	Fail
NRCI-LTI-01-E - Must be submitted for all buildings	☐	☐

U. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

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Form/Title	Systems/Spaces To Be Field Verified		Field Inspector Pass	Fail
NRCA-LTI-02-A - Must be submitted for occupancy sensors and automatic time switch controls.	☐	☐		

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STATE OF CALIFORNIA

Indoor Lighting

NRCC-LTI-E — CALIFORNIA ENERGY COMMISSION

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Project Name:	155 N Jackson Ave STE 102 TI	**Report Page:**	**(Page 8 of 8)**
Project Address:	155 N Jackson Ave STE 102	**Date Prepared:**	5/15/2023

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

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

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Company: InnoDez, Inc.	Signature Date: **2023.05.15**
Address: 726 Foxbrough pl	CEA/ HERS Certification Identification (if applicable):
City/State/Zip: Pleasanton CA 94566	Phone: 9168321752

RESPONSIBLE PERSON'S DECLARATION STATEMENT

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Address: 22 Chatel drive	License: 21635
City/State/Zip: Little Rock AR 72223	Phone: 479-313-2632

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CLIENT:

ADDRESS:
155 NORTH JACKSON AVENUE SAN JOSE, CALIFORNIA

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
02	CITY COMMENTS	3/23	A.B

PROJECT:
DOCTOR TRAN DENTAL OFFICE TENANT IMPROVEMENTS.

TITLE:
T24.1

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

DRAWING NO.: **T 2 4 . 1** | REV.: