

MECHANICAL SPECIFICATIONS

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

**DEFINITIONS:**  
FURNISH: TO SUPPLY AND DELIVER TO PROJECT SITE, READY FOR INSTALLATION.  
INSTALL: TO PLACE IN POSITION AND MAKE CONNECTIONS FOR SERVICE OR USE.  
PROVIDE: TO FURNISH AND INSTALL, COMPLETE AND READY FOR INTENDED USE.  
WARRANTY: PROVIDE LABOR AND MATERIALS TO REPAIR OR REPLACE DEFECTIVE PARTS AND MATERIALS AS REQUIRED FOR ONE YEAR AFTER SUBSTANTIAL COMPLETION OR OWNER ACCEPTANCE OF THE COMPLETED PROJECT. PROVIDE A SEPARATE LINE ITEM DEDUCT AMOUNT ON THE PROPOSAL FORM TO DELETE WARRANTY SERVICE, AT THE OWNER'S OPTION. PROVIDE OPERATION MANUALS, MAINTENANCE MANUALS AND SCHEMATICS FOR ALL MECHANICAL EQUIPMENT INSTALLED.

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

**ROOF PENETRATIONS** SHALL COMPLY WITH "SMACNA" AND "NRCA" STANDARDS, AND WITH THE REQUIREMENTS OF THE EXISTING ROOFING WARRANTY, IF APPLICABLE. DO NOT PERFORM ROOFING PENETRATIONS IN A MANNER WHICH WOULD VOID OR OTHERWISE LIMIT THE EXISTING ROOF WARRANTY.

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

**SHEET METAL DUCTWORK:** PROVIDE SHEET METAL DUCTWORK FABRICATED AND INSTALLED IN ACCORDANCE WITH ASHRAE AND SMACNA STANDARDS, FOR 1" W.G. PRESSURE CLASS, SEAL CLASS "A". SHEET METAL SHALL BE GALVANIZED SHEET STEEL OF LOCK FORMING QUALITY, WITH G90 ZINC COATING. SHEET STEEL SHALL COMPLY WITH ASTM A653 STANDARD SPECIFICATION FOR STEEL SHEET METAL, ZINC COATED (GALVANIZED) OR ZINC-IRON ALLOY-COATED (GALVANNEALED) BY THE HOT DIP PROCESS, AND A924 STANDARD SPECIFICATION FOR GENERAL REQUIREMENTS FOR SHEET, METALLIC-COATED BY THE HOT DIP PROCESS. ALL ANGLE IRON USED FOR SUPPORT SHALL BE GALVANIZED. CONNECTIONS TO WALLS OR FLOOR SHALL BE AIR TIGHT WITH ANGLE IRON AND CAULKING. SEAL ALL DUCT SEAMS, TRANSVERSE AND LONGITUDINAL, AIR TIGHT. PROVIDE TURNING VANES AT ALL 90° ELBOWS. TRAPEZE DUCT HANGERS: PROVIDE MINIMUM 1" X 2" X 1" X 18 GAUGE CHANNELS WITH MINIMUM 1" X 18 GAUGE STRAPS TO STRUCTURAL SUPPORT.

**ROUND SHEET METAL DUCT:** PROVIDE SPIRAL SEAM (ALL SIZES) OR SNAP LOCK (DUCT SIZES UP TO 10") GALVANIZED STEEL COMPLYING WITH SMACNA STANDARDS. SPIRAL SEAM DUCTWORK SHALL HAVE SMACNA SEAM TYPE RL-1. FIBER GLASS DUCT BOARD IS AN ACCEPTABLE ALTERNATIVE IF APPROVED BY OWNER AND THE LOCAL BUILDING CODE OFFICIAL. PRODUCT AND INSTALLATION MUST MEET NAIMA STANDARDS AND OTHER APPLICABLE CODES AND REGULATIONS.

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

**DUCT INSULATION:** MATERIAL FOR SUPPLY AND RETURN AIR DUCT ABOVE CEILING INSIDE THE BUILDING SHALL HAVE THE EQUIVALENT THERMAL RESISTANCE OF MINIMUM R-6. THE REQUIRED R VALUES ARE FOR INSTALLED INSULATION WITH 25% COMPRESSION AT THE CORNERS. PROVIDE PINS AND WASHERS IN ACCORDANCE WITH SMACNA REQUIREMENTS AND AS REQUIRED TO PREVENT INSULATION FROM SAGGING. PROVIDE ADEQUATE INSULATION AT THE SUPPLY AIR DIFFUSERS TO PREVENT CONDENSATION.

**FLEXIBLE DUCT** : UL #181 LISTED, CLASS 1, AND CONTAIN A 0.1 PERM RATED POLYETHYLENE INNER LINER, WITH R-8 FIBERGLASS INSULATION. FLEXIBLE DUCTS SHALL BE SECURED TO RIGID SHEET METAL COLLARS AND AIR DIFFUSERS WITH NYLON TIES OR STAINLESS STEEL WORM GEAR STRAPS. SEAL ALL CONNECTIONS AND JOINTS AIRTIGHT. SUPPORT FLEXIBLE DUCTS FROM THE BUILDINGS STRUCTURE WITH MINIMUM 1" WIDE, 18 GAUGE, GALVANIZED STEEL STRAP AT MAXIMUM 4'-0" CENTERS. PROVIDE 4" WIDE SHEET METAL SADDLES AT EACH SUPPORT EACH STRAP. SAG OF FLEXIBLE DUCT BETWEEN HANGERS SHALL NOT EXCEED 1/2" PER FOOT OF SUPPORT SPACING. RADIUS FOR TURNS OF FLEXIBLE DUCTS SHALL BE A MINIMUM OF ONE DUCT DIAMETER. FLEXIBLE DUCT RUNS SHALL NOT EXCEED 10'-0" IN LENGTH AND SHALL BE THE SAME SIZE AS THE DIFFUSER NECK CONNECTION.

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

**RECTANGULAR VOLUME DAMPERS:** PROVIDE MINIMUM 16 GAUGE GALVANIZED STEEL CHANNEL FRAME, 16 GAUGE GALVANIZED STEEL BLADES, MINIMUM 1/2" 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.

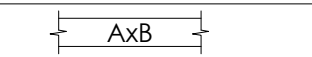
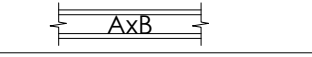
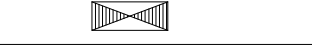


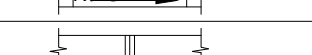
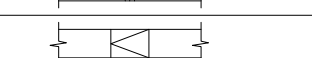
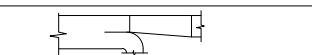

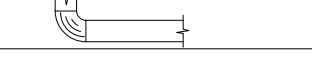
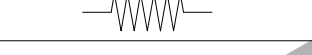

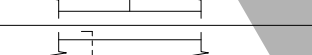

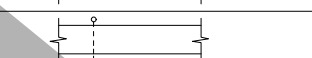






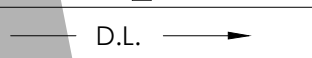
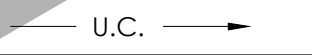
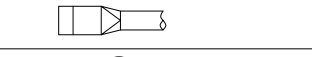

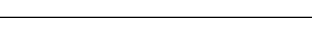
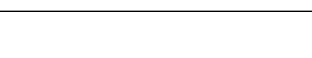
**COMPLETION REQUIREMENTS:**  
THE CONTRACTOR SHALL PROVIDE, WITHIN 90 DAYS AFTER THE DATE OF SYSTEM ACCEPTANCE, RECORD DRAWINGS AND AN OPERATING AND MAINTENANCE MANUAL TO THE BUILDING OWNER OR THE DESIGNATED REPRESENTATIVE OF THE OWNER. THE RECORD DRAWING SHALL BE OF THE ACTUAL INSTALLATION AND INCLUDE 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-POINTS SHALL BE PERMANENTLY RECORDED ON CONTROL DRAWINGS AT CONTROL DEVICES OR, FOR DIGITAL CONTROL SYSTEMS, IN PROGRAMMING COMMENTS  
(E) A COMPLETE NARRATIVE OF HOW EACH SYSTEM EACH SYSTEM IS INTENDED TO OPERATE, INCLUDING SET-POINTS.

HVAC GENERAL NOTES

- 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.
- 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.
- DRAWINGS FOR HVAC WORK ARE DIAGRAMMATIC SHOWING THE GENERAL LOCATION, TYPE, LAYOUT, AND EQUIPMENT REQUIRED. THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENT, REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS. PROVIDE ALL DUCTWORK, MATERIALS, CONNECTIONS, ACCESSORIES, FITTINGS, OFFSETS, TRANSITIONS, DAMPERS AS REQUIRED FOR A COMPLETE WORKABLE SYSTEM.
- 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 "GUIDELINES FOR SEISMIC RESTRAINTS OF MECHANICAL SYSTEMS AND PLUMBING PIPING SYSTEMS" BY THE SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION (SMACNA). ALL EQUIPMENT SHALL BE ANCHORED TO RESIST THE LATERAL FORCE REQUIREMENTS OF CHAPTER 16 OF THE 2022 CALIFORNIA BUILDING CODE.
- 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 AS REQUIRED. COORDINATE LOCATIONS OF GAS & CONDENSATE LINES WITH PLUMBING CONTRACTOR. COORDINATE LOCATIONS OF POWER, DISCONNECTS, AND CONTROL CONDUIT WITH THE ELECTRICAL CONTRACTOR. COORDINATE LOCATIONS OF ALL DIFFUSERS, REGISTERS, AND GRILLES WITH ARCHITECTURAL PLANS, ELECTRICAL LIGHTING PLANS AND ARCHITECTURAL ELEVATIONS.
- DETAILS FOR EQUIPMENT PADS, PLATFORMS, AND FLASHINGS SHALL BE AS INDICATED BY THE ARCHITECTURAL/STRUCTURAL/CIVIL DRAWINGS, UNLESS NOTED OTHERWISE.
- ALL EQUIPMENT, DUCTS, PIPING, SUPPORTS, AND OTHER DEVICES OUTSIDE OF THE BUILDING OR EXPOSED TO WEATHER, SHALL BE COMPLETELY WEATHER-PROOFED.
- OUTSIDE AIR INTAKES SHALL BE AT LEAST 10 FT. AWAY OR 3 FT. BELOW ANY VENT OR EXHAUST DISCHARGE.
- ALL DUCT SIZES ARE CLEAR INSIDE DIMENSIONS. DUCTWORK SHALL BE CONSTRUCTED, ERECTED, INSULATED AND TESTED IN ACCORDANCE CHAPTER 6 OF THE 2022 CALIFORNIA MECHANICAL CODE.
- ALL EXHAUST FANS SHALL BE EQUIPPED WITH A BACK DRAFT DAMPER.
- DUCT AND AIR TRANSFER PENETRATIONS THRU BUILDING ASSEMBLIES REQUIRING PROTECTION SHALL BE PROTECTED WITH FIRE DAMPERS, SMOKE DAMPERS, COMBINATION SMOKE/FIRE DAMPERS AND CEILING RADIATION DAMPERS IN ACCORDANCE WITH SECTION 607 OF THE CALIFORNIA MECHANICAL CODE. DUCTS NOT REQUIRING DAMPERS SHALL COMPLY WITH SECTION 714 & 717 OF THE 2022 CALIFORNIA BUILDING CODE.
- INSTALL SMOKE DETECTORS AND PROVIDE FOR SMOKE DETECTION AND AUTOMATIC SHUT-OFF OF ALL AIR HANDLING EQUIPMENT IN ACCORDANCE WITH SECTION 606 OF THE 2022 CALIFORNIA MECHANICAL CODE.
- 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.
- INSTALL ALL LOW VOLTAGE HVAC CONTROL WIRE AND DEVICES PER PLAN. ALL WIRE SHALL BE IN CONDUIT PROVIDED AND INSTALLED BY THE ELECTRICAL CONTRACTOR UNLESS NOTED OTHERWISE.
- 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 THEIR SEQUENCES OF OPERATION. BALANCE ALL AIR FLOWS WITHIN 5% OF DESIGN VALUES. PERMANENTLY MARK BALANCE POSITION OF ALL REGULATING DEVICES.
- 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).
- PROVIDE ONE YEAR WARRANTY ON ALL LABOR, PARTS AND MATERIALS.
- ANY CHANGE OR DEVIATION FROM THESE PLANS OR SPECIFICATIONS SHALL REQUIRE THE WRITTEN APPROVAL OF THE ENGINEER PRIOR TO COMMENCEMENT OF SUCH WORK.
- 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.

LEGEND

		DUCT WORK (WIDTHxDEPTH)
		LINED DUCT WORK (WIDTHxDEPTH DIMENSIONS ARE FOR I.D.)
		SUPPLY DUCT, SECTION
		RETURN DUCT, SECTION
		EXHAUST DUCT, SECTION
		RISE OR DROP IN DIRECTION OF AIR FLOW
	FLEX. CONN.	FLEXIBLE CONNECTION
		DUCT TRANSITION, ROUND AND RECTANGULAR
		SPLITTER DAMPER
		EXTRACTOR AT BRANCH DUCT
		TURNING VANES
		FLEXIBLE DUCT
		SINGLE LINE DUCT WORK
	AVD	AUTOMATIC VOLUME DAMPER
	MYD	MANUAL VOLUME DAMPER
	BDD	BACKDRAFT DAMPER
	MD	MODULATING DAMPER
	AFD	AUTOMATIC FIRE DAMPER
	AD	ACCESS DOOR
	SD	SUPPLY DIFFUSER
	RR	RETURN REGISTER
	ER	EXHAUST REGISTER
	SWR	SIDE WALL SUPPLY REGISTER
	SWE	SIDE WALL RETURN OR EXHAUST
	LD	LINEAR DIFFUSER
	DL	DOOR LOUVER
	UC	UNDER CUT DOOR
	VAV	VARIABLE AIR VOLUME
	①	THERMOSTAT
	⑤	DUCT SMOKE DETECTOR
	T/B	TO BELOW
	F/B	FROM BELOW
	T/A	TO ABOVE
	F/A	FROM ABOVE

SPECIAL NOTICE TO CONTRACTORS

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

MECHANICAL LIST OF DRAWINGS (LoD):

SHEET TAG	TITLE	SCALE
M 0.01	MECHANICAL GENERAL NOTES AND SPECIFICATIONS	NTS
M 1.01	MAIN FLOOR - MECHANICAL LAYOUT	1/16" = 1'- 0"
M 1.02	ROOF - MECHANICAL LAYOUT, DUCTS & DIFFUSERS SCHEDULE	1/16" = 1'- 0"
M 2.01	MECHANICAL EQUIPMENT SCHEDULE & VENTILATION	NTS
M 3.01	MECHANICAL EQUIPMENT DATA SHEETS	NTS
M 4.01	MECHANICAL GENERAL DETAILS	NTS

CLIENT:

ADDRESS:

CONFIDENTIALITY STATEMENT:

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

NOTES:

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

REV. NO.	DESCRIPTION	DATE	BY

PROJECT:  
**PROPOSED WAREHOUSE FACILITY**

TITLE:  
**MECH GENERAL NOTES AND SPECIFICATIONS**

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

DRAWING NO.	REV.
<b>M 0 . 0 1</b>	



CMC-917.0-917.1 Support  
Suspended-type unit heaters shall be safely and adequately supported, with due consideration given to their weight and vibration characteristics. Hangers and brackets shall be of noncombustible material. [NFPA 54:10.25.1]

917.2 Clearance  
Suspended-type unit heaters shall comply with the following requirements:  
A listed unit heater shall be installed with clearances from combustible material of not less than 18 inches (457 mm) at the sides, 12 inches (305 mm) at the bottom, and 6 inches (152 mm) above the top where the unit heater has an internal draft hood, or 1 inch (25.4 mm) above the top of the sloping side of a vertical draft hood. A unit heater listed for reduced clearances shall be installed in accordance with its listing and the manufacturer's installation instructions. Unlisted unit heaters shall be installed with clearances to combustible material of not less than 18 inches (457 mm).

CMC-933.4  
933.4.2 On the Ground  
An evaporative cooler supported directly by the ground shall be isolated from the ground by a level concrete slab extending not less than 3 inches (76 mm) above the adjoining ground level.  
933.4.3 On a Platform  
An evaporative cooler supported on an aboveground platform shall be elevated not less than 6 inches (152 mm) above adjoining ground level.

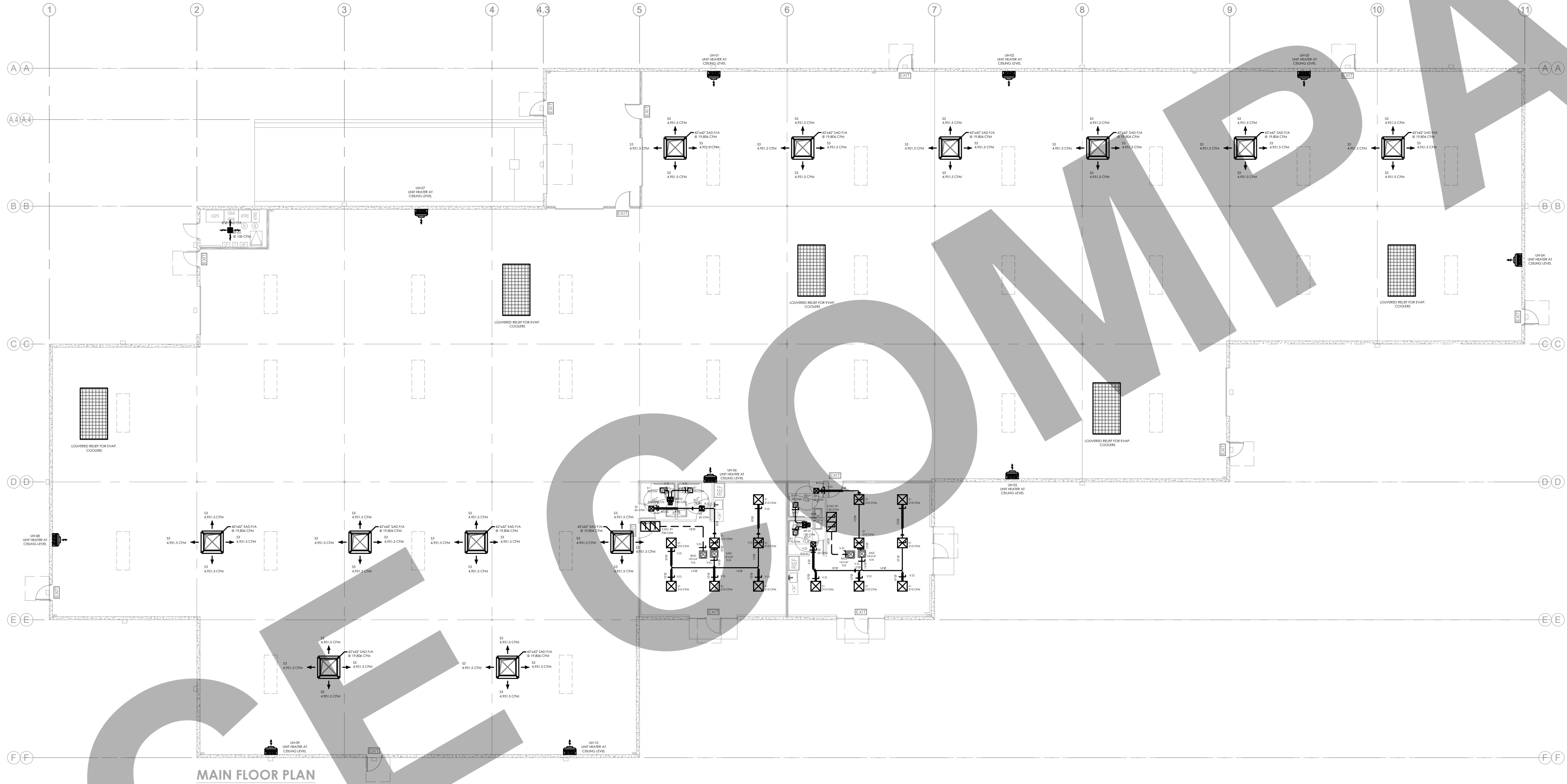
CMC-Appendix E 502.3.1-Balancing Dampers shall be installed in branch ducts, and the axis of the damper shall be installed parallel to the direction of airflow in the main duct

CMC-Appendix E 502.4.4-Duct systems shall be sized in accordance with ACCA Manual D.  
Velocity in main duct shall not exceed 1000 feet per minute.  
Velocity in section branches shall not exceed 600 feet per minute.

CMC-Appendix E 503.4.6.1-Outdoor air intake and exhaust systems shall be equipment with motorized dampers that will automatically shut when the systems or spaces served are not in use.  
Exceptions: Back-draft gravity dampers shall be permitted for exhaust and relief in buildings less than 3 stories in height.

GENERAL NOTES:

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



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

REV. NO.	DESCRIPTION	DATE	BY

PROJECT:  
PROPOSED WAREHOUSE FACILITY

TITLE:  
MAIN FLOOR - MECHANICAL LAYOUT

PROJ. NO. PROJ. ENGR. SCALE @ 24X36  
1/16" =1'-0"

DRAWING NO.

M 1 . 0 1

REV.

CMC-303.8-Appliances on roofs shall be designed or enclosed so as to withstand climatic conditions in the area in which they are installed. Where enclosures are provided, each enclosure shall permit easy entry and movement, shall be of reasonable height, and shall have at least a 30 inch (762 mm) clearance between the entire service access panel(s) of the appliance and the wall of the enclosure. [NFPA 54:9.4.1.1]

CMC-304.2-Where equipment or appliances that require service are installed on a roof having a slope of 4 units vertical in 12 units horizontal (33 percent slope) or more, a level platform of not less than 30 inches by 30 inches (762 mm by 762 mm) shall be provided at the service side of the equipment or appliance.

CMC-401.2-In mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media for outside and return air that provides at least a Minimum Efficiency Reporting Value (MERV) of 13.

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

CMC-502.2.1-Environmental air duct exhaust shall terminate not less than 3 feet (914 mm) from a property line, 10 feet (3048 mm) from a forced air inlet, 10 feet (3048 mm) above a public walkway, and 3 feet (914 mm) from openings into the building. The discharge of environmental exhaust ducts shall not be directed onto a public walkway

CMC-407.2-Outdoor air intakes shall be located at least 25 feet (7.62 m) from exhaust outlets of ventilating systems, combustion equipment stacks, medical-surgical vacuum systems, cooling towers, and areas that may collect vehicular exhaust or other noxious fumes. Plumbing vents shall be located in relation to outdoor air intakes per California Plumbing Code. The bottom of outdoor air intakes shall be located as high as practicable, but not less than 10 feet (3048 mm) above ground level. If installed above the roof, they shall be located 18 inches (457 mm) above roof level or 3 feet (914 mm) above a flat roof where heavy snowfall is anticipated.

GENERAL NOTES:

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

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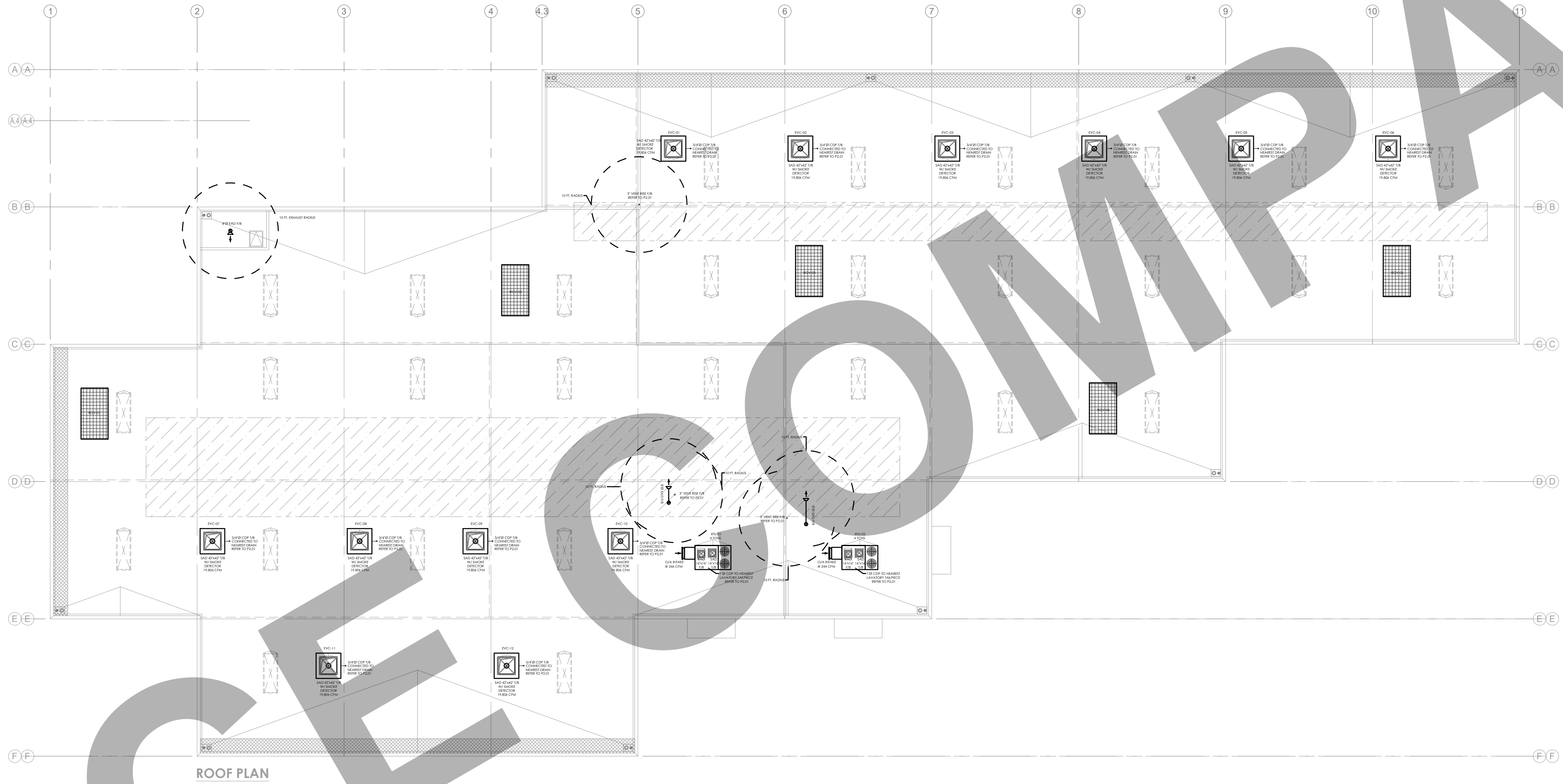
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Air Outlets Schedule								
ID	Items	Manufacturer	Model	Size (WxH)	Air Flow Range	Throw	Velocity	Description
S1	Supply Square Ceiling Diffuser	USAIRE	5200	24"x24"	100 to 1000 CFM	12 to 49	100 to 360	One way to four way, All Aluminum Construction, Removable Core
S2	Supply Square Ceiling Diffuser	USAIRE	5200	12"x12"	100 to 400 CFM	12 to 35	100 to 400	One way to four way, All Aluminum Construction Removable Core
S3	Supply Square Duct Mounted Diffuser	USAIRE	5200	24"x24"	100 to 1000 CFM	12 to 49	100 to 360	One way to four way, All Aluminum Construction, Removable Core
R1	Return Square Ceiling Diffuser	USAIRE	5500	24"x24"	750 to 1500 CFM	-	185 to 375	Extruded Aluminum Louver, Return Plenum by others.

Duct Sizing - Round Ducts			
S.N.	Duct Size	CFM Range	Velocity (FPM)
1	6" Dia	50 to 115	300 to 500
2	8" Dia	115 to 200	300 to 500
3	10" Dia	200 to 300	300 to 500
4	12" Dia	300 to 450	300 to 500
5	14" Dia	450 to 600	300 to 500
6	16" Dia	600 to 800	300 to 500
7	18" Dia	800 to 1000	300 to 500

PROJECT: PROPOSED WAREHOUSE FACILITY

TITLE: ROOF - MECHANICAL LAYOUT, DUCTS & DIFFUSERS SCHEDULE

PROJ. NO. PROJ. ENGR. SCALE @ 24X36 1/16" =1'-0"

DRAWING NO. M 1 . 0 2 REV.



SCHEDULE No. 1

ROOF-TOP UNIT HEAT PUMP SCHEDULE

TAG	LOCATION / SERVE	MANUF.	MODEL	NOMINAL COOLING CAPACITY	NET COOLING CAPACITY (MBH)	SEER / EER	ELECTRICAL DATA			HEATING			BLOWER DATA		DIM. DATA			ACCESSORIES
							MOCP	MCA	V/PH/Hz	HSPF	HIGH HEATING CAPACITY (Btuh)	HIGH HEAT COP	AIRFLOW @0.6"W.G. (CFM)	BHP	WIDTH X DEPTH (in.)	HEIGHT (in.)	WEIGHT (lb)	
RTU-01 & RTU-02	ROOF / OFFICES	CARRIER	50FCQA05	4 TONS	47.0	SEER 14.00 EER 11.80 IEER N/A	50	31	208-230/1/60	8.2	46 MBH	3.7	1600	0.48	74-3/8 X 46-5/8	33-3/8	498	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

INLINE EXHAUST AIR FAN SCHEDULE

TAG	IEF-01 & 02
LOCATION	TOILETS
MANUFACTURER	FANTECH
MODEL	CVS275A
SELECTED FLOW (CFM)	140
PRESSURE DROP (INCH W.G.)	0.88
ELECTRICAL (V / PH / HZ)	120/1/60
INPUT AMPS	0.79
RPM	2,550
INPUT POWER (WATTS)	92

SCHEDULE No. 3

CEILING EXHAUST FAN SCHEDULE

TAG	EF-01
MANUFACTURER	WHISPERGREEN
MODEL	FV-0511VKS2
LOCATON	ELECTRIC ROOM
STATIC PRESSURE (INCH W.C.)	0.1
AIR VOLUME (CFM)	100
ELECTRICAL (V/ PH/ HZ)	120 / 1 / 60
MAX CURRENT (AMPS)	0.2
POWER CONSUMPTION (WATTS)	7.9
MOTOR SPEED (RPM)	889
FAN TYPE	CEILING MOUNT

AS PER CEnC 2022, TABLE 120.1-A: MINIMUM VENTILATION RATES:

S.N.	SPACE NAME	AREA (FT2)	CFM/FT2	TOTAL CFM
1	OFFICE	705	0.15	106
2	OFFICE	690	0.15	104
3	TOILET	55	-	70
4	TOILET	55	-	70
5	TOILET	55	-	70
6	TOILET	55	-	70
TOTAL		1,615	-	489

O/A SUPPLIED BY RTU-01 = 70 + 70 + 106 = 246 CFM

O/A SUPPLIED BY RTU-02 = 70 + 70 + 104 = 244 CFM

SCHEDULE No. 4

UNIT HEATER SCHEDULE

TAG	LOCATION/SERVING	HEATING INPUT	THERMAL OUTPUT (80%)	ELECTRICAL (V/PH/Hz)	FLA	POWER	DIAMETER	CFM	OUTLET VELOCITY	MODEL	MANUFACTURER	WEIGHT
UH-01 TO 10	WAREHOUSE	100,000 BTU/HR	80,000 BTU/HR	115/1/60	2.8	195 W	14 in.	1,250	1,358 FPM	F100	REZNOR	97 LBS

SCHEDULE No. 5

EVAPORATIVE COOLER SCHEDULE

TAG	LOCATION / SERVING	RATED AIRFLOW	ELECTRICAL(V/PH/Hz)	MOTOR HP	MANUFACTURER	MODEL	DIMENSIONS	WEIGHT	COMMENTS
EVC-01 TO 12	ROOF / WAREHOUSE	19,806 CFM @ 0"ESP	230/3/60	5	ESSICKAIR	ASPEN 14/21 DD	61 ¼ "x62"x62"	983 LBS	MOUNT WITH SEISMIC SUPPORT

1. EVC UNITS SHALL BE CONTROLLED BY A LINE VOLTAGE TWIST TIMER LOCATED ON THE WALL WHERE SHOWN. EACH TWIST TIMER SHALL CONTROL 3 UNITS EACH.

SCHEDULE No. 6

RELIEF GRAVITY VENTILATOR SCHEDULE

TAG	LOCATION / SERVING	RATED AIRFLOW	MANUFACTURER	MODEL	DIMENSIONS	NB OF LOUVERS
RGV-01 TO 05	ROOF / WAREHOUSE	30,000 CFM @ 0.055 in. WG	GREENHECK	WRH	68"x128"x46"	13

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:  
PROPOSED WAREHOUSE FACILITY

TITLE:  
MECHANICAL EQUIPMENT SCHEDULES & VENTILATION

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

DRAWING NO. REV.

M 2 . 0 1



M 3 0 1



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 2022 CALIFORNIA MECHANICAL CODE AND THE 2022 CALIFORNIA BUILDING CODE AND THE 2022 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 EQUIPMENT (CMC 309)
19. HEATING, VENTILATING, AND AIR CONDITIONING SYSTEMS SHALL BE BALANCED IN ACCORDANCE WITH ONE OF THE FOLLOWING METHODS IN ACCORDANCE WITH CMC 317.1 REQUIREMENTS

A. AABC NATIONAL STANDARDS FOR TOTAL SYSTEM BALANCE

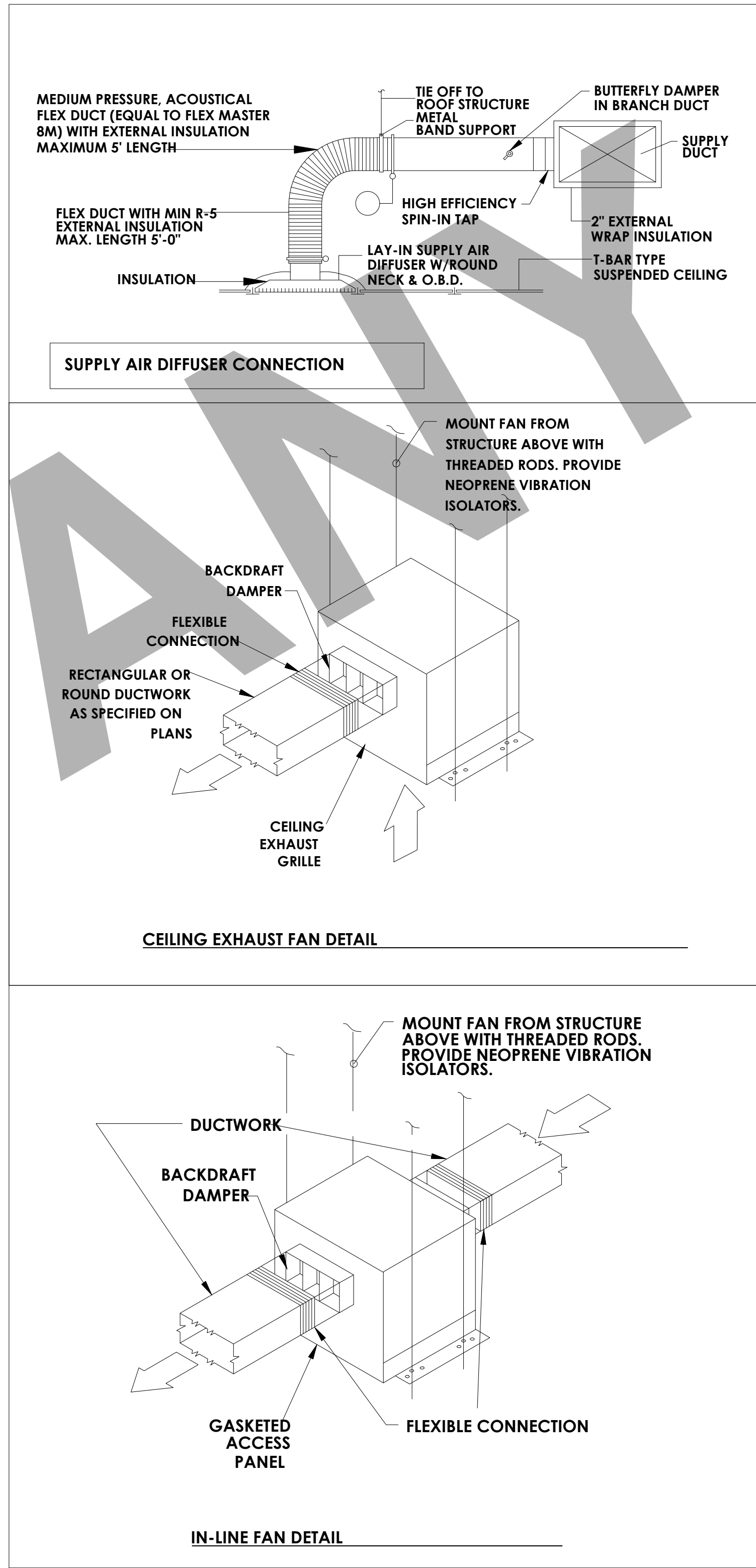
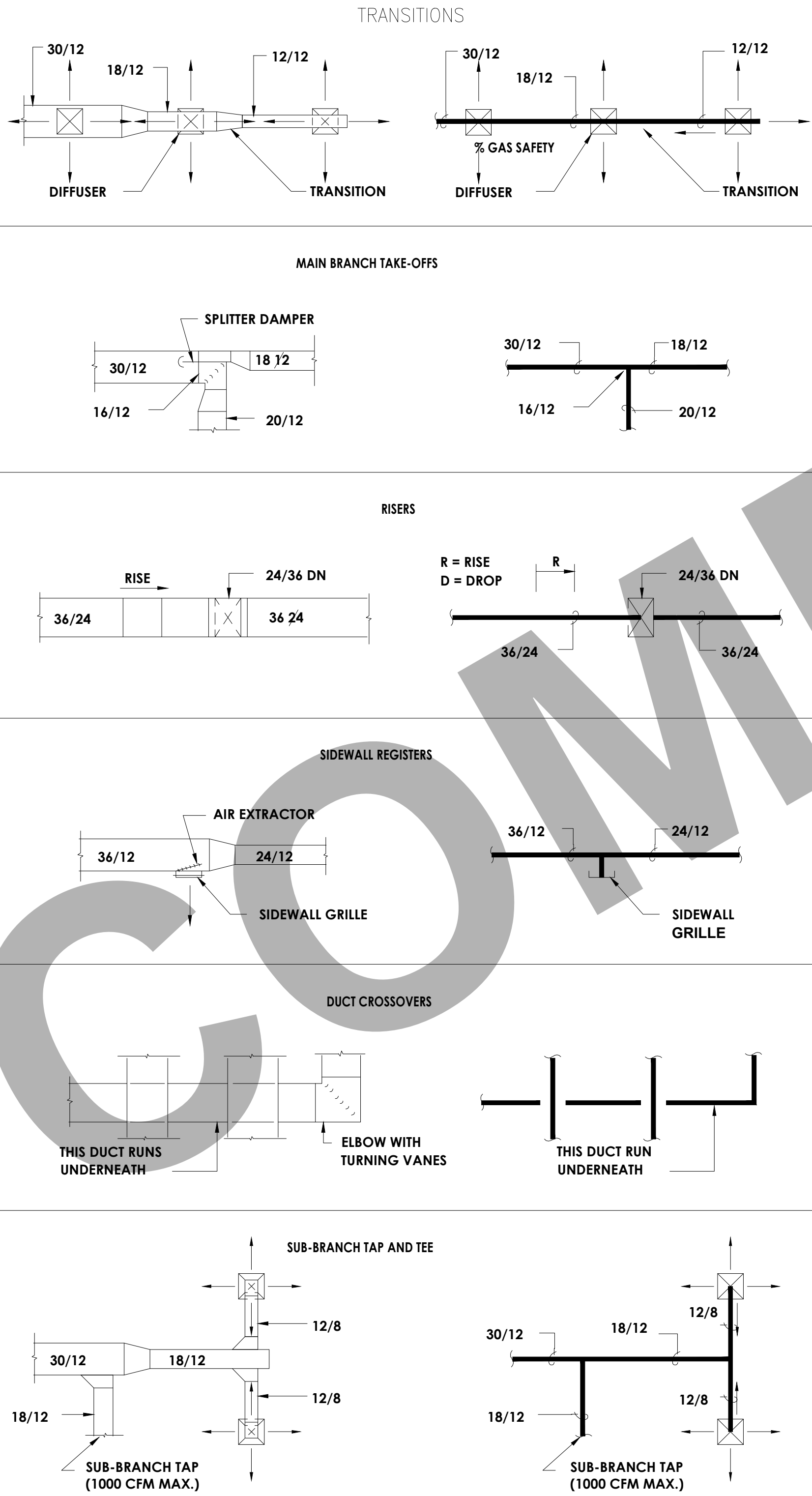
B. ACCA MANUAL B

C. ASHRAE 111

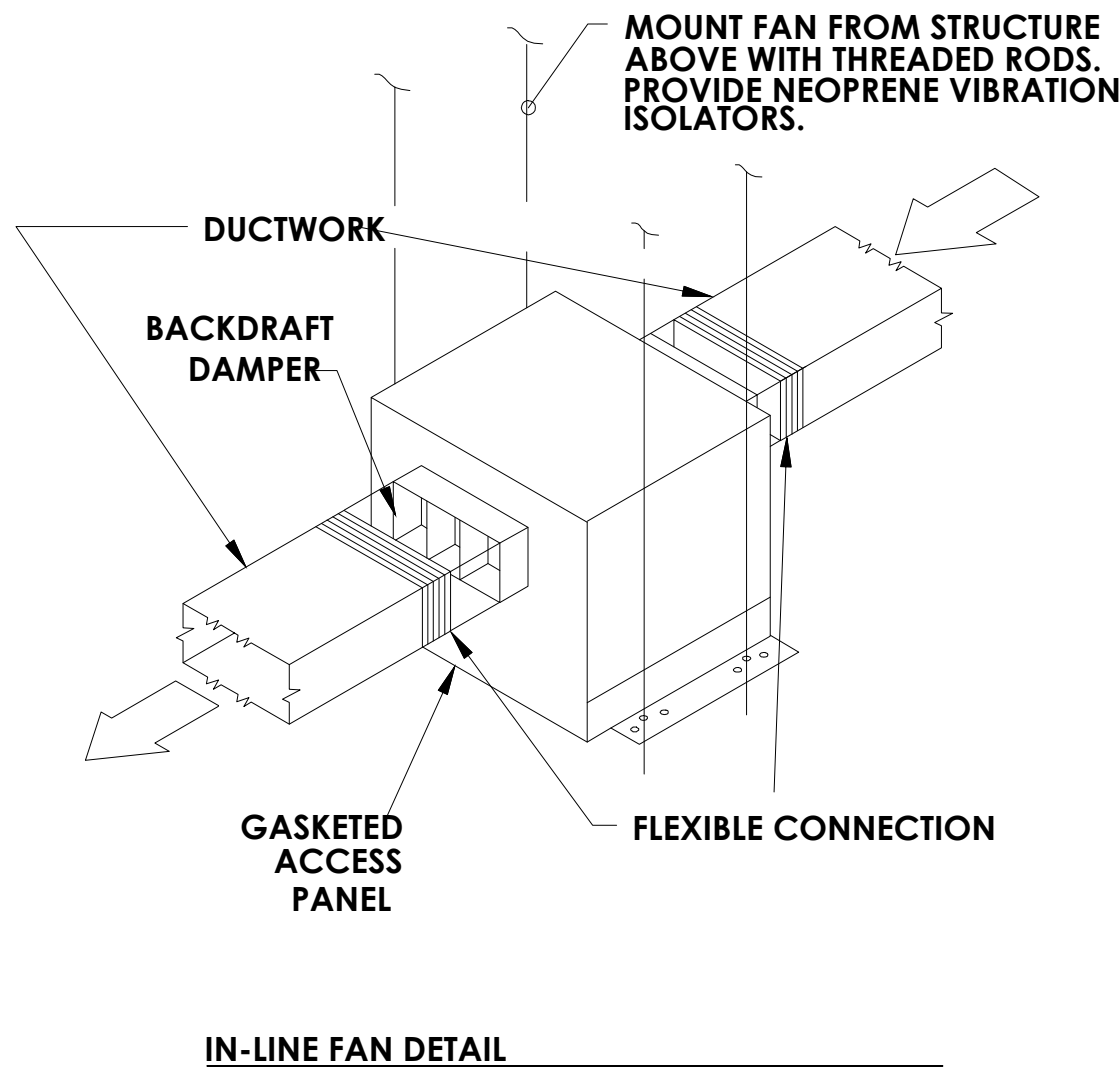
D. NEBB PROCEDURAL STANDARDS FOR TESTING, ADJUSTING, ADJUSTING BALANCING OF ENVIRONMENTAL SYSTEMS

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

DUCTWORK SYMBOLS LEGEND



CEILING EXHAUST FAN DETAIL



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REV. NO.	DESCRIPTION	DATE	BY

PROJECT: PROPOSED WAREHOUSE FACILITY		
TITLE: MECHANICAL GENERAL DETAILS		
PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36 NTS
DRAWING NO. M 4 . 0 1		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 CEC 2022 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 CEC 2022. PROVIDE BONDING AS REQUIRED BY ARTICLE 680.74 OF THE CEC 2022.
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 CEC 2022.
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 DWELING 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, DENIS, 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. CEC 2022 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 CEC 2022 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 CEC 2022 ARTICLE 410, THE LINE-SIDE TERMINALS OF THE DISCONNECTING MEANS SHALL BE LOCATED SO AS TO BE ACCESSIBLE TO QUALIFIED PERSONS BEFORE SERVICING OR MAINTAINING THE BALLAST.
18. ALL FLUORESCENT LAMPS SHALL BE OF A LOW MERCURY DESIGN. HAVE A MINIMUM CRI RATING OF 85 AND 3500K COLOR TEMPERATURE UNLESS NOTED OTHERWISE.

GENERAL NOTES

- a. CEC 2022 ARTICLE 210.52(A) (1) SPACING. RECEPTACLES SHALL BE INSTALLED THAT NO POINT ALONG THE FLOOR LINE OF THE WALL IS MORE THAN 6- FEET FROM A RECEPTACLE.
- b. ALL SMOKE AND CARBON DETECTORS ARE CONNECTED TOGETHER

ELECTRICAL ABBREVIATIONS

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

ELECTRICAL LIST OF DRAWINGS (LoD):

SHEET TAG	TITLE	SCALE
E 0.01	ELECTRICAL GENERAL NOTES AND SPECIFICATIONS	NTS
E 1.01	MAIN FLOOR - LIGHTING LAYOUT	1/16" = 1'- 0"
E 2.01	MAIN FLOOR - POWER LAYOUT	1/16" = 1'- 0"
E 2.02	ROOF PLAN - POWER LAYOUT	1/16" = 1'- 0"
E 3.01	PANEL BOARDS SCHD., FAULT CURRENT AND RISER DIAGRAM	NTS

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

PROPOSED WAREHOUSE FACILITY

TITLE:

ELEC GENERAL NOTES & SPECS AND ABBREVIATIONS.

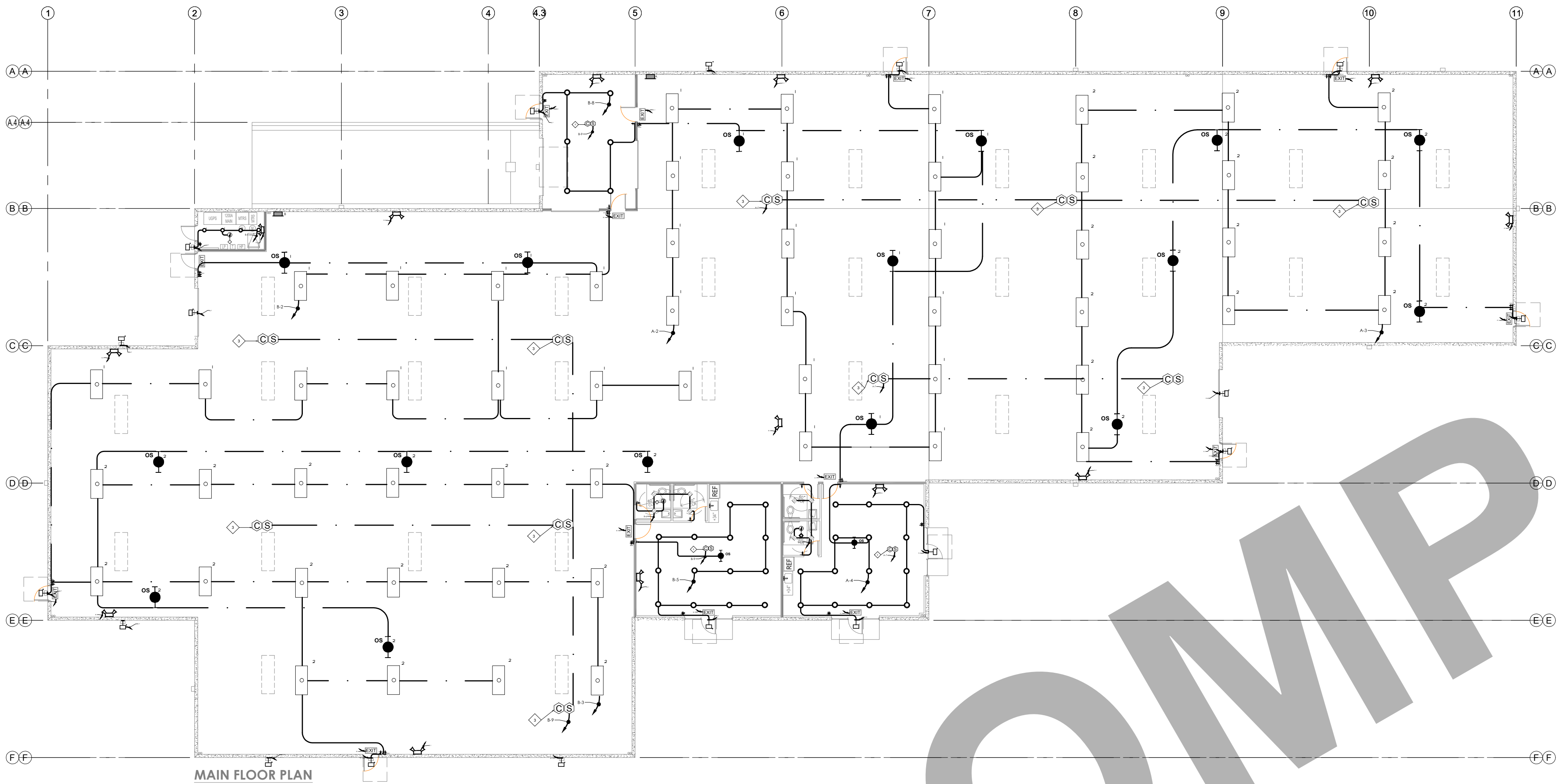
PROJ. NO.PROJ. ENGR.SCALE @ 24X36

NTS

DRAWING NO.

E 0.01

REV.



MAIN FLOOR PLAN

GENERAL NOTES:

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B. NATIONAL FIRE PROTECTION ASSOCIATION  
C. CALIFORNIA 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  
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- 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.
- 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.
- 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.
- ALL CONDUITS IN PUBLIC SHALL BE CONCEALED UNLESS NOTED OTHERWISE.

- 1 → JUNCTION BOX FOR EXHAUST FAN
- 2 → JUNCTION BOX FOR INDUSTRIAL EXHAUST FAN
- 3 → FURNISH AND INSTALL SMOKE OR COMBINATION SMOKE AND CARBON MONOXIDE DETECTOR AS REQUIRED. INTERLOCK WITH OTHER DETECTORS
- 4 → DISCONNECT SWITCH FOR UNIT HEATER
- 5 → DISCONNECT SWITCH FOR RTU
- 6 → DISCONNECT SWITCH FOR POINT OF USE WATER HEATER
- 7 → DISCONNECT SWITCH FOR EVC

LIGHTING SCHEDULE		WATTS
	SUNCO LIGHTING 2x4 LED FLAT PANEL LIGHT, COOL WHITE (4000K), DIMMABLE	50W
	RECESSED MOUNTED SPOT SIMILAR TO DN145B PSD D166 1 xLED10S/840 DIMMABLE	13W
	RECESSED MOUNTED SPOT SIMILAR TO DN140B PSED-E IP54 D162 1 xLED10S/840 C	11.5W
	NEW EMERGENCY BUG EYE LED LIGHT FIXTURE W/ BATTERY	
	EXIT SIGN WITH EMERGENCY LIGHT SHALL BE ON ALL TIME WITH 90 BACK UP MINUTES BATTERY BUILT IN	
	EXTERIOR WALL MOUNTED LED LIGHTING FIXTURE SIMILAR TO HYPERIKON LED OUTDOOR FLOOD LIGHT COOL WHITE COLOR	30W

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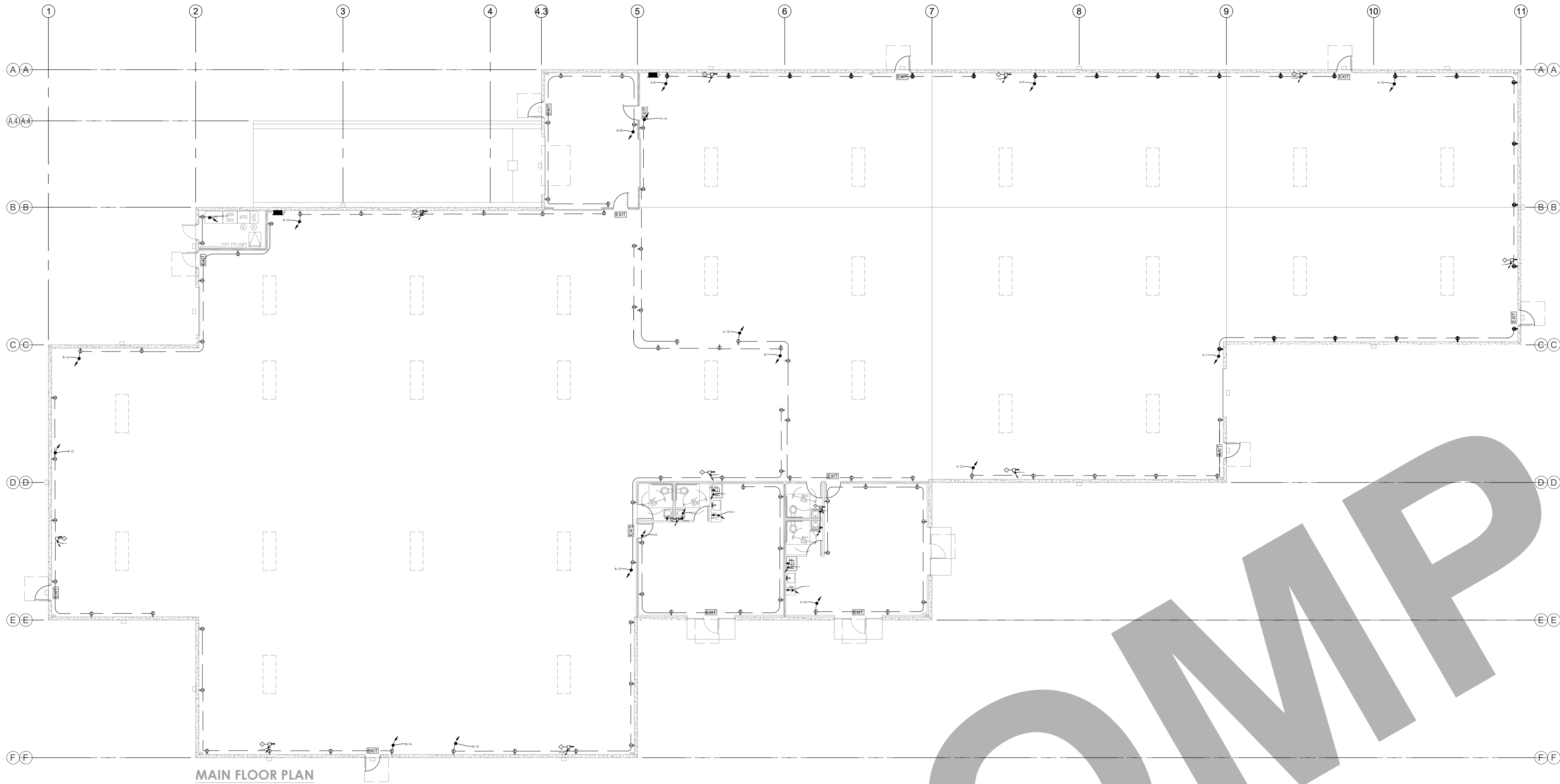
PROJECT:  
**PROPOSED WAREHOUSE FACILITY**

TITLE:  
**MAIN FLOOR LIGHTING LAYOUT.**

PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36 1/16"=1'-0"
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DRAWING NO. <b>E 1 . 0 1</b>	REV.
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MAIN FLOOR PLAN

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POWER AND SYSTEMS	
	DUPLEX RECEPTACLE
	DUPLEX RECEPTACLE - WALL MOUNTED @ +18" AFF UNLESS NOTED WITH GROUND FAULT CIRCUIT INTERRUPTER
	NON-FUSED DISCONNECT SWITCH - SIZE AS INDICATED
	SURFACE MOUNT PANELBOARD
	JUNCTION BOX - WALL MOUNTED - HEIGHT AS INDICATED
	CONDUITS IN CEILING
	CONDUITS UNDER TILES
	SELF-CONTAINED SMOKE DETECTOR/ANNUNCIATOR (120 W/BATTERY BACKUP) - CEILING MOUNTED SPECIFIED UL217
	SELF-CONTAINED SMOKE/CARBON MONOXIDE (120 W/BATTERY BACKUP) - CEILING MOUNTED SPECIFIED UL203A/28015
	360-degree View Occupancy Sensor (covering 251 to 500 ft2)
	LIGHT SWITCH - WALL MOUNTED @ +48" AFF UNLESS NOTED SUBSCRIPTS: S2 = 2-POLE SWITCH S3 = 3-WAY SWITCH S4 = 4-WAY SWITCH D = DIMMER SWITCH K = KEY OPERATED SWITCH M = MOMENTARY CONTACT SWITCH P = SWITCH WITH PILOT LIGHT T = TIMER OS=WITH BUILT IN OCCUPANCY SENSOR
INSTALLATION HEIGHTS: h1: 24 in h2: 42 in h3: 48 in h4: 72 in h5: 94 in h6: 60 in	

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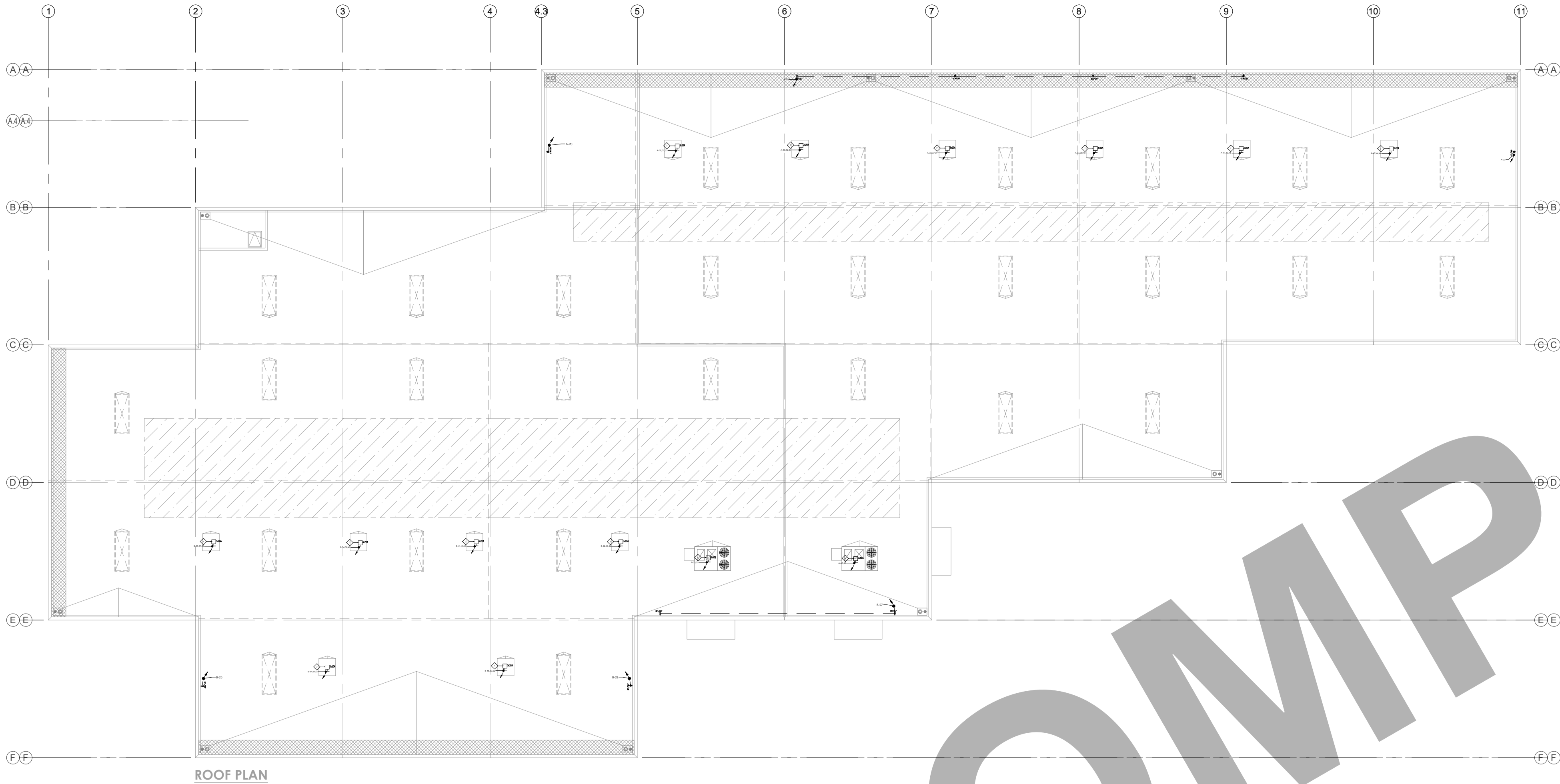
PROJECT:  
**PROPOSED WAREHOUSE FACILITY**

TITLE:  
**MAIN FLOOR POWER LAYOUT.**

PROJ. NO. PROJ. ENGR. SCALE @ 24X36  
**1/16"=1'-0"**

DRAWING NO.  
**E 2.01**

REV.



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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.

- 1 → JUNCTION BOX FOR EXHAUST FAN
- 2 → JUNCTION BOX FOR INDUSTRIAL EXHAUST FAN
- 3 → FURNISH AND INSTALL SMOKE OR COMBINATION SMOKE AND CARBON MONOXIDE DETECTOR AS REQUIRED. INTERLOCK WITH OTHER DETECTORS
- 4 → DISCONNECT SWITCH FOR UNIT HEATER
- 5 → DISCONNECT SWITCH FOR RTU
- 6 → DISCONNECT SWITCH FOR POINT OF USE WATER HEATER
- 7 → DISCONNECT SWITCH FOR EVC

POWER AND SYSTEMS	
	DUPLEX RECEPTACLE
	DUPLEX RECEPTACLE - WALL MOUNTED @ +18" AFF UNLESS NOTED WITH GROUND FAULT CIRCUIT INTERRUPTER
	NON-FUSED DISCONNECT SWITCH - SIZE AS INDICATED
	SURFACE MOUNT PANELBOARD
	JUNCTION BOX - WALL MOUNTED - HEIGHT AS INDICATED
	CONDUITS IN CEILING
	CONDUITS UNDER TILES
	SELF-CONTAINED SMOKE DETECTOR/ANNUNCIATOR (120 W/BATTERY BACKUP) - CEILING MOUNTED SPECIFIED UL217
	SELF-CONTAINED SMOKE/CARBON MONOXIDE (120 W/BATTERY BACKUP) - CEILING MOUNTED SPECIFIED UL200A/2015
	360-degree View Occupancy Sensor (covering 251 to 500 F2)
	LIGHT SWITCH - WALL MOUNTED @ +48" AFF UNLESS NOTED SUBSCRIPTS: S2 = 2-POLE SWITCH S3 = 3-WAY SWITCH S4 = 4-WAY SWITCH D = DIMMER SWITCH K = KEY-OPERATED SWITCH M = MOMENTARY CONTACT SWITCH P = SWITCH WITH PILOT LIGHT T = TIMER OS=WITH BUILT IN OCCUPANCY SENSOR
INSTALLATION HEIGHTS: h1: 24 in h2: 42 in h3: 48 in h4: 72 in h5: 94 in h6: 60 in	

CLIENT:

ADDRESS:

CONFIDENTIALITY STATEMENT:

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

NOTES:

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

REV. NO.	DESCRIPTION	DATE	BY

PROJECT: <b>PROPOSED WAREHOUSE FACILITY</b>		
TITLE: <b>ROOF PLAN POWER LAYOUT.</b>		
PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36 <b>1/16"=1'-0"</b>
DRAWING NO. <b>E 2.02</b>		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.

**SHUT-OFF VALVES:**  
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:**  
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 PERMITTED 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

- 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.
- THE ENTIRE INSTALLATION SHALL CONFORM TO THE REQUIREMENTS OF THE 2022 CALIFORNIA PLUMBING CODE, 2022 CALIFORNIA BUILDING CODE, 2022 CALIFORNIA ENERGY CONSERVATION CODE AND ALL OTHER APPLICABLE CODES AND REGULATIONS REQUIRED BY AUTHORITIES HAVING JURISDICTION. IN THE EVENT OF CONFLICT BETWEEN SPECIFICATIONS, CODES, AND REGULATIONS, THE MORE RESTRICTIVE SHALL APPLY.
- COORDINATE ENTIRE INSTALLATION OF THE PLUMBING SYSTEM WITH THE WORK OF OTHER TRADES PRIOR TO ANY FABRICATION OR INSTALLATION. FIELD VERIFY ALL DIMENSIONS AND CONDITIONS. REPORT ANY DISCREPANCIES, IN WRITING, TO THE ENGINEER PRIOR TO COMMENCEMENT OF WORK.
- 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.
- THE DRAWINGS ARE DIAGRAMMATIC AND INTENDED TO SHOW SCOPE. CONTRACTOR SHALL COORDINATE HIS WORK WITH OTHER TRADES TO PROVIDE THE BEST ARRANGEMENT OF ALL DUCT, PIPE, CONDUIT, ETC.
- ALL CUTTING AND PATCHING OF THE EXISTING STRUCTURE SHALL BE PROVIDED UNDER OTHER SECTIONS OF THE WORK. PROVIDE NECESSARY REQUIREMENTS TO THE PROJECT SUPERINTENDENT.
- ALL HOT WATER PIPING AND RE-CIRCULATION PIPING (EXCEPT RUNOUTS 12 FT. OR SHORTER TO INDIVIDUAL FIXTURES) SHALL BE INSULATED TO MEET THE REQUIREMENTS OF THE 2022 CALIFORNIA ENERGY CONSERVATION CODE
- 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.
- PIPING:
  - WASTE, VENT, AND STORM DRAIN PIPING SHALL BE CO-EXTRUDED PVC SCHEDULE 40) PIPE
  - WATER PIPE SHALL BE CPVC PIPE
  - CONDENSATE PIPING SHALL BE CO-EXTRUDED PVC (SCHEDULE 40) PIPE
  - 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.
  - ALL PIPING NOT ENCLOSED IN CONDITION SPACE OR AT EXTERIOR WALLS SHALL BE INSULATED.
  - PIPING: PVC SCHEDULE 40, SCHEDULE 80 AND CPVC PIPING WITH SOLVENT WELD FITTINGS SHALL BE USED WHERE PERMITTED BY CODE/LOCAL AUTHORITIES
- ALL VENTS OR EXHAUSTS SHALL BE AT LEAST 10 FT. AWAY OR 3 FT. ABOVE ANY WINDOW, DOOR, OPENING, OR AIR INTAKE.
- CLEANOUTS SHALL BE INSTALLED PER THE CALIFORNIA PLUMBING CODE.
- PROVIDE WATER TIGHT FLASHINGS WHEREVER PIPES PASS THROUGH EXTERIOR WALLS, ROOFS, OR FLOORS.
- PROVIDE ISOLATION FOR ALL PIPES THAT COME IN CONTACT WITH THE STRUCTURE.
- 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.
- 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.
- 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.
- PROVIDE HANGERS AND SUPPORTS AS REQUIRED. PLUMBERS TAPE AND WIRE ARE NOT ACCEPTABLE.
- 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.
- CONTRACTOR SHALL AFFIX A MAINTENANCE LABEL TO ALL EQUIPMENT REQUIRING ROUTINE MAINTENANCE AND SHALL PROVIDE MAINTENANCE AND OPERATIONAL MANUALS IN ACCORDANCE WITH THE SPECIFICATIONS.
- 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.
- ANY CHANGE OR DEVIATION FROM THESE PLANS OR SPECIFICATIONS SHALL REQUIRE THE APPROVAL, IN WRITING, OF THE ENGINEER PRIOR TO COMMENCEMENT OF SUCH WORK.
- ALL PLUMBING, ELECTRICAL, AND GAS LINES SHALL BE CONCEALED WITHIN 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
- AN APPROVED BACK-FLOW PREVENTOR SHALL BE PROPERLY INSTALLED UPSTREAM OF ANY POTENTIAL HAZARD BETWEEN THE POTABLE WATER SUPPLY AND SOURCE OF CONTAMINATION.

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	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
	-	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

VERIFY AND WHERE WATER PRESSURE EXCEEDS 80 PSI AN APPROVED PRESSURE REGULATOR PRECEDED BY AN ADEQUATE STRAINER SHALL BE INSTALLED

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

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

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

4- A GAS 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- 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 BACK-DRAFT 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 PREVENTER 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-The plans that a minimum of 65% of construction waste is to be recycled. CGC Section 4.408.1.  
4-The contractor shall submit a Construction Waste Management Plan, per CGC Section 4.408.2.  
5-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.

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

SPECIAL NOTICE TO CONTRACTORS

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

PLUMBING LIST OF DRAWINGS (LoD):

SHEET TAG	TITLE	SCALE
P 0.01	PLUMBING GENERAL NOTES AND SPECIFICATIONS	NTS
P 1.01	MAIN FLOOR - WATER SUPPLY LAYOUT	1/16" = 1'- 0"
P 1.02	PLUMBING FIXTURES & WATER HEATER SCHEDULES	NTS
P 2.01	MAIN FLOOR - SEWER LAYOUT	1/16" = 1'- 0"
P 3.01	MAIN FLOOR - GAS LAYOUT	1/16" = 1'- 0"
P 3.02	GAS CODE CHECKING, SIZING & ISOMETRIC RISER DIAGRAM	NTS
P 4.01	WATER HEATER DATA SHEETS	NTS
P 5.01	PLUMBING GENERAL DETAILS	NTS
P 6.01	WATER SUPPLY RISER DIAGRAM	NTS
P 6.02	SEWER RISER DIAGRAM	NTS

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

REV. NO.	DESCRIPTION	DATE	BY

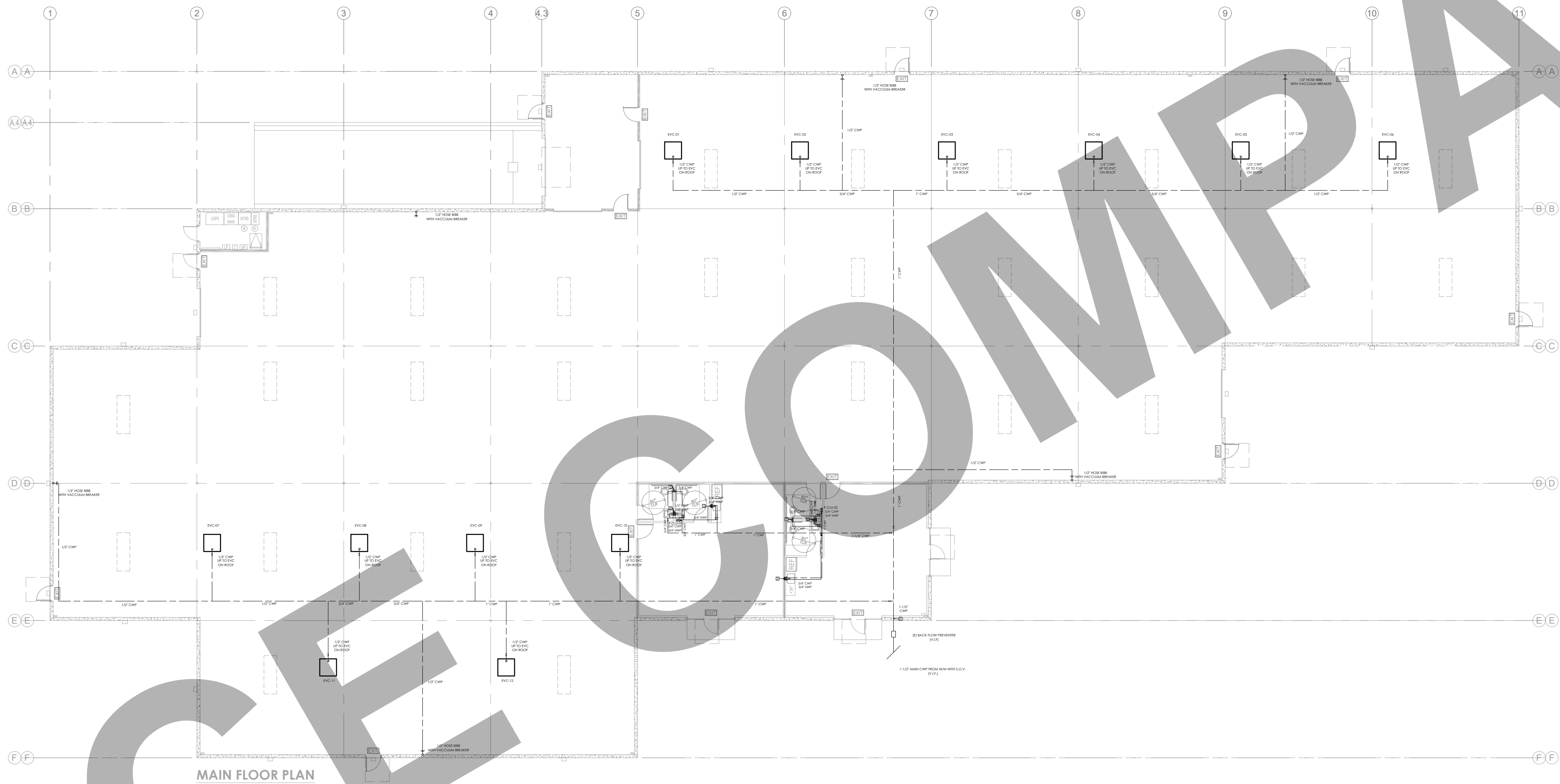
PROJECT:  
**PROPOSED WAREHOUSE FACILITY**

TITLE:  
**PLUMBING GENERAL NOTES AND SPECIFICATIONS**

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

DRAWING NO. REV.  
**P 0 . 0 1**





MAIN FLOOR PLAN

AS PER CPC 2022, TABLE 610.3 - WATER SUPPLY FIXTURE UNITS (WSFU) AND MINIMUM FIXTURE BRANCH PIPE SIZES

FIXTURES	MIN. FIXTURE BRANCH SIZE (Inches)	PUBLIC WSFU	NUMBER OF FIXTURES	TOTAL WSFU
Lavatory	1/2	1.00	4	4
Sink	1/2	1.50	2	3
Water Closet, 1.6 GPF Flushometer Tank	1/2	2.50	4	10
Swamp Coolers (12 QTY)	3/8	1.67	12	20
Hose bibb	1/2	2.5	1	2.5
Additional Hose bibb	1/2	1.0	5	5.0
Total			28	44.5

AS PER CPC 2022, TABLE 610.8:  
SIZE OF METER AND BUILDING SUPPLY PIPE USING TABLE 610.4:

Available Pressure at the water meter	45.00
Elevation from Water Meter to highest Fixture	25.00
Available Pressure	32.50
Total Developed Length	230.00
WSFU from Table 610.3	44.50
Water Meter Size (Inches)	1-1/2"
Building Supply Pipe Size (Inches)	1-1/2"

CPC-407.2.1-The maximum flow rate for public lavatory faucets shall not exceed 0.5 gpm at 60 psi (1.9 L/m at 414 kPa).

CPC-411.2-The effective flush volume of all water closets shall not exceed 1.28 gallons (4.8 L) per flush when tested in accordance with ASME A112.19.2/CSA B45.1.

CPC-420.2-Sink faucets shall have a maximum flow rate of not more than 2.2 gpm at 60 psi (8.3 L/m at 414 kPa).

CPC-606.2-A fullway valve controlling outlets shall be installed on the discharge side of each water meter and each unmetered water supply. Water piping supplying more than one building on one premise shall be equipped with a separate fullway valve to each building, so arranged that the water supply can be turned on or off to an individual or separate building provided.

GENERAL NOTES:

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

WATER SUPPLY SHEET NOTES:

- DCW/DHW RISE TO HIGH LEVEL.
- DCW/DHW TO FIXTURE CONNECTION.

ALL WATER PIPES ARE CPVC PIPES

EVAPORATIVE COOLING WATER REQUIREMENTS CALCULATIONS:

- CLIMATE ZONE: CA ZONE-14
- R.H = 50 %
- OUTDOOR DBT = 102 °F
- COOLING LOAD = 660 MBH = 195 kW
- QTY OF EV.C. = 12
- COOLING LOAD BY ONE EV.C = 55 MBH = 16.25 kW
- EV.C. AIR FLOW RATE = 19,802 CFM = 9.35 m³/s
- DENSITY OF AIR = 1.2 Kg/m³

LATENT HEAT FORMULA:  
 $Q = m \times 2,454 \times \Delta W$  (SI UNIT)

Q : COOLING LOAD (Kw)  
m : MASS AIR FLOW RATE (Kg/s)  
 $\Delta W$  : MOISTURE CONTENT DIFFERENCE (Kg/Kg d.a)

THEREFORE,

- $m_{air} = 9.35 \times 1.2 = 11.22 \text{ Kg/s}$
- $Q = m \times 2,454 \times \Delta W$   
 $195 = 11.22 \times 2,454 \times \Delta W$   
 $\Delta W = 0.0071 \text{ Kg/Kg d.a}$
- MOISTURE ADDED:
- $m_{moist} = m_{air} \times \Delta W$   
 $m_{moist} = 11.22 \times 0.0071 = 0.08 \text{ Kg/s}$
- 1.0 Liter (H2O) = 1.0 Kg (H2O)  
 $Q_{moist} = 0.08 \text{ L/s} = 1.27 \text{ GPM}$  for one Swamp Cooler

THE REQUIRED WATER FLOW FOR EACH EVAPORATIVE COOLER EQUALS TO 1.27 GPM  
TOTAL WATER FLOW FOR THE 12 EVAPORATIVE COOLERS EQUALS TO 1.27 x 12 = 15.25 GPM

AS PER 2022 CPC - APPENDIX A - CHART A103.1(2)  
15.25 GPM = 20 WSFU

PIPE SIZING:

- AS PER 2022 CPC - CHART A105.1(2) FOR FERROUS PIPE (FAIRLY SMOOTH)
- HEAD LOSS = 7 PSI/100 FT.
  - GPM = 15.25
  - THE MAIN PIPE SIZE SHALL BE NOT LESS THAN 1"Ø
  - THE BRANCH PIPE SIZE FOR EACH EV.C. SHALL BE NOT LESS THAN 3/8"Ø.

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:  
PROPOSED WAREHOUSE  
FACILITY

TITLE:  
MAIN FLOOR -  
WATER SUPPLY LAYOUT

PROJ. NO. PROJ. ENGR. SCALE @ 24X36  
1/16" = 1'-0"

DRAWING NO. REV.

P 1 . 0 1

Plumbing Fixtures Schedule - Water Supply								
Fixture ID	Fixture	Manufacturer	Model	SW	V	CW	HW	Description
WCFT-1	Water Closet - Flush Tank	American Standard	Townsend Vormax	-	-	1/2"	-	High Efficiency, Ultra Low Consumption (1.28 GPF) Meets EPA WaterSense
CLF-1	Commercial Lavatory Faucet	American Standard	Paradigm	-	-	1/2"	1/2"	Lead-Free: Faucet contains <0.25% Total Lead content Flow Rate: 1.5 GPM @ 60 PSI.
LSD-1	Liquid Soap Dispenser	American Standard	4503.12	-	-	-	-	Strong, pump for frequent usage, Brass protects body against corrosion and ensures long product life
CHS-1	Commercial Hand Sink	Advance Tabco	7-PS-60	-	-	1/2"	1/2"	One piece, heavy gauge style 304 series stainless steel, 1 GPM @ 60 PSI

Plumbing Fixtures Schedule - Waste								
Fixture ID	Fixture	Manufacturer	Model	SW	V	CW	HW	Description
WCFT-1	Water Closet - Flush Tank	American Standard	Townsend Vormax	3"	2"	-	-	High Efficiency, Ultra Low Consumption (1.28 GPF) Meets EPA WaterSense
CL-1	Commercial Lavatory	American Standard	DECORUM	2"	1-1/2"	-	-	Wall Hung Lavatory, ADA & TAS Compliant Recessed Self-draining deck with minimal backsplash
CFD-1	Commercial Floor Drain	Advance Tabco	FD-1 SSG	4"	1-1/2"	-	-	14 gauge Stainless Steel, with Strainer Basket with handle Custom Sizes Available. Optional SS Grate & Anti Splash
CHS-1	Commercial Hand Sink	Advance Tabco	7-PS-60	2"	1-1/2"	-	-	One piece, heavy gauge style 304 series stainless steel, 1 GPM @ 60 PSI

SCHEDULE No. 1

P.O.U. ELECTRIC WATER HEATER

TAG		P.O.U-01 & 02
BRAND		CHRONOMITE
MODEL		M-30L/120
POWER SUPPLY		120/1/60
AMPS		30
POWER (kW)		3.6
°F TEMPERATURE RISE @ ACTIVATION GPM		70 @ 0.35
MAX. FLOW (GPM)		1.0
DIMENSIONS	W x D	10-1/8" x 2-3/4"
	H	6-1/4"

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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:  
PROPOSED WAREHOUSE  
FACILITY

TITLE:  
PLUMBING FIXTURES & WATER  
HEATER SCHEDULES

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

DRAWING NO.  
P 1 . 0 2

REV.



CMC-310.1-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 drainage system, equipment shall drain by means of an indirect waste pipe. The waste pipe shall have a slope of not less than 1/8 inch per foot (10.4 mm/m) or 1 percent slope and shall be of approved corrosion-resistant material not smaller than the outlet size in accordance with Section 310.3 or Section 310.4 for air-cooling coils or condensing appliances, respectively. Condensate or wastewater shall not drain over a public way.

CMC-310.5-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.

CPC-706.2-Horizontal drainage lines, connecting with a vertical stack, shall enter through 45 degree (0.79 rad) wye branches, 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

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

CPC-707.4-1- Each horizontal drainage pipe shall be provided with a cleanout at its upper terminal  
Exceptions:  
Cleanouts shall be permitted to be omitted on a horizontal drain line less than 5 feet in length unless such line is serving sinks or urinals.  
2- each run of piping, that is more than 100 feet in total developed length.  
3-A cleanout shall be provided in a drainage line for each aggregate horizontal change in direction exceeding 135 degrees.

CPC-707.9-Each cleanout in piping 2 inches (50 mm) or less in size shall be so installed that there is a clearance of not less than 18 inches (457 mm) by 18 inches (457 mm) in front of the cleanout. Cleanouts in piping exceeding 2 inches (50 mm) shall have a clearance of not less than 24 inches (610 mm) by 24 inches (610 mm) in front of the cleanout.

CPC-906.1-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.

CPC-906.2-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 lot line, alley and street excepted.

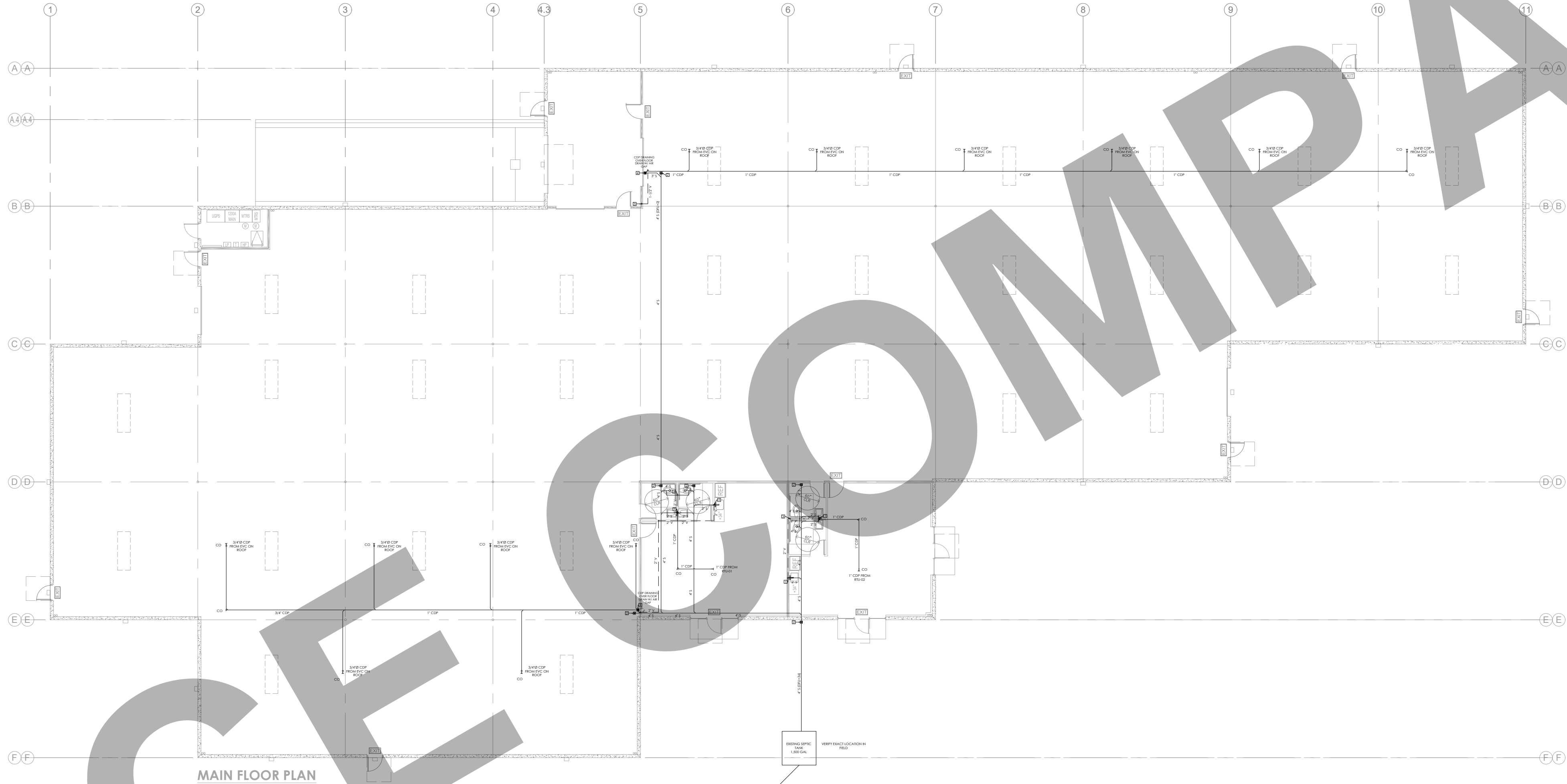
GENERAL NOTES:

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- ALL SANITARY DRAINAGE PIPING 4" AND SMALLER SHALL BE SLOPED AT 1/4" PER FOOT. PIPING 4" AND LARGER SHALL BE SLOPED AT 1/8" PER FOOT.
- ALL CONDENSATE DRAIN PIPING SHALL BE SLOPED AT 1/8" PER FOOT AND PROVIDE ACCESSIBLE CLEANOUTS AT ALL CHANGES OF DIRECTION.
- VENTS THAT TERMINATE AT THE ROOF SHALL BE A MINIMUM OF 10' FROM ANY FRESH AIR INTAKE.
- REFER TO THE PLUMBING DIAGRAMS FOR GUIDANCE OF INSTALLATION INTENT. CONTRACTOR IS TO PROVIDE ALL COMPONENTS NECESSARY TO MEET THE DESIGN INTENT, WHETHER SHOWN IN DIAGRAM OR NOT.

SANITARY SHEET NOTES:

- WASTE DROP AND 2" VENT RISE.
- 4" FLOOR CLEAN-OUT.
- 3" VENT STACK TO ABOVE.
- 3" FLOOR DRAIN.

ALL WASTE AND VENT PIPES ARE CO-EXTRUDED PVC SHCD. 40 PIPES



MAIN FLOOR PLAN

AS PER CPC 2022, TABLE 702.1 DRAINAGE FIXTURE UNIT VALUES (DFU):

FIXTURES	MINIMUM SIZE TRAP AND TRAP ARM (inches)	PUBLIC DFU	NUMBER OF FIXTURES	TOTAL DFU
Lavatory	1 1/4	1.00	4.00	4.00
Sink	1 1/2	2.00	2.00	4.00
Water Closet, 1.6 GPF Flushometer Tank	3	4.00	4.00	16.00
Total			10.00	24.00

AS PER CPC 2022, TABLE H201.1(1): CAPACITY OF SEPTIC TANKS:

FOR TOTAL DFU = 24, SEPTIC TANK CAPACITY MUST NOT BE LESS THAN 1,200 GAL.

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:  
**PROPOSED WAREHOUSE FACILITY**

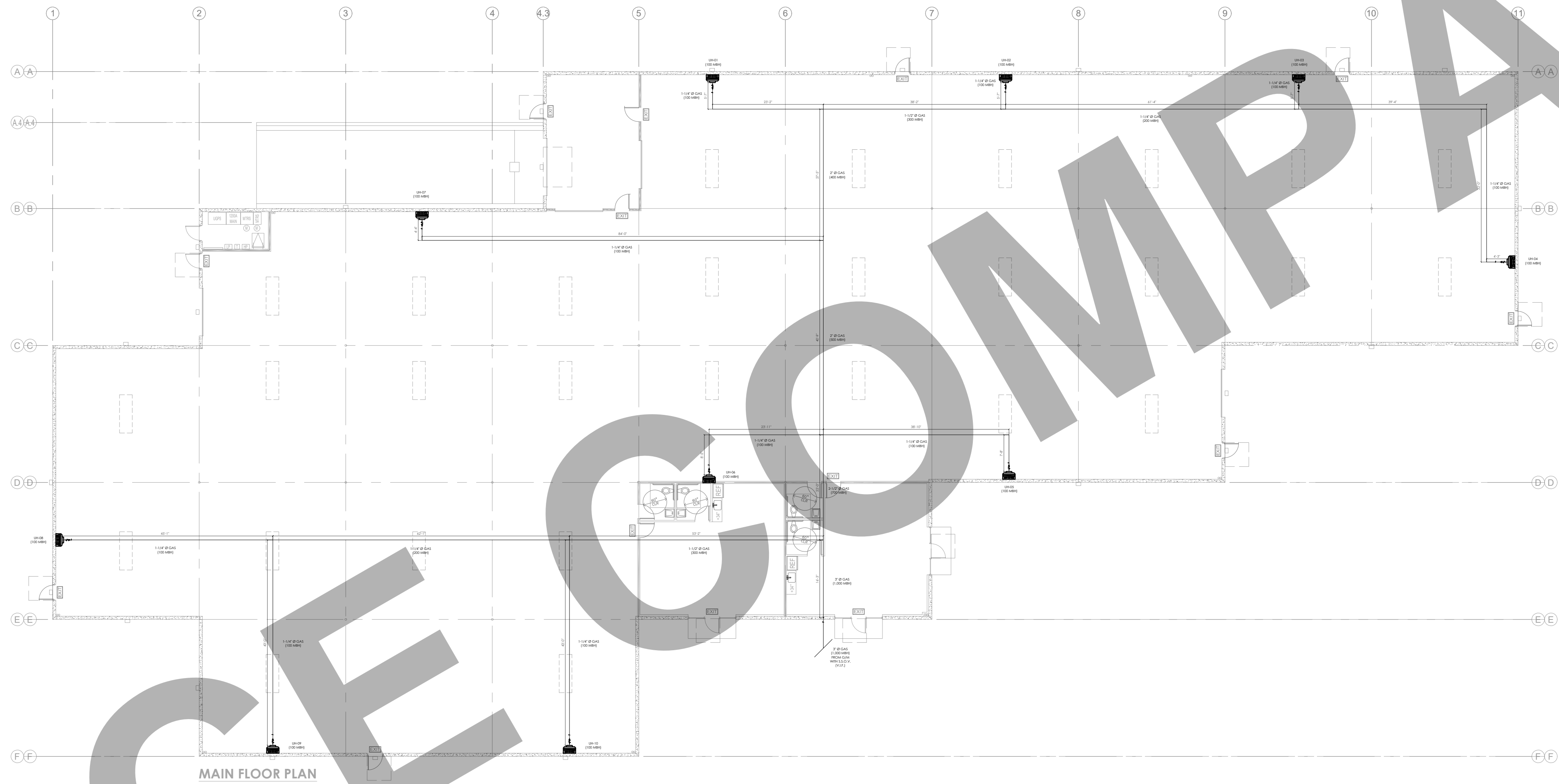
TITLE:  
**MAIN FLOOR -SEWER LAYOUT**

PROJ. NO. PROJ. ENGR. SCALE @ 24X36  
1/16" = 1'-0"

DRAWING NO.  
**P 2 . 0 1**

REV.





GENERAL NOTES:

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10. ALL SANITARY DRAINAGE PIPING 4" 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.
14. 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.
15. 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 LOT LINE, ALLEY AND STREET EXCEPTED.

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT: PROPOSED WAREHOUSE FACILITY		
TITLE: MAIN FLOOR - GAS LAYOUT		
PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36 1/16" = 1'-0"
DRAWING NO. P 3 . 0 1		REV.

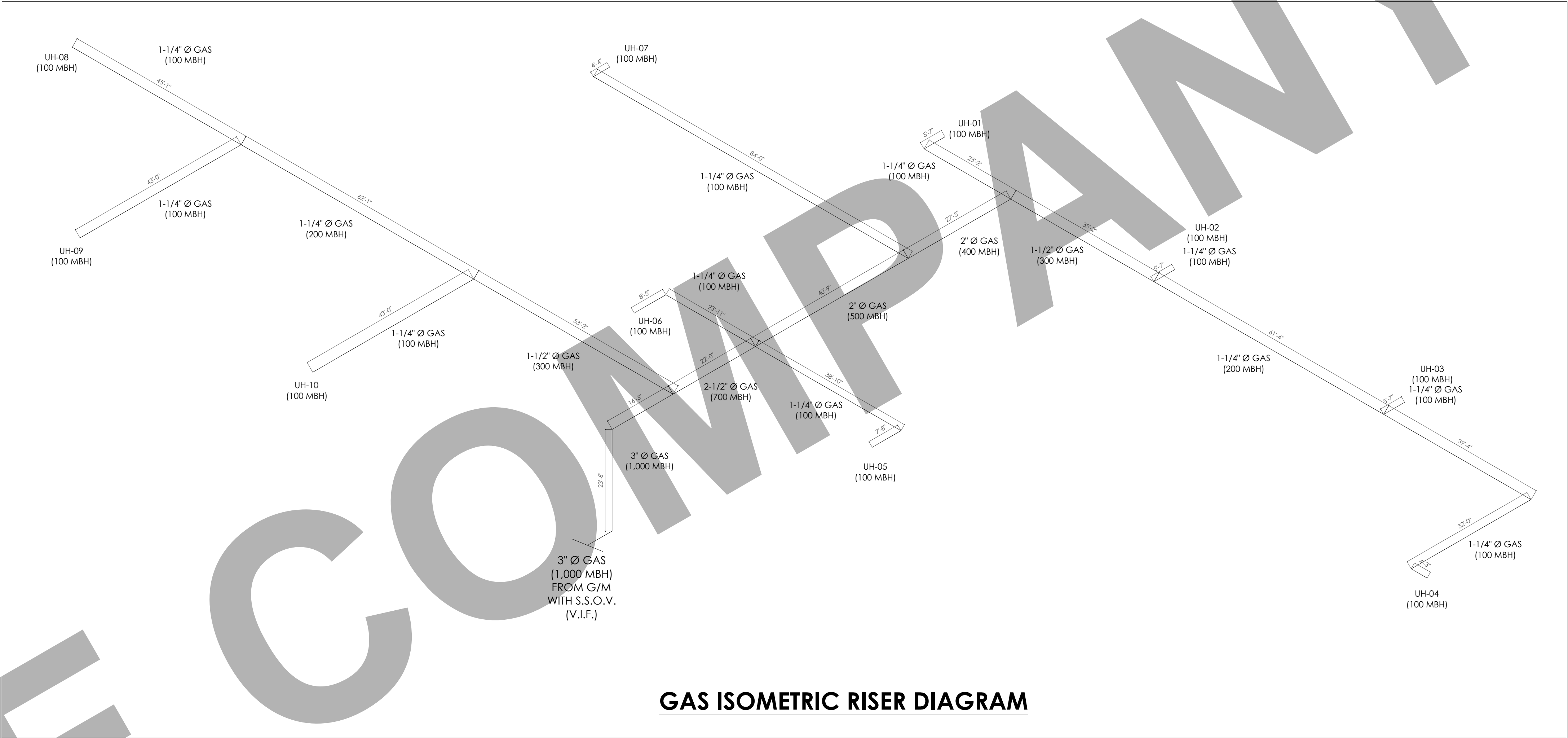


ALL GAS PIPES ARE METALLIC SHCD. 40

THE TOTAL GAS PIPE LENGTH FROM GAS METER TO THE FARTHEST EQUIPMENT IS APPRX. 350 FEET.

GAS UNITS AND MBH:

ITEM	MBH
UH x 10	100
TOTAL =	1,000



CMC-1308.6-1- Gas meters shall be located in ventilated spaces readily accessible for examination, reading, replacement, or necessary maintenance. [NFPA 54:5.7.2.1]

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

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

CMC-1310.1-Underground gas piping shall be installed with sufficient clearance from any other underground structure to avoid contact therewith, to allow maintenance, and to protect against damage from proximity to other structures. In addition, underground plastic piping shall be installed with sufficient clearance or shall be insulated from any source of heat so as to prevent the heat from impairing the serviceability of the pipe.

1310.1.1 Cover Requirements  
Underground piping systems shall be installed with a minimum of 12 inches (305 mm) of cover. The minimum cover shall be increased to 18 inches (457 mm) if external damage to the pipe or tubing from external forces is likely to result. Where a minimum of 12 inches (305 mm) of cover cannot be provided, the pipe shall be installed in conduit or bridged (shielded).

CMC-1310.3-Piping installed above ground shall be securely supported and located where it will be protected from physical damage. Where passing through an exterior wall, the piping shall also be protected from corrosion by coating or wrapping with an inert material approved for such applications. The piping shall be sealed around its circumference at the point of the exterior penetration to prevent the entry of water, insects, and rodents. Where piping is encased in a protective pipe sleeve, the annular spaces between the gas piping and the sleeve and between the sleeve and the wall opening shall be sealed. [NFPA 54:7.2.1]  
1310.3.1 Protective Coating  
Where piping is in contact with a material or an atmosphere corrosive to the piping system, the piping and fittings shall be coated with a corrosion-resistant material. Any such coating used on piping or components shall not be considered as adding strength to the system. [NFPA 54:7.2.2]  
1310.3.2 Building Structure  
The installation of gas piping shall not cause structural stresses within building components to exceed allowable design limits. Approval shall be obtained before any beams or joists are cut or notched. [NFPA 54:7.2.3.1 - 7.2.3.2]  
1310.3.3 Gas Piping to Be Sloped  
Piping for other than dry gas conditions shall be sloped not less than 1/4 inch in 15 feet (1.4 mm/m) to prevent traps. [NFPA 54:7.2.4]

CMC-1312.6-Each appliance connected to a piping system shall have an accessible, approved manual shutoff valve with a nondisplaceable valve member, or a listed gas convenience outlet. Appliance shutoff valves and convenience outlets shall serve a single appliance only. [NFPA 54:9.6.5] The shutoff valve shall be located within 6 feet (1829 mm) of the appliance it serves. [NFPA 54:9.6.5.1] Where a connector is used, the valve shall be installed upstream of the connector. A union or flanged connection shall be provided downstream from the valve to permit removal of appliance controls. [NFPA 54:9.6.5.1(A)]

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:  
PROPOSED WAREHOUSE FACILITY

TITLE:  
GAS CODE CHECKING, SIZING & ISOMETRIC RISER DIAGRAM

PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36 NTS
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DRAWING NO. REV.

P 3 . 0 2





POINT-OF-USE WATER HEATERS

HEATING WATER FOR OVER 50 YEARS



INSTANT-FLOW®  
C-MICRO (CM SERIES)  
Low Activation - 0.20 gpm



MINI TANK (CMT SERIES)  
1.3 to 6.0 Gallons



BOXER® (ERB SERIES)  
2.6 to 30 gpm

1.8 - 9.6 KW

POINT-OF-USE ELECTRIC TANKLESS WATER HEATERS

INSTANT-FLOW® SR  
MODEL SR SERIES

POINT-OF-USE ELECTRIC TANKLESS WATER HEATER



MODEL SR SERIES

INSTANT FLOW® - SR SERIES										
LOW FLOW						°F TEMPERATURE RISE @				
MODEL	ACTIVATION GPM	VOLTS	KW	AMPS	90°C WIRE	0.35 GPM	0.5 GPM	1.0 GPM	1.5 GPM	2.0 GPM
SR-15L/120	0.35	120	1.80	15	14 AWG	35	25	12	8	6
SR-20L/120	0.35	120	2.40	20	12 AWG	47	31	16	11	8
SR-30L/120	0.35	120	3.60	30	10 AWG	70	49	25	16	12
SR-20L/208	0.35	208	4.16	20	12 AWG	81	57	28	19	14
SR-20L/240	0.35	240	4.80	20	12 AWG	90+	66	33	22	16
SR-15L/277	0.35	277	4.15	15	14 AWG	81	57	28	19	14
SR-20L/277	0.35	277	5.54	20	12 AWG	90+	76	38	25	19

INSTANT FLOW® - SR SERIES										
STANDARD FLOW						°F TEMPERATURE RISE @				
MODEL	ACTIVATION GPM	VOLTS	KW	AMPS	90°C WIRE	0.65 GPM	1.0 GPM	1.5 GPM	2.0 GPM	
SR-30/208	0.65	208	6.24	30	10 AWG	66	41	28	21	
SR-40/208	0.65	208	8.32	40	8 AWG	87	57	38	28	
SR-30/240	0.65	240	7.20	30	10 AWG	76	49	33	25	
SR-40/240	0.65	240	9.60	40	8 AWG	90+	66	44	33	
SR-30/277	0.65	277	8.31	30	10 AWG	87	57	38	28	

Note : Local plumbing and electrical codes must be followed for this installation of the water heater and accessories.

CLIENT:

ADDRESS:

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

REV. NO.	DESCRIPTION	DATE	BY

PROJECT:  
PROPOSED WAREHOUSE  
FACILITY

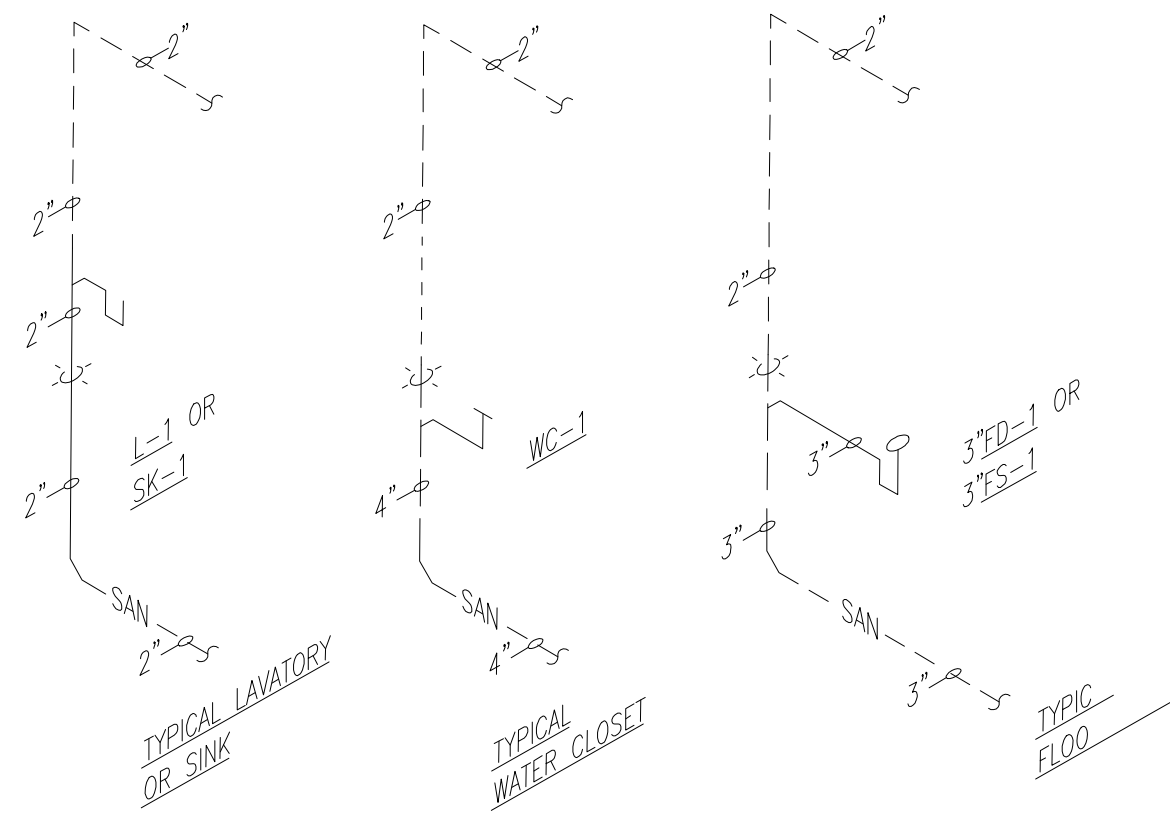
TITLE:  
WATER HEATER DATA SHEETS

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

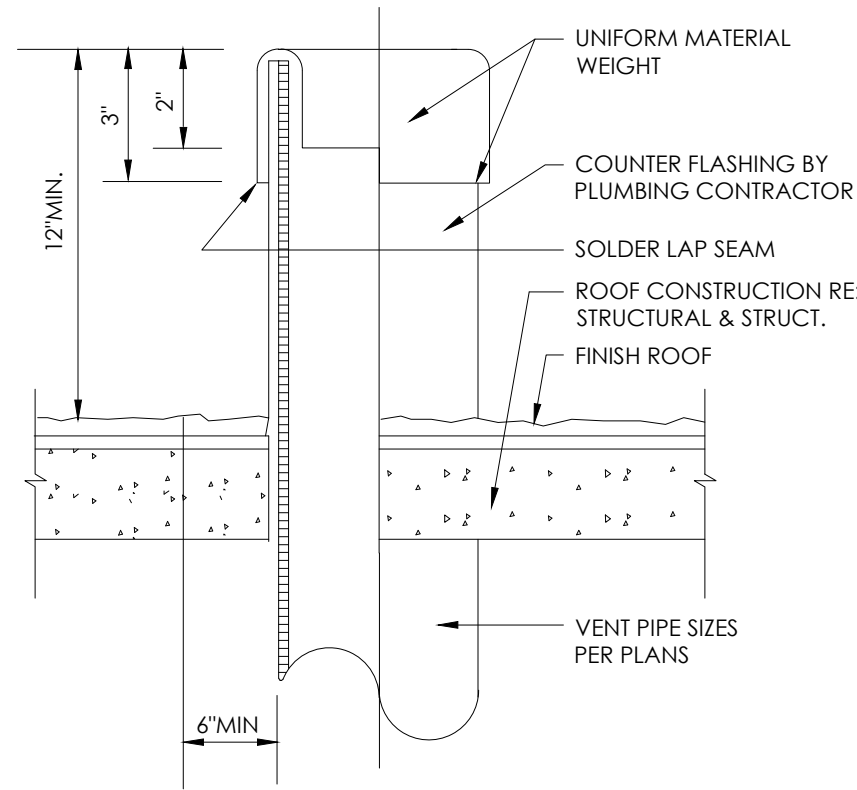
DRAWING NO.  
P 4 . 0 1

REV.

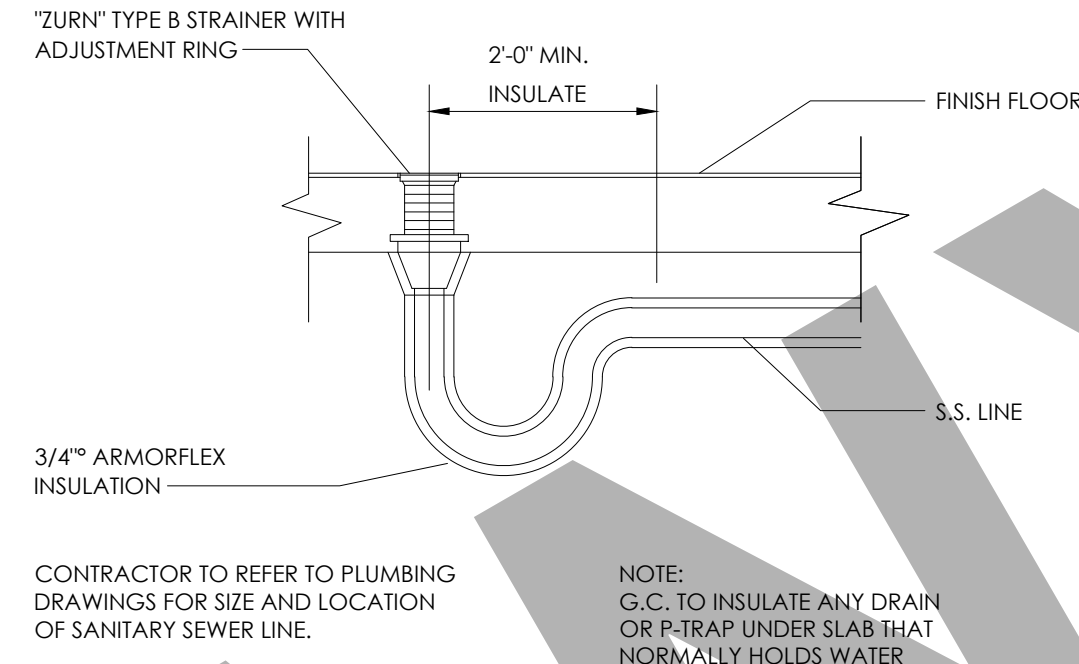




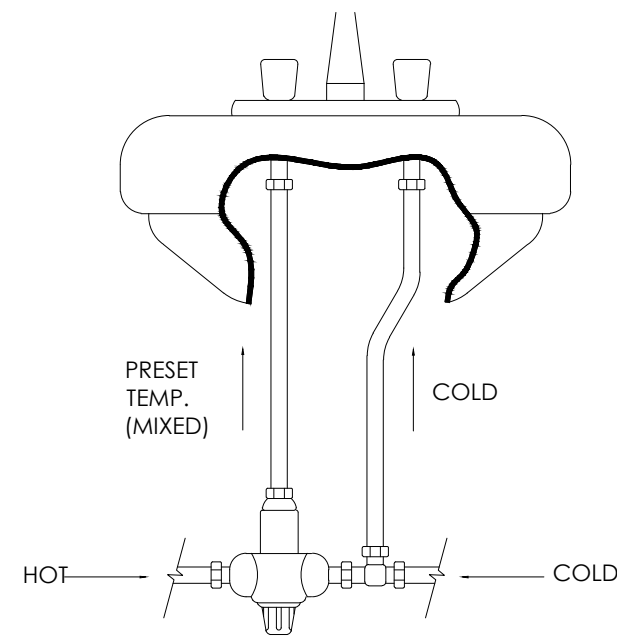
1 TYPICAL WASTE AND VENT RISERS  
NO SCALE



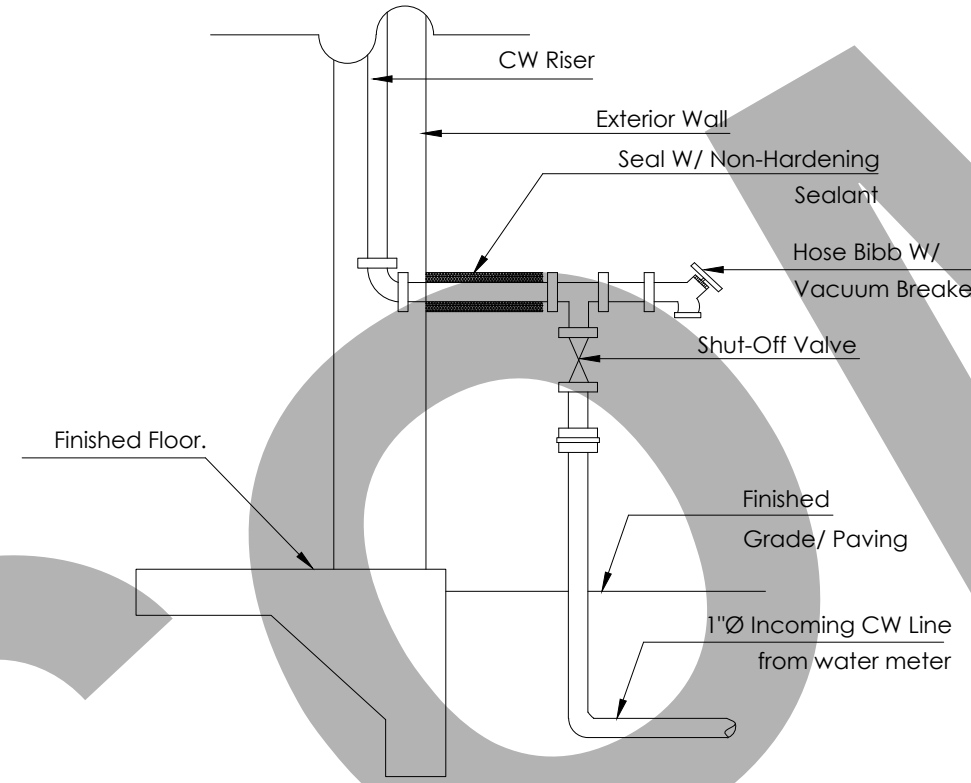
2 VENT THRU ROOF DETAIL  
NO SCALE



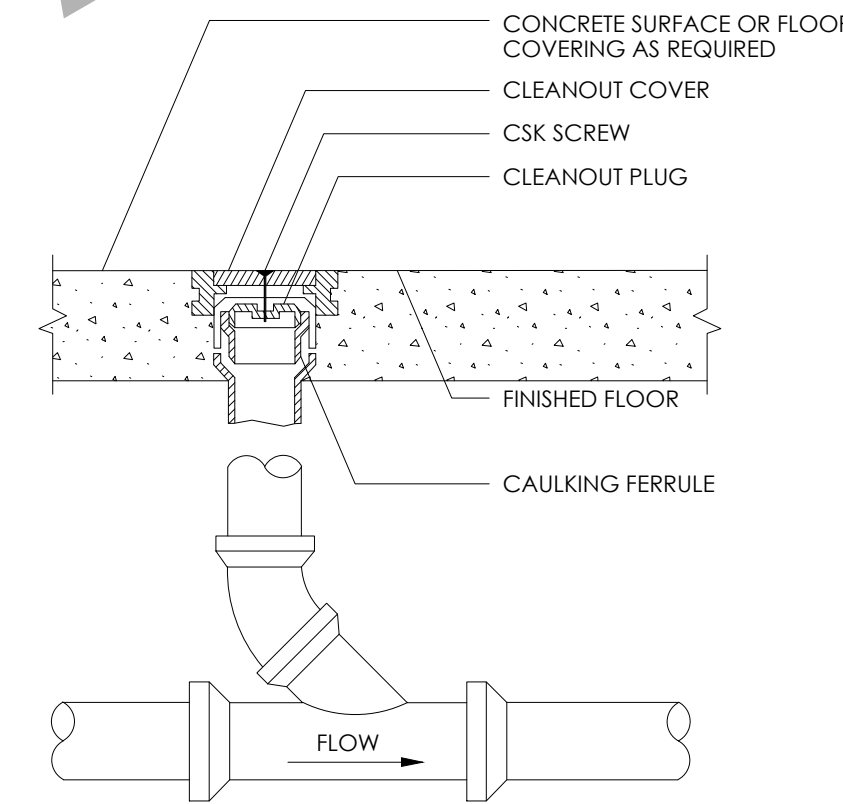
3 FLOOR DRAIN DETAIL  
NO SCALE



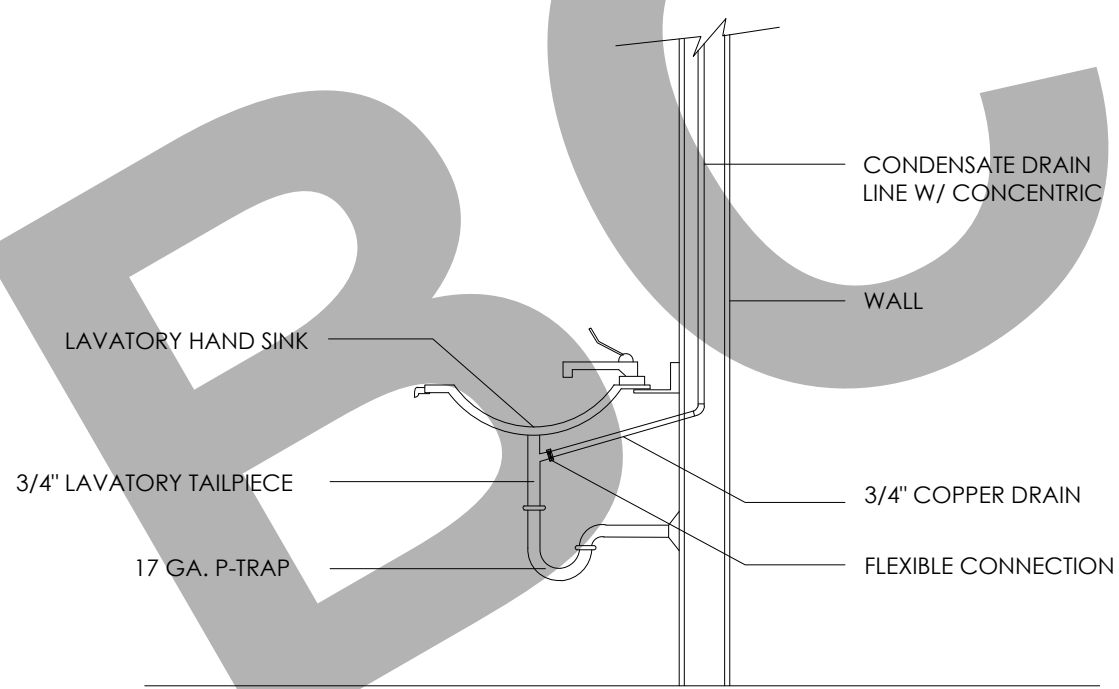
4 ANTI-SCALD MIXING VALVE  
NO SCALE



5 WATER ENTRY DETAIL  
NO SCALE



6 FLOOR CLEANOUT DETAIL  
NO SCALE



7 CONDENSATE DETAIL  
NO SCALE

CLIENT:

ADDRESS:

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

**PROPOSED WAREHOUSE FACILITY**

TITLE:

**PLUMBING GENERAL DETAILS**

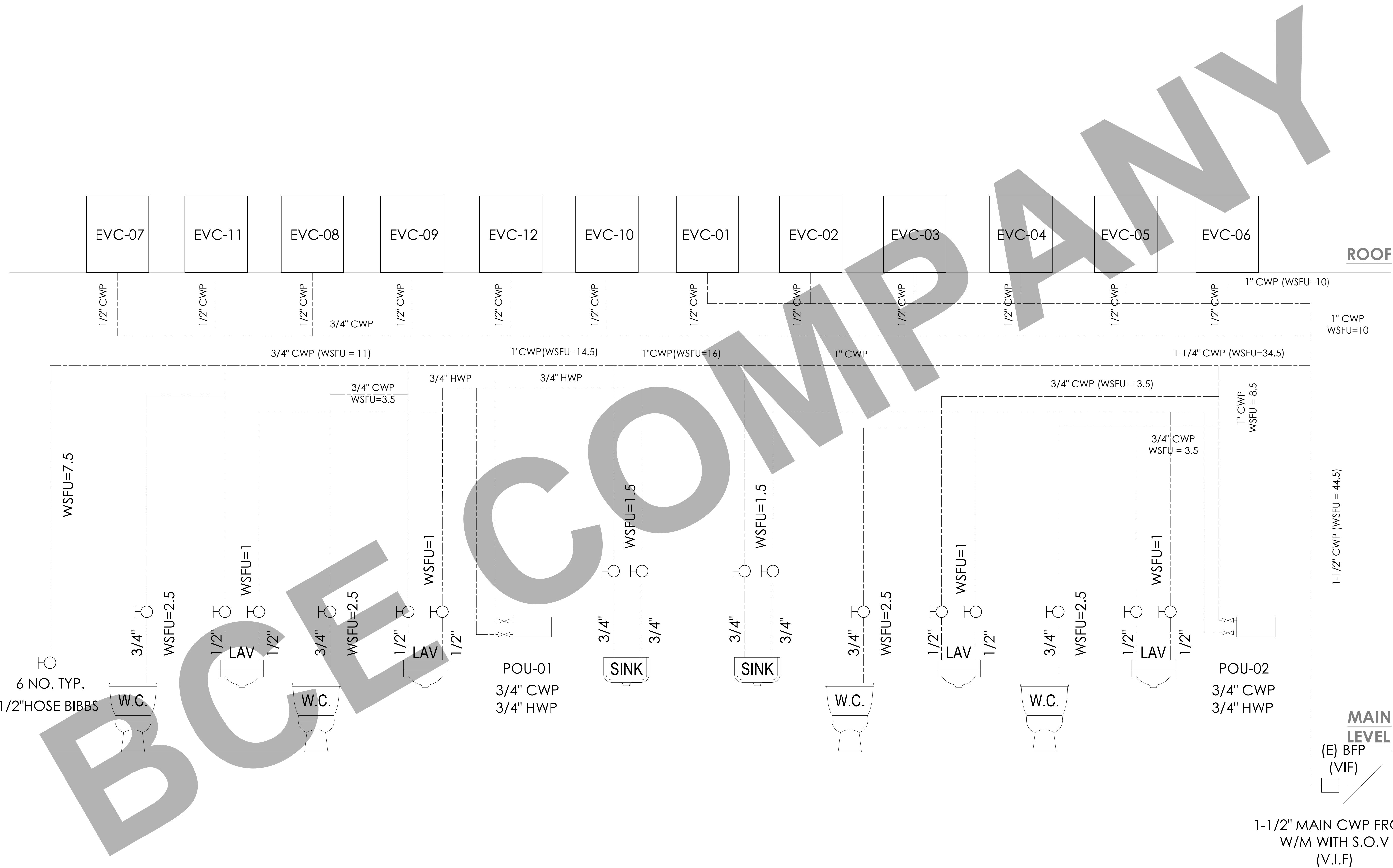
PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36
		NTS

DRAWING NO.

**P 5 . 0 1**

REV.





WATER SUPPLY RISER DIAGRAM

CLIENT:

ADDRESS:

**CONFIDENTIALITY STATEMENT:**

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- 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.

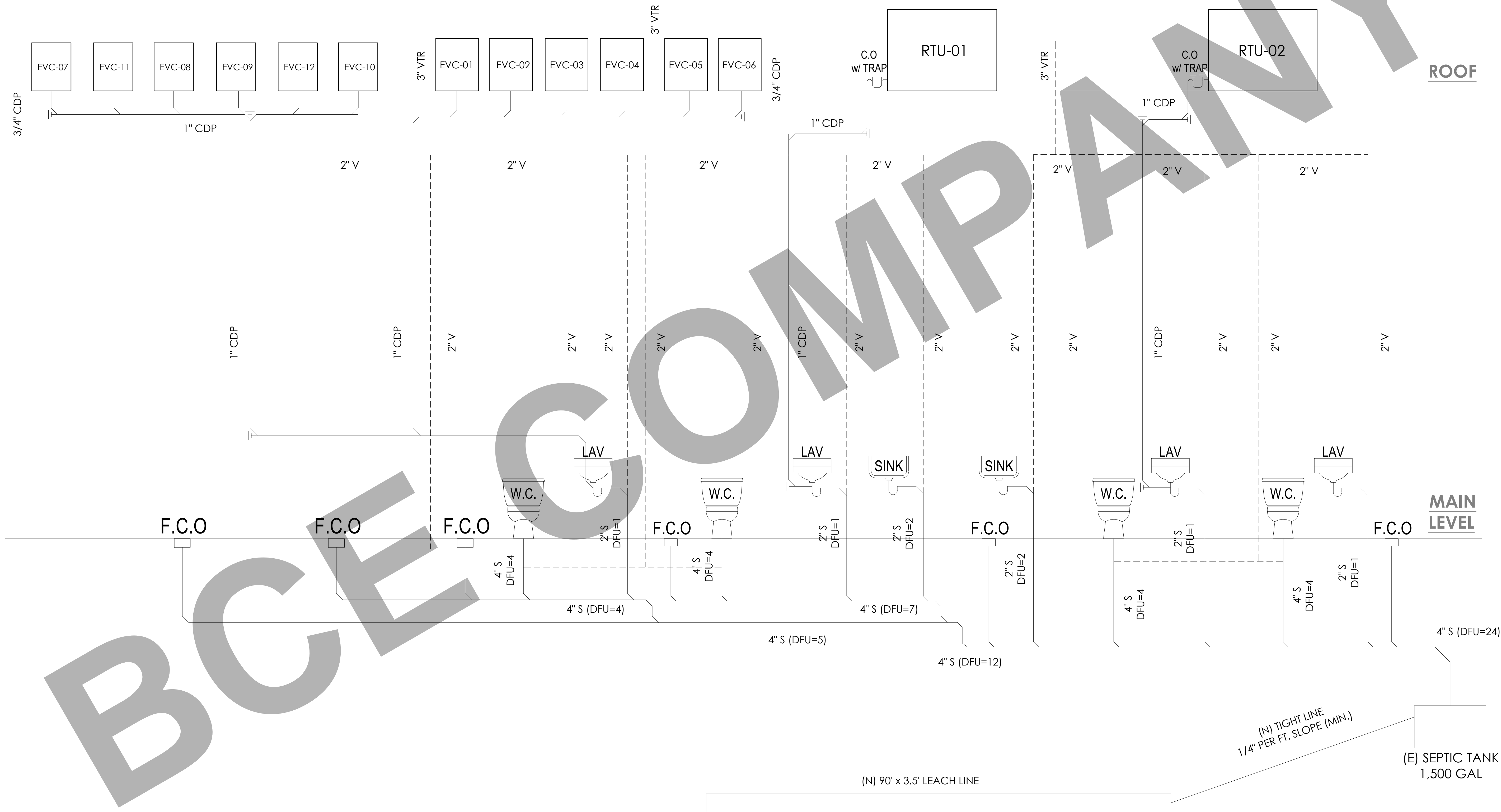
REV. NO.	DESCRIPTION	DATE	BY

PROJECT: **PROPOSED WAREHOUSE FACILITY**

TITLE: **WATER SUPPLY RISER DIAGRAM**

PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36 NTS
DRAWING NO. <b>P 6 . 0 1</b>		REV.





SEWER RISER DIAGRAM

CLIENT:

ADDRESS:

**CONFIDENTIALITY STATEMENT:**

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT: **PROPOSED WAREHOUSE FACILITY**

TITLE: **SEWER RISER DIAGRAM**

PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36 NTS
DRAWING NO. <b>P 6 . 0 2</b>		REV.



STATE OF CALIFORNIA  
Electrical Power Distribution  
CERTIFICATE OF COMPLIANCE  
This document is used to demonstrate compliance with mandatory requirements in 130.5, for electrical systems in newly constructed nonresidential and hotel/motel occupancies and 160.6 and 160.9 for electrical systems in newly constructed multifamily occupancies. Additions and alterations to electrical service systems in nonresidential and hotel/motel occupancies will also use this document to demonstrate compliance per 141.0(a) or 141.0(b)(2) for alterations. For multifamily addition or alterations compliance will be documented per 180.1(a) or 180.2 (b)(4b).

Project Name: Warehouse Facility  
Project Address: Avenue & Sierra Hwy  
Report Page: (Page 1 of 9)  
Date Prepared: 5/28/2023

A. GENERAL INFORMATION

01 Project Location (city)

Lancaster

02 Climate Zone

14

03 Occupancy Types Within Project:

Office/Warehouse

B. PROJECT SCOPE

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

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

<sup>1</sup>FOOTNOTES: Adding only new feeders and branch circuits triggers Voltage Drop 130.5(c)/160.6(c), feeder requirements from 130.5(b)(8) are required.  
<sup>2</sup>If common use areas in a multifamily are submetered, rating is for submeter size serving common use areas.  
<sup>3</sup>Applicable if the utility company is providing a metering system that indicates instantaneous kW demand and kWh for a utility-defined period.

Registration Number:

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Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

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Compliance ID: EnergyPro-50207-0523-0478

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STATE OF CALIFORNIA  
Electrical Power Distribution  
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Project Name: Warehouse Facility  
Project Address: Avenue & Sierra Hwy  
Report Page: (Page 2 of 9)  
Date Prepared: 5/28/2023

C. COMPLIANCE RESULTS

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

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

D. EXCEPTIONAL CONDITIONS

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

E. ADDITIONAL REMARKS

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

F. SERVICE ELECTRICAL METERING

This table includes new or replacement electrical service systems OR equipment to demonstrate compliance with 130.5(c)/ 160.6(c). For multifamily occupancies, submetered systems that provide power to common use areas must meet the following metering requirements. Submetered systems providing power to dwelling units do not.

01	02	03	04	05
Electrical Service Designation/ Description	Rating <sup>2</sup>	Required Metering Capabilities per Table 130.5-A	Location of Requirements in Construction Documents	Field Inspector
Main	50	<input type="checkbox"/> Instantaneous Demand (kW) <input type="checkbox"/> Historical Peak Demand (kW) <input type="checkbox"/> Tracking kWh for user-defined period <input type="checkbox"/> kWh per time period	<input type="checkbox"/> Location of Requirements in Construction Documents	<input type="checkbox"/> Pass <input type="checkbox"/> Fail

<sup>1</sup>FOOTNOTES: If common use areas in a multifamily are submetered, rating is for submeter size serving common use areas.

Registration Number:

Generated Date/Time:

Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

Report Version: 2022.0.000

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Electrical Power Distribution  
CERTIFICATE OF COMPLIANCE  
This document is used to demonstrate compliance with mandatory requirements in 130.5, for electrical systems in newly constructed nonresidential and hotel/motel occupancies and 160.6 and 160.9 for electrical systems in newly constructed multifamily occupancies. Additions and alterations to electrical service systems in nonresidential and hotel/motel occupancies will also use this document to demonstrate compliance per 141.0(a) or 141.0(b)(2) for alterations. For multifamily addition or alterations compliance will be documented per 180.1(a) or 180.2 (b)(4b).

Project Name: Warehouse Facility  
Project Address: Avenue & Sierra Hwy  
Report Page: (Page 3 of 9)  
Date Prepared: 5/28/2023

G. SEPARATION OF ELECTRICAL CIRCUITS FOR ENERGY MONITORING

This table includes entirely new or complete replacement electrical power distribution systems to demonstrate compliance with 130.5(b)/ 160.6(b). Any load types that are not included in the service do not need to be shown. For multifamily occupancies, submetered systems that provide power to dwelling units do not need to meet these separation requirements and therefore load types on those submetered systems also do not need to be shown.

01	02	03	04	05
Load Type per Table 130.5-A <sup>1</sup>	Minimum Required Separation of Load per Table 130.5-B	Compliance Method <sup>2</sup>	Location of Requirements in Construction Documents	Field Inspector
Main	<input checked="" type="checkbox"/> Voltage drop less than 3%	<input type="checkbox"/> Permitted by CA Elec Code Exception to 130.5(c)(1)	Attached	<input type="checkbox"/> Pass <input type="checkbox"/> Fail

<sup>1</sup>NOTES: If "Other" is selected under Compliance Method above, please indicate how compliance has been achieved in the space provided below.  
<sup>2</sup>FOOTNOTES: For each separate load type, up to 50% of the connected load may be of any type.  
Method 1: Switchboard/ motor control center/ panelboard loads disaggregated for each load type.  
Method 2: Switchboard/ motor control center/ panelboard supply other distribution equipment with loads disaggregated for each load type.  
Method 3: Branch circuits serve load types individually and provisions for adding future branch circuit monitoring.  
Method 4: Complete metering system measures and reports loads by type.  
See Chapter 8 of the Nonresidential Compliance Manual for more detail on Compliance Methods.

H. VOLTAGE DROP

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

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 <sup>1</sup>	Sheet Number for Voltage Drop Calculations in Construction Documents	Field Inspector
Main	<input checked="" type="checkbox"/> Voltage drop less than 3%	<input type="checkbox"/> Permitted by CA Elec Code Exception to 130.5(c)(1)	Attached	<input type="checkbox"/> Pass <input type="checkbox"/> Fail

<sup>1</sup>NOTES: If "Permitted by CA Elec Code" is selected under Compliance Method above, please indicate where the exception applies in the space provided below.  
<sup>2</sup>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".

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Report Version: 2022.0.000

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Compliance ID: EnergyPro-50207-0523-0478

Report Generated: 2023-05-28 05:29:34

STATE OF CALIFORNIA  
Electrical Power Distribution  
CERTIFICATE OF COMPLIANCE  
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Project Name: Warehouse Facility  
Project Address: Avenue & Sierra Hwy  
Report Page: (Page 4 of 9)  
Date Prepared: 5/28/2023

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

This table includes entirely new or complete replacement electrical power distribution systems to demonstrate compliance with 130.5(d)/ 160.6(d). Both controlled and uncontrolled receptacles must be provided in office areas, lobbies, conference rooms, kitchen areas in office spaces, copy rooms and hotel/motel guest rooms.

01	02	03	04	05	06	07
Room name or Description	Location/ <sup>1</sup> Type of Controlled Receptacles <sup>1</sup>	Shut-Off Controls	Demand Responsive Controls	Removable Durable Marking Will be Used	Location of Requirements in Construction Documents	Field Inspector
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/> Pass <input type="checkbox"/> Fail

<sup>1</sup>FOOTNOTES: Receptacles dedicated to refrigerators and waste dispensers in kitchens, located a minimum of 6ft above the floor specifically for clocks, network copiers, fax machines, A/V and data equipment other than personal computers in copy rooms, circuits rated more than 20 Amps, or connected to a UPS that are intended to be in continuous use and are marked to differentiate them from other receptacles or circuits are exempted from the requirements.

J. ELECTRIC READY BUILDINGS

This section does not apply to this project.

K. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Form/Title

Registration Number:

Generated Date/Time:

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Report Version: 2022.0.000

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STATE OF CALIFORNIA  
Envelope Component Approach  
CERTIFICATE OF COMPLIANCE  
This document is used to demonstrate compliance with mandatory requirements in 140.3(a)(18)/ 170.2(a)(18) for new construction, 141.0(a)/ 180.1 for alterations, or 141.0(b)(2)(ii)/ 180.2 for alterations. Roof recovery and replacements must also check "Roof Assembly" box and document compliance with insulation requirements in Table F. Roof recovery may document compliance with roof material only in Table G.

Project Name: Warehouse Facility  
Project Address: Avenue & Sierra Hwy  
Report Page: (Page 5 of 9)  
Date Prepared: 5/28/2023

A. GENERAL INFORMATION

01 Project Location (city)

Lancaster

02 Zipcode

93534

03 Climate Zone

14

04 Occupancy Types Within Project (select all that apply): If one occupancy constitutes >= 50% of the conditioned floor area, the entire building envelope may be designed to comply with the provisions of that occupancy per 100.0(b).

05 # of Stories (Habitable Above Grade)

3

06 Total Conditioned Floor Area (ft²)

1740

07 Total Unconditioned Floor Area (ft²)

26510

B. PROJECT SCOPE

This table describes project envelope components within the permit application demonstrating compliance using the prescriptive paths outlined in 140.3/ 170.2 and 141.0(a)/ 180.1 and 141.0(b)(2) and 2/ 180.2 for additions and alterations.

01	02	03	04	05
My project consists of (check all that apply)	Component Types			
<input checked="" type="checkbox"/> New Construction or Newly Conditioned Space	01	02	03	04
<input type="checkbox"/> One or more enclosed spaces > 5,000 ft² directly under roof with ceiling height > 15ft.	<input checked="" type="checkbox"/> Roof	<input type="checkbox"/> Floors	<input checked="" type="checkbox"/> Exterior Opaque Doors	<input checked="" type="checkbox"/> Fenestration/ Glazed Doors <sup>1</sup>
<input type="checkbox"/> Addition of conditioned space	<input type="checkbox"/> Walls	<input type="checkbox"/> Floors	<input type="checkbox"/> Exterior Opaque Doors	<input type="checkbox"/> Fenestration/ Glazed Doors <sup>1</sup>
<input type="checkbox"/> One or more enclosed spaces > 5,000 ft² directly under roof with ceiling height > 15ft.	<input type="checkbox"/> Roof	<input type="checkbox"/> Walls	<input type="checkbox"/> Floors	<input type="checkbox"/> Fenestration/ Glazed Doors <sup>1</sup>
<input type="checkbox"/> Addition to <= 700 ft²	<input type="checkbox"/> Roof Assembly	<input type="checkbox"/> Walls	<input type="checkbox"/> Exterior Opaque Doors NA for Alts.	<input type="checkbox"/> Fenestration
<input type="checkbox"/> Addition to > 700 ft²	<input type="checkbox"/> Roofing Material <sup>2</sup>	<input type="checkbox"/> Floors	<input type="checkbox"/> Fenestration	
<input type="checkbox"/> Alteration of conditioned space				
<input type="checkbox"/> One or more enclosed spaces > 5,000 ft² directly under roof with ceiling height > 15ft. and lighting system installed for the first time				

<sup>1</sup>FOOTNOTES: Enclosed spaces > 5,000 ft² directly under roof with ceiling height > 15 ft in climate zones 2 through 15 are required to meet the minimum daylighting requirements defined in 140.3(c)/ 170.2(b). Compliance with 140.3(c)/ 170.2(b) is documented in Table L. This is the only prescriptive requirement which applies to unconditioned spaces.

C. COMPLIANCE RESULTS

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

01	02	03	04	05	06	07	08
Roof Assemblies	Roofing Materials	Walls	Floors	Doors	Fenestration	Daylighting Spaces > 5,000ft²	Compliance Results
01	02	03	04	05	06	07	08
Yes	Yes	Yes	Yes	Yes	Yes	Yes	COMPLIES

D. EXCEPTIONAL CONDITIONS

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

E. ADDITIONAL REMARKS

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

F. ROOF ASSEMBLY SCHEDULE

This table demonstrates compliance for prescriptive roof assembly requirements in 140.3(a)(18)/ 170.2(a)(18) for new construction, 141.0(a)/ 180.1 for alterations, or 141.0(b)(2)(ii)/ 180.2 for alterations.

01	02	03	04	05
Indicate roof types included in the project:	<input checked="" type="checkbox"/> Framed	<input type="checkbox"/> Framed-Multifamily	<input type="checkbox"/> SIPs	<input type="checkbox"/> Span Deck & Concrete
	<input type="checkbox"/> Metal Panels	<input type="checkbox"/> Metal Building		

Framed Roof Assemblies

01	02	03	04	05
	<input checked="" type="checkbox"/>			

Registration Number:

Generated Date/Time:

Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

Report Version: 2022.0.000

Report Generated: 2023-05-28 05:29:34

Compliance ID: EnergyPro-50207-0523-0481

Report Generated: 2023-05-28 05:29:34

STATE OF CALIFORNIA  
Envelope Component Approach  
CERTIFICATE OF COMPLIANCE  
This document is used to demonstrate compliance with mandatory requirements in 140.3(a)(18)/ 170.2(a)(18) for new construction, 141.0(a)/ 180.1 for alterations, or 141.0(b)(2)(ii)/ 180.2 for alterations. Roof recovery and replacements must also document compliance with insulation requirements in Table F. Roof recovery may document compliance with roof material only in Table G.

Project Name: Warehouse Facility  
Project Address: Avenue & Sierra Hwy  
Report Page: (Page 6 of 9)  
Date Prepared: 5/28/2023

G. RATED ROOFING MATERIAL (COOL ROOF)

This table demonstrates compliance with prescriptive roof material requirements in 140.3(a)(1A)/ 170.2(a)(1A) for new construction, 141.0(a)/ 180.1 for alterations, and 141.0(b)(2)(ii)/ 180.2 for alterations. Roof recovery and replacements must also document compliance with insulation requirements in Table F. Roof recovery may document compliance with roof material only in Table G.

01	02	03	04	05	06	07	08	09	10
Tag/Plan Detail ID	Name/Description/Location	Status	Occupancy Type	Roof Slope	Roof Material	Compliance Method	Required Minimum Material Performance	Designed Material Performance	U-factor / R-Value of Assembly
R38	Roof	New	Nonresidential	Low slope	To Be Determined	Aged solar reflectance and thermal emittance SRI	Reflectance 0.63 Emissivity 0.75 SRI	Reflectance 0.63 Emissivity 0.75 SRI	0.059

H. WALL ASSEMBLY SCHEDULE

This table demonstrates compliance with prescriptive wall assembly requirements in 140.3(a)/ 170.2(a) for new construction, 141.0(a)/ 180.1 for alterations and 141.0(b)(1)(b)/ 180.2 for alterations.

01	02	03	04	05	06	07	08	09	10	11	12	13
Tag/Plan Detail ID	Name/Description/Location	Status	Occupancy Type	How Design U-factor was determined	Location/Fire Rating	Frame Material, Spacing & Depth	Cavity Insulation per Design	Continuous Insulation per Design	Thermal Performance Unit	Required Thermal Performance	U-factor per Design	Net Area <sup>2</sup> ft²

<sup>1</sup>FOOTNOTES: If any junction assembly is non-compliant, assemblies may show compliance using an area-weighted calculation. Metal framed walls may not be combined with other wall types. Wood framed walls are combined with SIPs, spandeck & curtain, metal panel and straw bale wall types. The area-weighted compliance option is not available for alterations.  
<sup>2</sup>If "Span/Bale" is shown in cell 10 as the Thermal Performance Unit, the R-value shown here is for cavity insulation per 141.0(b)(1)(b).

I. FLOOR ASSEMBLY SCHEDULE

This section does not apply to this project.

J. EXTERIOR DOOR SCHEDULE

This section does not apply to this project.

Registration Number:

Generated Date/Time:

Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

Report Version: 2022.0.000

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Compliance ID: EnergyPro-50207-0523-0481

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STATE OF CALIFORNIA  
Envelope Component Approach  
CERTIFICATE OF COMPLIANCE  
This document is used to demonstrate compliance with mandatory requirements in 140.3(a)(18)/ 170.2(a)(18) for new construction, 141.0(a)/ 180.1 for alterations, or 141.0(b)(2)(ii)/ 180.2 for alterations. Roof recovery and replacements must also document compliance with insulation requirements in Table F. Roof recovery may document compliance with roof material only in Table G.

Project Name: Warehouse Facility  
Project Address: Avenue & Sierra Hwy  
Report Page: (Page 7 of 9)  
Date Prepared: 5/28/2023

K. FENESTRATION AND GLAZED DOOR SCHEDULE

This table demonstrates compliance with prescriptive fenestration requirements in 140.3(a)(5)/ 170.2(a)(5) for new constructions, 141.0(a)/ 180.1 for alterations, or 141.0(b)(2)(ii)/ 180.2 for alterations. Exterior doors that are more than 25% glass in area are considered Glazed Doors and should be documented in this table with fenestration.

01	02	03	04	05	06	07	08	09	10	11	12	13
Indicate fenestration types included in the project:	<input type="checkbox"/> Vertical (alterations)	<input checked="" type="checkbox"/> Vertical (new)	<input type="checkbox"/> Skylights	<input type="checkbox"/> Glazed Doors (new only)								

Vertical Fenestration and Glazed Doors: Total Building & West Facing Area (New Construction & Additions Only)

01	02	03	04	05	
Elevation Item Tag/Description	Orientation (Azimuth) (ft²)	Gross Exterior Wall Area <sup>2</sup> (ft²)	Display Perimeter Length <sup>2</sup> (ft)	Vertical Fenestration Area per Design <sup>1</sup> (ft²)	
North	North Facing	0	0	0	
East	East Facing	0	0	0	
South	South Facing	464	0	102	
West	West Facing	1178	0	186	
06	Maximum Allowed Vertical Fenestration (ft²)- All Orientations	656.8	07	Total Vertical Fenestration (ft²) per design- All Orientations	288
08	Maximum Allowed Vertical Fenestration (ft²)- West Facing	471.2	09	Total Vertical Fenestration (ft²) per design- West Facing	186

<sup>1</sup>FOOTNOTES: Orientation between 225 deg and 215 deg are considered "West Facing". A diagram has been provided in the Nonresidential Compliance Manual for useful reference.  
<sup>2</sup>Do not include decking width per 140.3(a)(5).  
<sup>3</sup>Includes glazed door fenestration area.

Registration Number:

Generated Date/Time:

Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

Report Version: 2022.0.000

Report Generated: 2023-05-28 05:29:34

Compliance ID: EnergyPro-50207-0523-0481

Report Generated: 2023-05-28 05:29:34

STATE OF CALIFORNIA  
Envelope Component Approach  
CERTIFICATE OF COMPLIANCE  
This document is used to demonstrate compliance with mandatory requirements in 140.3(a)(18)/ 170.2(a)(18) for new construction, 141.0(a)/ 180.1 for alterations, or 141.0(b)(2)(ii)/ 180.2 for alterations. Roof recovery and replacements must also document compliance with insulation requirements in Table F. Roof recovery may document compliance with roof material only in Table G.

Project Name: Warehouse Facility  
Project Address: Avenue & Sierra Hwy  
Report Page: (Page 8 of 9)  
Date Prepared: 5/28/2023

K. FENESTRATION AND GLAZED DOOR SCHEDULE

This table demonstrates compliance with prescriptive fenestration requirements in 140.3(a)(5)/ 170.2(a)(5) for new constructions, 141.0(a)/ 180.1 for alterations, or 141.0(b)(2)(ii)/ 180.2 for alterations. Exterior doors that are more than 25% glass in area are considered Glazed Doors and should be documented in this table with fenestration.

04	05	06	07	08	09	10	11	12	13
Tag/Plan Detail ID	Fenestration Type	Occupancy & Status	U-factor/ (RSHGC) Compliance Method	VT Compliance Method	Calculation Method for Performance Values per Design <sup>1</sup>	Product Performance Unit	Required Product Performance	Product Performance per Design	Area ft²
W3	Fixed window	Nonresidential/ Relocatable 1 CZ: New	<input type="checkbox"/> NFRC Certified <input checked="" type="checkbox"/> Overhang/ Slats used for RSHGC	<input type="checkbox"/> NFRC Certified <input type="checkbox"/> Overhang/ Slats used for RSHGC	U-factor (max)	0.34	0.34	0.22	93
W3	Fixed window	Nonresidential/ Relocatable 1 CZ: New	<input type="checkbox"/> NFRC Certified <input type="checkbox"/> Overhang/ Slats used for RSHGC	<input type="checkbox"/> NFRC Certified <input type="checkbox"/> Overhang/ Slats used for RSHGC	U-factor (max)	0.34	0.34	0.22	93
W2	Fixed window	Nonresidential/ Relocatable 1 CZ: New	<input type="checkbox"/> NFRC Certified <input type="checkbox"/> Overhang/ Slats used for RSHGC	<input type="checkbox"/> NFRC Certified <input type="checkbox"/> Overhang/ Slats used for RSHGC	U-factor (max)	0.34	0.34	0.22	102

<sup>1</sup>FOOTNOTES: If any individual fenestration product is non-compliant, products may show compliance using an area-weighted calculation. Chromogenic glazing is not included in area-weighted calculations. Area-weighted calculation shown in separate area-weighted table below.  
<sup>2</sup>The MAX Default calculation can only be used for alterations or dwelling units in buildings with <= 3 habitable stories. Alterations are limited to 200ft² of site built glazing and dwelling units are limited to 250ft² or 5% of conditioned floor area. If the fenestration does not meet these conditions, the only options for determining fenestration values are NFRC Certification or the Default Tables in 110.6.  
<sup>3</sup>Overhangs must extend past the left and right window the same distance as the depth of the overhang or greater to show an effect on the RSHGC. If an overhang does not meet this requirement, the effect of the overhang will be ignored.  
<sup>4</sup>Projecting includes casement and awning windows.

Registration Number:

Generated Date/Time:

Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

Report Version: 2022.0.000

Report Generated: 2023-05-28 05:29:34

Compliance ID: EnergyPro-50207-0523-0481

Report Generated: 2023-05-28 05:29:34

STATE OF CALIFORNIA  
Envelope Component Approach  
CERTIFICATE OF COMPLIANCE  
This document is used to demonstrate compliance with mandatory requirements in 140.3(a)(18)/ 170.2(a)(18) for new construction, 141.0(a)/ 180.1 for alterations, or 141.0(b)(2)(ii)/ 180.2 for alterations. Roof recovery and replacements must also document compliance with insulation requirements in Table F. Roof recovery may document compliance with roof material only in Table G.

Project Name: Warehouse Facility  
Project Address: Avenue & Sierra Hwy  
Report Page: (Page 9 of 9)  
Date Prepared: 5/28/2023

L. SUMMARY

This table summarizes the project information and compliance results.

01	02	03	04	05	06	07	08	09	10	11	12	13
Tag/Plan Detail ID	Name/Description/Location	Status	Occupancy Type	How Design U-factor was determined	Location/Fire Rating	Frame Material, Spacing & Depth	Cavity Insulation per Design	Continuous Insulation per Design	Thermal Performance Unit	Required Thermal Performance	U-factor per Design	Net Area <sup>2</sup> ft²
West Walls	Nonresidential/ Relocatable 1 CZ: New	JAA Tables	Demising wall	Wood 1/2" gyp 1/2" DC-36			21	2	U-factor	0.059	per JAA per Software/ Other	0.059

Registration Number:

Generated Date/Time:

Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

Report Version: 2022.0.000

Report Generated: 2023-05-28 05:29:34

Compliance ID: EnergyPro-50207-0523-0481

Report Generated: 2023-05-28 05:29:34

CLIENT:

ADDRESS:

CONFIDENTIALITY STATEMENT:

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

NOTES:

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

REV. NO. DESCRIPTION DATE BY

PROJECT:

PROPOSED WAREHOUSE FACILITY

TITLE:

T24-1

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

NTS

DRAWING NO.

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T 2 4 . 1



STATE OF CALIFORNIA

CALIFORNIA ENERGY COMMISSION

Envelope Component Approach

CERTIFICATE OF COMPLIANCE

Warehouse Facility

Report Page: (Page 1 of 8)

Project Name: Warehouse Facility

Project Address: Avenue & Sierra Hwy

Date Prepared: 5/28/2023

K. FENESTRATION AND GLAZED DOOR SCHEDULE

Area-Weighted Average U-Factor, SHGC, VT Compliance Calculation for Vertical Fenestration And Glazed Doors

	01	02	03	04	05
Product Performance Unit	Total Area of Fenestration (ft²)	Area-weighted Calculation for Fenestration Required	Designed	Compliance Results Using Area-Weighted Calculation Option	
U-Factor	288	0.34	0.34	COMPLIES	
(PV)SHGC	288	0.22	0.22	COMPLIES	
VT	288	0.42	0.5	COMPLIES	

L. DAYLIGHT IN LARGE ENCLOSED SPACES

This section does not apply to this project.

M. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Form/Title

NRC-ENV-01-E - Must be submitted for all buildings

N. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

Form/Title

NRCA-ENV-02-F must be submitted for all new, added or altered fenestration.

O. DECLARATION OF REQUIRED CERTIFICATES OF VERIFICATION

There are no forms required for this project.

Registration Number: CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

Generated Date/Time: Report Version: 2023.0.000 Schema Version: rev 20220101

Documentation Software: EnergyPro

Compliance ID: EnergyPro-50207-0523-0481

Report Generated: 2023-05-28 05:29:39

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SITE OF CALIFORNIA
**Mechanical Systems**
CALIFORNIA ENERGY COMMISSION

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**CERTIFICATE OF COMPLIANCE**  
 Project Name:  
 Project Address:

Warehouse Facility  
 Avenue & Sierra Highway

**Report Pages:**  
**Date Prepared:**

**NCE-ACHS**  
**Page # of 13**  
**5/28/2021**

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**G. PUMPS**  
 This section does not apply to this project.

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**H. FAN SYSTEMS & AIR ECONOMIZERS**  
 This table is used to demonstrate compliance with prescriptive requirements found in 140.4(c), 140.4(d), 140.4(e), 170.2(c), and 170.2(g) for fan systems. Fan systems serving only process loads are exempt from these requirements and do not need to be included in Table H.

System Name	RTU-O1 or O2	Quantity	Fan System Status	New	System downsized	all other system %	Serving Dwelling Units	NCE Serving Dwelling Units	Fan System Airflow (cfm)	3,200	Site Elevation	2,340	Economizer	Flued Temperature
01	02	03				04		05	06	07	08	09	10	11
Fan Name or Tag	Fan Type	City	Component			Airflow through Component (ft <sup>3</sup> /min)	Water Gauge Inlet	Component Allowance	Fan Allowance (watt/cfm)	Design Electrical Input Power Method	Motor Nameplate Horsepower	Design Electrical Input Power (kW)		
SF	Supply	2	Base Allowance for system serving spaces <= 6'0" deep away			1,600		371						
			MERV 13-16 Filter upstream of thermal conditioning equipment			1,600		222						
			Hydramax cooling coil or least pump coil			1,600		722						
			Economizer Returns Damper			1,600		74						
Fan System Allowance (kW) <sup>1</sup>									Fan System Electrical Output (kW)					

Registration Number:
Generated Date/Time:
Documentation Software: Enspno

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance
Report Version: 2023.0.000
Compliance ID: Enspno#-52007-6523-A040

Schema Version: rev 20220301
Report Date: 2023-05-28 05:29:38

MECHANICAL SYSTEMS												CALIFORNIA ENERGY COMMISSION			
CERTIFICATE OF COMPLIANCE												NREC-MCH- [Project Name]			
Project Name:												Warehouse Facility   Report Date:			
Project Address:												Avenue & Sierra Hwy   Date Prepared:			
												5/18/2023			
<b>H. FAN SYSTEMS &amp; AIR ECONOMIZERS</b>															
System Name	Exp 01 12	Quantities 12	12	Fan System Status	New	System Zoning	all other system s	Servicing Dwelling Units	Not Servicing Dwelling Units	Fan System Airflow (cfm)	237,672	Site Elevation	2,340	Economizer	N/A -<>3 kWh/kv cooling
01	02	03			04				05	06	07	08	09	10	11
											Allowance			Design	
Fan Name or Item Tag	Fan Type	Qty		Component				Airflow Through Component (% )	Water Gauge (w.g.)	Compos ite Allowance	Fan Allowance wh/(cwh x 1) 3	Design Electrical Input Power Method	Motor Horsepower	Design Electrical Input Power (kW)	
SF	Supply	12		Base Allowance for system serving spaces >=6 floors away				19,806		4,674					
			MERV 13-16 Filter upstream of thermal conditioning equipment				19,806		2,119						
			Evaporative humidifier/cooler in series with a cooling coil				19,806		3,506						4.19
			Economizer Return Damper				19,806		713						
										Fan System Allowance (kW) <sup>1</sup>	132.15	Fan System Electrical Output (kW)		50.32	
<b><sup>1</sup> FOOTNOTES:</b> Fan serving spaces with design background noise goals below NC35 <sup>2</sup> Low-dynamic static pressure VAV fan systems must be capable of and configured to reduce airflow to 50 percent of design airflow and use no more than 30 percent of the design wattage at that airflow. No more than 10 percent of the design load served by the equipment shall have fixed loads.															
<b>H. EXHAUST AIR HEAT RECOVERY (140.0)(4), 170.2(C)(4)</b>															
01	02	03	04	05	06	07	08	09	10	11					
Fan System Name	Qty	Hours of Operation per Day	Design Supply Airflow Rate	Outdoor Airflow	% Outdoor Air at Full Design Airflow	Exhausts to Heat Recovery Requirement per 140.0(4) & 170.2(C)(4)	Exhaust Air Heat Recovery Requirement per 140.0(4) & 170.2(C)(4)	Type Of Heat Recovery Rating	Required Recovery Ratio	Energy Recovery Systems					

Registration Number: \_\_\_\_\_ Generated Date/Time: \_\_\_\_\_ Documentation Software: Energypix

CA Building Energy Efficiency Standards – 2022/2023 Noncompliance  
 Version Number: 2023.0.0000  
 Schema Version: 2022.002031

Compliance ID: ENEC-2023-0528-9438  
 Project Generated: 2023-05-28 09:58:30

<div style="display: flex; justify-content: space-between;"> <span>OF CALIFORNIA</span> <span><b>Mechanical Systems</b></span> </div>		CALIFORNIA ENERGY COMMISSION						
<b>CERTIFICATE OF COMPLIANCE</b>		<b>NICC-MCH- [Page 1 of 1]</b>						
Project Name:		Warehouse Facility <div style="display: flex; justify-content: space-between; font-size: small;"> <span>Venture &amp; Sierra Hwy</span> <span>Date Prepared: 5/28/2023</span> </div>						
<b>Fan Energy Index (FEI)</b>								
O1		O2						
Name or Item Tag		FEI Exception						
<b>I. SYSTEM CONTROLS</b>								
This table is used to demonstrate compliance with mandatory controls in 130.2 and 130.2.2 and prescriptive controls in 140.4(f) and (g), 170.2(c)(4), 170.2(c)(4)L or requirements in 143.0(b)(2), 140.2(b)(2) for altered space conditioning systems.								
O1	O2	O3	O4	O5	O6	O7	O8	O9
System Name	System zoning	Conditioned Floor Area (ft²) 110.2(b) & (c), 120.2(a) for Space Serv'd (ft²)	Thermastats 160.3(a)(4) & 141.0(b)(2) & 180.2(b)(2)	Shut-Off Controls 120.2(e) & 160.3(a)(2)	Isolation Zone Controls 120.2(g) & 160.3(a)(2)	Demand Response 130.2.2, 120.2(b) & 160.3(a)(2)	Supply Air Temp. Reset 146.4(f) & 170.2(c)(4)	Window Interlocks per 140.4(f) & 170.2(c)(4)
RTU-01 & O2	Single zone	<= 25,000 ft²	Setback	Auto-Timer Switch	4 Hour Timer	EMCS	N/A-Would increase energy-use	Provided

♦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.

<b>SYSTEMS</b>				<b>CALIFORNIA ENERGY COMMISSION</b>			
<b>CERTIFICATE OF COMPLIANCE</b> Project Name: _____ Warehouse Facility Address: _____ Avenue & Santa Fe Drive City: _____ State: _____ Zip: _____				<b>NCEC-AHJ-01</b> <b>1/26/2023</b>			
<b>J. VENTILATION AND INDOOR AIR QUALITY</b>							
O4		O5		O6		O7	
System Name		RTU-O1 & O2		System Design Transfer Air CFM		Air Filtration per 120.1(c) 141.05(2) and 160.2(b)(2) <sup>1</sup>	
		System Design Airflow <sup>2</sup>		261		0	
						Provided	
O8		O9		10		16	
		11		12		13	
		14		15		16	
Mechanical Ventilation required per 120.1(c)(3) <sup>3</sup> & 160.2(b)(3)							
Space Name or Item Tag		Conditioned Floor Area (ft²)		If of Shower heads/toilets		Required Min CMF	
Occupancy Type <sup>4</sup>		1740		261		Provided per Design CFM	
				0		DCV or Sensor Controls per 120.1(d), 120.1(i)(5), and 120.1(h)(3) 160.1(c)(5) 160.2(c)(6) 160.2(d)(2)(D)	
Offices		Office space				DCV NA: Not required per §160.1(a)(3)	
						Occ Sensor NA: Not required sample type	
17		Total System Required Min OA CMF		1740		Verification for this System Completed?	
						Yes	

**1** *ACH/Hourly.* System CMF should include both mechanical and natural ventilation for the zone/system.  
**2** *Air flow rates/restrictions apply to the following three system types per 120.1(c)(4).* Case conditioning systems utilizing ducts to supply air to occupiable space; supply-only ventilation systems providing outside air to occupiable space; supply supply 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 Sections Tables 120.1.4-A and 120.1.4-B.  
**5** For furniture built with fixed seating, the expected number of occupants shall be determined in accordance with the California Building Code.  
**6** *120.2(b)(2)* requires system serving rooms that are required by 130.1(c), to limit lighting occupancy sensing controls to also have occupancy sensing zone controls for ventilation. Examples of spaces which require lighting occupancy sensor include office 250K ft² or smaller, multipurpose rooms less than 1,000 ft², classrooms, conference rooms, restrooms, aisles and open areas in warehouses, library book stock aisles, corridors, stairwells, parking garages, loading and unloading zones, unless exempted by 130.1(c).

Multi-family Dwelling Unit Ventilation Systems											
[ ] Check the box if the system is using continuous ventilation to meet the ventilation requirements per 160.2(b)(2A)(b)(2B)(d)(2)											
17	20	21	22	23	24	25	26	27	28	29	30

Registration Number: \_\_\_\_\_ Generated Date/Time: \_\_\_\_\_ Documentation Source: EnrgPro  
 CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance      Report Version: 2023.0.00      Compliance ID: EnrgPro-SW-2023-0034-0480  
 Schema Version: rev\_20220001      Report Generated: 2023-08-28 09:25:38 PST

REV. NO.	DESCRIPTION	DATE	BY

PROJECT: <b>PROPOSED WAREHOUSE FACILITY</b>			
TITLE: <b>T24-3</b>			
PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36 <b>NTS</b>	
DRAWING NO. <b>T 2 4 . 3</b>		REV.	



STATE OF CALIFORNIA

**Mechanical Systems**

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

Project Name: Warehouse Facility

Report Page: (Page 8 of 11)

Project Address: Avenue & Sierra Hwy

Date Prepared: 5/28/2023

J. VENTILATION AND INDOOR AIR QUALITY

Space Name or Item Tag

Conditioned Floor Area (ft²)

# of Bedrooms

# of Dwelling Units

Required Min. CMV CFM¹

Supply Air CFM

Exhaust CFM

Local Exhaust

Air Filtration per 120.1(c) & 160.2(b)(1)

28

Is this a balanced system¹

29

Meeting Outside Air Requirements²

¹ FOOTNOTES: Uniform Mechanical Code may have more stringent ventilation requirements; the most stringent code requirement takes precedence.  
² Kitchen range hood will be verified per NA7.18.1 to confirm model is rated by AHAM.  
³ 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.  
⁴ A balanced ventilation system provides ventilation airflow to each dwelling unit at a rate equal to or greater than the required minimum rate, but not more than twenty percent.

K. TERMINAL BOX CONTROLS

This section does not apply to this project.

L. DISTRIBUTION (DUCTWORK AND PIPING)

This table is used to show compliance with mandatory pipe insulation requirements found in 120.3 and mandatory requirements found in 120.4(a) for duct sealing.

01

☐

Insulation shall be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind. Insulation exposed to weather shall be installed with a cover suitable for outdoor service. Insulation covering chilled water piping and refrigerant suction piping located outside the conditioned space shall have a Class I or Class II vapor retarder. All penetrations and joints of which shall be sealed.

Duct Leakage Testing

The answers to the questions below apply to the following duct systems:

RTU-01 & 02

N/A / Common User: Duct leakage testing shall not exceed 6% per NA7.5.3 required for these systems?

No

Registration Number:

Generated Date/Time:

Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

Report Version: 2022.0.000

Schema Version: rev 20220101

Compliance ID: EnergyPro-50207-0523-0480

Report Generated: 2023-05-28 05:29:38

STATE OF CALIFORNIA

**Mechanical Systems**

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

Project Name: Warehouse Facility

Report Page: (Page 9 of 11)

Project Address: Avenue & Sierra Hwy

Date Prepared: 5/28/2023

L. DISTRIBUTION (DUCTWORK AND PIPING)

Dwelling Units: Total duct leakage of duct system shall not exceed 12% or duct system to outside space shall not exceed 6% per RA3.1.4 required for systems.  
Duct leakage testing per CMV Section 610.10.1 required for these systems?

11

No

The scope of the project includes only duct systems serving healthcare facilities

12

Yes

Duct system provides conditioned air to an occupiable space for a constant volume, single zone, space-conditioning system.

13

Yes

The space conditioning system serves less than 5,000 ft² of conditioned floor area.

14

No

The combined surface area of the ducts is more than 25% of the total surface area of the entire duct system.

15

No

The scope of the project includes extending an existing duct system, which is constructed, insulated or sealed with asbestos.

16

No

All ductwork and plenums with pressure class ratings shall be constructed to Seal Class A.

17

No

All ductwork is an extension of an existing duct system

18

No

Ductwork serving individual dwelling unit

19

No

< 25 ft of new or replacement space conditioning ducts installed

20

No

Duct Insulation R-value

21

8-8

Duct Insulation R-value

M. COOLING TOWERS

This section does not apply to this project.

N. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Form/Title

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

Registration Number:

Generated Date/Time:

Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

Report Version: 2022.0.000

Schema Version: rev 20220101

Compliance ID: EnergyPro-50207-0523-0480

Report Generated: 2023-05-28 05:29:38

STATE OF CALIFORNIA

**Mechanical Systems**

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

Project Name: Warehouse Facility

Report Page: (Page 10 of 11)

Project Address: Avenue & Sierra Hwy

Date Prepared: 5/28/2023

O. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

Form/Title

System/Spaces To Be Field Verified

NICA-MCH-02-A - Outdoor Air must be submitted for all newly installed HVAC units. Note: MCH-02-A can be performed in conjunction with MCH-07-A Supply Fan VFD Acceptance (if applicable) since testing activities overlap.

Standard Heat Pump;

NICA-MCH-03-A - Constant Volume Single Zone HVAC NOTE: This form does not automatically move to "Yes." If Constant Volume Single Zone HVAC Systems are included in the scope, permit applicant should move this form to "Yes."

Standard Heat Pump;

NICA-MCH-05-A - Air Economizer Controls

Standard Heat Pump;

NICA-MCH-11-A Automatic Demand Shed Controls

Standard Heat Pump;

NICA-MCH-16-A Supply Air Temperature Reset Controls

Standard Heat Pump;

NICA-MCH-18-A Energy Management Control Systems

Standard Heat Pump;

P. DECLARATION OF REQUIRED CERTIFICATES OF VERIFICATION

There are no NIRC 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

Yes

Plan sheet or construction document location

02

No

MP Sheets

Registration Number:

Generated Date/Time:

Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

Report Version: 2022.0.000

Schema Version: rev 20220101

Compliance ID: EnergyPro-50207-0523-0480

Report Generated: 2023-05-28 05:29:38

STATE OF CALIFORNIA

**Mechanical Systems**

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

Project Name: Warehouse Facility

Report Page: (Page 11 of 11)

Project Address: Avenue & Sierra Hwy

Date Prepared: 5/28/2023

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

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

Documentation Author Name: Mohamed Nohayli

Signature Date: 2023.05.28

Address: 726 Foxbrough, Pleasanton CA 94566

City/State/Zip: Pleasanton CA 94566

Phone: (925) 865-2877

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify that I am the responsible person for this project and I am the owner or the owner's representative.

Responsible Designer Name: Syed P. Alam

Signature Date: 2023-05-28

Address: 228 Foxbrough, Pleasanton CA 94566

City/State/Zip: Pleasanton CA 94566

Phone: (925) 865-2877

Registration Number:

Generated Date/Time:

Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

Report Version: 2022.0.000

Schema Version: rev 20220101

Compliance ID: EnergyPro-50207-0523-0480

Report Generated: 2023-05-28 05:29:38

STATE OF CALIFORNIA

**Domestic Water Heating System**

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

Project Name: Warehouse Facility

Report Page: (Page 1 of 6)

Project Address: Avenue & Sierra Hwy

Date Prepared: 5/28/2023

A. GENERAL INFORMATION

01: Project Location (city): Lancaster

02: Climate Zone: 14

03: Occupancy Types Within Project (select all that apply): Office, Warehouse

B. PROJECT SCOPE

This table is used to demonstrate compliance for nonresidential occupancies with requirements in 110.1, 110.3, 120.3, and 140.5, and with requirements in 141.0 for additions and alterations, for domestic water heating systems using the prescriptive path. For high-rise residential and hotel/motel occupancies compliance is demonstrated with requirements in 110.1, 110.3, 160.4 and 170.2(a), and with requirements 180.3 for additions and 180.2 for alterations.

01: My project consists of (check all that apply): System Type¹

02: System Components: Equipment, Distribution, Controls

03: New system (DHW system being installed for the first time in newly constructed building)

04: Individual System (serving nonresidential spaces)

05: Equipment, Distribution, Controls

06: System alteration (equipment, distribution or controls)

07: Equipment, Distribution, Controls

C. COMPLIANCE RESULTS

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

01: Domestic Hot Water Equipment

02: Distribution Systems

03: Controls

04: Compliance Results

05: Table F

06: Table H

07: Yes

08: COMPLIES

D. EXCEPTIONAL CONDITIONS

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

Registration Number:

Generated Date/Time:

Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

Report Version: 2022.0.000

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Compliance ID: EnergyPro-50207-0523-0476

Report Generated: 2023-05-28 05:29:34

STATE OF CALIFORNIA

**Domestic Water Heating System**

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

Project Name: Warehouse Facility

Report Page: (Page 2 of 6)

Project Address: Avenue & Sierra Hwy

Date Prepared: 5/28/2023

E. ADDITIONAL REMARKS

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

F. DOMESTIC HOT WATER EQUIPMENT

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

Equipment Schedule: Water Heating Efficiency and Standby Loss

01: System Name

02: Instantaneous Electric

03: Exception to 140.5(c) / 170.2(d)

04: Gas Service Water Heating System > 1MMBtu/h¹

05: Capacity-weighted Average Efficiency %

06: System Components

07: Equipment Type

08: Volume (gal)

09: Rated Input Capacity (kW)

10: Max GPM / First Hour Rating (FHR)

11: Rated Efficiency

12: Minimum Efficiency Required

13: Efficiency Unit

14: Designed Standby Loss

15: Maximum Standby Loss

16: Instantaneous Electric

17: Consumer Rated Electric Instantaneous (<12kW)

18: 1

19: 12,000

20: FHR=75

21: 0.98

22: 0.92

23: UEF

G. COMPLIANCE RESULTS

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

01: Domestic Hot Water Equipment

02: Distribution Systems

03: Controls

04: Compliance Results

05: Table F

06: Table H

07: Yes

08: COMPLIES

H. EXCEPTIONAL CONDITIONS

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

Registration Number:

Generated Date/Time:

Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

Report Version: 2022.0.000

Schema Version: rev 20220101

Compliance ID: EnergyPro-50207-0523-0476

Report Generated: 2023-05-28 05:29:34

STATE OF CALIFORNIA

**Domestic Water Heating System**

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

Project Name: Warehouse Facility

Report Page: (Page 3 of 6)

Project Address: Avenue & Sierra Hwy

Date Prepared: 5/28/2023

G. DOMESTIC HOT WATER DISTRIBUTION SYSTEM

This table is used to demonstrate compliance for nonresidential occupancies with distribution requirements in 120.3 and 140.5. For multifamily and hotel/motel occupancies, compliance is demonstrated with requirements 160.3(a), 160.4, 170.2(a), and 170.2(b).

Mandatory Pipe Insulation All Occupancies

01: For systems serving dwelling units, pipe insulation must meet the minimum insulation requirements in Table 160.4-A (see below) except:  
• Piping that penetrates framing members shall not be required to have pipe insulation for the distance of the framing penetration. Piping that penetrates metal framing shall use grommet, plug, wrapping or other insulating material to assure that no contact is made with the metal framing. Insulation shall extend at least 6 inches on both sides of the framing member.  
• Piping installed in interior or exterior walls shall include required to have pipe insulation if all of the requirements are met for compliance with Quality Insulation (QI) as specified in the Reference Residential Appendix RA3.5.  
• Piping surrounded with a minimum of 1 inch of wall insulation, 2 inches of crawlspace insulation, or 4 inches of attic insulation, shall not be required to have pipe insulation.  
02: For systems serving nonresidential spaces, pipe insulation for the following applications is specified to comply with Table 120.3-A (see below) per 120.3:  
• Recirculating system piping, including supply and return piping of the water heater  
• The fill, fill & hot and cold outlet piping, including between storage tank and heat trap, for a nonrecirculating storage system  
• Pipes that are externally heated  
03: Insulation shall be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind. Insulation exposed to weather shall be installed with a cover suitable for outdoor service per 120.3(b) / 160.4(b). Pipe insulation buried below grade must be installed in a water proof and non-rivulose casing or sleeve.

H. DOMESTIC HOT WATER CONTROLS

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

01: Yes

02: No

03: Not Applicable

04: Requirement

05: Construction documents require manufacturer certification that service water-heating systems are equipped with automatic temperature controls capable of adjusting temperature settings per 110.3(a).

06: Systems with capacity > 167,000 BTUH equipped with outlet temperature controls per 110.3(a) unless covered by California Plumbing Code 613.0.

07: Controls for circulating pumps or electrical heat trace systems are capable of automatically turning off the system per 110.3(a).

08: For recirculation systems serving multiple dwelling units, design includes automatic pump controls per 170.2(d) or 180.1(b)(3) for additions.

09: For recirculation systems serving individual dwelling units, design includes manual on/off controls as specified in Reference Appendix RA4.4.5 per 170.2(d).

10: Combustion air positive shut-off shall be provided per 160.4(c)(1) on all newly installed commercial boilers as follows:  
• Boilers with input capacity > 2.5 MMBtu/h, in which the boiler is designed to operate with a nonpositive vent static pressure  
• Boilers where one stack serves two or more boilers with a total combined input capacity per stack of 2.5 MMBtu/h.  
The fan motor shall be driven by a variable speed drive OR  
The fan motor shall include controls that limit the fan motor demand to <30% of the total design wattage at 50% of the design air volume.

11: Newly installed boilers with an input capacity (d.gte) 5 MMBtu/h and a steady state full-load combustion efficiency < 90% shall maintain excess (stack-gas) oxygen concentrations <= 5% by volume on a dry basis over firing rates of 20-100%. Combustion air volume shall be controlled with respect to firing rate or fuel gas oxygen concentration. Use of a common gas and combustion air control linkage or jack shaft is prohibited.

Registration Number:

Generated Date/Time:

Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

Report Version: 2022.0.000

Schema Version: rev 20220101

Compliance ID: EnergyPro-50207-0523-0476

Report Generated: 2023-05-28 05:29:34

STATE OF CALIFORNIA

**Domestic Water Heating System**

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

Project Name: Warehouse Facility

Report Page: (Page 4 of 6)

Project Address: Avenue & Sierra Hwy

Date Prepared: 5/28/2023

I. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Form/Title

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

Registration Number:

Generated Date/Time:

Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

Report Version: 2022.0.000

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Compliance ID: EnergyPro-50207-0523-0476

Report Generated: 2023-05-28 05:29:34

STATE OF CALIFORNIA

**Domestic Water Heating System**

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

Project Name: Warehouse Facility

Report Page: (Page 5 of 6)

Project Address: Avenue & Sierra Hwy

Date Prepared: 5/28/2023

J. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

There are no forms required for this project.

K. DECLARATION OF REQUIRED CERTIFICATES OF VERIFICATION

There are no forms required for this project.

Registration Number:

Generated Date/Time:

Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

Report Version: 2022.0.000

Schema Version: rev 20220101

Compliance ID: EnergyPro-50207-0523-0476

Report Generated: 2023-05-28 05:29:34

STATE OF CALIFORNIA

**Domestic Water Heating System**

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

Project Name: Warehouse Facility

Report Page: (Page 6 of 6)

Project Address: Avenue & Sierra Hwy

Date Prepared: 5/28/2023

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

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

Documentation Author Name: Mohamed Nohayli

Signature Date: 2023-05-28

Address: 726 Foxbrough, Pleasanton CA 94566

City/State/Zip: Pleasanton CA 94566

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify that I am the responsible person for this project and I am the owner or the owner's representative.

Responsible Designer Name: Syed P. Alam

Signature Date: 2023-05-28

Address: 228 Foxbrough, Pleasanton CA 94566

City/State/Zip: Pleasanton CA 94566

Registration Number:

Generated Date/Time:

Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

Report Version: 2022.0.000

Schema Version: rev 20220101

Compliance ID: EnergyPro-50207-0523-0476

Report Generated: 2023-05-28 05:29:34

STATE OF CALIFORNIA

**Solar And Battery**

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

Project Name: Warehouse Facility

Report Page: (Page 1 of 1)

Project Address: Avenue & Sierra Hwy

Date Prepared: 5/28/2023

A. GENERAL INFORMATION

01: Project Location (city): Lancaster

02: Climate Zone: 14

03: Conditioned Floor Area (ft²): 1740

04: Project Occupancies: Office/Warehouse

05: Construction Type: New construction

06: Number of Stories: Bldg <= 3 stories

B. PROJECT SCOPE

The compliance path the project is using to comply per 110.106(b)(8) / 140.10 / 170.2(a) and h) is indicated below.

01: Compliance with Solar Photovoltaic (PV) and Battery Requirements in 140.10 / 170.2(a) and h)

02: The project has included an installed PV system and battery storage system per requirements in 140.10 / 170.2(a) and h) as documented in Table I.

03: The total of all available Solar Access Roof Area(s) of the project site is less than three percent of the conditioned floor area as documented in Table I.

04: The required PV system size is less than 4 kW dc as documented in Table I.

05: The Solar Access Roof Area(s) of the project site contains less than 80 contiguous square feet as documented in Table I.

06: The project has a roof design where the enforcement authority has verified it is not possible for the PV system, including panels, modules, components, supports, and attachments to the roof structure, to meet ASCE 7-16 Chapter 7, Snow Loads.

07: The project is a multi-tenant building in an area where a load serving entity does not provide either a Virtual Net Metering (VNM) or community solar program.

08: The project is a multi-tenant building in an area where a load serving entity does not provide either a Virtual Net Metering (VNM) or community solar program.

Registration Number:

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CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

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STATE OF CALIFORNIA

**Solar And Battery**

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

Project Name: Warehouse Facility

Report Page: (Page 2 of 2)

Project Address: Avenue & Sierra Hwy

Date Prepared: 5/28/2023

C. COMPLIANCE RESULTS

Results in this table are automatically calculated from data input and calculations in Tables F through I. Note: If any cell on this table says "DOES NOT COMPLY" or "COMPLIES with Exceptional Conditions" refer to Table D, for guidance or see the applicable Table referenced below.

01: Compliance with Solar Thermal Water Heating Requirements in 170.2(a)(3C) (Multifamily and hotel/ motel occupancies only)

02: The project includes a hotel/motel or multifamily occupancy with a gas or propane central water-heating system (serves 2+ dwelling units) and includes a permanently installed domestic solar water-heating system to comply with 170.2(a)(3C) and Reference Residential Appendix RA4, as documented in Table H.

03: Compliance meets Exception 2 to solar ready requirements in 110.10(b).

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 used to include remarks made by the permit applicant to the Authority Having Jurisdiction.

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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: PROPOSED WAREHOUSE FACILITY

TITLE: T24-4

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

DRAWING NO. REV. T 2 4 . 4



STATE OF CALIFORNIA

CALIFORNIA ENERGY COMMISSION

Solar And Battery

CERTIFICATE OF COMPLIANCE

Warehouse Facility

Report Page: NRCC-SAB-E (Page 3 of 5)

Project Name: Warehouse Facility

Project Address: Avenue & Sierra Hwy

Date Prepared: 5/28/2023

F. ALLOCATED SOLAR ZONE

This section does not apply to this project.

G. PERMANENTLY INSTALLED SOLAR PV FOR SOLAR READY EXCEPTION

This section does not apply to this project.

H. PERMANENTLY INSTALLED SOLAR HOT WATER SYSTEMS

This section does not apply to this project.

I. SMART THERMOSTATS AND ALTERNATIVE EFFICIENCY MEASURE FOR SOLAR READY EXCEPTION

This section does not apply to this project.

Registration Number: CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

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STATE OF CALIFORNIA

CALIFORNIA ENERGY COMMISSION

Solar And Battery

CERTIFICATE OF COMPLIANCE

Warehouse Facility

Report Page: NRCC-SAB-E (Page 4 of 5)

Project Name: Warehouse Facility

Project Address: Avenue & Sierra Hwy

Date Prepared: 5/28/2023

J. PHOTOVOLTAIC (PV) AND BATTERY SYSTEMS

This table documents compliance with prescriptive photovoltaic and battery system requirements in 140.10/ 170.2(g) and (h). Unless the project meets one of the listed exceptions, or trades off PV in an energy model using performance path, 140.10/ 170.2(g) and (h) requires installed photovoltaic and battery systems for newly constructed buildings. The installed PV systems must meet the minimum requirements in Table Appendix 11.

01	02	03	04	05	06	07	08
Occupancy	Conditioned Floor Area (ft²)	Area of New Roof² (ft²)	Roof Area < 70% Solar Access¹ (ft²)	Flashedheet or Document showing Solar Access Calculations	Occupied Roof Area³ (ft²)	Solar Access Roof Area (SARA) (ft²)	Min Size of PV System Required (kWdc)
Total Min Size PV System Required for all Spaces (kWdc)							0
Total Size PV System in Design (kWdc)							20

FOOTNOTES: Includes the area of the building's roof space capable of structurally supporting a PV system and the area of all roof space on covered parking areas, carports, and all other newly constructed structures on the site that are compatible with supporting a PV system per Title 24, Part 2 Section 1511.2.

¹Solar access must be determined using CEC approved solar access calculation tools found at <https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/solar-assessment-tools>.

²As specified by CBC Section 503.1.4.

K. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Form/Title

NRCC-SAB-01-E - Must be submitted for all buildings that must comply with solar readiness or PV/Battery requirements.

L. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

There are no forms required for this project.

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CALIFORNIA ENERGY COMMISSION

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CERTIFICATE OF COMPLIANCE

Warehouse Facility

Report Page: NRCC-SAB-E (Page 5 of 5)

Project Name: Warehouse Facility

Project Address: Avenue & Sierra Hwy

Date Prepared: 5/28/2023

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

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

Documentation Author Name: Mohammad Nohayil

Documentation Author Signature: Mohammad Nohayil

Company: InnoDez, Inc.

Address: 726 Foxborough

City/State/Zip: Pleasanton 94566

Registration Date: 2023.05.28

CSA/ HERS Certification Identification (if applicable): None

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 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 this documentation the builder provides to the building owner at occupancy.

Responsible Designer Name: Syed P. Alam

Responsible Designer Signature: Syed Alam

Company: InnoDez Inc.

Date Signed: 2023-05-28

Address: 726 Foxborough

City/State/Zip: Pleasanton CA 94566

Phone: 770897

Registration Number: CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

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HVAC SYSTEM HEATING AND COOLING LOADS SUMMARY

Project Name: Warehouse Facility

Date: 5/28/2023

System Name: RTU-01 & 02

Floor Area: 1,740

ENGINEERING CHECKS	SYSTEM LOAD	COIL COOLING PEAK	COIL HTG. PEAK
		CFM Sensible Latent	CFM Sensible
Heating System			
Output per System	44,000		
Total Output (Btu/h)	88,000		
Output (Btu/h/ft²)	50.6		
Cooling System			
Output per System	44,000		
Total Output (Btu/h)	88,000		
Total Output (Tons)	7.5		
Total Output (Btu/h/ft²)	50.6		
Total Output (kWh/Ton)	237.3		
TOTAL SYSTEM LOAD		58,960	23,059

Air System

CFM per System: 1,909

Standard Heat Pump: 67,844

12,694

35,474

1.84

436.4

6.2%

67,844

12,694

35,474

0.13

Aug 4 PM

Jan 1 AM

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

12 °F

65 °F

105 °F

106 °F

106 °F

70 °F

ROOM

70 °F

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

101 / 66 °F

77 / 63 °F

56 / 63 °F

57 / 54 °F

74 / 63 °F

ROOM

56 / 63 °F

HVAC SYSTEM HEATING AND COOLING LOADS SUMMARY

Project Name: Warehouse Facility

Date: 5/28/2023

System Name: Evap 01 to 12

Floor Area: 0

ENGINEERING CHECKS	SYSTEM LOAD	COIL COOLING PEAK	COIL HTG. PEAK
		CFM Sensible Latent	CFM Sensible
Heating System			
Output per System	0		
Total Output (Btu/h)	0		
Output (Btu/h/ft²)	0.0		
Cooling System			
Output per System	0		
Total Output (Btu/h)	0		
Total Output (Tons)	0.0		
Total Output (Btu/h/ft²)	0.0		
Total Output (kWh/Ton)	0.0		
TOTAL SYSTEM LOAD		171,745	0

Air System

CFM per System: 19,809

4,910,933

-5,479,850

0

0

0

0

0

4,910,933

-5,479,850

0

0

Jun 12 AM

Jun 1 AM

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

12 °F

105 °F

106 °F

105 °F

105 °F

105 °F

ROOM

105 °F

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

29 / 11 °F

85 / 29 °F

34 / 29 °F

58 / 29 °F

55 / 29 °F

ROOM

55 / 29 °F

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT: PROPOSED WAREHOUSE FACILITY

TITLE: T24-5

PROJ. NO.

PROJ. ENGR.

SCALE @ 24X36

DRAWING NO. T 2 4 . 5

REV.