MECHANICAL SPECIFICATIONS

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

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

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

PROVIDE OPERATION MANUALS, MAINTENANCE MANUALS AND SCHEMATICS FOR ALL MECHANICAL EQUIPMENT INSTALLED.

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

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

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

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

TRAPEZE DUCT HANGERS: PROVIDE MINIMUM 1" X 2" X 1" X 18 GAUGE CHANNELS WITH MINIMUM 1" X 18 GAUGE STRAPS TO STRUCTURAL SUPPORT.

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

FIBER GLASS DUCT BOARD IS AN ACCEPTABLE ALTERNATIVE IF APPROVED BY OWNER AND THE LOCAL BUILDING CODE OFFICIAL. PRODUCT AND INSTALLATION MUST MEET NAIMA STANDARDS AND OTHER APPLICABLE CODES AND REGULATIONS.

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

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

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

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

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

RECTANGULAR VOLUME DAMPERS: PROVIDE MINIMUM 16 GAUGE GALVANIZED STEEL CHANNEL FRAME, 16 GAUGE GALVANIZED STEEL BLADES, MINIMUM ½" HEXAGONAL AXLE, BOLDED SYNTHETIC BEARINGS, WITH 3/8" SQUARE PLATED STEEL CONTROL SHAFT. LINKAGES SHALL BE CONCEALED IN THE FRAME. OPERATING SHAFT SHALL EXTEND BEYOND FRAME AND DUCT TO A LOCKING QUADRANT WITH ADJUSTABLE LEVER. MAXIMUM BLADE WIDTH SHALL NOT EXCEED 6".

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

FLEXIBLE DUCT CONNECTORS: PROVIDE U.L. LABELED 30 OUNCE NEOPRENE COATED FIBERGLASS FABRIC DUCT CONNECTORS.

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

HVAC CONTROL SYSTEM: PROVIDE ALL THE NECESSARY CONTROLS AND CONTROL WIRING IN CONDUIT COMPATIBLE TO SYSTEMS SHOWN ON EQUIPMENT SCHEDULE M2.0.

PROGRAMMABLE THERMOSTAT FOR EACH SYSTEM SHALL ENABLE THE SUPPLY FAN AND CYCLE THE COOLING AND HEATING STAGES TO MAINTAIN SPACE SET-POINT. SUPPLY FAN RUNS CONTINUOUSLY DURING THE OCCUPIED MODE.

EACH THERMOSTAT SHALL HAVE A DEAD BAND OF AT LEAST 5 DEGREES (ADJ) WITHIN WHICH THE SUPPLY OF HEATING AND COOLING IS SHUT OFF,

EACH THERMOSTAT SHALL HAVE SETBACK AND SET-UP CAPABILITY DURING THE UNOCCUPIED MODE. FOR SETBACK, THE HEATING SHALL RESTART AND TEMPORARILY OPERATE ACCORDING TO A SET-POINT ADJUSTABLE DOWN TO 55 DEGREES. FOR SET-UP, THE COOLING SHALL RESTART AND TEMPORARILY OPERATE ACCORDING TO A SET-POINT ADJUSTABLE UP TO 85 DEGREES OR TO PREVENT HIGH SPACE HUMIDITY LEVELS.

EACH SYSTEM SHALL BE PROVIDED WITH A MOTORIZED OUTSIDE AIR DAMPER THAT WILL AUTOMATICALLY SHUT WHEN THE SYSTEM OR SPACES SERVED ARE NOT IN USE. VENTILATION OUTSIDE AIR DAMPERS SHALL BE CAPABLE OF AUTOMATICALLY CLOSING DURING PREOCCUPANCY BUILDING WARM-UP, COOL DOWN, AND SETBACK, EXCEPT WHEN VENTILATION REDUCES ENERGY COSTS (e.g., NIGHT PURGE) OR WHEN VENTILATION MUST BE SUPPLIED TO MEET CODE REQUIREMENTS.

COMMISSIONING/VERIFICATION: HVAC CONTROL SYSTEM SHALL BE TESTED TO ENSURE THAT CONTROL ELEMENTS ARE CALIBRATED, ADJUSTED, AND IN PROPER WORKING CONDITION, AND THAT THE SYSTEM MEETS THE DESIGN REQUIREMENTS.

TEST AND BALANCE: CONTRACT DIRECTLY A THIRD PARTY TO PROVIDE TEST AND BALANCE OF THE HVAC SYSTEM. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR SCHEDULING. TEST AND ADJUST ALL MECHANICAL SYSTEM AND EQUIPMENT TO ASSURE PROPER BALANCE AND OPERATION. PERFORM TESTS IN ACCORDANCE WITH NEBB PROCEDURAL STANDARDS-1999 OR AABC 2002, AND ASHRAE STANDARD 111. ELIMINATE NOISE AND VIBRATION, AND ASSURE PROPER FUNCTION OF CONTROLS. SUBMIT COMPLETED TEST AND BALANCE REPORT TO OWNER'S REPRESENTATIVE. BALANCING CONTRACTOR SHALL BE INDEPENDENT AND CERTIFIED WITH NEBB OR AABC. BALANCE ALL SYSTEMS WITHIN 5% OF AIR FLOW INDICATED ON DRAWINGS, AND REPORT ALL DISCREPANCIES TO THE HVAC CONTRACTOR FOR CORRECTION. MARK FINAL BALANCE POSITIONS ON DAMPERS WITH PERMANENT MARKER.

COMPLETION REQUIREMENTS: THE CONTRACTOR SHALL PROVIDE, WITHIN 90 DAYS AFTER THE DATE OF SYSTEM ACCEPTANCE, RECORD DRAWINGS AND AN OPERATING AND MAINTENANCE MANUAL TO THE BUILDING OWNER OR THE DESIGNATED REPRESENTATIVE OF THE OWNER.

THE RECORD DRAWING SHALL BE OF THE ACTUAL INSTALLATION AND INCLUDE AS A MINIMUM THE LOCATION AND PERFORMANCE DATA ON EACH PIECE OF EQUIPMENT, GENERAL CONFIGURATION OF DUCT AND PIPE DISTRIBUTION SYSTEM INCLUDING SIZES, AND THE TERMINAL AIR OR WATER DESIGN FLOW RATES.

THE OPERATING AND MAINTENANCE MANUALS SHALL BE IN ACCORDANCE WITH INDUSTRY-ACCEPTED STANDARDS AND SHALL INCLUDE, AT A MINIMUM, THE FOLLOWING: (A) SUBMITTAL DATA STATING EQUIPMENT SIZE AND SELECTED OPTIONS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE; (B) OPERATION MANUALS AND MAINTENANCE MANUALS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE. EXCEPT EQUIPMENT NOT FURNISHED AS PART OF THE PROJECT. REQUIRED ROUTINE MAINTENANCE ACTIONS SHALL BE CLEARLY IDENTIFIED; (C) NAMES AND ADDRESSES OF AT LEAST ONE SERVICE AGENCY; (D) HVAC CONTROLS SYSTEMS MAINTENANCE AND CALIBRATION INFORMATION, INCLUDING WIRING DIAGRAMS, SCHEMATICS, AND CONTROL SYSTEM SEQUENCE DESCRIPTIONS. DESIRED OR FIELD-DETERMINED SET-PIONTS SHALL BE PERMANENTLY RECORDED ON CONTROL DRAWINGS AT CONTROL DEVICES OR, FOR DIGITAL CONTROL SYSTEMS, IN PROGRAMMING COMMENTS; (E) A COMPLETE NARRATIVE OF HOW EACH SYSTEM EACH SYSTEM IS INTENDED TO OPERATE, INCLUDING SET-POINTS.

HVAC GENERAL NOTES

1. THE INTENT OF THESE PLANS AND SPECIFICATIONS IS TO INCLUDE ALL LABOR, EQUIPMENT, MATERIALS, AND SERVICES NECESSARY TO FURNISH, INSTALL, TEST, AND ADJUST A COMPLETE WORKABLE HEATING, VENTILATION, AND AIR CONDITIONING SYSTEM AS SHOWN, PRESCRIBED, OR REASONABLY IMPLIED BUT NOT LIMITED TO THAT EXPLICITLY INDICATED IN THE CONTRACT DOCUMENTS, BUT NECESSARY FOR THE PROPER EXECUTION AND COMPLETION OF THE INTENT THEREOF.

2. THE ENTIRE INSTALLATION SHALL CONFORM TO THE APPLICABLE CODES AND REGULATIONS REQUIRED BY AUTHORITIES HAVING JURISDICTION. IN THE EVENT OF CONFLICT BETWEEN SPECIFICATIONS, CODES, AND REGULATIONS, THE MORE RESTRICTIVE SHALL APPLY.

3. DRAWINGS FOR HVAC WORK ARE DIAGRAMATIC SHOWING THE GENERAL LOCATION, TYPE, LAYOUT, AND EQUIPMENT REQUIRED. THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENT, REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS. PROVIDE ALL DUCTWORK, MATERIALS, CONNECTIONS, ACCESSORIES, FITTINGS, OFFSETS, TRANSITIONS, DAMPERS AS REQUIRED FOR A COMPLETE WORKABLE SYSTEM.

4. ALL EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND APPROVED LISTING. ALL EQUIPMENT, PIPING AND SUPPORTS SHALL BE RESTRAINED IN ACCORDANCE WITH THE LATEST EDITION OF THE "GUIDLINES FOR SEISMIC RESTRAINTS OF MECHANICAL SYSTEMS AND PLUMBING PIPING SYSTEMS" BY THE SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION (SMACNA). ALL EQUIPMENT SHALL BE ANCHORED TO RESIST THE LATERAL FORCE REQUIREMENTS OF CHAPTER 16 OF THE 2019 CALIFORNIA BUILDING CODE.

5. COORDINATE THE INSTALLATION OF THE HVAC SYSTEM WITH ALL OTHER TRADES PRIOR TO FABRICATION OR INSTALLATION. COORDINATE THE LOCATIONS OF PENETRATIONS AND FINAL LOCATION OF ALL EQUIPMENT WITH THE GENERAL CONTRACTOR. PROVIDE EQUIPMENT WEIGHTS, EQUIPMENT DIMENSIONS, PLATFORM SIZES & LOCATIONS, CURB SIZES & LOCATIONS, CONCRETE PAD SIZES AND LOCATIONS AST REQUIRED. COORDINATE LOCATIONS OF GAS & CONDENSATE LINES WITH PLUMBING CONTRACTOR. COORDINTAE LOCATIONS OF POWER, DISCONNECTS, AND CONTROL CONDUIT WITH THE ELECTICAL CONTRACTOR. COORDINATE LOCATIONS OF ALL DIFFUSERS, REGISTERS, AND GRILLES WITH ARCHITECTURAL PLANS, ELECTRICAL LIGHTING PLANS AND ARCHITECTURAL ELEVATIONS.

6. DETAILS FOR EQUIPMENT PADS, PLATFORMS, AND FLASHINGS SHALL BE AS INDICATED BY THE ARCHITECTURAL/STRUCTURAL/CIVIL DRAWINGS, UNLESS NOTED OTHERWISE.

7. ALL EQUIPMENT, DUCTS, PIPING, SUPPORTS, AND OTHER DEVICES OUTSIDE OF THE BUILDING OR EXPOSED TO WEATHER, SHALL BE COMPLETELY WEATHER-PROOFED.

8. OUTSIDE AIR INTAKES SHALL BE AT LEAST 10 FT. AWAY OR 3 FT. BELOW ANY VENT OR EXHAUST DISCHARGE.

9. ALL DUCT SIZES ARE CLEAR INSIDE DIMENSIONS. DUCTWORK SHALL BE CONSTRUCTED, ERECTED, INSULATED AND TESTED IN ACCORDANCE CHAPTER 6 OF THE 2019 CALIFORNIA MECHANICAL CODE.

10. ALL EXHAUST FANS SHALL BE EQUIPED WITH A BACK DRAFT DAMPER.

11. DUCT AND AIR TRANSFER PENETRATIONS THRU BUILDING ASSEMBLIES REQUIRING PROTECTION SHALL BE PROTECTED WITH FIRE DAMPERS, SMOKE DAMPERS, COMBINATION SMOKE/FIRE DAMPERS AND CEILING RADIATION DAMPERS IN ACCORDANCE WITH SECTION 607 OF THE CALIFORNIA MECHANICIAL CODE. DUCTS NOT REQUIRING DAMPERS SHALL COMPLY WITH SECTION 714 & 717 OF THE 2019 CALIFORNIA BUILDING CODE.

12. INSTALL SMOKED DETECTORS AND PROVIDE FOR SMOKE DETECTION AND AUTOMATIC SHUT-OFF OF ALL AIR HANDLING EQUIPMENT IN ACCORDANCE WITH SECTION 606 OF THE 2019 CALIFORNIA MECHANICAL CODE.

13. UNLESS NOTED OTHERWISE, ALL LINE VOLTAGE WIRING, CONDUIT, FINAL CONNECTIONS, DISCONNECTS, STARTERS, AND OVER CURRENT PROTECTION DEVICES SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR AS INDICATED ON THESE MECHANICAL DRAWINGS AND/OR ELECTRICAL DRAWINGS AND/OR ELECTRICAL SECTION OF THE SPECIFICATIONS.

14. INSTALL ALL LOW VOLTAGE HVAC CONTROL WIRE AND DEVICES PER PLAN. ALL WIRE SHALL BE IN CONDUIT PROVIDED AND INSTALLED BY THE ELECTICAL CONTRACTOR UNLESS NOTEDED OTHERWISE.

15. PROVIDE OWNER WITH THREE COPIES OF A CERTIFIED AIR BALANCE REPORT PREPARED IN BY A THIRD PARTY CERTIFIED BY THE AABC OR NEBB. TEST, ADJUST AND BALANCE THE HVAC SYSTEM IN ACCORDANCE WITH AABC OR NEBB PROCEDURES. PROVIDE START-UP/TEST REPORTS FOR ALL AIR HANDLING EQUIPMENT, FANS, AND REFRIGERATION EQUIPMENT. TEST AND VERIFY PROPER OPERATION OF ALL MAKE-UP AIR/EXHAUST AIR INTERLOCK SYSTEMS AND THIER SEQUENCES OF OPERATION. BALANCE ALL AIR FLOWS WITHIN 5% OF DESIGN VALUES. PERMANENTLY MARK BALANCE POSITION OF ALL REGULATING DEVICES.

16. PROVIDE OWNER WITH THREE SETS OF AS-BUILT PLANS AND OPERATIONS AND MAINTENANCE MANUALS. CLEARLY IDENTIFY ALL EQUIPMENT WITH PERMANENT PLASTIC OR METAL LABELS/TAGS (PEN MARKING NOT ACCEPTABLE).

17. PROVIDE ONE YEAR WARRANTY ON ALL LABOR, PARTS AND MATERIALS.

18. ANY CHANGE OR DEVIATION FROM THESE PLANS OR SPECIFICATIONS SHALL REQUIRE THE WRITTEN APPROVAL OF THE ENGINEER PRIOR TO COMMENCEMENT OF SUCH WORK.

19.0

a) DUCTS FOR DEMAND CONTROLLED VENTILATION SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE FAN MANUFACTURER'S INSTALLATION INSTRUCTIONS, THE PROVISIONS ASHRAE 62.2, TABLE 5.3, OR THE AIRFLOW SHALL BE MEASURED AS REQUIRED BY AND IN COMPLIANCE WITH ASHRAE 62.2, 5.4.

b) DUCTS FOR KITCHEN COOKTOPS OR RANGES SHALL BE SHOWN OF METAL WITH A SMOOTH INTERIOR. [CMC 504.3].

1) IDENTIFY THE DETAILED REQUIREMENTS OF CMC DRYER DUCTS. SPECIFY--

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

b) DUCTS FOR DOMESTIC CLOTHES DRYERS SHALL BE RIGID METALLIC DUCTS WITH A MINIMUM MILL THICKNESS OF 16 (0.016-INCH), SHALL HAVE A MINIMUM 4-INCH DIAMETER AND A SMOOTH INTERIOR. THE COMBINED HORIZONTAL AND VERTICAL LENGTH OF THE DUCTS OF THE DUCTS SHALL BE 14-FEET, WHICH SHALL BE REDUCED BY 2-FEET FOR EVERY 90-DEGREE ELBOW IN EXCESS OF TWO ELBOWS.

c) LISTED CLOTHES DRYER TRANSITION DUCTS NOT MORE THAN 6-FEET IN LENGTH SHALL BE PERMITTED TO CONNECT THE DRYER TO THE EXHAUST DUCTS AS LONG AS THEY ARE NOT CONCEALED WITHIN CONSTRUCTION, AND THEY ARE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.

LEGEND

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

SPECIAL NOTICE TO CONTRACTORS

1. ALL CONTRACTORS (GENERAL CONTRACTOR AND SUB-CONTRACTORS) BIDDING THIS PROJECT ARE REQUIRED TO VISIT THE JOB SITE AND VERIFY THE EXISTING CONDITIONS PRIOR TO SUBMITTING THEIR BID. CONTRACTORS ARE TO CAREFULLY REVIEW ALL CONSTRUCTION DOCUMENTS AND NOTE ANY DISCREPANCIES BETWEEN THE CONSTRUCTION DOCUMENTS AND THE CONDITIONS OBSERVED AT THE JOB SITE PRIOR TO SUBMISSION OF ANY BID. THE BUILDING OWNER REPRESENTATIVE LISTED BELOW MAY BE CONTACTED FOR ACCESS TO THE JOB SITE.

2. CONTRACTORS ARE RESPONSIBLE FOR VERIFYING THE LOCATION AND CONDITION OF ALL POINTS OF CONNECTION, LOCATION AND CONDITION OF ALL BUILDING (ROOF/FLOOR/CEILING) PENETRATIONS, LOCATION AND CONDITION OF ALL UTILITIES AND BUILDING SYSTEMS INCLUDING, BUT NOT LIMITED TO, GAS, WATER, SEWER, VENT, ELECTRICAL, BUILDING MECHANICAL SYSTEMS, DUCT CONNECTIONS, EXHAUST/OUTSIDE AIR CONNECTIONS, SECURITY, FIRE ALARM, DATA, AND PHONE PRIOR TO SUBMISSION OF THEIR BID.

3. ANY DISCREPANCIES BETWEEN THE CONSTRUCTION DOCUMENTS AND THE CONDITIONS OBSERVED SHALL BE BROUGHT TO THE ATTENTION, IN WRITING, TO THE ARCHITECT AND/OR ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.

4. NO WORK SHALL BE DONE ON ANY PART OF THE BUILDING BEYOND THE POINT INDICATED IN EACH SUCCESSIVE INSPECTION WITHOUT FIRST OBTAINING THE WRITTEN APPROVAL OF THE CODE OFFICIAL. NO CONSTRUCTION SHALL BE CONCEALED WITHOUT BEING INSPECTED AND APPROVED.

CLIENT:

ADDRESS:

CARLSBAD SAN DIEGO, CA

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
01	PC CORRECTIONS	02.19.23	MN

PROJECT:
1934 KELLOG

TITLE:
MECH LIST OF SYMBOLS AND GENERAL NOTES

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

DRAWING NO.	REV.
M0.00	

CMC 2019 - 605.1 Smoke Dampers:

Smoke dampers shall comply with UL 555S, and shall be installed in accordance with the manufacturer's installation instructions where required by the California Building Code or California Residential Code.

CEC 2019 -TABLE 150.2-A:
DUCT INSULATION R-VALUE

Climate Zone	1 through 10, 12 & 13	11, 14 through 16
Duct R-Value	R-6	R-8

ALL DUCTS INSULATION SHALL NOT BE LESS R6 | CEC2019-150.2A
ALL DUCTS ARE GALVANIZED STEEL G90.

Flexible air ducts shall comply with UL 181, and shall be installed in accordance with the manufacturer's installation instructions and SMACNA HVAC Duct Construction Standards-Metal and Flexible.

Flexible air duct installations shall comply with the following:

1. Ducts shall be installed using the minimum required length to make the connection.
2. Horizontal duct runs shall be supported at not more than 4 feet (1219 mm) intervals.
3. Vertical risers shall be supported at not more than 6 feet (1829 mm) intervals.
4. Sag between support hangers shall not exceed 1/2 inch (12.7 mm) per foot (305 mm) of support spacing.
5. Supports shall be rigid and shall be not less than 11/2 inches (38 mm) wide at point of contact with the duct surface.
6. Duct bends shall be not less than one duct diameter bend radius.
7. Screws shall not penetrate the inner liner of non-metallic flexible ducts unless permitted in accordance with the manufacturer's installation instructions.
8. Fittings for attaching non-metallic ducts shall be beaded and have a collar length of not less than 2 inches (51 mm) for attaching the duct.

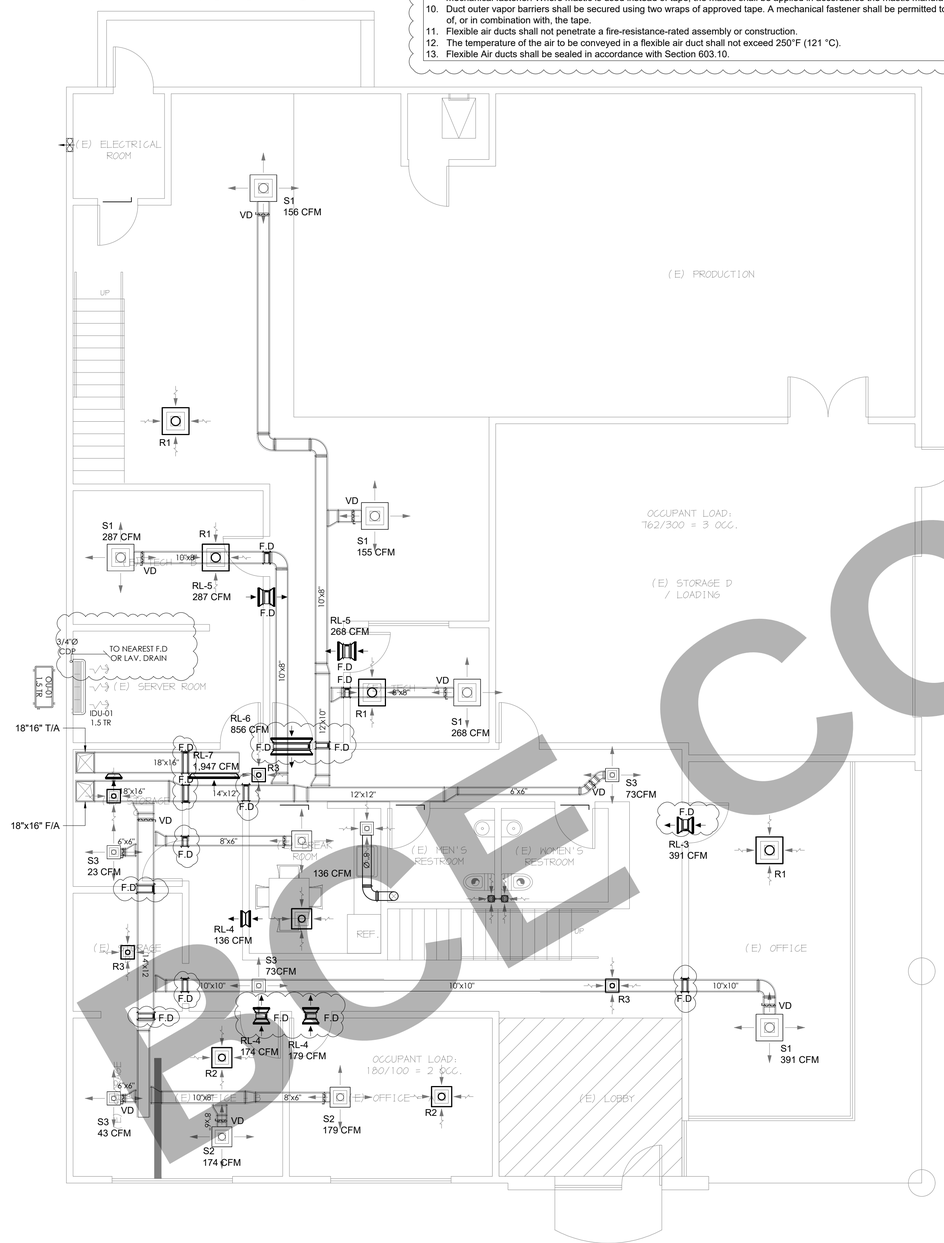
Exception: A bead shall not be required where metal worm-gear clamps are used or where attaching metallic ducts using screws in accordance with the manufacturer's installation instructions.

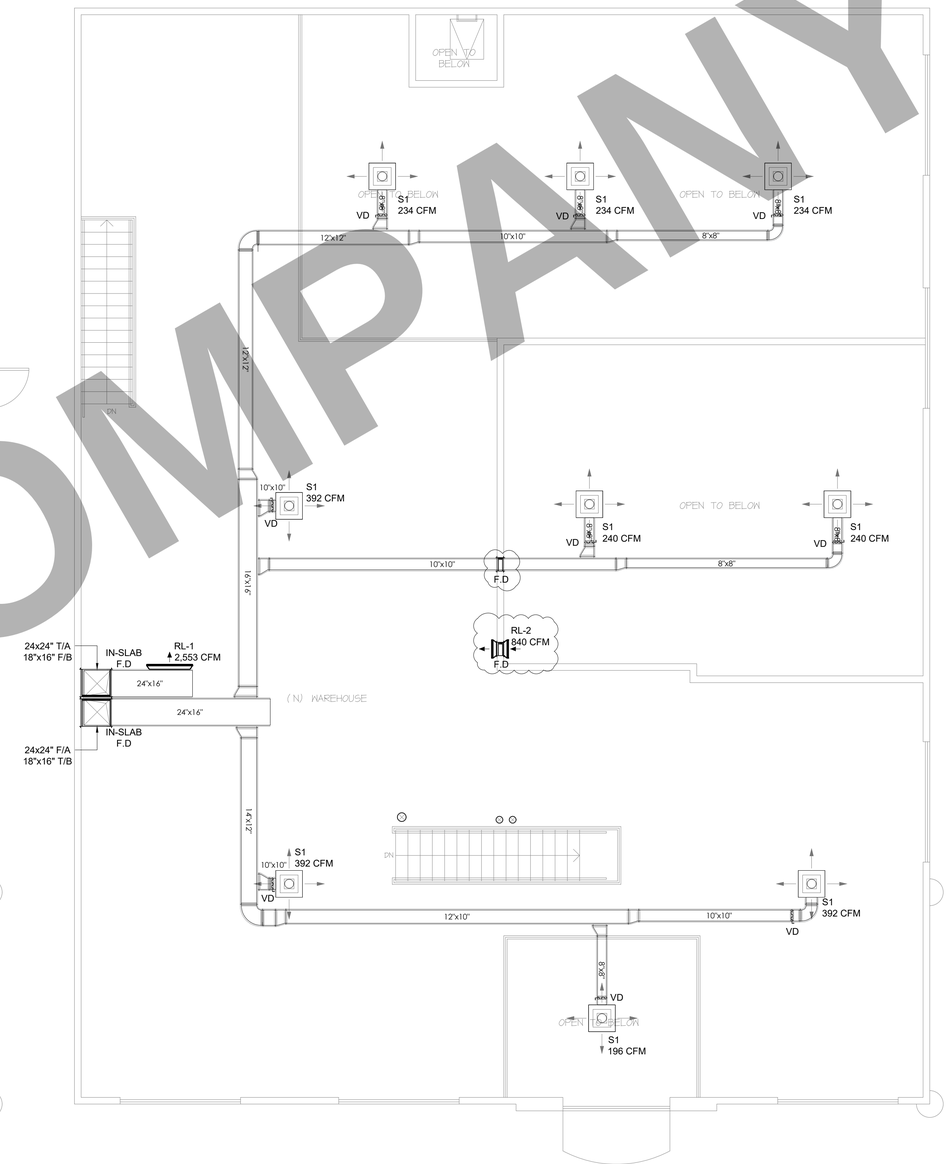
9. Duct inner liner shall be installed at not less than 1 inch (25.4 mm) on the collar and past the bead prior to the application of the tape and mechanical fastener. Where mastic is used instead of tape, the mastic shall be applied in accordance the mastic manufacturer's instructions.
10. Duct outer vapor barriers shall be secured using two wraps of approved tape. A mechanical fastener shall be permitted to be used in place of, or in combination with, the tape.
11. Flexible air ducts shall not penetrate a fire-resistance-rated assembly or construction.
12. The temperature of the air to be conveyed in a flexible air duct shall not exceed 250°F (121 °C).
13. Flexible Air ducts shall be sealed in accordance with Section 603.10.

CMC-2019 - 605.5 Access and Identification

Fire and smoke dampers shall be provided with an approved means of access large enough to allow inspection and maintenance of the damper and its operating parts. The access shall not affect the integrity of the fire-resistance-rated assembly. The access openings shall not reduce the fire-resistance rating of the assembly.

Access shall not require the use of tools. Access doors in ducts shall be tight fitting and approved for the required duct construction. Access points shall be permanently identified on the exterior by a label with letters not less than 1/2 of an inch (12.7 mm) in height reading as one of the following:
1- Smoke Damper
2- Fire Damper
3- Fire/Smoke Dampe





PROPOSED FIRST FLOOR

PROPOSED SECOND FLOOR

CLIENT:

ADDRESS:

CARLSBAD SAN DIEGO, CA

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
01	PC CORRECTIONS	02.19.23	MN

PROJECT:
1934 KELLOG

TITLE: MECHANICAL PLAN PROPOSED FIRST & SECOND FLOOR

PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36:
		3/16"=1'-0"

DRAWING NO.
M1.01

REV.

CMC-2019 - 605.5 Access and Identification

Fire and smoke dampers shall be provided with an approved means of access large enough to allow inspection and maintenance of the damper and its operating parts. The access shall not affect the integrity of the fire-resistance-rated assembly. The access openings shall not reduce the fire-resistance rating of the assembly.

Access shall not require the use of tools. Access doors in ducts shall be tight fitting and approved for the required duct construction. Access points shall be permanently identified on the exterior by a label with letters not less than 1/2 of an inch (12.7 mm) in height reading as one of the following:
1- Smoke Damper
2- Fire Damper
3- Fire/Smoke Dampe

CMC 2019 - 608.1 Air-Moving Systems and Smoke Detectors:

Air-moving systems supplying air in excess of 2000 cubic feet per minute (ft3/min) (0.9439 m3/s) to enclosed spaces within buildings shall be equipped with an automatic shutoff. Automatic shutoff shall be accomplished by interrupting the power source of the air-moving equipment upon detection of smoke in the main supply-air duct served by such equipment. Duct smoke detectors shall comply with UL 268A, shall be labeled by an approved agency, approved and listed by California State Fire Marshal, and shall be installed in accordance with the manufacturer's installation instructions. Such devices shall be compatible with the operating velocities, pressures, temperatures, and humidities of the system. Where fire-detection or alarm systems are provided for the building, the smoke detectors shall be supervised by such systems in an approved manner, and installed in accordance with NFPA 72 and the California Building and Fire Codes.

CMC 2019 - 605.1 Smoke Dampers:

Smoke dampers shall comply with UL 555S, and shall be installed in accordance with the manufacturer's installation instructions where required by the California Building Code or California Residential Code.

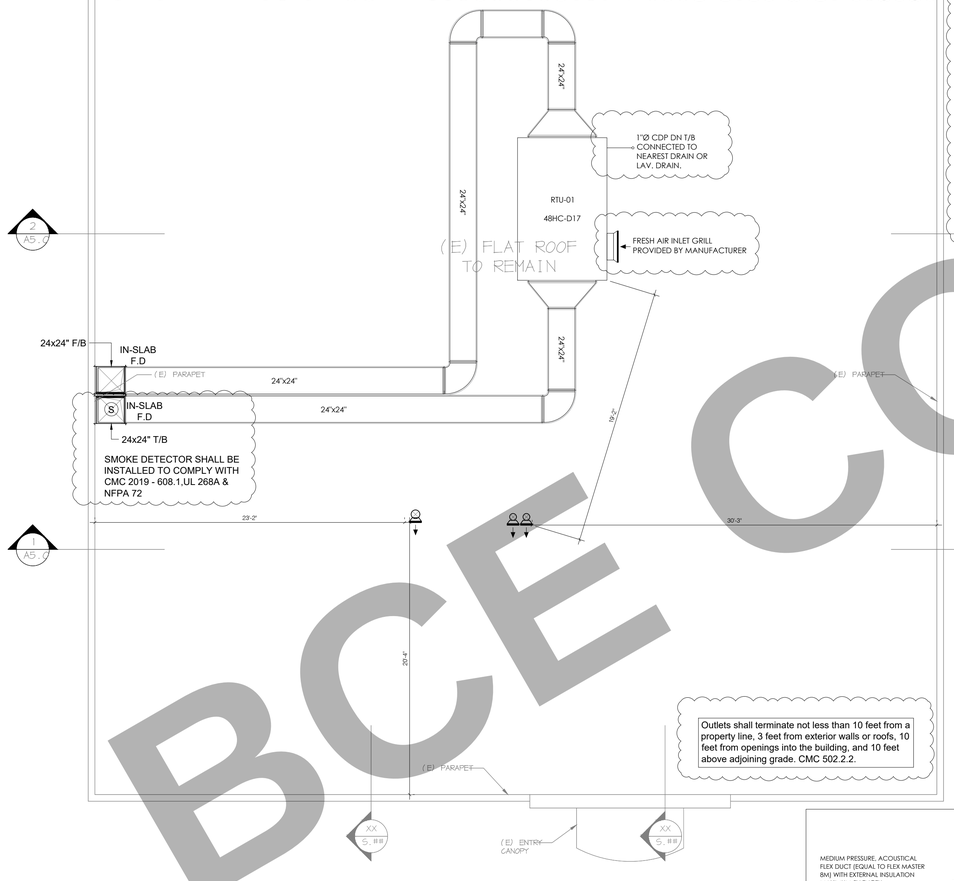
CMC 2019 -603.10.1 Duct Leakage Tests:
Ductwork shall be leak-tested in accordance with the SMACNA HVAC Air Duct Leakage Test Manual. Representative sections totaling not less than 10 percent of the total installed duct area shall be tested. Where the tested 10 percent fail to comply with the requirements of this section, then 40 percent of the total installed duct area shall be tested. Where the tested 40 percent fail to comply with the requirements of this section, then 100 percent of the total installed duct area shall be tested. Sections shall be selected by the building owner or designated representative of the building owner. Positive pressure leakage testing shall be permitted for negative pressure ductwork. The permitted duct leakage shall be not more than the following:

Lmax = CLx(P)^0.65 (Equation 603.10.1)
Where:
Lmax = maximum permitted leakage, (ft3/min)/100 square feet [0.0001 (m3/s)/m2] duct surface area.
CL = six, duct leakage class, (ft3/min)/100 square feet [0.0001 (m3/s)/m2] duct surface area at 1 inch water column (0.2 kPa).
P = test pressure, which shall be equal to the design duct pressure class rating, inch water column (kPa).

CMC 2019 - 603.4.1 Length Limitation:

[Not permitted for OSHPD 1, 1R, 2, 3, 4 & 5] Factory-made flexible air ducts and connectors shall be not more than 5 feet (1524 mm) in length and shall not be used in lieu of rigid elbows or fittings. Flexible air ducts shall be permitted to be used as an elbow at a terminal device.

ALL DUCTS INSULATION SHALL NOT BE LESS R-6.0 AS PER CEC 2019 - TABLE 150.2-A



ROOF PLAN

Outlets shall terminate not less than 10 feet from a property line, 3 feet from exterior walls or roofs, 10 feet from openings into the building, and 10 feet above adjoining grade. CMC 502.2.2.

SCHEDULE No. 1
ROOF TOP UNIT

TAG	RTU-01
SERVING	ROOF
MANUFACTURER	CARRIER
MODEL	48HC-D17
NOM. CAPACITY (TR)	15.0
MAX. HEATING (BTU/hr)	324,000
INPUT GAS (MBH)	400
HEATING STAGES	2
HEATING EFFICIENCY	81
OUTSIDE AIR PERCENTAGE	25%
AIR FLOW (CFM)	4500 CFM
POWER SUPPLY	208/3/60
TOTAL POWER (WATTS)	14,500
EER	12
IEER (1-SPEED)	13
IEER (2-SPEEDS)	13.5
DIMENSIONS (HxWxD) (IN.)	47.75x80.25x127-7/8
WEIGHT	858

NOTES
1. PROVIDE CONDENSATE PUMP, IF REQUIRED.
2. PROVIDE DISCONNECT SWITCH.
3. PROVIDE 2" MERV 8 THROWAWAY FILTER.
4. PROVIDE VIBRATION ISOLATION.
5. PROVIDE FREEZE THERMOSTAT.

SCHEDULE No. 2
INDOOR & OUTDOOR UNIT

TAG	IDU-1 & OU-1
SERVING	FIRST FLOOR
MANUFACTURER	CARRIER
INDOOR MODEL	40MPHAQ18XA3
POWER SUPPLY	230/1/60
MAXIMUM CURRENT (A)	0.5
AIR FLOW (CFM) - 4 SPDS	261/389/528/926
DRAIN SIZE (IN.)	1"
COOLING CAPACITY (BTU/H)	18,000
INDOOR DIMENSIONS (H x W x D) (IN.)	14.25x49.57x11.1
OUTDOOR MODEL	38MPRAQ18AA3
POWER SUPPLY	208/230 / 1 / 60
MINIMUM CIRCUIT AMPACITY	18 A
MAX OVERCURRENT DEVICE	30 A
OUTDOOR DIMENSIONS (H x W x D) (inch)	31.89 x 37.24 x16.14

SCHEDULE No. 3
FAN SCHEDULE

TAG	EF-01/02	EF-03	EF-04
LOCATION	TOILETS	KITCHEN	ELECTRICAL ROOM
DESIGN SUPPLY VOLUME (CFM)	50	110	133
SELECT SUPPLY VOLUME (CFM)	50	100	100
DESIGN PRESSURE DROP (INCH W.C.)	0.5	0.5	0.00
SELECTED PRESSURE DROP (INCH W.C.)	0.5	0.5	0.08
ELECTRICAL (V / PH / HZ)	115 / 1 / 60	115 / 1 / 60	115 / 1 / 50
MAX Amps	0.24	0.31	-
MAX WATTS	16.5	20.4	0.01 HP
MOTOR SPEED (RPM)	820	934	1050
FAN TYPE	CEILING-MOUNT FAN	CEILING-MOUNT FAN	SIDE-WALL
MANUFACTURER	GREENHECK	GREENHECK	GREENHECK
MODEL	SPA-AP0611W	SPA-AP0611W	CUE-060 / E-1/200

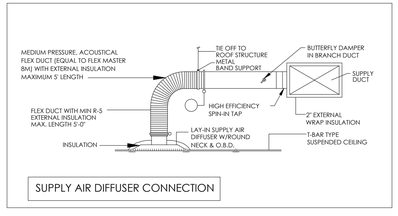
NOTES
1. PROVIDE UL LISTING.
2. PROVIDE ENERGY STAR COMPLIANCE.
3. INTERLOCK WITH WALL SWITCH.
4. PROVIDE MOTOR WITH THERMAL OVERLOADS.

MINIMUM VENTILATION RATE REQUIRED / FROM TABLE 402.1 - CMC CODE 2019

S.N.	Space	Area (ft2)	Occ./1000 ft2	CFM/ft2	CFM-A	No. of Occupacies	CFM/Pers.	CFM-B	TOTAL CFM
1	Production 2	1211	7	0.18	**218.0**	9	10.0	**90.0**	**308.0**
2	STO. Loading	776	2	0.12	**93.1**	2	5.0	**10.0**	**103.1**
3	Break Room	113	50	0.12	**13.6**	6	5.0	**30.0**	**43.6**
4	Corridor	378	0	0.06	**22.7**	0	0.0	**0.0**	**22.7**
5	Electr. Room	54	4	0.06	**3.2**	1	5.0	**5.0**	**8.2**
6	Lobby	169	10	0.06	**10.1**	2	5.0	**10.0**	**20.1**
7	Office	321	5	0.05	**16.1**	2	5.0	**10.0**	**26.1**
8	Office A	180	5	0.05	**9.0**	1	5.0	**5.0**	**14.0**
9	Office B	184	5	0.05	**9.2**	1	5.0	**5.0**	**14.2**
10	Production 1	579	7	0.18	**104.2**	5	10.0	**50.0**	**154.2**
11	Server Room	119	4	0.06	**7.1**	1	5.0	**5.0**	**12.1**
12	STO. A	84	2	0.12	**10.1**	1	5.0	**5.0**	**15.1**
13	STO. B	72	2	0.12	**8.6**	1	5.0	**5.0**	**13.6**
14	Tech. A	89	7	0.18	**16.0**	1	10.0	**10.0**	**26.0**
15	Tech. B	142	7	0.18	**25.6**	1	10.0	**10.0**	**35.6**
16	Warehouse	2853	-	0.06	**171.2**	4	10.0	**40.0**	**211.2**
17	**TOTAL**	**7324**	-		**737.8**	38	-	**290.0**	**1,027.8**

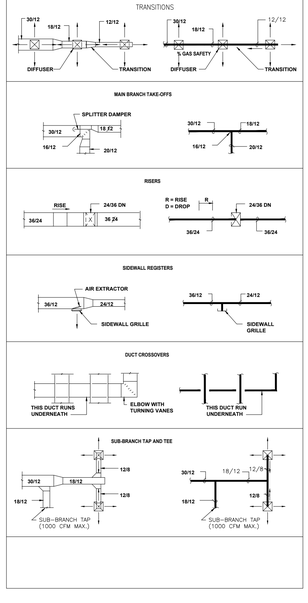
GENERAL NOTES:

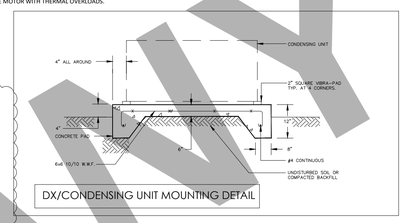
1. MECHANICAL CONTRACTOR TO COORDINATE ROUTING AND LOCATION OF MECHANICAL COMPONENTS AND EQUIPMENT WITH ALL OTHER TRADES AND EXISTING FIELD CONDITIONS PRIOR TO PERFORMING WORK.
2. CONTRACTOR TO CUT AND PATCH AS REQUIRED TO PERFORM THE WORK.
3. ACCESS DOORS ARE REQUIRED FOR ANY COMPONENT REQUIRING ACCESS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



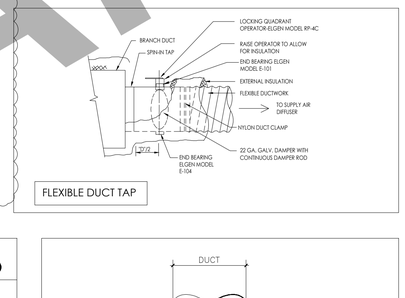
SUPPLY AIR DIFFUSER CONNECTION

DUCTWORK SYMBOLS LEGEND

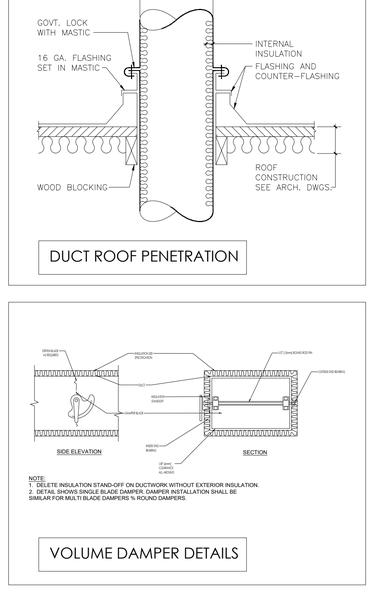




DX/CONDENSING UNIT MOUNTING DETAIL



FLEXIBLE DUCT TAP



DUCT ROOF PENETRATION

NOTE:
1. DELETE INSULATION STAND-OFF ON DUCTWORK WITHOUT EXTERIOR INSULATION.
2. DETAIL SHOWS SINGLE BLADE DAMPER. DAMPER INSTALLATION SHALL BE SIMILAR FOR MULTI BLADE DAMPERS 'S ROUND DAMPERS.

VOLUME DAMPER DETAILS

CLIENT:

ADDRESS:
CARLSBAD SAN DIEGO, CA

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
01	PC CORRECTIONS	02.19.23	MN

PROJECT:
1934 KELLOG

TITLE:
MECHANICAL PLAN
PROPOSED ROOF FLOOR & EQUIPMENT SCHEDULE

PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36:
		3/16"=1'-0"

DRAWING NO.
M1.02

REV.

Design Weather Parameters & MSHGs

2.2.40 Fate Kellog Office Rev.01 — 01/19/2022
E. MJ — 03:27PM

Design Parameters:

City Name	Los Angeles LAX	
Location	California	
Latitude	33.9	Deg.
Longitude	118.4	Deg.
Elevation	300.0	ft
Summer Design Dry-Bulb	70.0	°F
Summer Coincident Wet-Bulb	63.2	°F
Summer Daily Range	10.9	°F
Winter Design Dry-Bulb	43.0	°F
Winter Design Wet-Bulb	36.1	°F
Atmospheric Clearness Number	1.05	
Average Ground Reflectance	0.20	
Soil Conductivity	0.800	BTU/(hr-ft-°F)
Local Time Zone (GMT +/- N hours)	8.0	hours
Consider Daylight Savings Time	No	
Simulation Weather Data	noneN/A	
Current Data is	User Modified	
Design Cooling Months	January to December	

Design Day Maximum Solar Heat Gains

(The MSHG values are expressed in BTU/(hr-ft²))

Month	N	NNE	NE	ENE	E	ESE	SE	SSE	S
January	23.6	23.6	23.6	107.3	178.6	233.2	262.0	265.9	260.3
February	27.8	27.8	66.2	148.4	216.0	249.4	262.5	248.7	236.3
March	32.3	32.3	118.1	184.8	233.8	254.1	238.9	210.0	190.9
April	36.8	78.9	155.0	211.0	234.9	230.9	199.8	154.2	129.8
May	39.9	113.0	176.3	220.2	231.2	208.8	167.8	111.9	85.9
June	51.5	123.3	184.0	221.3	225.6	198.9	152.4	93.9	70.2
July	40.9	108.8	176.2	216.4	224.3	205.9	162.5	107.4	82.5
August	38.5	74.9	152.0	203.4	224.1	223.7	191.7	148.1	124.9
September	33.6	33.6	109.5	177.9	218.1	242.1	229.2	202.2	187.1
October	28.8	28.8	65.4	143.4	202.7	244.9	249.6	238.7	230.7
November	24.1	24.1	28.6	96.9	178.6	229.2	258.0	260.8	257.8
December	21.8	21.8	21.8	87.4	163.5	220.5	257.2	267.2	264.8
Month	**SSW**	**SW**	**WSW**	**W**	**WNW**	**NW**	**NNW**	**HOR**	**Mult**
January	265.9	262.8	230.2	181.3	104.8	25.5	23.6	172.9	1.00
February	247.6	260.9	253.6	214.4	143.1	69.5	27.8	217.5	1.00
March	209.7	238.3	254.1	232.9	186.0	118.0	32.3	255.5	1.00
April	154.8	198.3	232.6	233.4	208.7	156.8	76.9	278.9	1.00
May	111.5	165.5	211.8	226.8	219.4	179.3	110.7	287.3	1.00
June	93.4	151.5	200.5	223.7	221.2	185.5	121.2	287.0	1.00
July	107.3	162.4	206.0	224.1	216.4	176.3	108.5	282.4	1.00
August	149.0	191.0	224.2	225.1	201.8	152.4	76.5	272.9	1.00
September	204.5	231.7	240.2	224.9	175.4	107.8	33.8	248.7	1.00
October	240.7	252.7	242.8	204.1	145.8	59.8	28.8	214.8	1.00
November	260.4	253.8	231.7	173.2	104.8	26.1	24.1	173.5	1.00
December	266.5	254.3	223.7	157.6	89.0	21.8	21.8	153.9	1.00

Mult. = User-defined solar multiplier factor.

Hourly Analysis Program v4.90 — Page 1 of 56

Air System Sizing Summary for RTU

Project Name: 2.2.40 Fate Kellog Office Rev.01 — 01/19/2022
Prepared by: E. MJ — 03:28PM

Air System Information
Air System Name ... RTU
Equipment Class ... PKG ROOF
Air System Type ... SZCAV
Number of zones ... 1
Floor Area ... 7151.0 ft²
Location ... Los Angeles LAX, California

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

Central Cooling Coil Sizing Data
Total coil load ... 10.9 Tons
Total coil load ... 130.4 MBH
Sensible coil load ... 120.5 MBH
Coil CFM at Aug 1400 ... 7496 CFM
Max block CFM ... 7496 CFM
Sum of peak zone CFM ... 7496 CFM
Sensible heat ratio ... 0.924
ft²/Ton ... 658.0
BTU/(hr-ft²) ... 18.2
Water flow @ 10.0 °F rise ... N/A
Load occurs at ... Aug 1400
OA DB / WB ... 69.7 / 63.1 °F
Entering DB / WB ... 75.4 / 65.0 °F
Leaving DB / WB ... 60.3 / 59.3 °F
Coil ADP ... 58.6 °F
Bypass Factor ... 0.100
Resulting RH ... 56 %
Design supply temp. ... 58.0 °F
Zone T-stat Check ... 1 of 1 OK
Max zone temperature deviation ... 0.0 °F

Central Heating Coil Sizing Data
Max coil load ... 54.5 MBH
Coil CFM at Des Htg ... 7496 CFM
Max coil CFM ... 7496 CFM
Water flow @ 20.0 °F drop ... N/A
Load occurs at ... Des Htg
BTU/(hr-ft²) ... 7.6
Ent. DB / Lvg DB ... 66.8 / 73.6 °F

Supply Fan Sizing Data
Actual max CFM ... 7496 CFM
Standard CFM ... 7416 CFM
Actual max CFM/ft² ... 1.05 CFM/ft²
Fan motor BHP ... 0.00 BHP
Fan motor kW ... 0.00 kW
Fan static ... 0.00 in wg

Outdoor Ventilation Air Data
Design airflow CFM ... 836 CFM
CFM/ft² ... 0.12 CFM/ft²
CFM/person ... 30.94 CFM/person

Hourly Analysis Program v4.90 — Page 22 of 56

Zone Sizing Summary for RTU

Project Name: 2.2.40 Fate Kellog Office Rev.01 — 01/19/2022
Prepared by: E. MJ — 03:28PM

Air System Information
Air System Name ... RTU
Equipment Class ... PKG ROOF
Air System Type ... SZCAV
Number of zones ... 1
Floor Area ... 7151.0 ft²
Location ... Los Angeles LAX, California

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

Zone Sizing Data

Zone Name	Maximum Cooling Sensible (MBH)	Design Airflow (CFM)	Minimum Airflow (CFM)	Time of Peak Load	Maximum Heating Load (MBH)	Zone Floor Area (ft²)	Zone CFM/ft²
Zone 1	126.5	7496	7496	Aug 1400	31.8	7151.0	1.05

Zone Terminal Sizing Data
No Zone Terminal Sizing Data required for this system.

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (MBH)	Time of Load	Air Flow (CFM)	Heating Load (MBH)	Floor Area (ft²)	Space CFM/ft²
Zone 1							
F1-LOBBY	1	6.0	Nov 1300	328	2.2	169.0	1.94
F1-OFFICE	1	11.9	Sep 1300	654	5.4	321.0	2.04
F1-OFFICE A	1	5.4	Nov 1300	299	0.9	180.0	1.66
F1-OFFICE B	1	5.3	Nov 1400	292	1.1	184.0	1.59
F1-CORRIDOR	1	0.0	Jul 1500	244	6.5	378.0	0.65
F1-BREAK ROOM	1	4.1	Jul 1500	228	0.1	113.0	2.01
F1-STORAGE A	1	0.7	Jul 1700	39	0.3	84.0	0.46
F1-STORAGE B	1	0.6	Jul 1700	33	0.2	72.0	0.46
F1-TECH A	1	8.2	Jul 1500	449	0.1	89.0	5.04
F1-TECH B	1	8.7	Jul 1700	480	0.3	142.0	3.38
F1-PROD.1 F1 ONLY	1	9.2	Jul 1700	504	0.8	579.0	0.87
F1,F2-PROD.2	1	21.3	Jul 1300	1175	5.3	1211.0	0.97
F1,F2-STORAGE LOADING	1	14.6	Jul 1000	805	2.5	776.0	1.04
F2-WAREHOUSE	1	35.7	Aug 1400	1967	6.0	2853.0	0.69

Hourly Analysis Program v4.90 — Page 23 of 56

Air System Sizing Summary for SPLIT DX

Project Name: 2.2.40 Fate Kellog Office Rev.01 — 01/19/2022
Prepared by: E. MJ — 03:28PM

Air System Information
Air System Name ... SPLIT DX
Equipment Class ... TERM
Air System Type ... SPLT-FC
Number of zones ... 1
Floor Area ... 119.0 ft²
Location ... Los Angeles LAX, California

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

Hourly Analysis Program v4.90 — Page 46 of 56

Zone Sizing Summary for SPLIT DX

Project Name: 2.2.40 Fate Kellog Office Rev.01 — 01/19/2022
Prepared by: E. MJ — 03:28PM

Air System Information
Air System Name ... SPLIT DX
Equipment Class ... TERM
Air System Type ... SPLT-FC
Number of zones ... 1
Floor Area ... 119.0 ft²
Location ... Los Angeles LAX, California

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

Zone Sizing Data

Zone Name	Maximum Cooling Sensible (MBH)	Design Airflow (CFM)	Minimum Airflow (CFM)	Time of Peak Load	Maximum Heating Load (MBH)	Zone Floor Area (ft²)	Zone CFM/ft²
Zone 1	12.0	663	663	Jul 1700	0.3	119.0	5.57

Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Load (MBH)	Sens Coil Load (MBH)	Coil Entering DB / WB (°F)	Coil Leaving DB / WB (°F)	Water Flow @ 10.0 °F (gpm)	Time of Peak Load
Zone 1	12.1	12.1	75.9 / 63.8	58.9 / 57.7	-	Aug 1600

Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load (MBH)	Heating Coil Ent/Lvg DB (°F)	Htg Coil Water Flow @20.0 °F (gpm)	Fan Design Airflow (CFM)	Fan Motor (BHP)	Fan Motor (kW)	OA Vent Design Airflow (CFM)
Zone 1	0.5	69.9 / 70.6	-	663	0.000	0.000	7

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (MBH)	Time of Load	Air Flow (CFM)	Heating Load (MBH)	Floor Area (ft²)	Space CFM/ft²
Zone 1							
F1-SERVER ROOM	1	12.0	Jul 1700	663	0.3	119.0	5.57

Hourly Analysis Program v4.90 — Page 47 of 56

Product Data

Carrier — Turn to the experts

WeatherMaster®
Gas Heat/Electric Cooling Packaged Rooftop Units
15 to 25 Nominal Tons

WeatherMaster®

Unit shown with economizer and power exhaust.

48HC Sizes 17 to 28
Packaged Rooftop Units with Gas Heat, Optional EnergyX® Energy Recovery Device, and *Comfort*Link Controls

© 2021 Carrier — Form 48HC-17-28-05PD Rev. A

Capacity ratings

AHRI RATINGS (2-STAGE COOLING)

48HC UNIT	CONFIGURATION	NOM. CAPACITY (TONS)	NET COOLING CAPACITY (MBH)	TOTAL POWER (kW)	EER	IEER (SINGLE SPEED)	IEER (2-SPEED)
17	Vertical	15.0	174	14.5	12.0	13.0	13.5
	Horizontal			15.1	11.5	12.2	13.0
20	Vertical	17.5	202	16.8	12.0	13.0	13.6
	Horizontal			17.9	11.3	11.5	13.2
24	Vertical	20.0	232	19.3	12.0	13.2	13.8
	Horizontal			20.4	11.4	12.0	13.0
28	Vertical	25.0	282	25.2	11.2	12.0	12.5
	Horizontal			26.9	10.5	N/A	12.2

LEGEND
AHRI — Air-Conditioning, Heating and Refrigeration Institute
EER — Energy Efficiency Ratio
IEER — Integrated Energy Efficiency Ratio

NOTE: 48HC**28 horizontal units are only available with a 2-speed option.

C ETL US Intertek — AHRI CERTIFIED www.ahridirectory.org — Unitary Large AC AHRI Standard 340/360

SOUND RATINGS TABLE

48HC UNIT	COOLING STAGES	A-WEIGHTED	LINEAR	AHRI-370 RATING	31.5	63	125	250	500	1000	2000	4000	8000
					OUTDOOR SOUND (dB) AT 60 Hz								
17	2	84.1	96.2	84	92.6	92.0	84.0	80.0	82.0	78.7	76.5	72.2	65.4
20	2	84.1	96.2	84	92.6	92.0	84.0	80.0	82.0	78.7	76.5	72.2	65.4
24	2	86.5	99.6	87	96.2	95.6	87.5	84.2	84.2	81.7	77.9	73.2	66.3
28	2	85.9	103.0	86	101.0	97.0	88.0	84.0	83.0	80.7	77.4	73.4	67.3

LEGEND
dB — Decibel

NOTES:
1. Outdoor sound data is measured in accordance with AHRI 370.
2. Measurements are expressed in terms of sound power. Do not compare these values to sound pressure values because sound pressure depends on specific environmental factors which normally do not match individual applications. Sound power values are independent of the environment and therefore more accurate.
3. A-weighted sound ratings filter out very high and very low frequencies, to better approximate the response of "average" human ear. A-weighted measurements for Carrier units are taken in accordance with AHRI 370.

5

Capacity ratings (cont)

MINIMUM - MAXIMUM AIRFLOW RATINGS (CFM) — NATURAL GAS AND PROPANE

48HC UNIT	HEAT LEVEL	COOLING: MINIMUM SINGLE SPEED FAN MOTOR	COOLING: MINIMUM 2-SPEED FAN MOTOR (AT HIGH SPEED)	COOLING: MINIMUM 2-SPEED FAN MOTOR (AT LOW SPEED)	COOLING: MAXIMUM	ALUMINUM HEATING: MINIMUM	ALUMINUM HEATING: MAXIMUM	STAINLESS STEEL HEATING: MINIMUM	STAINLESS STEEL HEATING: MAXIMUM
17	LOW	4,500	5,070	3,380	7,500	3,000	8,250	3,000	8,250
	MED					3,880	7,750	3,880	7,750
	HIGH					4,620	8,570	4,620	8,570
20	LOW	5,250	5,915	3,943	9,000	3,000	11,000	3,000	11,000
	MED					3,880	9,300	3,880	9,300
	HIGH					4,620	10,000	4,620	10,000
24	LOW	6,000	7,500	5,000	10,000	3,000	11,000	3,000	11,000
	MED					3,880	11,630	3,880	11,630
	HIGH					4,620	10,000	4,620	10,000
28	LOW	7,500	8,450	5,633	12,500	3,000	16,500	3,000	16,500
	MED					3,880	15,500	3,880	15,500
	HIGH					4,620	15,000	4,620	15,000

HEAT RATING TABLE — NATURAL GAS AND PROPANE

48HC UNIT	GAS HEAT	AL/SS HEAT EXCHANGER: INPUT/OUTPUT STAGE 1 (MBH)	AL/SS HEAT EXCHANGER: INPUT/OUTPUT STAGE 2 (MBH)	TEMPERATURE RISE (°F)	THERMAL EFFICIENCY (%)
17	LOW	176/142	220/178	20-55	81%
	MED	248/200	310/251	30-60	
	HIGH	320/260	400/324	35-65	
20	LOW	176/142	220/178	15-55	81%
	MED	248/200	310/251	25-60	
	HIGH	320/260	400/324	30-65	
24	LOW	176/142	220/178	15-55	81%
	MED	248/200	310/251	20-60	
	HIGH	320/260	400/324	30-65	
28	LOW	176/142	220/178	10-55	81%
	MED	248/200	310/251	15-60	
	HIGH	320/260	400/324	20-65	

NOTES:
1. Heat ratings are for natural gas heat exchangers operated at or below 2000 ft (610 m). For information on Propane or altitudes above 2000 ft (610 m), see the Application Data section of this book. Accessory Propane/High Altitude kits are also available.
2. In the USA the input rating for altitudes above 2000 ft (610 m) must be derated by 4% for each 1000 ft (305 m) above sea level. In Canada, the input rating must be derated by 10% for altitudes of 2000 ft (610 m) to 4500 ft (1372 m) above sea level.

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Physical data

48HC 15 TO 25 TON PHYSICAL DATA

UNIT	48HC*D17	48HC*E17	48HC*D20	48HC*E20	48HC*D24	48HC*E24	48HC*D28	48HC*E28
BASE UNIT TONS	15	15	17.5	17.5	20	20	25	25
BASE UNIT WEIGHT - lb (kg)	1892 (858)		2102 (953)		2247 (1019)		2292 (1040)	
REFRIGERATION SYSTEM								
# Circuits / # Comp. / Type	2 / 2 / Scroll	2 / 2 / Scroll	2 / 2 / Scroll	2 / 2 / Scroll	2 / 2 / Scroll	2 / 2 / Scroll	2 / 2 / Scroll	2 / 2 / Scroll
R-410A Charge A/B (lbs)	17/16.4	24.5/25.7	17.5/16.8	25.5/25.5	23.8/23.1	30.0/30.7	24.9/27.7	35.1/35.4
Metering device	TXV	TXV	TXV	TXV	TXV	TXV	TXV	TXV
High-Pressure Trip / Reset (psig)	630 / 505	630 / 505	630 / 505	630 / 505	630 / 505	630 / 505	630 / 505	630 / 505
Low-Pressure Trip / Reset (psig)	54 / 117	27 / 44	54 / 117	27 / 44	54 / 117	27 / 44	54 / 117	27 / 44
EVAPORATOR COIL								
Material	Cu / Al	Cu / Al	Cu / Al	Cu / Al	Cu / Al	Cu / Al	Cu / Al	Cu / Al
Tube Diameter (in.)	3/8 RTPF	3/8 RTPF	3/8 RTPF	3/8 RTPF	3/8 RTPF	3/8 RTPF	3/8 RTPF	3/8 RTPF
Rows / FPI	4 / 15	4 / 15	4 / 15	4 / 15	4 / 15	4 / 15	4 / 15	4 / 15
Total Face Area (ft²)	22	22	22	22	26	26	26	26
Condensate Drain Connection Size (in.)	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
HUMIDI-MIZER COIL								
Material	—	Cu / Al	—	Cu / Al	—	Cu / Al	—	Cu / Al
Tube Diameter		3/8 RTPF		3/8 RTPF		3/8 RTPF		3/8 RTPF
Rows / FPI		1 / 17		1 / 17		1 / 17		1 / 17
Total Face Area (ft²)		22		22		26		26
EVAPORATOR FAN AND MOTOR VERTICAL SUPPLY								
STANDARD STATIC — Motor Qty / Belt Qty / Driver Type	1 / 1 /Belt	1 / 1 /Belt	1 / 1 /Belt	1 / 1 /Belt	N/A	N/A	1 / 1 /Belt	1 / 1 /Belt
Nominal / Nameplate hp	2.9	2.9	3.7	3.7	N/A	N/A	5.25	5.25
Max bhp	2.9	2.9	3.7	3.7	N/A	N/A	4.9	4.9
Rpm Range	514-680	514-680	622-822	622-822	N/A	N/A	717-911	717-911
Max Blower/Shaft rpm	1200	1200	1200	1200	N/A	N/A	1200	1200
Motor Frame Size	56	56	56	56	N/A	N/A	56	56
Fan Qty / Type	2 / Centrifugal	2 / Centrifugal	2 / Centrifugal	2 / Centrifugal	N/A	N/A	2 / Centrifugal	2 / Centrifugal
Fan Diameter (in.)	15 X 15	15 X 15	15 X 15	15 X 15	N/A	N/A	15 X 15	15 X 15
MEDIUM STATIC — Motor Qty / Belt Qty / Driver Type	1 / 1 /Belt	1 / 1 /Belt	1 / 1 /Belt	1 / 1 /Belt	N/A	N/A	N/A	N/A
Nominal / Nameplate hp	3.7	3.7	5.25	5.25	N/A	N/A	N/A	N/A
Max bhp	3.7	3.7	4.9	4.9	N/A	N/A	N/A	N/A
Rpm Range	679-863	679-863	713-879	713-879	N/A	N/A	N/A	N/A
Max Blower/Shaft rpm	1200	1200	1200	1200	N/A	N/A	N/A	N/A
Motor Frame Size	56	56	56	56	N/A	N/A	N/A	N/A
Fan Qty / Type	2 / Centrifugal	2 / Centrifugal	2 / Centrifugal	2 / Centrifugal	N/A	N/A	N/A	N/A
Fan Diameter (in.)	15 X 15	15 X 15	15 X 15	15 X 15	N/A	N/A	N/A	N/A
HIGH STATIC — Motor Qty / Belt Qty / Driver Type	1 / 1/ BELT	1 / 1/ BELT	N/A	N/A	N/A	N/A	N/A	N/A
Nominal / Nameplate hp	5.25	5.25	N/A	N/A	N/A	N/A	N/A	N/A
Max bhp	4.9	4.9	N/A	N/A	N/A	N/A	N/A	N/A
Rpm Range	826-1009	826-1009	N/A	N/A	N/A	N/A	N/A	N/A
Max Blower/Shaft rpm	1200	1200	N/A	N/A	N/A	N/A	N/A	N/A
Motor Frame Size	56	56	N/A	N/A	N/A	N/A	N/A	N/A
Fan Qty / Type	2 / Centrifugal	2 / Centrifugal	N/A	N/A	N/A	N/A	N/A	N/A
Fan Diameter (in.)	15 X 15	15 X 15	N/A	N/A	N/A	N/A	N/A	N/A

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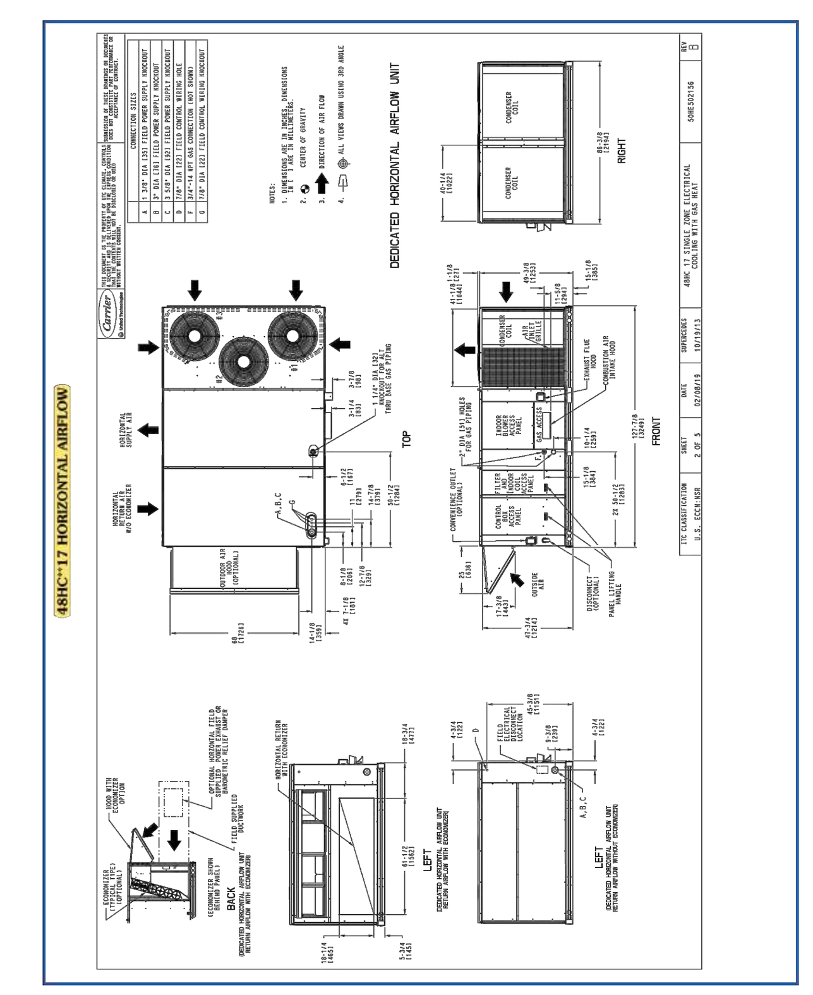
Base unit dimensions (cont)



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INFINITY® SERIES
40MPHA HIGH WALL

Infinity® High Wall Indoor Unit

FEATURES
- Available in 208/230V
- Modes: Cool, Heat, Dry, Fan, Auto
- Turbo Mode
- Fully modulating fan speeds
- Sleep Mode
- Up-down/right-left louver control (fixed or swing)
- **Relative Humidity Sensor**
- **Wi-Fi® Built-in**
- ECO Mode
- Carbon Filter
- Follow Me (senses temperature at handheld remote)
- Heating Setback (46°F Heating Mode)
- Quiet indoor operation
- Anti-corrosive fin coating

COMPATIBLE WITH:
- 38MPRA Outdoor Unit Single Zone

INFINITY SERIES

Sizes: 18/24
ENERGY STAR® certified based on outdoor unit pairing

At 28.2 SEER, when paired with its outdoor single-zone counterpart 38MPRA, there's nothing more efficient.[1] The High Wall is a fl exible soluti on for large residential applications and light commercial applications where more airflow or load is necessary, such as basements, garages, restaurants, offices or IT server rooms. The 40MPHA indoor unit features either built-in Wi-Fi® that gives you control anywhere Wi-Fi is available or compatibility with third-party thermostats when the 24V interface is installed. The High Wall also offers a Relative Humidity Sensor to customize the humidity level for more comfortable air.

KEY FEATURES
Built-in Wi-Fi to control unit anywhere, anytime
Wireless Remote Controller included with indoor unit
Wired Remote Controller KSACN0401AAA

CONTROLS
Wireless Remote Controller included with indoor unit
Wired Remote Controller KSACN0401AAA (7-Day Programmable) (Optional)

Optional Wired Controller (7-Day Programmable) KSACN0401AAA — **Wireless Remote Controller**

ACCESSORIES
Condensate Pump (230V opti onal)
24V Interface for third-party thermostat compatibility (Optional)

[1] According to system rati ngs maintained by AHRI as of March 26, 2019, in accordance with the AHRI Unitary Small Equipment Operati ons Manual. The 18,000 Btu/h single-zone ductless has a 28.2 SEER Rati ng.

Visit our website at carrierductless.com

INFINITY® SERIES
40MPHA HIGH WALL

SPECIFICATIONS:

40MPHA High Wall — Heat Pump			
System			
Size		18	24
Indoor Model		40MPHAQ18XA3	40MPHAQ24XA3
Electrical			
Voltage, Phase, Cycle	V/Ph/Hz	208/230-1-60	208/230-1-60
Power Supply			
MCA	A	0.5	0.5
Controls			
Wireless Remote Controller (° F / ° C Convertible)		Standard	Standard
Wired Remote Controller (° F / ° C Convertible)		Optional	Optional
Operating Range			
Cooling Indoor DB Min - Max	° F (° C)	62~90 (17~32)	62~90 (17~32)
Heating Indoor DB Min - Max	° F (° C)	32~86 (0~30)	32~86 (0~30)
Piping			
Pipe Connection Size - Liquid	in (mm)	3/8" (9.52)	3/8" (9.52)
Pipe Connection Size - Suction	in (mm)	5/8" (15.9)	5/8" (15.9)
Indoor			
Unit Width	in (mm)	49.57 (1,259)	49.57 (1,259)
Unit Height	in (mm)	14.25 (362)	14.25 (362)
Unit Depth	in (mm)	11.10 (282)	11.10 (282)
Net Weight	lb (kg)	43.4 (19.7)	43.4 (19.7)
Number of Fan Speeds		4	4
Airflow (lowest to highest)	cfm	261/389/528/926	359/470/583/926
Sound Pressure (lowest to highest)	dB(A)	35.1/40.8/46.1/55.9	36.1/43.3/46.4/56.5
Air Throw Data	ft (m)	28.80 (8.7)	31.66 (9.65)
Moisture Removal	Pint/h (L/h)	3.8 (1.8)	5.0 (2.39)
Field Drain Pipe Size O.D.	in (mm)	1 (25.4)	1 (25.4)

Performance may vary based on the compatible outdoor units.
See respective pages for performance data.

COMPATIBILITY:

Indoor Unit	40MPHAQ18XA3	40MPHAQ24XA3
Outdoor Unit Single Zone*	38MPRAQ18AA3	38MPRAQ24AA3

Indoor units sizes 18-24 not compatible with Multi-Zone 38MGR due to size of the indoor unit coil.

Visit our website at **carrierductless.com**

01-DLS-040-01 07/2020

Ceiling Exhaust Fan Model SP-AP

Bathroom Exhaust Fans

Greenheck's SP ceiling exhaust fan line is better than ever!

- Flexibility - Virtually silent EC motors allow for three built-in high speed airflow settings of 50, 80 and 110 cfm for flexibility in most applications. The universal duct connector allows for quick connections to 4-, 5- and 6-inch ducting.
- Performance Under Pressure - Constant CFM technology provides guaranteed airflow to over .375 in. wg. This improves indoor air quality, reduces callback and eliminates issues during test and balance.
- Plug and Play Customization - Optional humidity, motion, nightlight, and CO_2 sensor modules clip into the fan, creating countless combinations.
- Energy Efficiency - Recognized as the "Most Efficient of Energy Star® 2021".
- Code Compliance - Standard two speed (commonly known as whole house ventilation) operation provides tools to help meet ASHRAE 62.2, WSEC and CAL Title 24 requirements.
- Installation and Retrofit - Installs without the need for attic or above the ceiling access. Makes installation in new construction and retrofits easy and simple.

SP-AP0511W — SP-AP0511WL (lighted)

Plug and Play Accessories

Humidity Sensor – Controlling humidity in bathrooms is critical to helping improve Indoor Air Quality (IAQ). The simple, snap in, plug and play humidity sensor has adjustable sensitivity (30-80% RH) and will run the fan when humidity levels are high.

Motion Sensor – Forgetting to turn on the fan can cause poor IAQ by not eliminating moisture and odor. The plug and play motion sensor automatically runs the fan when someone walks in the room. Once the sensor no longer detects motion, the fan runs for a short period of time, then returns to low speed.

Night Light – The plug and play night light offers a low-intensity LED light that provides enough light for using the bathroom at night without turning on the main light. A night light is available as an optional plug and play accessory on the SP-AP0511W and is standard on the SP-AP0511WL.

CO_2 – High CO_2 levels have been linked to headaches, dizziness, tiredness and general discomfort. When CO_2 concentrations exceed 1000 PPM the fan will turn on until CO_2 levels are below 800 PPM.

Humidity Sensor — Motion Sensor — Night Light — CO_2 Sensor

GREENHECK — Building Value in Air. — March 2021

Performance

Model	Energy Star®	CFM Selection	RPM	Max Amps	Max Watts		0	0.1	0.125	0.25	0.375	0.5	0.625
							CFM/Static Pressure in Inches wg						
SP-AP0511W	☆	50	820	0.24	16.5	CFM	50	50	50	50	50	50	50
						Sones	<0.3	<0.3	<0.3	0.6	1.5	2.5	3.0
						CFM/Watt	20.1	11.0	9.9	6.8	4.9	4.0	3.3
						Watts	3.0	4.9	5.5	8.1	11.3	14.3	16.5
		80	831	0.26	18.1	CFM	80	80	80	80	80	80	60
						Sones	<0.3	<0.3	<0.3	0.7	1.4	2.0	3.0
						CFM/Watt	18.6	12.5	11.5	8.2	5.9	4.8	3.5
						Watts	4.7	6.8	7.4	10.5	14.7	18.1	17.1
		110	861	0.30	20.1	CFM	110	110	110	110	110	105	58
						Sones	0.4	0.4	0.5	0.8	1.3	2.0	3.0
						CFM/Watt	16.1	11.3	11.3	8.2	6.2	5.2	3.4
						Watts	7.4	10.6	10.6	14.8	20.1	20.1	16.9
SP-AP0511WL	☆	50	819	0.24	16.3	CFM	50	50	50	50	50	50	50
						Sones	<0.3	<0.3	<0.3	1.0	2.0	3.0	3.0
						CFM/Watt	19.6	11.5	10.1	6.8	5.2	4.1	3.4
						Watts	3.1	4.8	5.4	8.2	10.8	14.3	16.3
		80	861	0.25	17.0	CFM	80	80	80	80	80	80	55
						Sones	<0.3	<0.3	<0.3	0.9	1.5	2.5	3.5
						CFM/Watt	17.4	12.2	11.3	7.9	5.9	4.7	3.4
						Watts	5.1	7.0	7.7	11.2	14.6	17	16.4
		110	934	0.31	20.4	CFM	110	110	110	110	110	77	55
						Sones	0.5	0.7	0.7	1.2	2.0	2.5	3.5
						CFM/Watt	15	10.7	8.4	6.8	5.7	3.4	1.6
						Watts	7.9	10.8	11.4	15.7	20.4	16.9	16.4

Most Efficient 2021 — ENERGY STAR — www.energystar.gov
SP-AP0511W and SP-AP0511WL are recognized as the Most Efficient of ENERGY STAR® 2021

HVI Certified — Home Ventilating Institute www.hvi.org — Air and Sound Certified at .1, .25 and .375 in. wg

Our Commitment

As a result of our commitment to continuous improvement, Greenheck reserves the right to change specifications without notice.

Product warranties can be found online at Greenheck.com, either on the specific product page or in the literature section of the website at Greenheck.com/Resources/Library/Literature.

GREENHECK — Building Value in Air.

P.O. Box 410 • Schofield, WI 54476-0410 • Phone (715) 359-6171 • greenheck.com

00.FBX.1028 R2 3-2021

CLIENT:

ADDRESS:
CARLSBAD SAN DIEGO, CA

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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
01	PC CORRECTIONS	02.19.23	MN

PROJECT: 1934 KELLOG

TITLE: MECHANICAL CALCULATIONS & CATALOGS

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

DRAWING NO.: M2.01 — REV.:

LIST OF SYMBOLS AND SERVICES

	SURFACE MTD. 1'W X 4'L LIGHTING FIXTURE, "LITHONIA LIGHTING"ZL1N-L46-3000LM-35K-MVOLT LED 25W
	SURFACE MTD. 1'W X 4'L LIGHTING FIXTURE, "LITHONIA LIGHTING"ZL1N-L46-3000LM-35K-MVOLT LED 25W WITH 90 MIN BATTERY
	2X4RECESSED LED "LITHONIA "2TL4-48L-LP835 LED 40W
	2X4RECESSED LED "LITHONIA "2TL4-48L-LP835 LED 40W WITH 90 MIN BATTERY
	CEILING RECESSED LED (6" ROUND) "LITHONIA LTG" LDN6 40/05 L06AR LD LED 20W
	CEILING RECESSED LED (6" ROUND) "LITHONIA LTG" LDN6 40/05 L06AR LD LED 20W WITH 90MIN BATTERY
S	LIGHT SWITCH - WALL MOUNTED @ +48" AFF UNLESS NOTED SUBSCRIPTS: 2 = 2-POLE SWITCH 3 = 3 WAY SWITCH 4 = 4 WAY SWITCH D = DIMMER SWITCH K = KEY OPERATED SWITCH M = MOMENTARY CONTACT SWITCH P = SWITCH WITH PILOT LIGHT T = THERMAL OVERLOAD SWITCH
	120/240V, 1PH, 3W LOAD CENTER
	SINGLE RECEPTACLE - WALL MOUNTED @ +18" AFF UNLESS NOTED
	DUPLEX RECEPTACLE - WALL MOUNTED @ +18" AFF UNLESS NOTED
J	JUNCTION BOX - WALL MOUNTED - HEIGHT AS INDICATED
J	JUNCTION BOX
YxXXA	NON-FUSED DISCONNECT SWITCH - SIZE AS INDICATED
	CONDUITS IN CEILING
	CONDUITS UNDER TILES

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

DRAWING LIST

E0.00	DRAWING LIST AND LEGEND AND GENERAL NOTES	NTS
E0.01	ELECTRICAL SPECIFICATIONS	NTS
E1.01	FIRST FLOOR PLAN- LIGHTING LAYOUT	3/16"=1'-0"
E1.02	SECOND FLOOR PLAN- LIGHTING LAYOUT	3/16"=1'-0"
E2.01	FIRST FLOOR PLAN - POWER LAYOUT	3/16"=1'-0"
E2.02	SECOND FLOOR PLAN - POWER LAYOUT	3/16"=1'-0"
E2.03	ROOF FLOOR PLAN - POWER LAYOUT	3/16"=1'-0"
E3.01	PANEL BOARDS SCHEDULE AND POWER RISER DIAGRAM	NTS
E4.01	GENERAL DETAILS SHEET-1	NTS
E4.02	GENERAL DETAILS SHEET-2	NTS

GENERAL NOTES:

1. ALL WORK AND EQUIPMENT UNDER THIS DIVISION SHALL BE IN STRICT COMPLIANCE WITH THE CODES, STANDARDS AND PRACTICES LISTED HEREIN, AND THEIR RESPECTIVE DATES ARE FURNISHED AS THE MINIMUM LATEST REQUIREMENTS.
A. LIFE SAFETY CODE
B. NATIONAL FIRE PROTECTION ASSOCIATION
C. NATIONAL ELECTRICAL CODE
D. 2019 CALIFORNIA BUILDING CODE which adopts the 2018 IBC, 2018 UMC, 2018 UPC and the 2017 NEC
E. INSTITUTE IF ELECTRICAL AND ELECTRONIC ASSOCIATION
F. NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION (NEMA)
G. REQUIREMENTS OF LOCAL POWER COMPANY
H. BUILDING CODE

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

3. REFER TO THE ARCHITECTURAL, MECHANICAL, PLUMBING, FIRE PROTECTION, CIVIL, INTERIOR DESIGN, FOR RELATED INFORMATION AND ADDITIONAL INSTALLATION REQUIREMENTS TO BE CONSIDERED AS PART OF THE ELECTRICAL CONTRACT DOCUMENTS.

4. IT IS NOT THE INTENT OF THESE PLANS TO SHOW EVERY MINOR DETAIL OF CONSTRUCTION THE CONTRACTOR IS EXPECTED TO FURNISH ALL ITEMS FOR A COMPLETE ELECTRICAL SYSTEM. PROVIDE EVERYTHING NECESSARY FOR EQUIPMENT TO BE PLACED IN PROPER WORKING ORDER. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL MINOR ITEMS WHICH ARE OBVIOUSLY NECESSARY TO COMPLETE THE INSTALLATION.

5. LIGHT SWITCHES SHALL BE MOUNTED 48 INCHES ABOVE FINISHED FLOOR TO CENTER LINE OF THE DEVICE, UNLESS NOTED OTHERWISE. GANG SWITCHES AND DIMMER WITH A COMMON PLATE WHERE TWO (2) OR MORE ARE INDICATED ADJACENT TO EACH OTHER.

6. RECEPTACLES SHALL BE LOCATED 18" ABOVE FINISHED FLOOR TO CENTER LINE OF DEVICE. UNLESS NOTED OTHERWISE. ABOVE-COUNTER RECEPTACLES SHALL BE MOUNTED 6" ABOVE BACK SPLASH TO CENTERLINE OF DEVICE UNLESS NOTED OTHERWISE.

7. USE GALVANIZED RIGID STEEL CONDUIT WHERE EPOSED TO EXTERIOR CONDITIONS OR WHERE EXPOSED IN ANY LOCATIONS WHERE SUBJECT TO MECHANICAL DAMAGE. EMT SHALL BE PROVIDED WITH SET SCREW STEEL FITTINGS FOR INSTALLATION IN ALL CONCEALED WALLS AND CEILINGS IN DRY AREAS. ALL CONDUIT FOR LIGHTING PROTECTION SHALL BE PVC, SCHEDULE 40. UNLESS OTHERWISE NOTED, PVC MAY BE USED WHERE BURIED UNDER GRADE AND ENCASED IN CONCRETE SLAB OR WALLS. ALUMINUM CONDUIT IS NOT ALLOWED. EMT CAN BE USED IN DRY AREAS WHEN INSTALLED 10 FEET ABOVE FINISHED FLOOR LEVEL.

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

ELECTRICAL ABBREVIATIONS

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

CLIENT:

ADDRESS:

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REV. NO.	DESCRIPTION	DATE	BY
01	PC CORRECTIONS	02.19.23	MN

PROJECT:

1934 KELLOG

TITLE:

DRAWING LIST AND LEGEND AND GENERAL NOTES

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

DRAWING NO.: E0.00

REV.:

ELECTRICAL SPECIFICATIONS

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

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

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

21. CONTRACTOR SHALL REVIEW ARCHITECTURAL, STRUCTURAL AND MECHANICAL DRAWINGS AND SHALL PROVIDE LIGHTS, SWITCHES, RECEPTACLES, EQUIPMENT CONNECTIONS, ETC., AND ASSOCIATED CIRCUITING IN NEW AND REMODELED AREAS, EVEN IF SUCH AREAS ARE NOT SHOWN ON ELECTRICAL DRAWINGS. LAYOUTS, FIXTURE TYPES, QUANTITIES AND SPACING SHALL BE IN ACCORDANCE WITH SIMILAR AREAS ON THIS PROJECT. CONTRACTOR SHALL INCLUDE COSTS FOR THE ABOVE IN HIS BID. IN ADDITION, CONTRACTOR SHALL PROVIDE LAYOUT DRAWINGS FOR WORK IN SUCH AREAS AND SUBMIT FOR APPROVAL PRIOR TO ROUGH-IN.
22. WIRE SHALL BE COPPER. 75 DEGREES C RATED FOR GENERAL USE, FOR WIRING WITHIN 3 INCHES OF FLUORESCENT BALLASTS WIRE SHALL BE COPPER, MINIMUM 90 DEGREES C RATED. SIZES INDICATED ARE FOR INSTALLATION IN A MAXIMUM 30 DEGREES C AMBIENT. CONDUCTOR AMPACITY SHALL BE DERATED FOR HIGHER AMBIENT INSTALLATIONS. 600 VOLT COMPACT ALUMINUM WIRE AND CABLE IN SIZES 1/0 AND LARGER MAY BE SUBSTITUTED FOR COPPER ON SERVICES AND FEEDERS IF AMPACITY IS EQUIVALENT TO OR GREATER
23. CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING EQUIPMENT WHICH IS DAMAGED DUE TO INCORRECT FIELD WIRING PROVIDED UNDER THIS SECTION OR FACTORY WIRING IN EQUIPMENT PROVIDED UNDER THIS SECTION.
24. CONTRACTOR'S FAILURE TO ORDER OR RELEASE ORDER FOR MATERIALS AND/OR EQUIPMENT WILL NOT BE ACCEPTED AS A REASON TO SUBSTITUTE ALTERNATE MATERIALS, EQUIPMENT OR INSTALLATION METHODS.
25. ELECTRICAL SYSTEMS SHALL BE COMPLETE, OPERABLE AND READY FOR CONTINUOUS OPERATION AT COMPLETION OF PROJECT.
26. RECEPTACLES WHICH ARE SHOWN WALL MOUNTED ON THE ELECTRICAL DRAWINGS ON WALLS WHICH, ON THE ARCHITECTURAL DRAWINGS AND ELEVATIONS ARE SHOWN AS GLASS OR PARTITIONS, SHALL BE FLUSH FLOOR DUPLEX RECEPTACLES MOUNTED ADJACENT TO BAS OR WALLS.
27. RECEPTACLES AT COUNTER SHALL BE MOUNTED WITH THEIR LONG AXIS HORIZONTAL AT +46" UNLESS NOTED.
28. FLUSH FLOOR RECEPTACLE OUTLETS SHALL BE WIREMOLD 862 SERIES. PROVIDE CARPET OR TILE FLANGE TO MATCH FLOOR FINISH.
29. THE COLOR OF THE DEVICES AND COVER PLATES SHALL BE AS DIRECTED BY ARCHITECT. IN DAMP OR WET LOCATIONS COVER PLATES SHALL BE STAINLESS STEEL. IN DRY LOCATIONS COVER PLATES SHALL BE SMOOTH HIGH ABUSE NYLON OR EQUIVALENT. PROVIDE COVER PLATES FOR SWITCHES, RECEPTACLES, TELEPHONE, TELEVISION, COMPUTER AND J-BOX OUTLETS AS REQUIRED.
30. ROMEX CABLE WITH A GROUNDING CONDUCTOR MAY BE USED WHERE PERMITTED BY BOTH THE N.E.C. AND LOCAL ORDINANCES.
31. DISCONNECT SWITCHES SHALL BE GENERAL DUTY TYPE. FUSIBLE SWITCHES SHALL ACCEPT CLASS 'R' FUSES ONLY AND REJECT ALL OTHERS.
32. FINAL CONNECTIONS TO VIBRATING EQUIPMENT SHALL BE WITH FLEX (LIQUIDTIGHT FOR EXTERIOR APPLICATIONS) AND APPROVED FITTINGS. DO NOT SECURE CONDUITS, DISCONNECTS OR DEVICES TO DUCTWORK OR MECHANICAL EQUIPMENT.
33. THE ENGINEER OF RECORD HAS PERFORMED SHORT CIRCUIT CALCULATIONS AND THE AIC RATINGS INDICATED FOR EACH DEVICE IS ADEQUATE TO PROTECT THE EQUIPMENT AND THE ELECTRICAL SYSTEM.
34. THE ENGINEER OF RECORD HAS PERFORMED VOLTAGE DROP CALCULATIONS AND ALL BRANCH CIRCUITS AND FEEDERS COMPLY WITH NEC 210-19(A) FPN NO4.
35. THE CONTRACTOR SHALL PROVIDE 120V CONNECTION TO NEAREST MAINTENANCE RECEPTACLE WHERE REQUIRED FOR CONDENSATE PUMPS ASSOCIATED WITH FAN COIL UNITS. COORDINATE WITH MECHANICAL CONTRACTOR.
36. THE CONTRACTOR SHALL COORDINATE THE SPECIFIC LOCATION, MOUNTING HEIGHT, ROTATION, TYPE, COLOR, ETC. OF ALL DEVICES PRIOR TO INSTALLATION.
37. CONNECTIONS TO HYDROMASSAGE BATHTUBS, JACCUZZI TUBS OR SIMILAR EQUIPMENT SHALL BE MADE IN ACCORDANCE WITH ARTICLE 680.70 OF THE NEC. PROVIDE BONDING AS REQUIRED BY ARTICLE 680.74 OF THE NEC.
38. ALL INDOOR FLUORESCENT FIXTURES THAT UTILIZE DOUBLE-ENDED LAMPS AND CONTAIN BALLAST(S) THAT CAN BE SERVICED IN PLACE OR BALLASTED LUMINARIES THAT ARE SUPPLIED FROM MULTIWIRE BRANCH CIRCUITS AND CONTAIN BALLAST(S) THAT CAN BE SERVICED IN PLACE SHALL COMPLY WITH 410.73 (G) OF THE NEC.
39. CEILING MOUNTED SMOKE AND CARBON MONOXIDE DETECTORS PER NFPA 72. SECTION R314 MUST COMPLY WITH U.L. 2075 AND SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS.
40. ALL SMOKE DETECTORS AND COMBINATION SMOKE/CARBON MONOXIDE DETECTORS SHALL BE HARDWIRED ON SAME CIRCUIT AND HAVE A BATTERY BACKUP SYSTEM.
41. WHEN MORE THAN EITHER ONE (1) SMOKE ALARM OR MORE THAN ONE (1) CARBON MONOXIDE ALARM IS REQUIRED TO BE INSTALLED WITHIN AN INDIVIDUAL DWELLING UNIT, ALL ALARM DEVICES SHALL BE INTERCONNECTED IN SUCH A MANNER THAT THE ACTUATION OF ONE ALARM WITH ACTIVATE ALL OF THE ALARMS IN THE INDIVIDUAL UNIT. SMOKE AND CARBON MONOXIDE ALARMS SHALL BE INSTALLED IN THE FOLLOWING LOCATIONS. (IRC SECTION R3143 AS AMENDED)
    - A. SMOKE ALARMS IN EACH SLEEPING ROOM.
    - B. SMOKE ALARMS OUTSIDE OF EACH SEPARATE SLEEPING AREA IN THE IMMEDIATE VICINITY OF THE BEDROOMS.
    - C. SMOKE ALARMS ON EACH ADDITIONAL STORY OF THE DWELLING INCLUDING BASEMENTS BUT NOT INCLUDING CRAWL SPACE AND UNINHABITABLE ATTICS. IN DWELLINGS OR DWELLING UNITS WITH SPLIT LEVELS AND WITHOUT AN INTERVENING DOOR BETWEEN THE ADJACENT LEVELS, A SMOKE ALARM INSTALLED ON THE UPPER LEVEL SHALL SUFFICE FOR THE ADJACENT LOWER LEVEL PROVIDED THAT THE LOWER LEVEL IS LESS THAN ONE FULL STORY BELOW THE UPPER LEVEL.
    - D. CARBON MONOXIDE ALARMS OUTSIDE OF SLEEPING AREAS IN THE IMMEDIATE VICINITY OF THE BEDROOMS IN DWELLING UNITS WITHIN WHICH FUEL-FIRED APPLIANCES ARE INSTALLED AND IN DWELLING UNITS THAT HAVE ATTACHED GARAGES.
    - E. CARBON MONOXIDE ALARMS WITHIN EACH BEDROOM WHICH CONTAINS A FUEL-FIRED APPLIANCE.
43. ALL BRANCH CIRCUITS THAT SUPPLY 125-VOLT, SINGLE PHASE, 15 AND 20 AMP BRANCH CIRCUITS SUPPLYING OUTLETS INSTALLED IN DWELLING UNIT FAMILY ROOMS, DINING ROOMS, LIVING ROOMS, PARLORS, LIBRARIES, DENS, BEDROOMS, SUNROOMS, RECREATION ROOMS, CLOSETS, HALLWAYS, OR SIMILAR ROOMS OR AREAS SHALL BE PROTECTED BY A LISTED ARC-FAULT CIRCUIT INTERRUPTER, COMBINATION-TYPE, INSTALLED TO PROVIDE PROTECTION OF THE BRANCH CIRCUIT. NEC ARTICLE 210.12 (A).
44. ALL ATTIC ACCESSES SHALL BE PROVIDED WITH A SWITCHED LIGHT AND 120 VOLT GFI OUTLET AT OR NEAR THE FORCED AIR UNIT. LOCATE LIGHT SWITCH AT THE ATTIC ACCESS OPENING.
45. ALL RECESSED LED STRIP LIGHTING SALL BE BY KLUS.

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

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REV. NO.	DESCRIPTION	DATE	BY
01	PC CORRECTIONS	02.19.23	MN

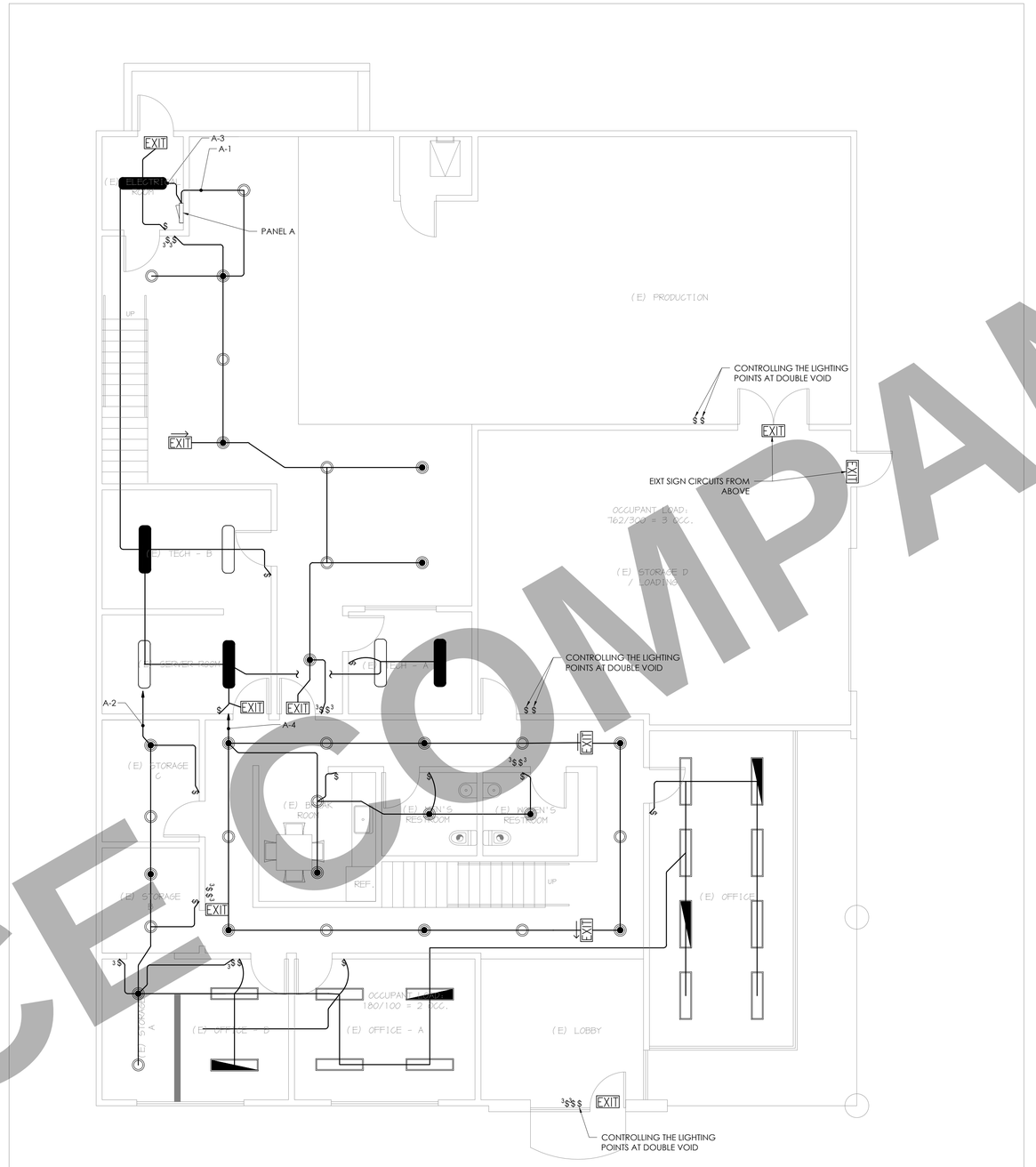
PROJECT: 1934 KELLOG

TITLE: ELECTRICAL SPECIFICATIONS

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

DRAWING NO. E0.01

REV.



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REV. NO.	DESCRIPTION	DATE	BY
01	PC CORRECTIONS	02.19.23	MN

PROJECT:

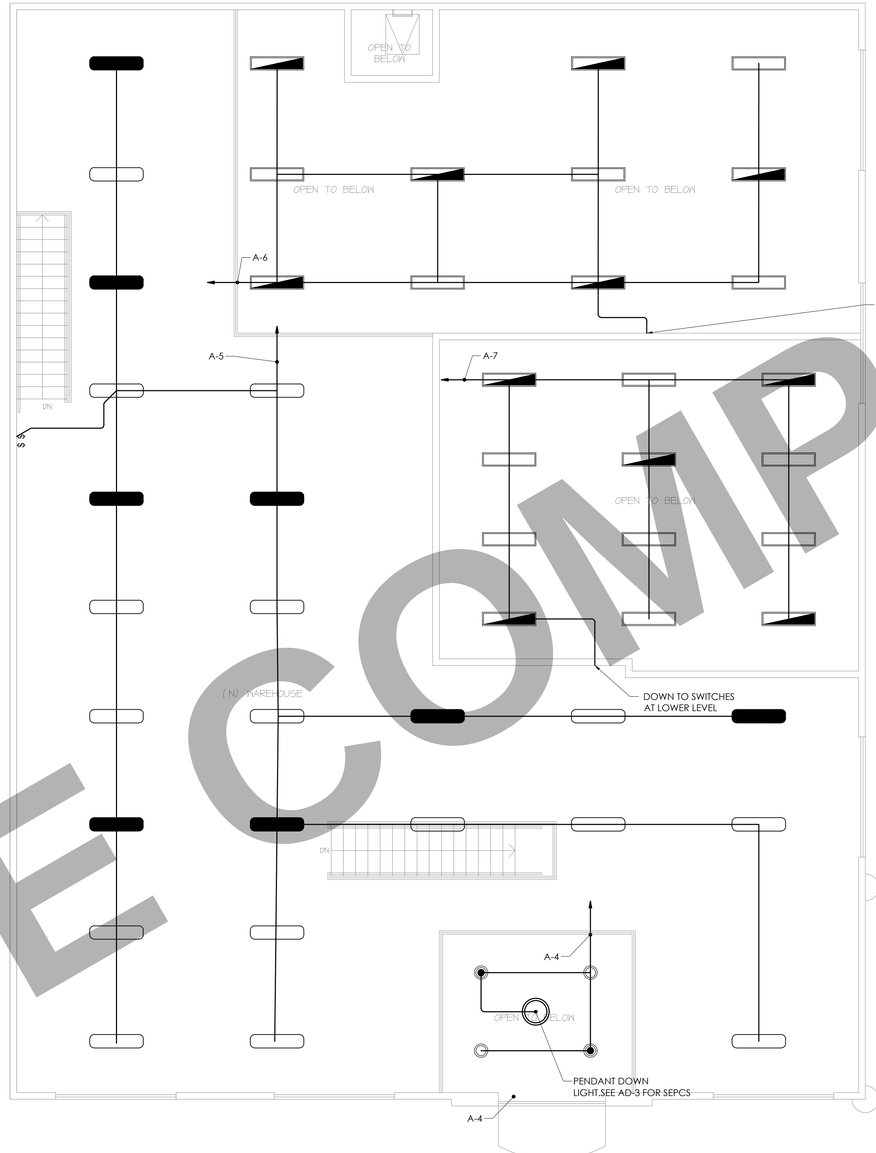
1934 KELLOG

TITLE:

FIRST FLOOR LIGHTING LAYOUT

PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36:
		3/16"=1'-0"

DRAWING NO.	REV.
E1.01	



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REV. NO.	DESCRIPTION	DATE	BY
01	PC CORRECTIONS	02.19.23	MN

PROJECT:

1934 KELLOG

TITLE:

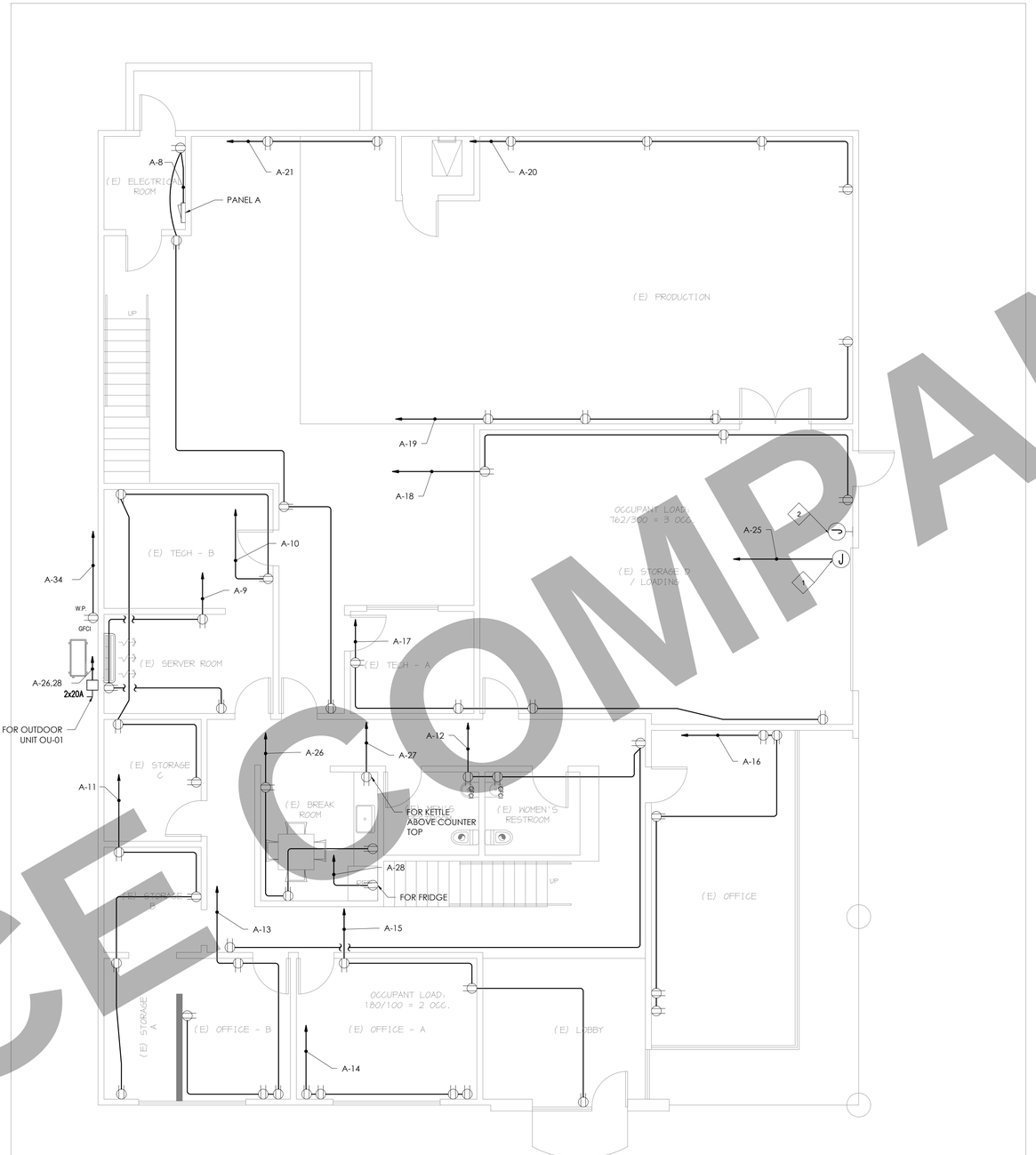
SECOND FLOOR LIGHTING LAYOUT

PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36:
		3/16"=1'-0"

DRAWING NO.

E1.02

REV.



SHEET NOTES:

1. APPROXIMATE LOCATION OF AUTOMATIC GARAGE DOOR SENSOR COORDINATE SPECIFIC STUB OUT LOCATION IN FIELD INSTALLED ON CEILING
2. APPROXIMATE LOCATION OF AUTOMATIC GARAGE DOOR PUSH BUTTON +42". COORDINATE SPECIFIC STUB LOCATION FIELD

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REV. NO.	DESCRIPTION	DATE	BY
01	PC CORRECTIONS	02.19.23	MN

PROJECT:

1934 KELLOG

TITLE:

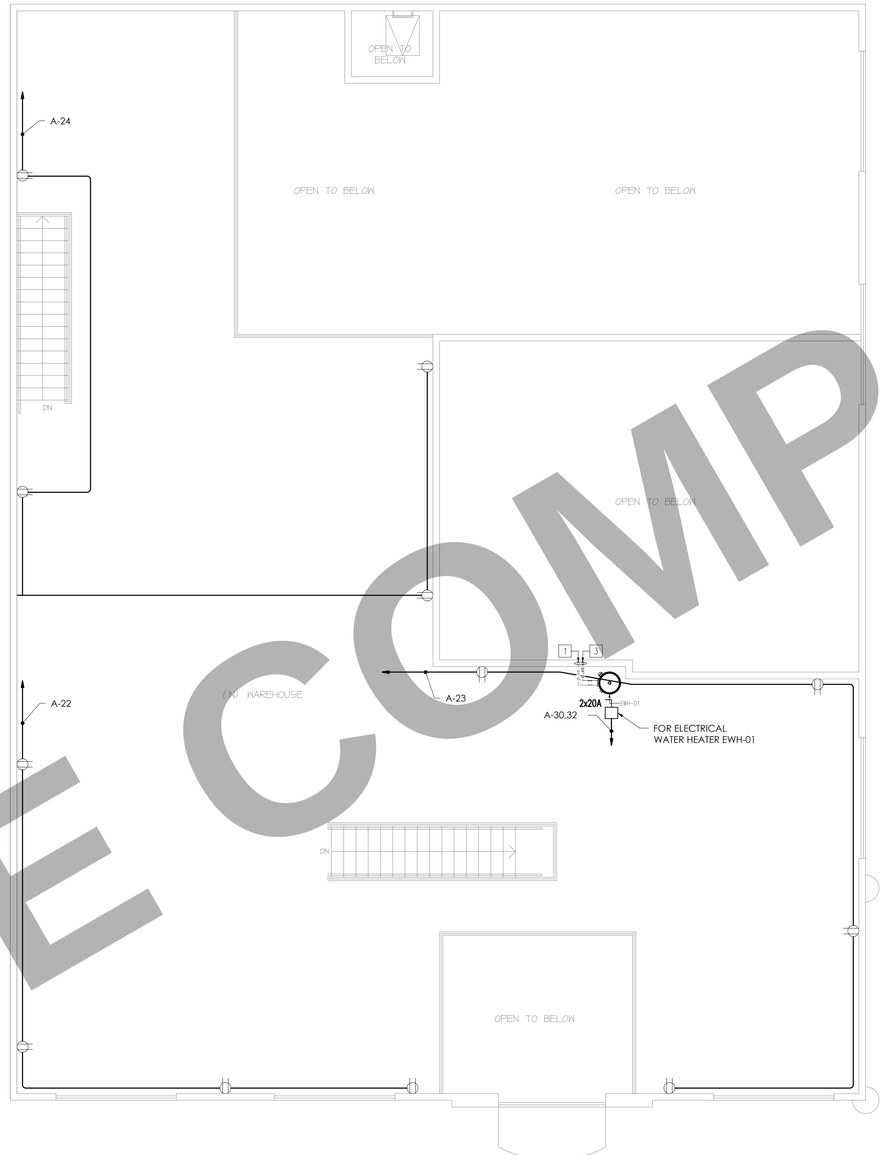
FIRST FLOOR POWER LAYOUT

PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36:
		3/16"=1'-0"

DRAWING NO.

E2.01

REV.



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REV. NO.	DESCRIPTION	DATE	BY
01	PC CORRECTIONS	02.19.23	MN

PROJECT:

1934 KELLOG

TITLE:

SECOND FLOOR POWER LAYOUT

PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36:
		3/16"=1'-0"

DRAWING NO.

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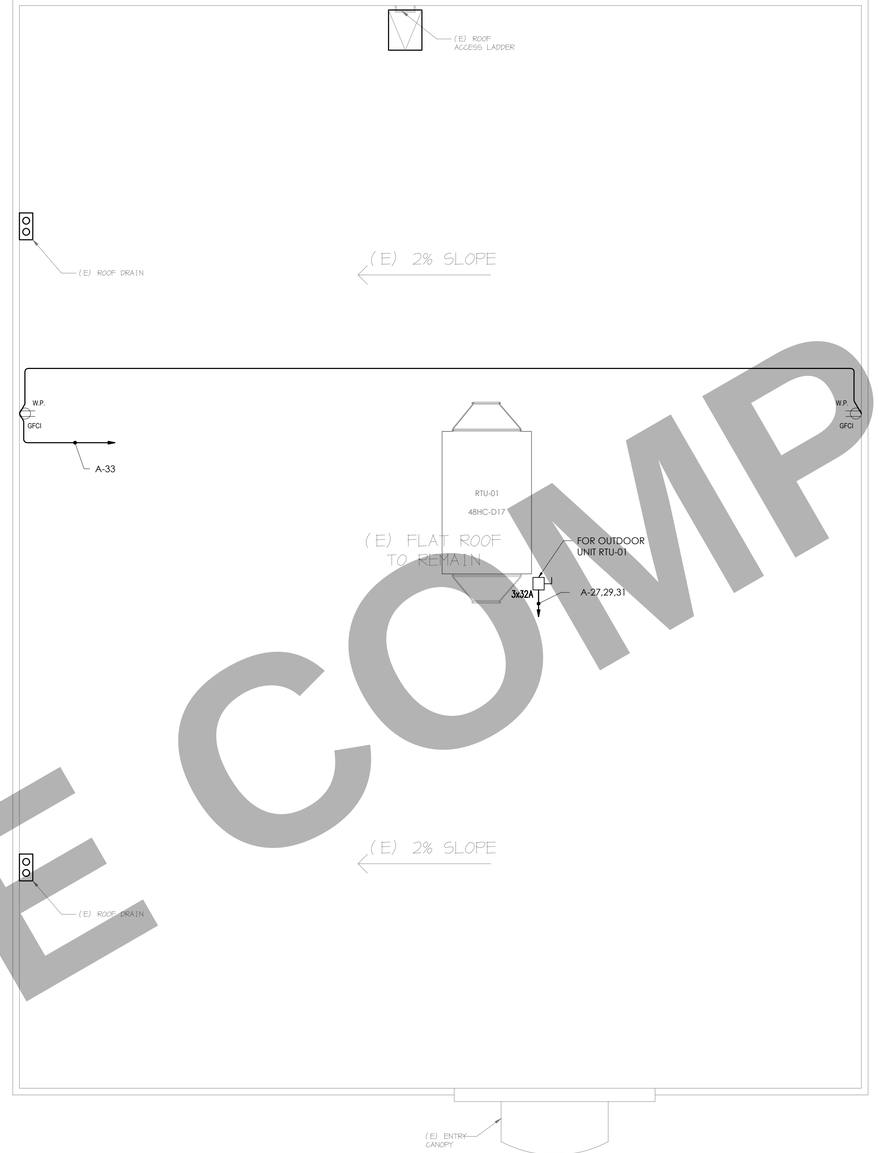
REV.



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REV. NO.	DESCRIPTION	DATE	BY
01	PC CORRECTIONS	02.19.23	MN

PROJECT:

1934 KELLOG

TITLE:

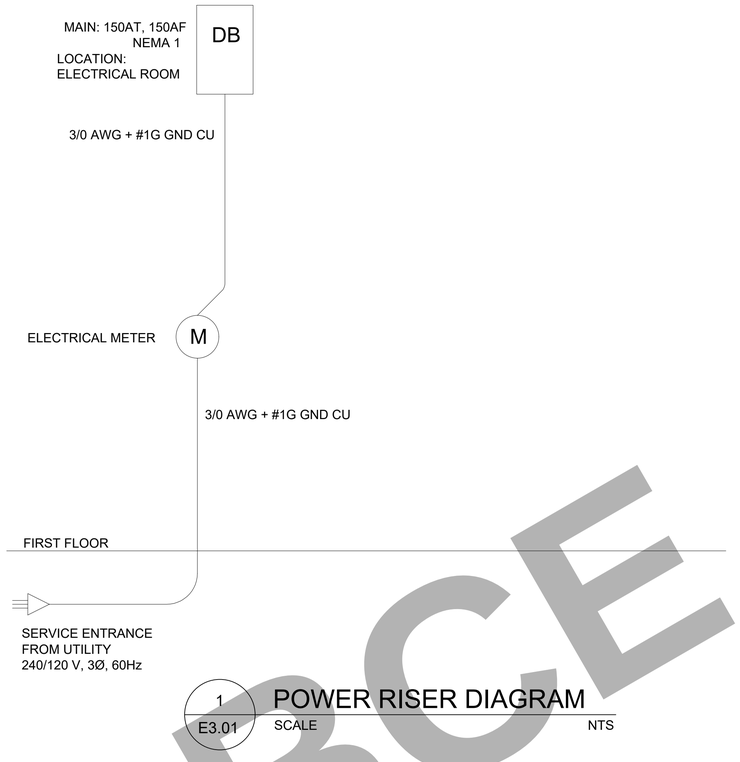
ROOF FLOOR POWER LAYOUT

PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36:
		3/16"=1'-0"

DRAWING NO.

E2.03

REV.



1 / E3.01 POWER RISER DIAGRAM

SCALE NTS

Location: ELEC			CONNECTED LOAD			DEMAND TOTAL
* LOAD SUMMARY	CL	DF	A	B	C	
L Lighting	3.45	1.25	1.54	0.67	1.24	3.45
R Convenience Recept	19.17		5.40	7.29	6.48	14.59
H Heating (Space)	3.00	1.25	1.50		1.50	3.00
C Cooling		1.00				
A HVAC	18.24	1.00	6.70	6.71	4.83	18.24
P Process		1.00				
O Other Continuous		1.25				
K Kitchen	0.50	0.65				0.33
N Noncontinuous		1.00				
M Motor	0.50	1.00				
Total	**44.85**		15.14	14.67	14.05	39.59

Total Demand Load (KVA)	39.59
Total Demand Current (A)	109.90
Min. Feeder Ampacity (A)	137.37

PANEL A	
PANELBOARD DESIGNATION	
SYSTEM VOLTAGE	208/120V, 3Φ, 4W
BUS SIZE	200
SYSTEM TYPE	NORMAL
FEEDER PROT	150A-3P C/B Bus Plug
CONDUCTOR SIZE	3/0 AWG - #1G CU
CONDUCTOR/PHASE	1
MAINS	150A MCB
SCCR	SERIES RATED
MCB RATING	80%
GROUND FAULT	NO
FEEDER LENGTH (FT)	50
FEEDER V. DROP (%)	0.480
FAULT CURRENT	
KAIC RATING	22
ENCLOSURE	TYPE 3R

	DESCRIPTION	*	WIRE	GRD	CB	KVA	A	B	C	KVA	CB	WIRE	GRD	DESCRIPTION	*	
1	Lighting Corridor	L	2X 12 AWG - #12G		15A-1P	0.34	1.06			0.72	15A-1P	2X 12 AWG - #12G		Lighting Storage & Offices	L	2
3	Lighting Storage & Electrical Rooms	L	2X 12 AWG - #12G		15A-1P	0.15		0.67		0.52	15A-1P	2X 12 AWG - #12G		Lighting Corridor & Break Time & Toilets	L	4
5	Lighting Ware House	L	2X 12 AWG - #12G		15A-1P	0.48			1.24	0.76	15A-1P	2X 12 AWG - #12G		Lighting Production Double Void	L	6
7	Lighting Storage Loading Double Void	L	2X 12 AWG - #12G		15A-1P	0.48	1.56			1.08	20A-1P	2X 10 AWG - #10G		Receptacles Electrical Room & Corridor	R	8
9	Receptacles Server Room	R	2X 10 AWG - #10G		20A-1P	1.08		2.16		1.08	20A-1P	2X 10 AWG - #10G		Receptacles Technical & Storage Rooms	R	10
11	Receptacles Storage Rooms	R	2X 10 AWG - #10G		20A-1P	1.08			2.16	1.08	20A-1P	2X 10 AWG - #10G		Receptacles Toilets & Corridor	R	12
13	Receptacles Office	R	2X 10 AWG - #10G		20A-1P	1.08	2.16			1.08	20A-1P	2X 10 AWG - #10G		Receptacles Office	**R**	**14**
15	Receptacles Office	R	2X 10 AWG - #10G		20A-1P	1.08		2.16		1.08	20A-1P	2X 10 AWG - #10G		Receptacles Office	**R**	**16**
17	Receptacles Technical & Storage Rooms	R	2X 10 AWG - #10G		20A-1P	1.08			2.16	1.08	20A-1P	2X 10 AWG - #10G		Receptacles Technical & Storage Rooms	**R**	**18**
19	Storage Production Room	R	2X 10 AWG - #10G		20A-1P	1.08	2.16			1.08	20A-1P	2X 10 AWG - #10G		Receptacles Storage Production Room	R	20
21	Receptacles Storage Production Room	R	2X 10 AWG - #10G		20A-1P	1.08		2.16		1.08	20A-1P	2X 10 AWG - #10G		Receptacles Ware House	R	22
23	Receptacles Ware House	R	2X 10 AWG - #10G		20A-1P	1.08			2.16	1.08	20A-1P	2X 10 AWG - #10G		Receptacles Ware House	R	24
25	Rolling Shutter Door	M	2X 10 AWG - #10G		20A-1P	0.50	2.37			1.87	20A-2P	2X 10 AWG - #10G		AC Server Room OU-01	A	26
27	Outdoor Unit RTU	A	4X 10 AWG - #10G		30A-3P	4.83		6.71		1.87		2X 10 AWG - #10G			A	28
29		A				4.83			6.33	1.50	20A-2P	2X 10 AWG - #10G		Electrical Water Heater EWH-01	H	30
31		A				4.83	6.33			1.50		2X 10 AWG - #10G			H	32
33	Receptacles Outdoor Unit	R	2X 10 AWG - #10G		20A-1P	0.27		0.81		0.54	20A-1P	2X 10 AWG - #10G		Receptacles Roof Top Unit	**R**	**34**
35	SPARE				20A-1P						20A-1P			SPARE		36
37	SPARE				20A-1P						20A-1P			SPARE		38
39	SPARE				20A-1P						20A-1P			SPARE		40
41	SPARE				20A-1P						20A-1P			SPARE		42
	(KVA)															
	Total Connected Load						15.64	14.67	14.05							

CLIENT:

ADDRESS:

CARLSBAD SAN DIEGO, CA

NOTES:

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

REV. NO.	DESCRIPTION	DATE	BY
01	PC CORRECTIONS	02.19.23	MN

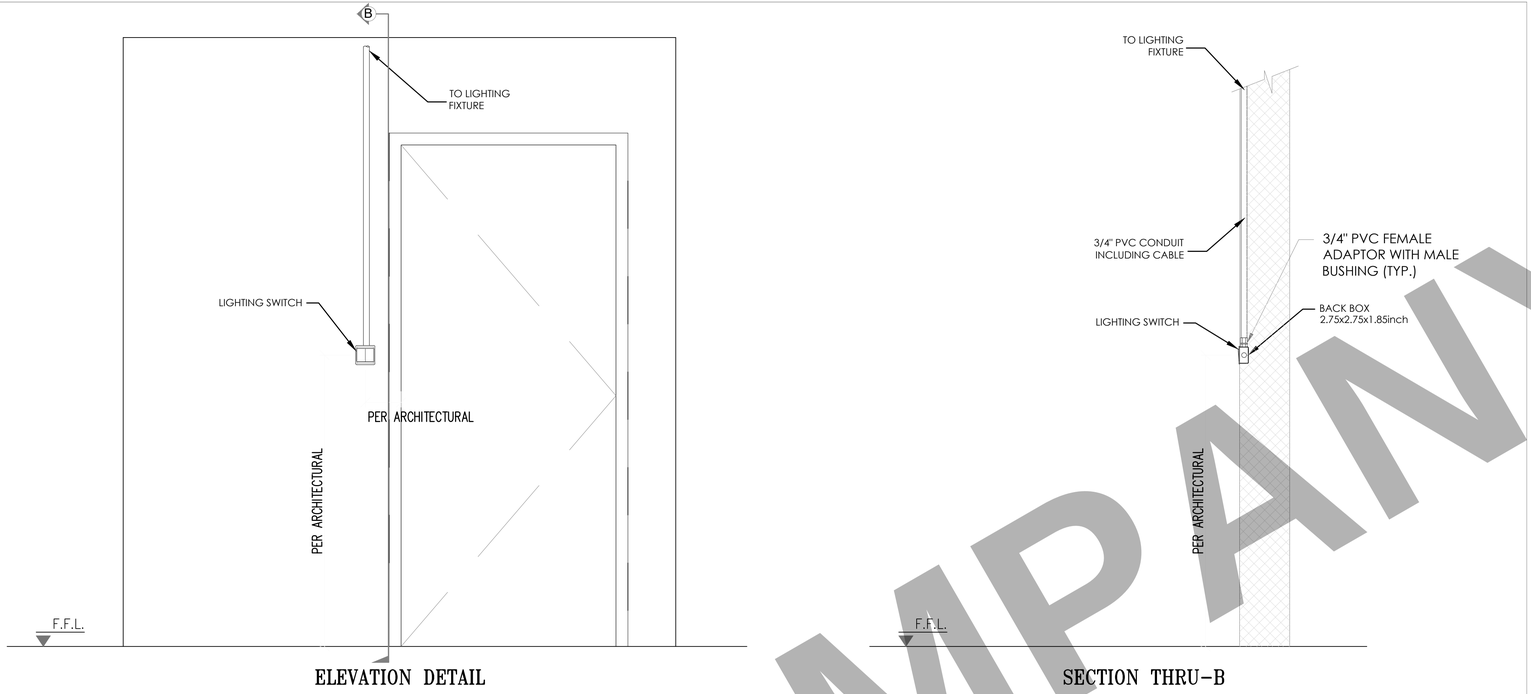
PROJECT: 1934 KELLOG

TITLE: PANEL BOARDS SCHEDULE AND POWER RISER DIAGRAM

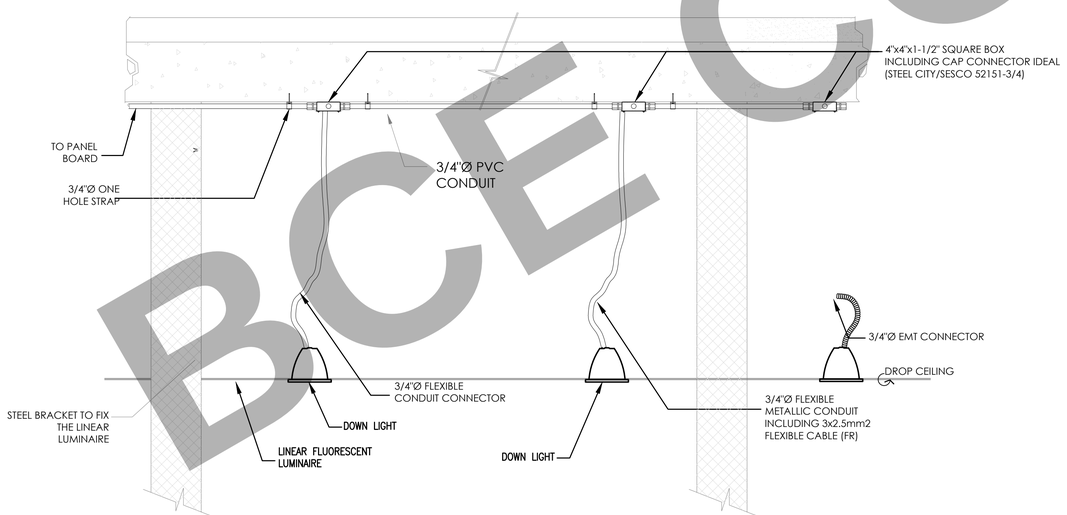
PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36:
		NTS

DRAWING NO. E3.01

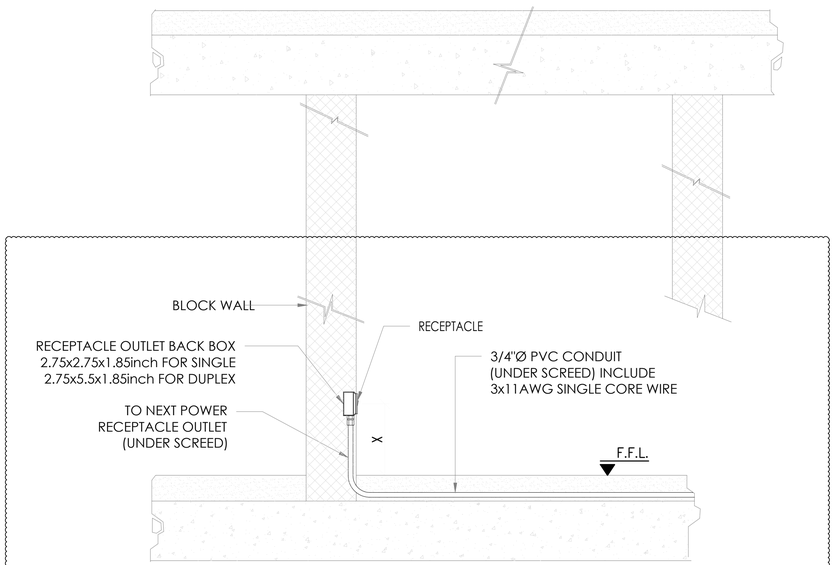
REV.



LIGHTING - WALL MOUTED SWITCH INSTALLATION DETAIL
SCALE : 1/2" = 1'



LIGHTING - RECESSED MOUNTING INSTALLATION DETAIL
SCALE : 1/2" = 1'



02

POWER - WALL MOUNTED
RECEPTACLE INSTALLATION DETAIL
SCALE : 1/2" = 1'

CLIENT:

ADDRESS:

CARLSBAD SAN DIEGO, CA

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.

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REV. NO.	DESCRIPTION	DATE	BY
01	PC CORRECTIONS	02.19.23	MN

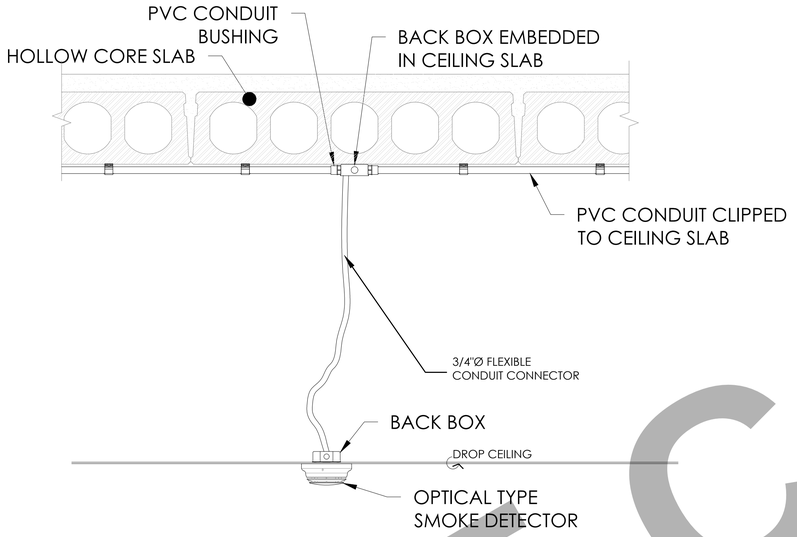
PROJECT:
1934 KELLOG

TITLE:
GENERAL DETAILS SHEET-1

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

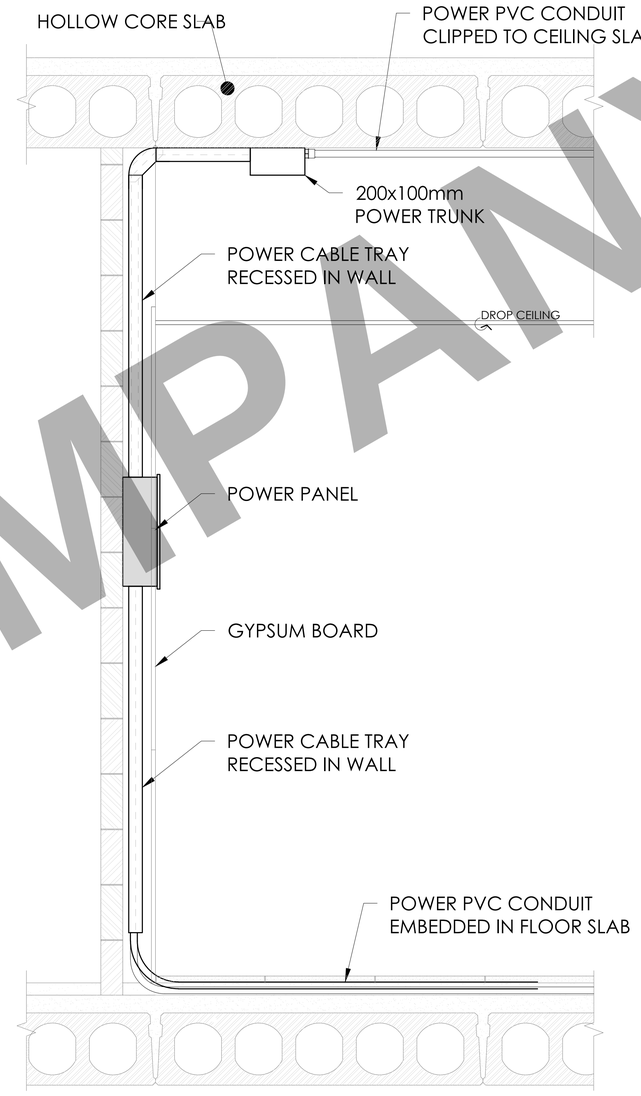
DRAWING NO.
E4.01

REV.



CEILING SLAB CLIPPED CONDUIT MOUNTED TO FALSE CEILING SMOKE DETECTOR - INSTALLATION DETAIL

SCALE : 1/2" = 1'



CLIENT:

ADDRESS:

CARLSBAD SAN DIEGO, CA

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REV. NO.	DESCRIPTION	DATE	BY
01	PC CORRECTIONS	02.19.23	MN

PROJECT:

1934 KELLOG

TITLE:

GENERAL DETAILS SHEET-2

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

DRAWING NO.

E4.02

REV.

PLUMBING SPECIFICATIONS

THE WORK INCLUDES MODIFICATION TO THE EXISTING PLUMBING SYSTEM AND PROVIDING NEW MATERIALS, FITTINGS AND ACCESSORIES NECESSARY FOR A COMPLETE FUNCTIONING PLUMBING SYSTEM. THE WORK ALSO INCLUDES ROUGH-IN AND FINAL CONNECTIONS TO FOOD SERVICE EQUIPMENT AND BEVERAGE DISPENSING EQUIPMENT PROVIDED BY OTHERS. ALL WORK SHALL BE IN ACCORDANCE WITH LOCAL CODES AND/OR ORDINANCES AND IS SUBJECT TO INSPECTION.

HOOK-UP CHARGES, PERMITS AND ALL OTHER EXPENSES RELATED TO A COMPLETE AND FUNCTIONING PLUMBING SYSTEM ARE INCLUDED AS A PART OF THIS SECTION.

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

THE INTENT OF THE DRAWINGS IS TO INDICATE THE GENERAL EXTENT OF WORK REQUIRED FOR THE PROJECT. THE DRAWINGS FOR PLUMBING WORK ARE DIAGRAMMATIC, SHOWING THE GENERAL LOCATION, TYPE, FIXTURES AND EQUIPMENT REQUIRED. THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENTS. REFER TO MANUFACTURER'S STANDARD ROUGH-IN DRAWINGS FOR PLUMBING FIXTURE INSTALLATION REQUIREMENTS. COMPLY WITH ALL APPLICABLE ADA INSTALLATION REQUIREMENTS.

COORDINATE WITH THE WORK OF OTHER SECTIONS, EQUIPMENT FURNISHED BY OTHERS, AND WITH THE CONSTRAINTS OF THE EXISTING CONDITIONS OF THE PROJECT SITE.

PIPING SYSTEMS - GENERAL: ALL PIPING SHALL BE RUN PARALLEL TO BUILDING LINES AND SUPPORTED AND ANCHORED AS REQUIRED TO FACILITATE EXPANSION AND CONTRACTION. ALL PIPING SHALL BE CONCEALED EXCEPT IN UNFINISHED SPACES. INSTALL AS REQUIRED TO MEET ALL CONSTRUCTION CONDITIONS AND TO ALLOW FOR INSTALLATION OF OTHER WORK SUCH AS DUCTS AND ELECTRICAL CONDUIT, AT ALL CONNECTIONS BETWEEN FERROUS PIPING AND NONFERROUS PIPING, PROVIDE AN ISOLATING DIALECTIC UNION. ALL HANGERS SHALL BE COMPATIBLE WITH PIPING MATERIAL TO PREVENT CORROSION.

PROVIDE ALL FITTINGS, ACCESSORIES, OFFSETS, AND MATERIALS NECESSARY TO FACILITATE THE PLUMBING SYSTEM'S FUNCTIONING AS INDICATED BY THE DESIGN AND THE EQUIPMENT INDICATED.

FIXTURES/EQUIPMENT FURNISHED BY OTHERS: PLUMBING CONTRACTOR SHALL PROVIDE UTILITY CONNECTIONS REQUIRED SUCH AS WATER, GAS, AIR, SUPPLIES, WASTE OUTLET, TRAPS, ETC. AT ALL PLUMBING TYPE FIXTURES OR EQUIPMENT FURNISHED BY OWNER, GENERAL CONTRACTOR, FOOD SERVICE CONTRACTOR, EQUIPMENT SUPPLIER, ETC. INCLUDED ARE STOP VALVES, ESCUTCHEONS, AND CHROME PLATED BRASS TUBING WITH COMPRESSION FITTINGS.

SEWER AND WASTE PIPING: PROVIDE ALL DRAINS AND SEWERS WITHIN THE SPACE WITH CONNECTION TO THE EXISTING DRAINAGE SYSTEMS ON-SITE. SANITARY DRAINAGE PIPING ABOVE FLOOR SHALL BE CO-EXTRUDED PVC DWV (SCHEDULE 40) PIPE, FITTINGS AND CONNECTIONS. SANITARY DRAINAGE PIPING BELOW GRADE SHALL BE CO-EXTRUDED PVC DWV (SCHEDULE 40) PIPE WITH SOLVENT WELD FITTINGS MAY BE USED (WHERE PERMITTED BY CODE/LOCAL AUTHORITIES). ALL DRAINAGE PIPING SHALL BE UNIFORMLY PITCHED, 1/4" PER FOOT UNLESS OTHERWISE REQUIRED BY EXISTING CONDITIONS, OR INDICATED ON THE DRAWINGS.

VENTS: PROVIDE A COMPLETE SYSTEM OF STANDARD WEIGHT CAST IRON NO-HUB VENT RISERS WHERE THE CEILING SPACE IS USED AS A RETURN AIR PLENUM OR USE CO-EXTRUDED PVC DWV (SCHEDULE 40) PIPE (WHERE PERMITTED BY CODE/LOCAL AUTHORITIES) WHERE THERE IS A DUCTED RETURN AIR SYSTEM. DO NOT USE PVC PIPE IN RETURN AIR PLENUM SPACES. THE VENT SYSTEM SHALL BE CARRIED THROUGH THE ROOF WITH APPROPRIATE FLASHING.

CONDENSATE AND INDIRECT DRAIN PIPING:PIPING ABOVE FLOOR SHALL BE CO-EXTRUDED PVC DWV (SCHEDULE 40) PIPE, FITTINGS AND CONNECTIONS. PIPING BELOW GRADE SHALL BE CO-EXTRUDED PVC DWV(SCHEDULE 40) PIPE WITH SOLVENT WELD FITTINGS.

CLEANOUTS: PROVIDE CLEANOUTS AT THE END OF EACH HORIZONTAL RUN, AND AT THE BASE OF ALL VERTICAL WASTE AND DRAIN PIPES. CLEANOUTS SHALL BE OF THE SAME SIZE AS THE PIPES THEY SERVE, CONFORMING TO CODE REQUIREMENTS. PROVIDE SUITABLE WALL OR FLOOR CLEANOUTS WITH ACCESSORIES TO OBSCURE FROM VIEW.

WATER DISTRIBUTION PIPING: LAYOUT WATER PIPING SO THAT THE ENTIRE SYSTEM CAN BE DRAINED. HOT AND COLD WATER PIPING SHALL BE 1/2" MIN. CPVC PIPE WITH SOLVENT FITTING. PROVIDE WATER HAMMER ARRESTERS AT EACH FIXTURE OR GROUP OF FIXTURES AS REQUIRED. INSTALL CHROME PLATED BRASS ESCUTCHEON PLATES AT ALL PENETRATIONS THROUGH FINISHED SURFACES (INCLUDING CABINET INTERIORS).

PIPE INSULATION: INSULATE (AS ALLOWED BY CODE) ALL LISTED SERVICE PIPING AS FOLLOWS. DOMESTIC COLD/HOT WATER, HOT WATER RETURN, STORM WATER PIPING. PROVIDE 1" PREFORMED FIBERGLASS, ASJ/SS-11, FLAME SPREAD 25, SMOKE DEVELOPED 50, ASTM C-547, FOR CONDENSATE PIPING PROVIDE 1/2" THICK INSULATION OF SAME CHARACTERISTICS AS LISTED FOR 1" ABOVE. WHERE PERMITTED BY LOCAL CODES, PROVIDE 1/2" SELF-ADHESIVE UNICELLULAR FOAM PIPE INSULATION WITH PRE-FORMED PVC FITTING COVERS - EQUAL TO SELF-ADHESIVE ARMSTRONG 2000 WITH K FACTOR OF 0.27 AT 75 DEGREES MEAN TEMPERATURE. INSULATE ANY EXPOSED CONDENSATE PIPING WITH WASTE TEMPERATURE BELOW 60 DEGREES F.

SHUTOFF VALVES, WITH UNIONS SHALL BE PROVIDED FOR SERVICE TO EACH PLUMBING FIXTURE, FOOD SERVICE EQUIPMENT ITEM OR OTHER EQUIPMENT ITEM, TO FACILITATE ISOLATION FOR REPAIR OR REPLACEMENT. VALVES SHALL BE EQUAL TO JENKINS #902-T BALL VALVE, CHROME-FINISHED BRONZE, TEFLON SEATS AND PACKING, 400 LB. W.O.G., SOLDER END.

ACCESS PANELS SHALL BE PROVIDED WHERE CONCEALED CONTROL DEVICES, VALVES, ETC. ARE CONCEALED WITHIN WALLS. WHERE ACCESS FOR ADJUSTMENT AND MAINTENANCE IS POSSIBLE THROUGH LAY-IN SUSPENDED CEILINGS, ACCESS PANELS ARE NOT REQUIRED.

PIPING SYSTEM- PVC SCHEDULE 40, SCHEDULE 80 AND CPVC PIPE WITH SOLVENT FITTINGS SHALL BE USED WHERE PEMITTED BY CODE/LOCAL AUTHORITIES.

INSTALLATION: THOROUGHLY CLEAN ITEMS BEFORE INSTALLATION. CAP PIPE OPENINGS TO EXCLUDE DIRT UNTIL FIXTURES ARE INSTALLED AND FINAL CONNECTIONS HAVE BEEN MADE. PROCEED AS RAPIDLY AS CONSTRUCTION WILL PERMIT. SET FIXTURES LEVEL AND IN PROPER ALIGNMENT. INSTALL SUPPLIES IN PROPER ALIGNMENT WITH FIXTURES. INSTALL SILICONE SEALANT BETWEEN FIXTURES AND ADJACENT MATERIAL, FOR SANITARY JOINT, AND OMIT ESCUTCHEONS.

REPAIR EXISTING PLUMBING SYSTEM COMPONENTS DAMAGED BY CONSTRUCTION OPERATIONS AND RESTORE TO ORIGINAL CONDITIONS.

TEST WATER SYSTEM UNDER 150 PSIG HYDROSTATIC PRESSURE, FOR FOUR (4) HOURS MINIMUM, WHEN TESTING INDICATES MATERIALS OR WORKMANSHIP IS DEFICIENT, REPLACE OR REPAIR AS REQUIRED, AND REPEAT TEST UNTIL STANDARDS ARE ACHIEVED.

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

GENERAL NOTES

1. THE INTENT OF THESE PLANS AND SPECIFICATIONS IS TO INCLUDE ALL LABOR, EQUIPMENT, MATERIALS, AND SERVICES NECESSARY TO FURNISH, INSTALL, TEST, AND ADJUST A COMPLETE WORKABLE PLUMBING INSTALLATION AS SHOWN, PRESCRIBED, OR REASONABLY IMPLIED BUT NOT LIMITED TO THAT EXPLICITLY INDICATED IN THE CONTRACT DOCUMENTS, BUT NECESSARY FOR THE PROPER EXECUTION AND COMPLETION OF THE INTENT THEREOF.

2. THE ENTIRE INSTALLATION SHALL CONFORM TO THE REQUIREMENTS OF THE 2019 CALIFORNIA PLUMBING CODE, 2019 CALIFORNIA BUILDING CODE, 2019 CALIFORNIA ENERGY CONSERVATION CODE AND ALL OTHER APPLICABLE CODES AND REGULATIONS REQUIRED BY AUTHORITIES HAVING JURISDICTION. IN THE EVENT OF CONFLICT BETWEEN SPECIFICATIONS, CODES, AND REGULATIONS, THE MORE RESTRICTIVE SHALL APPLY.

3. COORDINATE ENTIRE INSTALLATION OF THE PLUMBING SYSTEM WITH THE WORK OF OTHER TRADES PRIOR TO ANY FABRICATION OR INSTALLATION. FIELD VERIFY ALL DIMENSIONS AND CONDITIONS. REPORT ANY DISCREPANCIES, IN WRITING, TO THE ENGINEER PRIOR TO COMMENCEMENT OF WORK.

4. CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS WITH ALL CHANGES NOTED THEREON AT THE COMPLETION OF THE PROJECT IN ACCORDANCE WITH THE SPECIFICATIONS.

5 PROVIDE ONE YEAR WARRANTY ON ALL PARTS AND LABOR.

6. THE DRAWINGS ARE DIAGRAMMATIC AND INTENDED TO SHOW SCOPE. CONTRACTOR SHALL COORDINATE HIS WORK WITH OTHER TRADES TO PROVIDE THE BEST ARRANGEMENT OF ALL DUCT, PIPE, CONDUIT, ETC.

7. ALL CUTTING AND PATCHING OF THE EXISTING STRUCTURE SHALL BE PROVIDED UNDER OTHER SECTIONS OF THE WORK. PROVIDE NECESSARY REQUIREMENTS TO THE PROJECT SUPERINTENDENT.

8. ALL HOT WATER PIPING AND RECIRCULATION PIPING (EXCEPT RUNOUTS 12 FT. OR SHORTER TO INDIVIDUAL FIXTURES) SHALL BE INSULATED TO MEET THE REQUIREMENTS OF THE 2019 CALIFORNIA ENERGY CONSERVATION CODE

9. CONDENSATE DRAINS SHALL BE PROVIDED FOR EACH AIR CONDITIONING UNIT. HORIZONTAL CONDENSATE DRAINS ABOVE ANY CEILING SHALL BE INSULATED WITH MIN. 3/8" THICK CLOSED CELL INSULATION.

10. PIPING:
   A. WASTE, VENT, AND STORM DRAIN PIPING SHALL BE CO-EXTRUDED PVC SCHEDULE 40) PIPE
   B. WATER PIPE SHALL BE CPVC PIPE
   C. CONDENSATE PIPING SHALL BE CO-EXTRUDED PVC (SCHEDULE 40) PIPE
   D. INSIDE GAS PIPING SHALL BE BLACK IRON SCHEDULE 40 WITH MALLEABLE IRON FITTINGS. OUTSIDE SHALL BE GALVANIZED IRON SCHEDULE 40 WITH GALVANIZED FITTINGS. GAS LINE TO BE PAINTED GRAY IN COLOR. A 24 HOUR METERED GAS TEST SHALL BE REQUIRED.
   E. ALL PIPING NOT ENCLOSED IN CONDITION SPACE OR AT EXTERIOR WALLS SHALL BE INSULATED.
   F. PIPING: PVC SCHEDULE 40, SCHEDULE 80 AND CPVC PIPING WITH SOLVENT WELD FITTINGS SHALL BE USED WHERE PERMITTED BY CODE/LOCAL AUTHORITIES

11. ALL VENTS OR EXHAUSTS SHALL BE AT LEAST 10 FT, AWAY OR 3 FT. ABOVE ANY WINDOW, DOOR, OPENING, OR AIR INTAKE.

12. CLEANOUTS SHALL BE INSTALLED PER THE CALIFORNIA PLUMBING CODE.

13. PROVIDE WATER TIGHT FLASHINGS WHEREVER PIPES PASS THROUGH EXTERIOR WALLS, ROOFS, OR FLOORS.

14. PROVIDE ISOLATION FOR ALL PIPES THAT COME IN CONTACT WITH THE STRUCTURE.

15. LOCATION OF EXISTING UTILITIES AND POINTS OF CONNECTION ARE APPROXIMATE. CONTRACTOR SHALL VERIFY EXACT LOCATIONS AND DEPTHS OF EXISTING UTILITIES AND SERVICES PRIOR TO STARTING WORK OF THIS SECTION. IF INDICATED POINTS OF CONNECTION CANNOT BE MADE TO EXISTING UTILITIES AS FOUND, THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO INSTALLING ANY WORK WHICH MAY BE AFFECTED.

16. VALVES SHALL BE NIBCO, JENKINS, HAMMOND, RED & WHITE OR APPROVED EQUAL. SERVICE PRESSURE SHALL BE SUITABLE FOR SERVICE INTENDED. THE MAIN WATER SHUT OF VALVE SHALL BE A FULL PORT BALL TYPE AND APPROVED FOR SERVICE INTENDED.

17. CONTRACTOR SHALL PROVIDE ALL SHUT OFF VALVES AS NECESSARY TO ISOLATE ANY EQUIPMENT, PLUMBING ITEMS, OR FIXTURES, THAT MAY NEED SERVICING OR ARE SUBJECT TO FAILURE WHETHER OR NOT SUCH VALVES ARE SHOWN ON THE DRAWINGS.

18. PROVIDE HANGERS AND SUPPORTS AS REQUIRED. PLUMBERS TAPE AND WIRE ARE NOT ACCEPTABLE.

19. CONTRACTOR IS RESPONSIBLE FOR HIS OWN TRENCHING, BACKFILL, AND COMPACTION OF TRENCHES NECESSARY TO COMPLETE HIS SCOPE OF WORK. BACKFILLED TRENCHES SHALL BE RETURNED TO THEIR ORIGINAL GRADE UNLESS NOTED OTHERWISE.

20. CONTRACTOR SHALL AFFIX A MAINTENANCE LABEL TO ALL EQUIPMENT REQUIRING ROUTINE MAINTENANCE AND SHALL PROVIDE MAINTENANCE AND OPERATIONAL MANUALS IN ACCORDANCE WITH THE SPECIFICATIONS.

21. ALL EQUIPMENT THAT REQUIRES KEYS OR SPECIAL TOOLS TO OPERATE SHALL SUPPLY THE OWNER WITH TWO OF ANY SUCH KEYS OR TOOLS FOR EACH PIECE OF EQUIPMENT THAT REQUIRE THE SAME.

25. ANY CHANGE OR DEVIATION FROM THESE PLANS OR SPECIFICATIONS SHALL REQUIRE THE APPROVAL, IN WRITING, OF THE ENGINEER PRIOR TO COMMENCEMENT OF SUCH WORK.

26. ALL PLUMBING, ELECTRICAL, AND GAS LINES SHALL BE CONCEALED WITHIN THE THE BUILDING STRUCTURE TO AS GREAT EXTENT AS POSSIBLE. ALL LINES NOT CONCEALED SHALL BE SECURED 6" OFF THE FLOOR AND 3/4" FROM THE WALLS USING STANDOFF BRACKETS

27. AN APPROVED BACKFLOW PREVENTOR SHALL BE PROPERLY INSTALLED UPSTREAM OF ANY POTENTIAL HAZARD BETWEEN THE POTABLE WATER SUPPLY AND SOURCE OF COMTAMINATION.

28. WATER SUPPLY CARBONATORS SHALL BE PROTECTED BY AN APPROVED REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTOR. THE RELIEF VALVE SHALL DRAIN IN-DIRECTLY TO A FLOOR SINK WITH A 1" MIN. AIR GAP.

PIPE MATERIAL SCHEDULE

SERVICE		COPPER TYPE "M"	COPPER TYPE "L"	COPPER TYPE "K"	CAST IRON	BLACK STEEL	GALV. STEEL	VTRI. CLAY	ABS	SCH.40 PVC	SCH.40 CPVC	REMARKS
WATER PIPING	INSIDE		X									
	OUTSIDE									X		
SANITARY DRAIN	INSIDE									X		
	OUTSIDE									X		
SANITARY VENT	INSIDE									X		
	OUTSIDE									X		
GAS PIPING	INSIDE					X						
	OUTSIDE						X					
STORM DRAIN	INSIDE									X		
	OUTSIDE									X		
INDIRECT DRAINAGE	INSIDE									X		
	OUTSIDE									X		
CONDESATE	INSIDE									X		
	OUTSIDE									X		
COMPRESSED AIR	INSIDE					X						
	OUTSIDE						X					

NOTES:

PLUMBING LEGEND

SYMBOL	ABBREV	DESCRIPTION
	SS or W	NEW SEWER OR WASTE
	V	NEW VENT
	CW	NEW COLD WATER
	HW	NEW HOT WATER
	G	NEW GAS
	CD	NEW CONDENSATE DRAIN
CA	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
P	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

BATHTUBS AND WHIRLPOOL BATHTUBS. THE MAX. HOT WATER TEMPERATURE DISCHARGING SHALL BE LIMITED TO 120 DEGREES. CPC 414/2019
BATHTUBS WASTE OPENING IN FLOOR OVER CRAWL SPACES SHALL BE PROTECTED BY A METAL SCREEN NOT EXCEEDING 12" OR SOLID COVER. CPC 313.12.4 2019
SHOWERS AND TUB-SHOWERS COMBINATIONS IN ALL BUILDINGS SHALL BE PROVIDED WITH INDIVIDUAL CONTROL VALVES OF THE PRESSURE BALANCE, THERMOSTATIC, OR COMBINATION OF BOTH THAT PROVIDE SCALD AND THERMAL SHOCK PROTECTION. VALVES SHALL BE ADJUSTED TO DELIVER A MAXIMUM MIXED WATER
SETTING OF 120 DEGREES FAHRENHEIT. THE WATER HEATER THERMOSTAT SHALL NOT BE CONSIDERED A SUITABLE CONTROL FOR MEETING THIS PROVISION. 418.0 CPC/2019
VERIFY AND WHERE WATER PRESSURE EXCEEDS 80 PSI AN APPROVED PRESSURE REGULATOR PRECEDED BY AN ADEQUATE STRAINER SHALL BE INSTALLED 608.2 C(C / 2019
1-INSTALL TEMPERATURE AND PRESSURE RELIEF VALVE WITH MINIMUM 34" DRAIN PIPE AND TERMINATE TO THE EXTERIOR OF THE BUILDING OVER WINDOW, DOOR OR VISIBLE LOCATION. DISCHARGE FROM A RELIEF VALVE INTO A WATER HEATER PAN SHALL BE PROHIBITED CPC 608.5, 510.8.
2-PROVIDE (ON THE PLANS) A GAS PIPING DIAGRAM OF THE GAS PIPING SYSTEM THAT INCLUDES ALL PIPE SIZES, PIPE LENGTHS AND BTU RATINGS.

3-SUBMIT GAS LOAD CALCULATIONS IN ACCORDANCE WITH CPC TABLE 12-8 TO VERIFY THE PIPE SIZES ARE ADEQUATE FOR THE MAXIMUM DELIVERY CAPACITY OF CUBIC FEET OF GAS PER HOUR.
4- A WHOLE HOUSE HAS TEST IS REQUIRED UPON COMPLETION OF THE INSTALLATION, ALTERATION, OR REPAIR OF ANY GAS PIPING.
THE CITY SHALL BE NOTIFIED WHEN GAS PIPING IS READY FOR INSPECTION.
5- 2 GPM SHOWER FIXTURE, MAX.1.5 GPM BATHROOM FAUCET, MAX. 2 GPM KITCHEN FAUCET, AND MAX 1.28 WATER CLOSET TO CONFORM TO CITY GREEN REQUIREMENTS.

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

6-NOTE THAT ALL PLUMBING VENTS SHALL TERMINATE NOT LESS THAN 6" ABOVE ROOF NOR LESS THAN 1' FROM ANY VERTICAL SURFACE. VENTS SHALL TERMINATE NOT LESS THAN 10" FROM OR 3' ABOVE ANY WINDOW, DOOR OPENING AIR INTAKE, OR VENT SHAFT NOR 3' FROM LOT LINE.
(2019 CPC 906) IF WATER PRESSURE EXCEEDS 80 PSI, AND EXPANSION TANK AND AN APPROVED PRESSURE REGULATOR SHALL BE INSTALLED. (2019 CPC608.2)
NON-REMOVABLE BACK FLOW PRE-VENTER OR BIBB-TYPE VACUUM BREAKER WILL BE INSTALLED ON ALL EXTERIOR HOSE BIBS. (2019 CPC603.4.7)
HOT WATER RE-CIRCULATING SYSTEM IS INSTALLED, THE ENTIRE LENGTH OF HOT WATER PIPES SHALL BE INSULATED. (2019 CALIFORNIA ENERGY REGULATIONS 150 (J))
HOT WATER PIPE FROM THE WATER HEATER TO THE KITCHEN WILL BE INSULATED. (2019 CALIFORNIA ENERGY REGULATIONS 151(F)8 D)

NOTES:
1-Projects which disturb less than one acre of soil shall manage storm water drainage during construction by one of the following: A. Retention basins. B. Where storm water is conveyed to a public drainage system, water shall be filtered by use of a barrier system, wattle or other approved method.
2-Site grading or drainage system will manage all surface water flows to keep water from entering buildings (swales, water collection, French drains, etc.). CGC Section 4.106.3. Exception: Additions not altering the drainage path.
3-When a shower is provided with multiple shower heads, the sum of flow to all the heads shall not exceed 1.8 gpm @ 80 psi, or the shower shall be designed so that only one head is on at a time. CGC Section 4.303.1.3.2.
4-Landscape irrigation water use shall have weather or soil based controllers. CGC Section 4.304.1.
5-The plans that a minimum of 65% of construction waste is to be recycled. CGC Section 4.408.1.
6-The contractor shall submit a Construction Waste Management Plan, per CGC Section 4.408.2.
7-The builder is to provide an operation manual (containing information for maintaining appliances, etc.) for the owner at the time of final inspection. CGC Section 4.410.1.
8-The gas fireplace(s) shall be a direct-vent sealed- combustion type. Woodstove or pellet stoves must be US EPA Phase II rated appliances. CGC Section 4.503.1.

WATER SAVING STANDARDS.

THE WATER SAVING PERFORMANCE STANDARDS FOR A PLUMBING FIXTURE ARE THOSE ESTABLISHED BY THE AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI), CURRENT REVISION, OR THE FOLLOWING STANDARDS, WHICHEVER ARE THE MORE RESTRICTIVE
1.THE MAXIMUM FLOW FROM A SINK OR LAVATORY FAUCET OR A FAUCET AERATOR SHALL NOT EXCEED 0 5 GALLONS OF WATER PER MINUTE AT A PRESSURE OF 60 POUNDS PER SQUARE INCH WHEN TESTED IN ACCORDANCE WITH ANSI TESTING PROCEDURES
2.THE MAXIMUM VOLUME OF WATER PER FLUSH FROM A TOILET SHALL NOT EXCEED AN AVERAGE OF 1 28 GALLONS WHEN TESTED IN ACCORDANCE WITH ANSI TESTING PROCEDURES
3. THE MAXIMUM VOLUME OF WATER PER FLUSH FROM A URINAL AND THE ASSOCIATED FLUSH VALVE, IF ANY, SHALL NOT EXCEED AN AVERAGE OF ONE GALLON WHEN TESTED IN ACCORDANCE WITH ANSI TESTING PROCEDURES

SPECIAL NOTICE TO CONTRACTORS

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

CLIENT:

ADDRESS:

CARLSBAD SAN DIEGO, CA

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
01	PC CORRECTIONS	02.19.23	MN

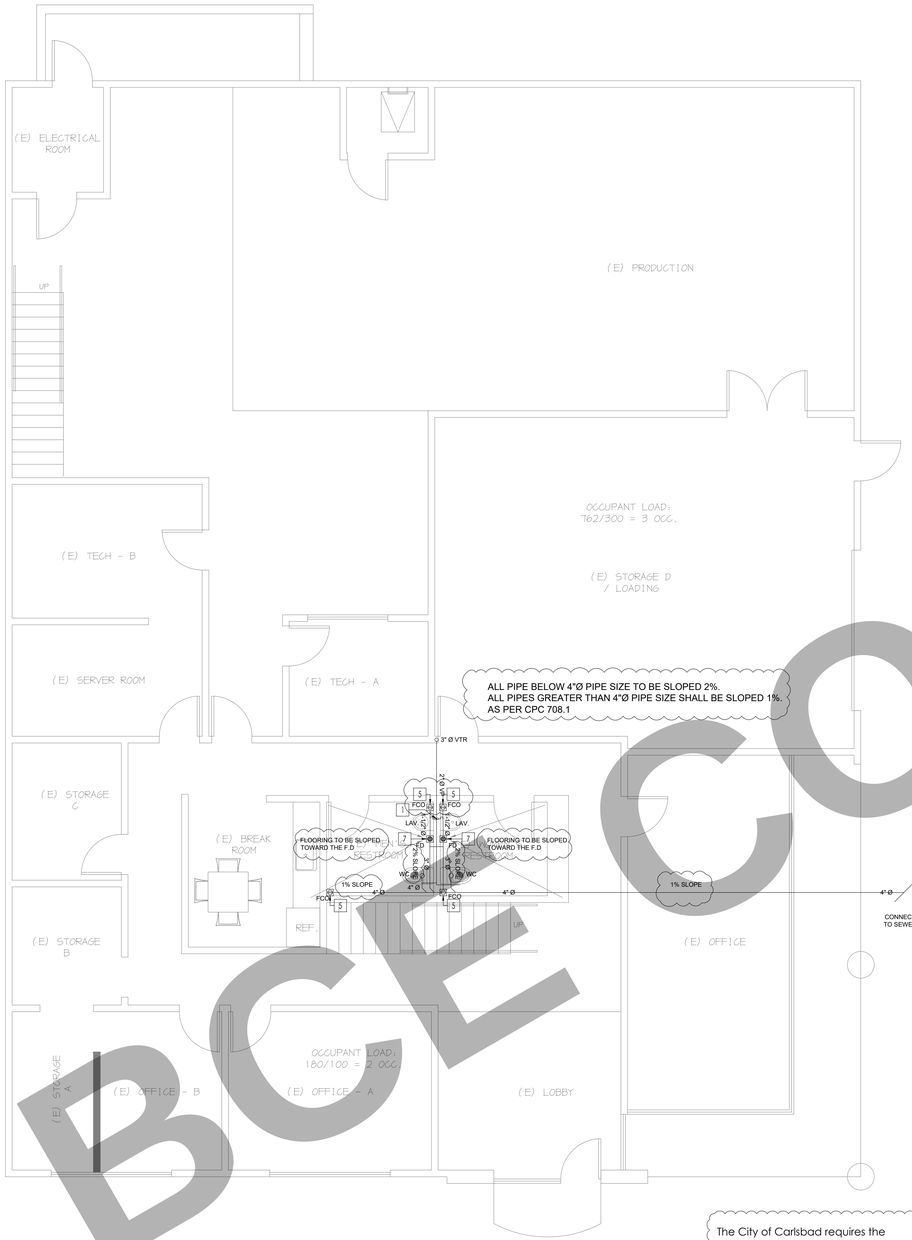
PROJECT:
1934 KELLOG

TITLE:
PLUMBING LIST OF SYMBOLS AND GENERAL NOTES

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

DRAWING NO.
P0.00

REV.



PROPOSED FIRST FLOOR

GENERAL NOTES:

1. PRIOR TO PERFORMING WORK, CONTRACTOR TO COORDINATE EXACT PIPE SIZES, INVERT ELEVATIONS, PRESSURES FOR LOCATIONS OF ANY SEWER, WATER PIPING AND WATER METER WITH CIVIL UTILITIES DRAWINGS, AND ANY OTHER ENGINEER AS APPLICABLE.
2. PRIOR TO PERFORMING WORK, CONTRACTOR TO COORDINATE PIPE ROUTING WITH ALL OTHER TRADES AND EXISTING FIELD CONDITIONS.
3. REFER TO MECHANICAL PLANS FOR PLUMBING SPECIFICATION OF MATERIAL, INSULATION AND INSTALLATION REQUIREMENTS.
4. CONTRACTOR IS RESPONSIBLE FOR ROUGH-IN COORDINATION AND LOCATIONS. REFER TO ARCHITECTURAL PLANS FOR LOCATIONS AND FIXTURES.
5. CONTRACTOR IS RESPONSIBLE FOR ANY REQUIRED CUTTING AND PATCHING.
6. ALL NOTCHING, BORING, AND CUTTING OF HOLES IN WALL STUDS AND FLOOR JOISTS SHALL BE PERFORMED BASED ON THE LATEST ADOPTED AND APPROVED EDITION OF THE BUILDING CODE.
7. ALL PLUMBING FIXTURES SHALL BE OF WATER CONSERVATION TYPE AS REQUIRED BY LOCAL AUTHORITY HAVING JURISDICTION.
8. ALL WATER PIPING SHALL BE INSTALLED ON INTERIOR SIDE OF THE BUILDING WALL INSULATION.
9. CONTRACTOR SHALL PROVIDE VALVES LOCATED ABOVE LAY-IN CEILING OR 24"x24" CEILING ACCESS PANEL COORDINATE FINAL LOCATION AND SIZE WITH ARCHITECT. PROVIDE BALANCING VALVES FOR HOT WATER RETURN SYSTEM AS REQUIRED.
10. ALL SANITARY DRAINAGE PIPING 3" AND SMALLER SHALL BE SLOPED AT ¼" PER FOOT. PIPING 4" AND LARGER SHALL BE SLOPED AT ⅛" PER FOOT.
11. ALL CONDENSATE DRAIN PIPING SHALL BE SLOPED AT ¼" 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.

PLEASE REFER TO DRAWING A-3.1 SHOWING THE OCCUPANT LOAD IN THIS PROJECT.
HAVING A OCCUPANT EQUAL TO 39 PERSONS, AND ACCORDING TO CPC TABLE 422.1, 2 TOILETS ARE MORE THAN ENOUGH TO COVER THE OCCUPANT LOAD

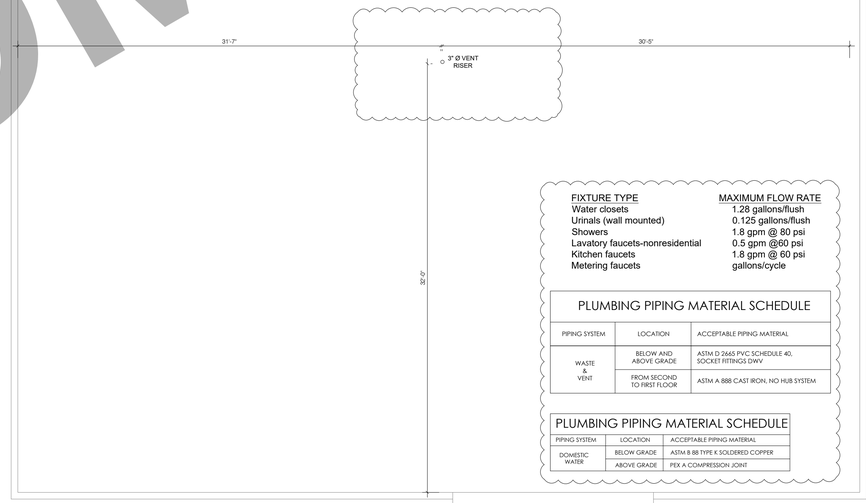
PLUMBING SHEET NOTES

SHEET NOTES:

1-1/2" WASTE DROP AND 2" VENT RISE.
2" VENT RISE TO HIGH LEVEL.
1-1/2" VENT RISE TO HIGH LEVEL.
3" VENT STACK TO ABOVE.
4" FLOOR CLEAN-OUT.
OUTDOOR FLOOR CLEAN-OUT. REFER TO DWG FOR PIPE SIZE.
3" FLOOR DRAIN.

MINIMUM PIPE SIZE PER FIXTURE

FIXTURE UNIT	DR (INCH)	VENT (INCH)
SHOWER	3	2
WATER CLOSET	4	2
LAVATORY	1-1/2	2
KITCHEN SINK	2	2
DISHWASHER	1-1/2	2
BATHTUB	3	2
LAUNDRY MACHINE	1-1/2	2



FIXTURE TYPE	MAXIMUM FLOW RATE
Water closets	1.28 gallons/flush
Urinals (wall mounted)	0.125 gallons/flush
Showers	1.8 gpm @ 80 psi
Lavatory faucets-nonresidential	0.5 gpm @60 psi
Kitchen faucets	1.8 gpm @ 60 psi
Metering faucets	gallons/cycle

PLUMBING PIPING MATERIAL SCHEDULE

PIPING SYSTEM	LOCATION	ACCEPTABLE PIPING MATERIAL
WASTE & VENT	BELOW AND ABOVE GRADE	ASTM D 2665 PVC SCHEDULE 40, SOCKET FITTINGS DWV
	FROM SECOND TO FIRST FLOOR	ASTM A 888 CAST IRON; NO HUB SYSTEM

PLUMBING PIPING MATERIAL SCHEDULE

PIPING SYSTEM	LOCATION	ACCEPTABLE PIPING MATERIAL
DOMESTIC WATER	BELOW GRADE	ASTM B 88 TYPE K SOLDERED COPPER
	ABOVE GRADE	PEX A COMPRESSION JOINT

The City of Carlsbad requires the installation of a "bypass tee and associated ball valves" be installed above grade on the main water supply
line before it enters the building. Please include the location and specifications for this fitting on the plumbing plans. (The City Engineer has a detail available, Standard drawing W35).

Based on CPC 2019 - TABLE 422.1
MINIMUM PLUMBING FACILITIES1

Each building shall be provided with sanitary facilities, including provisions for persons with disabilities as prescribed by the Department Having Jurisdiction7. Table 422.1 applies to new buildings, additions to a building, and changes of occupancy or type in an existing building resulting in increased occupant load.

Since the Building is existing, with no addition, or change or occupancy or type then the Table 422.1 is not valid.

PLUMBING FIXTURE SECHEDULE

TAG	MAKE	MODEL #	FLOW RATE	QUANTITY	PIPE
MEN WATER CLOSET	PROFLO®	PF1662WH	1.28 gpf	1.0	1.0"
WOMEN WATER CLOSET	Wellworth® Classic	K-4436-8A	1.28 gpf	1.0	-
LAVATORY	KOHLER	-	0.5 gpm	2.0	-
FLOOR DRAIN	-	-	-	2.0	3"
FLOOR CLEANOUT	-	-	-	4.0	3"/4"

1. CONTRACTOR SHALL FOLLOW MANUFACTURER INSTRUCTIONS AND INSTALLATION MANUAL.

CLIENT:

ADDRESS:
CARLSBAD SAN DIEGO, CA

NOTES:

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

REV. NO.	DESCRIPTION	DATE	BY
01	PC CORRECTIONS	02.19.23	MN

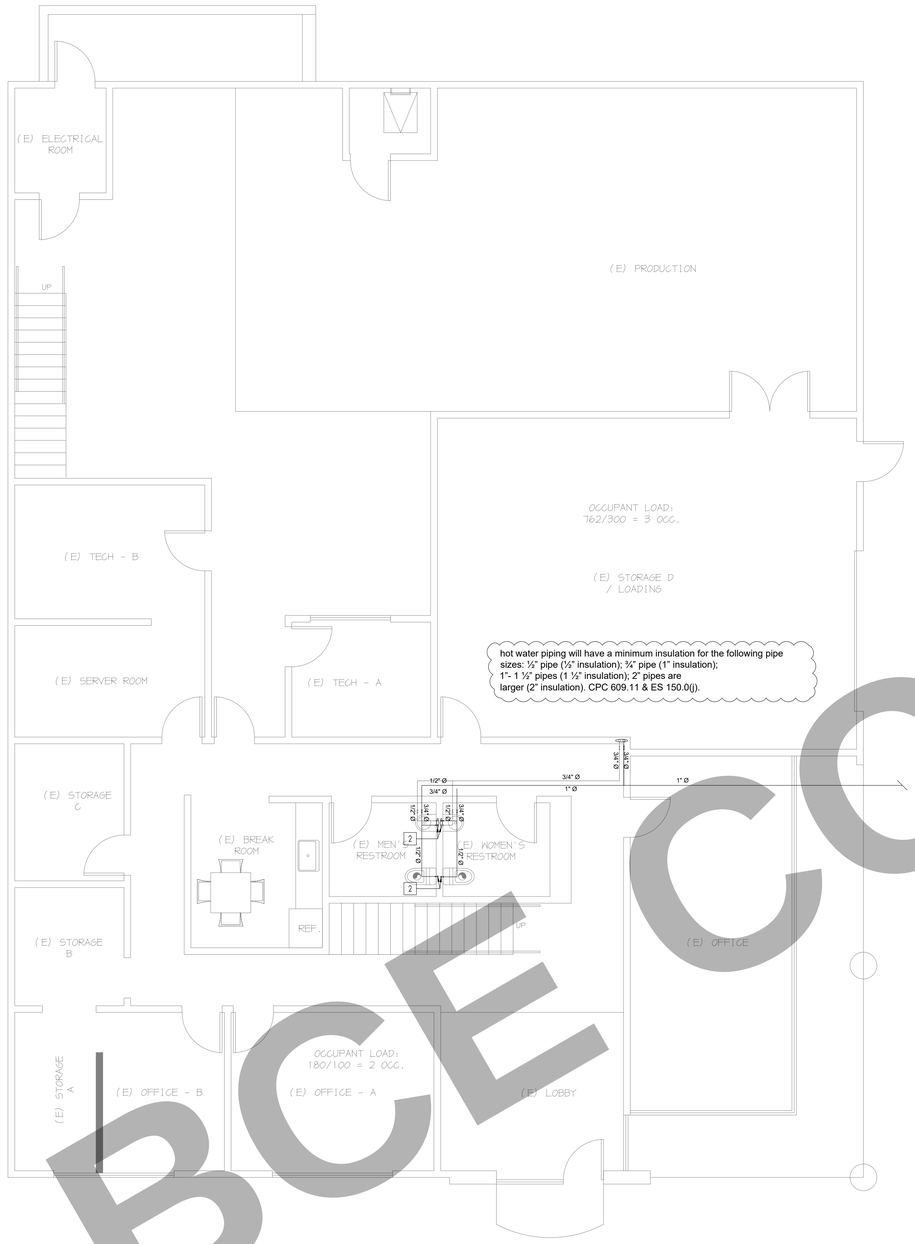
PROJECT:
1934 KELLOG

TITLE:
DRAINAGE PLAN
PROPOSED FIRST FLOOR

PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36:
		3/16"=1'-0"

DRAWING NO.
P1.01

REV.



PROPOSED FIRST FLOOR

GENERAL NOTES:

1. PRIOR TO PERFORMING WORK, CONTRACTOR TO COORDINATE EXACT PIPE SIZES, INVERT ELEVATIONS, PRESSURES FOR LOCATIONS OF ANY SEWER, WATER PIPING AND WATER METER WITH CIVIL UTILITIES DRAWINGS, AND ANY OTHER ENGINEER AS APPLICABLE.
2. PRIOR TO PERFORMING WORK, CONTRACTOR TO COORDINATE PIPE ROUTING WITH ALL OTHER TRADES AND EXISTING FIELD CONDITIONS.
3. REFER TO MECHANICAL PLANS FOR PLUMBING SPECIFICATION OF MATERIAL, INSULATION AND INSTALLATION REQUIREMENTS.
4. CONTRACTOR IS RESPONSIBLE FOR ROUGH-IN COORDINATION AND LOCATIONS. REFER TO ARCHITECTURAL PLANS FOR LOCATIONS AND FIXTURES.
5. CONTRACTOR IS RESPONSIBLE FOR ANY REQUIRED CUTTING AND PATCHING.
6. ALL NOTCHING, BORING, AND CUTTING OF HOLES IN WALL STUDS AND FLOOR JOISTS SHALL BE PERFORMED BASED ON THE LATEST ADOPTED AND APPROVED EDITION OF THE BUILDING CODE.
7. ALL PLUMBING FIXTURES SHALL BE OF WATER CONSERVATION TYPE AS REQUIRED BY LOCAL AUTHORITY HAVING JURISDICTION.
8. ALL WATER PIPING SHALL BE INSTALLED ON INTERIOR SIDE OF THE BUILDING WALL INSULATION.
9. CONTRACTOR SHALL PROVIDE VALVES LOCATED ABOVE LAY-IN CEILING OR 24"x24" CEILING ACCESS PANEL COORDINATE FINAL LOCATION AND SIZE WITH ARCHITECT. PROVIDE BALANCING VALVES FOR HOT WATER RETURN SYSTEM AS REQUIRED.
10. ALL SANITARY DRAINAGE PIPING 3" AND SMALLER SHALL BE SLOPED AT ¼" PER FOOT. PIPING 4" AND LARGER SHALL BE SLOPED AT ⅛" PER FOOT.
11. ALL CONDENSATE DRAIN PIPING SHALL BE SLOPED AT ⅛" 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. PUBLIC LAVATORIES ARE REQUIRED TO BE SELF-CLOSING OR SELF-METERING (SERVICE STATIONS, AIRPORTS, RESTAURANTS, MERCENTILE, STADIUMS, CONVENTIONS HALLS ONLY) CPC 407.4

PLUMBING SHEET NOTES

SHEET NOTES:

DCW TO ABOVE FLOOR.

DCW & DHW DROP IN WALL.

DCW TO ABOVE FLOOR.

MINIMUM PIPE SIZE PER FIXTURE

FIXTURE UNIT	CWP (INCH)	HWP (INCH)
SHOWER	1/2	1/2
WATER CLOSET	1/2	-
LAVATORY	1/2	1/2
KITCHEN SINK	1/2	1/2
DISHWASHER	-	1/2
BATHTUB	1/2	1/2
LAUNDRY MACHINE	1/2	1/2

BUILDING WATER LOAD			
DESCRIPTION	LOAD		PIPE SIZE PEX
	FU	GPM	
DCW	5	9.4	1"
DHW	3	3	1/2"
TOT. COMBINED	5.4	10.5	1"

DRAINAGE FIXTURE UNITS FOR FIXTURES AND GROUPS

FIXTURE TYPE	DRAINAGE FIXTURE UNIT VALUE AS LOAD FACTORS
LAVATORY	1
TOILET, PRIVATE	3
BATHTUB	2
LAUNDRY TRAY	2
FLOOR DRAIN 3 INCH TRAP SIZE	3
KITCHEN SINK, DOMESTIC	2

BUILDING DRAINS AND SEWERS

Dia of Pipe (Inches)	MAXIMUM NUMBER OF DRAINAGE FIXTURE UNITS (dfu)			
	Stacks			
	Total for Horizontal Branch	Total Discharge into one branch interval	Total for stack of three branch Intervals or less	Total for stack greater than three branch intervals
1 1/2	3	2	4	8
2	6	6	10	24
2 1/2	12	9	20	42
3	20	20	48	72
4	160	90	240	500
5	360	200	540	1,100
6	620	350	960	1,900

DOMESTIC WATER PIPE SIZING TABLE

BC PLUMBING CODE (2019) SECTION 2.6.3.1
DOMESTIC WATER PIPE SIZING IN ACCORDANCE WITH ASPE PLUMBING ENGINEERING DESIGN HANDBOOK VOL. 2.
BC PLUMBING CODE (2019) SECTION 2.6.3.2.
THIS TABLE IS TO BE USED IN CONJUNCTION WITH THE HYDRAULIC LOAD REQUIREMENTS FOR EACH FIXTURE.
BC PLUMBING CODE (2019) SECTION 2.6.3.5.
DOMESTIC WATER PIPE SIZING IN ACCORDANCE WITH THE MAXIMUM PERMITTED WATER VELOCITIES AS RECOMMENDED BY THE PIPE AND FITTING MANUFACTURER.
* PEX VALUES ARE BASED UPON UPONOR AQUAPEX.

PIPE MATERIAL		PEX*			PEX*			DUCTILE IRON & STAINLESS STEEL			COPPER (TYPE L)			COPPER (TYPE K)			COPPER (TYPE K)		
POTABLE WATER SYSTEM		DCW / DHW			DHWR			DCW / DHW			DCW			DHW			DHWR		
MAXIMUM ALLOWABLE VELOCITY		2.4 m/s (8 ft/s)			0.6 m/s (6 ft/s)			2.4 m/s (8 ft/s)			1.5 m/s (5 ft/s)			1.2 m/s (4 ft/s)			0.9 m/s (3 ft/s)		
[MM]	[INCH]	L/S	GPM	FU	L/S	GPM		L/S	GPM	FU	L/S	GPM	FU	L/S	GPM	FU	L/S	GPM	
15 MM	1/2"	0.28	4.4	4.5	0.07	1.1		0.36	5.7	7	0.23	3.6	3.5	0.18	2.9	2.5	0.06	1	
20 MM	3/4"	0.55	8.8	11.5	0.14	2.2		0.77	12.2	17	0.48	7.6	9	0.38	6.0	7.5	0.32	5	
25 MM	1"	0.92	14.5	20.5	0.23	3.6		1.26	20.0	30	0.81	12.9	18	0.65	10.3	14	0.60	9.5	
32 MM	1-1/4"	1.36	21.8	34	0.34	5.4		1.80	28.5	54	1.24	19.7	29	0.99	15.7	22	1.01	16	
40 MM	1-1/2"	1.91	30.3	55	0.48	7.5		2.80	44.4	102	1.75	27.7	46	1.40	22.2	34	1.51	24	
50 MM	2"	3.27	51.9	138	0.82	12.9		4.92	78.0	265	3.04	48.2	120	2.43	38.5	81	2.59	41	

SCHEDULE NO. 1
GAS WATER HEATER SCHEDULE

TAG	EWH-01
LOCATION	KITCHEN
MANUFACTURER	AO SMITH
MODEL	ENTT-38
TYPE	ELEC.
RATED STORAGE (gal.)	38.0
RECOVERY (GPH @90°F)	55.0
UEF	0.9
POWER SUPPLY	240/1/60
WATER CONNECTION (IN.)	3/4
POWER CONSUMPTION (Watts)	4,500

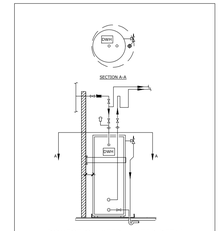
FIXTURE TYPE	MAXIMUM FLOW RATE
Water closets	1.28 gallons/flush
Urinals (wall mounted)	0.125 gallons/flush
Showers	1.8 gpm @ 80 psi
Lavatory faucets-nonresidential	0.5 gpm @60 psi
Kitchen faucets	1.8 gpm @ 60 psi
Metering faucets	gallons/cycle

PLUMBING PIPING MATERIAL SCHEDULE

PIPING SYSTEM	LOCATION	ACCEPTABLE PIPING MATERIAL
WASTE & VENT	BELOW AND ABOVE GRADE	ASTM D 2665 PVC SCHEDULE 40, SOCKET FITTINGS DWV
	FROM SECOND TO FIRST FLOOR	ASTM A 888 CAST IRON, NO HUB SYSTEM

PLUMBING PIPING MATERIAL SCHEDULE

PIPING SYSTEM	LOCATION	ACCEPTABLE PIPING MATERIAL
DOMESTIC WATER	BELOW GRADE	ASTM B 88 TYPE K SOLDERED COPPER
	ABOVE GRADE	PEX A COMPRESSION JOINT



DOMESTIC WATER HEATER DETAIL
SCALE NTS

CLIENT:

ADDRESS:

CARLSBAD SAN DIEGO, CA

NOTES:

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REV. NO.	DESCRIPTION	DATE	BY
01	PC CORRECTIONS	02.19.23	MN

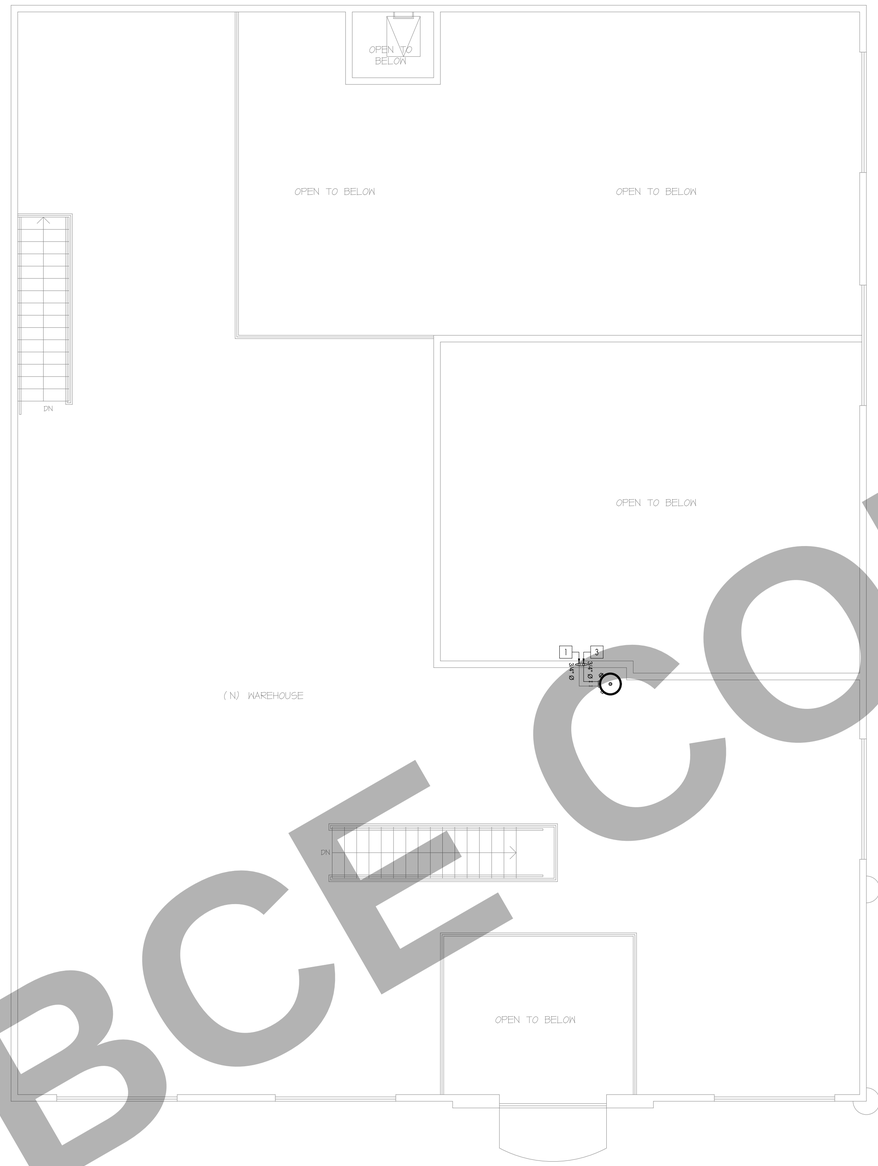
PROJECT:
1934 KELLOG

TITLE:
WATER SUPPLY PLAN
PROPOSED FIRST FLOOR

PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36:
		3/16"=1'-0"

DRAWING NO.
P1.02

REV.



RPOPOSED SECOND FLOOR

GENERAL NOTES:

1. PRIOR TO PERFORMING WORK, CONTRACTOR TO COORDINATE EXACT PIPE SIZES, INVERT ELEVATIONS, PRESSURES FOR LOCATIONS OF ANY SEWER, WATER PIPING AND WATER METER WITH CIVIL UTILITIES DRAWINGS, AND ANY OTHER ENGINEER AS APPLICABLE.
2. PRIOR TO PERFORMING WORK, CONTRACTOR TO COORDINATE PIPE ROUTING WITH ALL OTHER TRADES AND EXISTING FIELD CONDITIONS.
3. REFER TO MECHANICAL PLANS FOR PLUMBING SPECIFICATION OF MATERIAL, INSULATION AND INSTALLATION REQUIREMENTS.
4. CONTRACTOR IS RESPONSIBLE FOR ROUGH-IN COORDINATION AND LOCATIONS. REFER TO ARCHITECTURAL PLANS FOR LOCATIONS AND FIXTURES.
5. CONTRACTOR IS RESPONSIBLE FOR ANY REQUIRED CUTTING AND PATCHING.
6. ALL NOTCHING, BORING, AND CUTTING OF HOLES IN WALL STUDS AND FLOOR JOISTS SHALL BE PERFORMED BASED ON THE LATEST ADOPTED AND APPROVED EDITION OF THE BUILDING CODE.
7. ALL PLUMBING FIXTURES SHALL BE OF WATER CONSERVATION TYPE AS REQUIRED BY LOCAL AUTHORITY HAVING JURISDICTION.
8. ALL WATER PIPING SHALL BE INSTALLED ON INTERIOR SIDE OF THE BUILDING WALL INSULATION.
9. CONTRACTOR SHALL PROVIDE VALVES LOCATED ABOVE LAY-IN CEILING OR 24"x24" CEILING ACCESS PANEL COORDINATE FINAL LOCATION AND SIZE WITH ARCHITECT. PROVIDE BALANCING VALVES FOR HOT WATER RETURN SYSTEM AS REQUIRED.
10. ALL SANITARY DRAINAGE PIPING 3" AND SMALLER SHALL BE SLOPED AT $\frac{1}{4}$" PER FOOT. PIPING 4" AND LARGER SHALL BE SLOPED AT $\frac{1}{8}$" PER FOOT.
11. ALL CONDENSATE DRAIN PIPING SHALL BE SLOPED AT $\frac{1}{4}$" 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.

PLUMBING SHEET NOTES

SHEET NOTES:

DCW TO ABOVE FLOOR.

DCW & DHW DROP IN WALL.

DCW TO ABOVE FLOOR.

MINIMUM PIPE SIZE PER FIXTURE

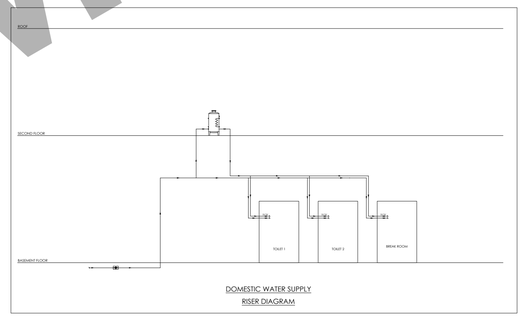
FIXTURE UNIT	CWP (INCH)	HWP (INCH)
SHOWER	1/2	1/2
WATER CLOSET	1/2	-
LAVATORY	1/2	1/2
KITCHEN SINK	1/2	1/2
DISHWASHER		1/2
BATHTUB	1/2	1/2
LAUNDRY MACHINE	1/2	1/2

BUILDING WATER LOAD			
DESCRIPTION	LOAD		PIPE SIZE PEX
	FU	GPM	
DCW	17	18.4	1"
DHW	6	10.7	3/4"
TOT. COMBINED	19	19.2	1"

SCHEDULE No. 1

ELECTRIC WATER HEATER SCHEDULE

TAG	EWH-1
LOCATION	WAREHOUSE
MANUFACTURER	AO Smith
MODEL	EJC-10
TYPE	ELECTRIC
POWER RATING	3000 W
Rated Storage Volume	9
First Hour Rating (Gallons)	N/A
APPROX. WEIGHT (lbs)	41
DIAMETER (in)	16"
HEIGHT (in)	18-1/4"
RECOVERY @ 90F RISE (GPH)	8

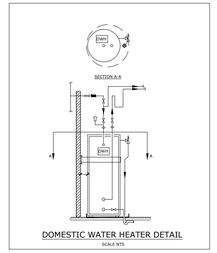


DOMESTIC WATER SUPPLY
RISER DIAGRAM

DOMESTIC WATER PIPE SIZING TABLE

BC PLUMBING CODE (2019) SECTION 2.6.3.1
DOMESTIC WATER PIPE SIZING IN ACCORDANCE WITH ASPE PLUMBING ENGINEERING DESIGN HANDBOOK VOL. 2.
BC PLUMBING CODE (2019) SECTION 2.6.3.2.
THIS TABLE IS TO BE USED IN CONJUNCTION WITH THE HYDRAULIC LOAD REQUIREMENTS FOR EACH FIXTURE.
BC PLUMBING CODE (2019) SECTION 2.6.3.5.
DOMESTIC WATER PIPE SIZING IN ACCORDANCE WITH THE MAXIMUM PERMITTED WATER VELOCITIES AS RECOMMENDED BY THE PIPE AND FITTING MANUFACTURER.
* PEX VALUES ARE BASED UPON UPONOR AQUAPEX.

PIPE MATERIAL		PEX*		PEX*		DUCTILE IRON & STAINLESS STEEL		COPPER (TYPE L)			COPPER (TYPE K)			COPPER (TYPE K)		
POTABLE WATER SYSTEM		DCW / DHW		DHWR		DCW / DHW		DCW			DHW			DHWR		
MAXIMUM ALLOWABLE VELOCITY		2.4 m/s (8 ft/s)		0.6 m/s (8 ft/s)		2.4 m/s (8 ft/s)		1.5 m/s (5 ft/s)			1.2 m/s (4 ft/s)			0.9 m/s (3 ft/s)		
[MM]	[INCH]	L/S	GPM	FU	L/S	GPM	L/S	GPM	FU	L/S	GPM	FU	L/S	GPM	FU	L/S	GPM
15 MM	1/2"	0.28	4.4	4.5	0.07	1.1	0.36	5.7	7	0.23	3.6	3.5	0.18	2.9	2.5	0.06	1
20 MM	3/4"	0.55	8.8	11.5	0.14	2.2	0.77	12.2	17	0.48	7.6	9	0.38	6.0	7.5	0.32	5
25 MM	1"	0.92	14.5	20.5	0.23	3.6	1.26	20.0	30	0.81	12.8	18	0.65	10.3	14	0.60	9.5
32 MM	1-1/4"	1.36	21.6	34	0.34	5.4	1.80	28.5	54	1.24	19.7	29	0.99	15.7	22	1.01	16
40 MM	1-1/2"	1.91	30.3	55	0.48	7.5	2.80	44.4	102	1.75	27.7	46	1.40	22.2	34	1.51	24
50 MM	2"	3.27	51.9	138	0.82	12.9	4.92	78.0	265	3.04	48.2	120	2.43	38.5	81	2.59	41



DOMESTIC WATER HEATER DETAIL
SCALE NTS

CLIENT:

ADDRESS:

CARLSBAD SAN DIEGO, CA

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.
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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
01	PC CORRECTIONS	02.19.23	MN

PROJECT:

1934 KELLOG

TITLE:

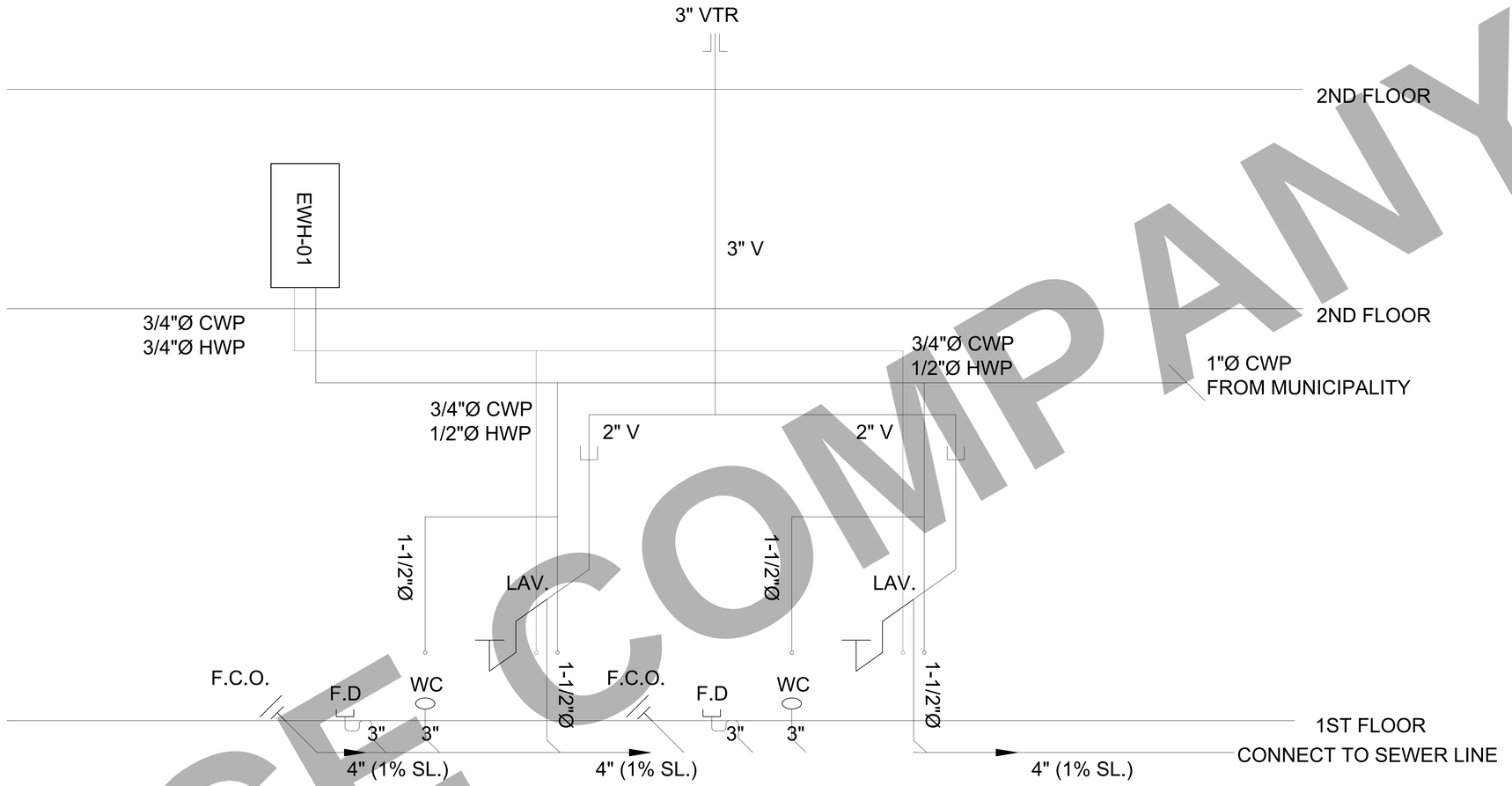
WATER SUPPLY PLAN
PROPOSED SECOND FLOOR

PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36:
		3/16"=1'-0"

DRAWING NO.

P 1 . 0 3

REV.



PLUMBING RISER DIAGRAM

CLIENT:

ADDRESS:

CARLSBAD SAN DIEGO, CA

NOTES:

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REV. NO.	DESCRIPTION	DATE	BY
01	PC CORRECTIONS	02.19.23	MN

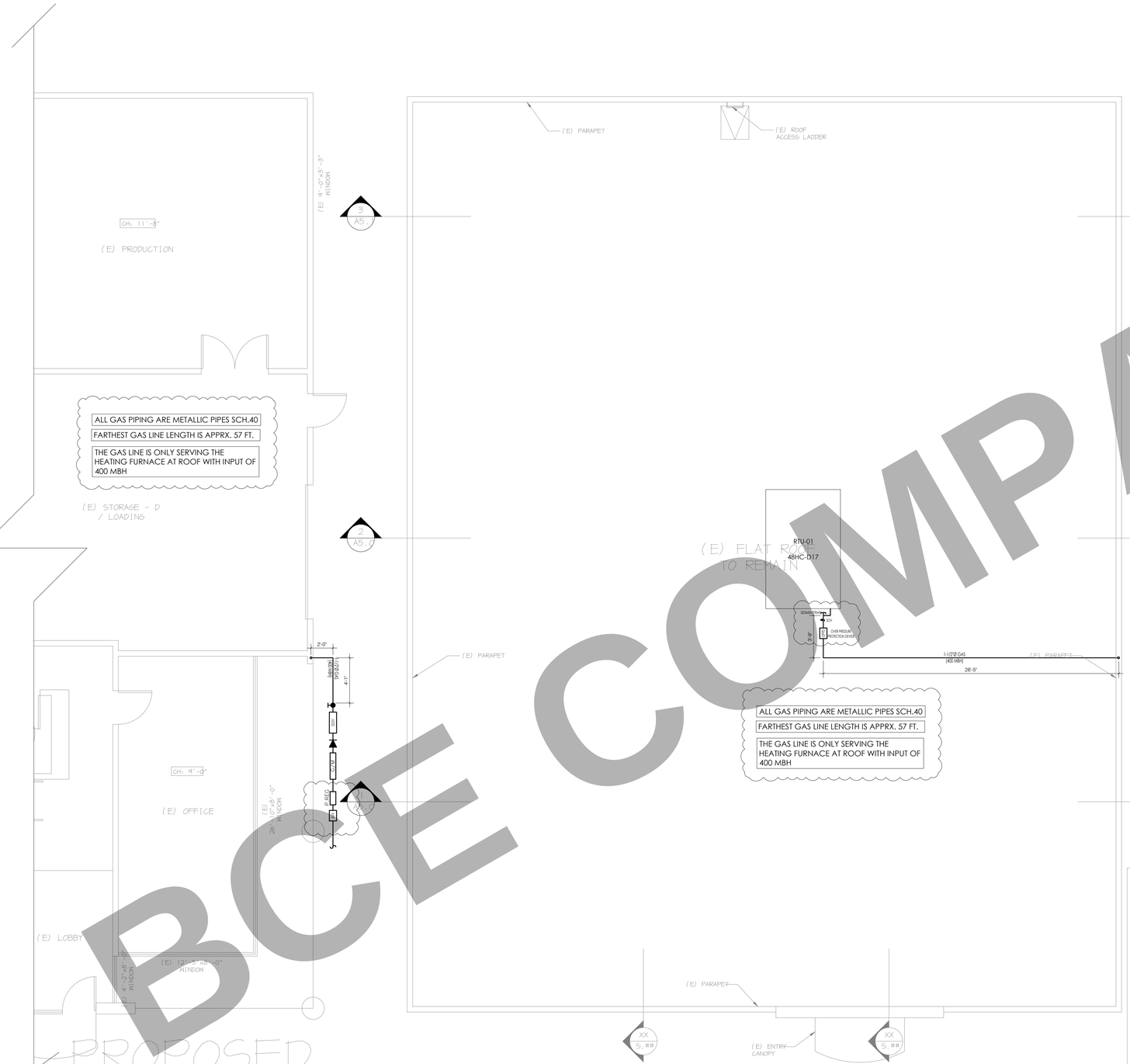
PROJECT: 1934 KELLOG

TITLE: PLUMBING RISER DIAGRAM

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

DRAWING NO. P1.04

REV.



GENERAL NOTES:

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GAS PIPING INSTALLATIONS

TABLE 402.4(1)
SCHEDULE 40 METALLIC PIPE

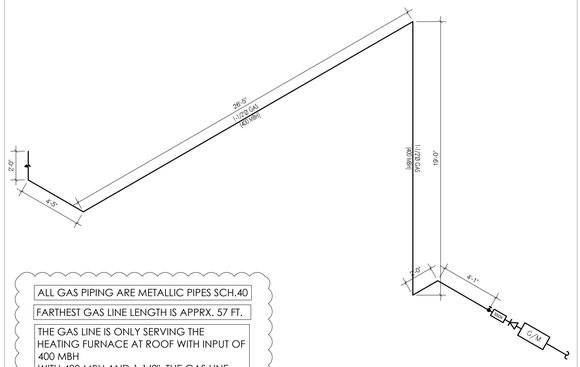
Gas	Natural
Inlet Pressure	Less than 2 psi
Pressure Drop	0.3 in. w.c.
Specific Gravity	0.60

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

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square inch = 6.8953kPa, 1-inch water column = 0.2488 kPa,
1 cfh = 1 British thermal unit per hour = 0.2931 W, 1 cubic foot per hour = 0.0283 m³/h, 1 degree = 0.01745 rad.

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

2009 INTERNATIONAL FUEL GAS CODE® 31



ALL GAS PIPING ARE METALLIC PIPES SCH.40
FARTHEST GAS LINE LENGTH IS APPRX. 57 FT.
THE GAS LINE IS ONLY SERVING THE HEATING FURNACE AT ROOF WITH INPUT OF 400 MBH
WITH 400 MBH AND 1-1/2", THE GAS LINE LENGTH CAN GO UP TO 100 FEET.

CLIENT:

ADDRESS:

CARLSBAD SAN DIEGO, CA

NOTES:

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REV. NO.	DESCRIPTION	DATE	BY
01	PC CORRECTIONS	02.19.23	MN

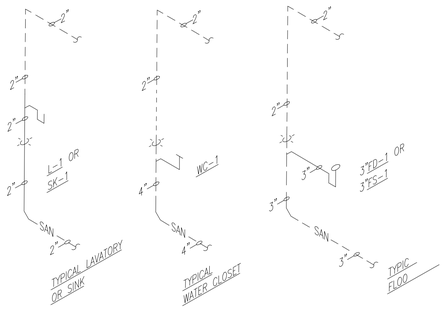
PROJECT:
1934 KELLOG

TITLE:
GAS PLAN PROPOSED FIRST & ROOF FLOOR

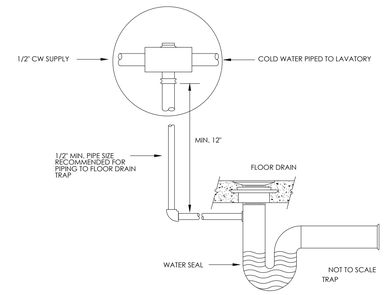
PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36:
		3/16"=1'-0"

DRAWING NO.
P1.05

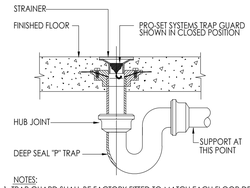
REV.



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

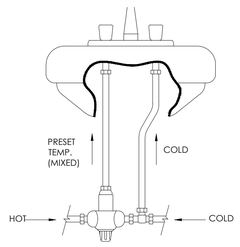


2 TRAP PRIMER

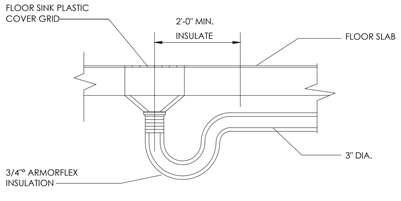


NOTES:
1. TRAP GUARD SHALL BE FACTORY FITTED TO MATCH EACH FLOOR DRAIN (AND FLOOR SINK) BY SIZE, MODEL, AND MANUFACTURER.
2. FLOOR SINK/HUB DRAIN TRAP GUARD INSTALLATION IS SIMILAR.
3. INSTALLATION OF TRAP GUARD TO BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
4. INSERT TRAP GUARD ONLY AFTER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

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



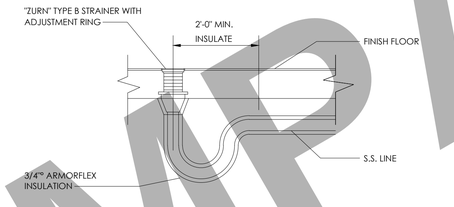
ANTI-SCALD MIXING VALVE
NO SCALE



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

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

FLOOR SINK DETAIL
NO SCALE



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

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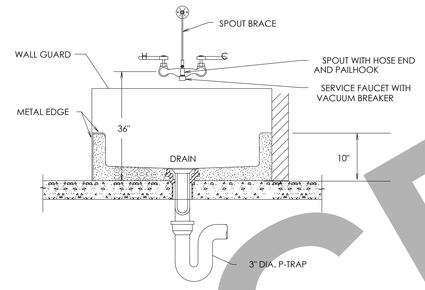
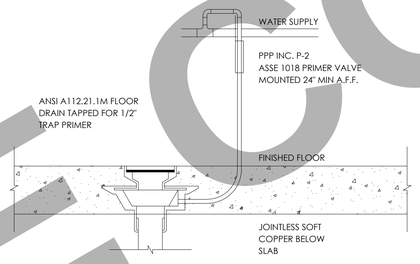
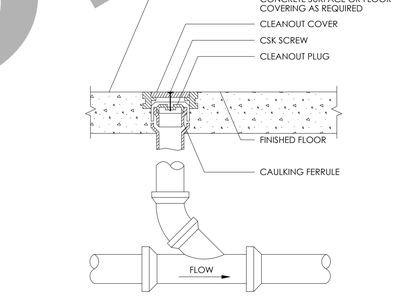
FLOOR DRAIN DETAIL
NO SCALE



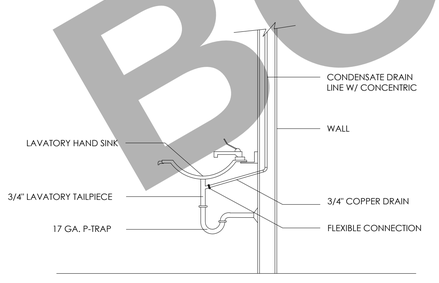
MOP SINK DETAIL
NO SCALE



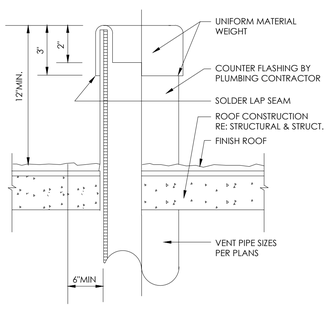
TRAP PRIMER DETAIL
NO SCALE



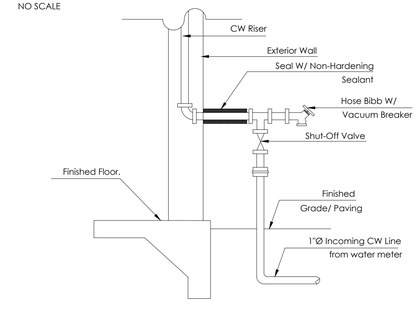
FLOOR CLEANOUT DETAIL
NO SCALE



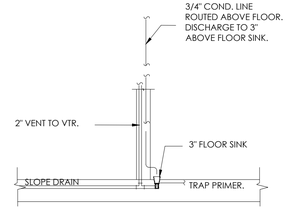
CONDENSATE DETAIL
NO SCALE



VENT THRU ROOF DETAIL
NO SCALE



WATER ENTRY DETAIL
NO SCALE



COND. ON FLOOR SINK DETAIL
NO SCALE

CLIENT:

ADDRESS:

CARLSBAD SAN DIEGO, CA

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
01	PC CORRECTIONS	02.19.23	MN

PROJECT:
1934 KELLOG

TITLE:
PLUMBING GENERAL DETAILS

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

DRAWING NO.
P 2 . 0 1

REV.

Project Name:	1934 Kellogg Ave TI	NRCC-PRF-01-E	Page 2 of 12
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C1. COMPLIANCE RESULTS FOR PERFORMANCE COMPONENTS (Annual TDV Energy Use, kBtu/ft ²-yr)

COMPLIES

Energy Component	Standard Design (TDV)	Proposed Design (TDV)	Compliance Margin (TDV)[1]
Space Heating	7.04	6.15	0.89
Space Cooling	38.12	44.75	-6.63
Indoor Fans	21.64	11.63	10.01
Heat Rejection	--	--	--
Pumps & Misc.	--	--	--
Domestic Hot Water	4.12	4.12	--
Indoor Lighting	20.68	20.68	--
ENERGY STANDARDS COMPLIANCE TOTAL	**91.60**	**87.33**	**4.27 (4.7%)**

[1] *Notes: The number in parenthesis following the Compliance Margin in column 4. represents the Percent Better than Standard.*

C2. RESULTS FOR 'ABOVE CODE' QUALIFICATIONS[1]

☐ This project is pursuing CalGreen Tier 1 ☐ This project is pursuing CalGreen Tier 2

Miscellaneous Energy Component	Standard Design (TDV)	Proposed Design (TDV)	Compliance Margin (TDV)[1]
Receptacle	43.61	43.61	--
Process	--	--	--
Other Ltg	--	--	--
Process Motors	--	--	--
COMPLIANCE TOTAL PLUS MISCELLANEOUS COMPONENTS	**135.21**	**130.94**	**4.3 (3.2%)**

[1] *Notes: This table is used to document compliance with programs OTHER THAN Title 24 Part 6, if applicable.*

Project Name:	1934 Kellogg Ave TI	NRCC-PRF-01-E	Page 3 of 12
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C3. ENERGY USE SUMMARY

Energy Component	Standard Design Site (MWh)	Proposed Design Site (MWh)	Margin (MWh)	Standard Design Site (MBtu)	Proposed Design Site (MBtu)	Margin (MBtu)
Space Heating	--	1.9	--	26.3	--	--
Space Cooling	8.7	11.6	-2.9	--	--	--
Indoor Fans	6.2	3.4	2.8	--	--	--
Heat Rejection	--	--	--	--	--	--
Pumps & Misc.	--	--	--	--	--	--
Domestic Hot Water	1.2	1.2	0.0	--	--	--
Indoor Lighting	5.7	5.7	0.0	--	--	--
Compliance Total	**21.8**	**23.8**	**-2.0**	**26.3**	**0.0**	**--**
Receptacle	12.1	12.1	0.0	--	--	--
Process	--	--	--	--	--	--
Other Ltg	--	--	--	--	--	--
Process Motors	--	--	--	--	--	--
TOTAL	**33.9**	**35.9**	**-2.0**	**26.3**	**0.0**	**--**

D. EXCEPTIONAL CONDITIONS

This project uses the Simplified Geometry Performance Modeling Approach which is not capable of modeling daylighting controls and assumes the prescriptive Secondary Daylit Control requirements are met. PRESCRIPTIVE COMPLIANCE documentation (form NRCC-LTI-02-E) for the requirements of section 140.6(d) Automatic Daylighting Controls in Secondary Daylit Zones is required.

E. HERS VERIFICATION

This Section Does Not Apply

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G1. ENVELOPE GENERAL INFORMATION (conditioned spaces only)

1	2	3	4
Opaque Surfaces & Orientation	Total Gross Surface Area (ft²)	Total Fenestration Area (ft²)	Window to Wall Ratio (%)
North-Facing[1]	1,183 ft²	0 ft²	00.0%
East-Facing[2]	1,676 ft²	365 ft²	21.8%
South-Facing[3]	1,170 ft²	336 ft²	28.7%
West-Facing[4]	1,409 ft²	0 ft²	00.0%
Total	**5,438 ft²**	**701 ft²**	**12.9%**
Roof	2,986 ft²	0 ft²	00.0%

Notes:
[1] North-Facing is oriented to within 45 degrees of true north, including 45°00'00" east of north (NE), but excluding 45°00'00" west of north (NW).
[2] East-Facing is oriented to within 45 degrees of true east, including 45°00'00" south of east (SE), but excluding 45°00'00" north of east (NE).
[3] South-Facing is oriented to within 45 degrees of true south, including 45°00'00" west of south (SW), but excluding 45°00'00" east of south (SE).
[4] West-Facing is oriented to within 45 degrees of true west, including 45°00'00" north of due west (NW), but excluding 45°00'00" south of west (SW).

G3. OPAQUE SURFACE ASSEMBLY SUMMARY

1	2	3	4	5	6	7	8	9	10
Surface Name	Surface Type	Area (ft²)	Framing Type	Cavity R-Value	Continuous R-Value	Units	Value	Description of Assembly Layers	Status[1]
Default Wall 1992 to Pres10	ExteriorWall	5438	Wood	13	NA	U-Factor	0.102	Stucco - 7/8 in. Vapor permeable felt - 1/8 in. Wood framed wall, 16in. OC, 3.5in., R-13 Gypsum Board - 1/2 in.	E
R-0 Wall12	InteriorWall	4492	NA	0	NA	U-Factor	0.337	Stucco - 7/8 in. Vapor permeable felt - 1/8 in. Air - Cavity - Wall Roof Ceiling - 4 in. or more Gypsum Board - 1/2 in.	E
Slab On Grade15	UndergroundFloor	4708	NA	0	NA	F-Factor	0.73	Slab Type = UnheatedSlabOnGrade Insulation Orientation = None Insulation R-Value = R0	E

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G3. OPAQUE SURFACE ASSEMBLY SUMMARY

1	2	3	4	5	6	7	8	9
Surface Name	Surface Type	Area (ft²)	Framing Type	Cavity R-Value	Continuous R-Value	Units	Value	Description of Assemb
R-0 Roof No Attic109	Roof	2986	NA	0	NA	U-Factor	0.304	Asphalt shingles - 1, Vapor permeable felt Plywood - 1/2 in Air - Cavity - Wall Roof Ce or more Gypsum Board - 1/
Default Floor No Crawlspa111	ExteriorFloor	769	Wood	19	NA	U-Factor	0.049	Wood framed floor, 16in. R-19 Plywood - 1/2 in Carpet - 3/4 in.
R-0 Floor No Crawlspace113	InteriorFloor	2217	NA	0	NA	U-Factor	0.183	Air - Cavity - Wall Roof Ce or more Plywood - 1/2 in Carpet - 3/4 in.

[1] *Status: N - New, A – Altered, E – Existing*

G4. OPAQUE DOOR SUMMARY

1	2	3
Assembly Name	Overall U-factor	Status[1]
Metal Door46	0.700	E

G5. FENESTRATION ASSEMBLY SUMMARY

1	2	3	4	5	6	7	8	9
Fenestration Assembly Name / Tag or I.D.	Fenestration Type / Product Type / Frame Type	Certification Method[1]	Assembly Method	Area ft²	Overall U-factor	Overall SHGC	Overall VT	Status[2]
Single Metal Clear_	VerticalFenestration FixedWindow MetalFraming	Default Performance	SiteBuilt	618	1.19	0.83	0.77	E

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G5. FENESTRATION ASSEMBLY SUMMARY

1	2	3	4	5	6	7	8	9
Fenestration Assembly Name / Tag or I.D.	Fenestration Type / Product Type / Frame Type	Certification Method[1]	Assembly Method	Area ft²	Overall U-factor	Overall SHGC	Overall VT	Status[2]
Door- Single Metal Clear_	VerticalFenestration FixedWindow MetalFraming	Default Performance	SiteBuilt	24	1.19	0.83	0.77	E
(N) Single Metal Clear_	VerticalFenestration FixedWindow MetalFraming	Default Performance	SiteBuilt	59	1.19	0.83	0.77	N

[1] *Newly installed fenestration shall have a certified NFRC Label Certificate or use the CEC default tables found in Table 110.6-A and Table 110.6-B. Center of Glass (COG) values are for the glass-only, determined by the manufacturer, and are shown for ease of verification. Site-built fenestration values are calculated per Nonresidential Appendix NA6 and are used in the analysis.*
[2] *Status: N - New, A – Altered, E – Existing*

H1. DRY SYSTEM EQUIPMENT (furnaces, air handling units, heat pumps, VRF, economizers etc.)

1	2	3	4	5	6	7	8	9	10	11	12
Equipment Name	Equipment Type	Qty	Heating				Cooling			Economizer Type (if present)	Status[5]
			Total Heating Output (kBtu/h)	Supp Heat Output (kBtuh)	Efficiency Unit	Efficiency	Total Cooling Output (kBtu/h)	Efficiency Unit	Efficiency		
(N) HVAC System (RTU-1)	SZHP (Packaged3Phase)	1	337	0	COP	3.20	311	EER	12.0	NoEconomizer	N
(N) HVAC System (IDU-1 &	MiniSplitHP (Split3Phase)	1	18	0	HSPF	8.50	18	SEER EER	15.00 9.00	NA	N

[1] *Status: N - New, A – Altered, E – Existing*

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H2. FAN SYSTEMS SUMMARY[1]

1	2	3	4	5	6	7	8	9	10	11	12	13
Name or Item Tag	System Type	Design OA	Supply Fan				Return Fan				Economizer Type (if present)	Status[5]
	packaged, DOAS, etc.	CFM	CFM	BHP	Watts	Control	CFM	BHP	Watts	Control		
(N) HVAC System (RTU-1)	SZHP	1361	4500	1.000	862.0	ConstantVolume	NA	NA	NA	NA	NoEconomizer	N
(N) HVAC System (IDU-1 &	MiniSplitHP	0	450	0.150	130.8	ConstantVolume	NA	NA	NA	NA	NA	N

[1] *Status: N - New, A – Altered, E – Existing*

H3. EXHAUST FAN SUMMARY

1	2	3	4	5	6	7
System ID	Zone Name	Qty	CFM	Motor BHP	Motor Watts	Total Static Pressure (in H20)
(E) Tech & Server Room3	1-(E) Tech & Server Room	1	50	0.015	13.1	1.24

H4. Wet System Equipment (boilers, chillers, cooling towers, etc.)

1	2	3	4	5	6	7	8	9	10	11	12
Name or Item Tag	Equipment Type	Qty	Vol (gal)	Rated Capacity (kBtu/h)	Efficiency	Standby Loss	Pumps				Status[1]
							Qty	GPM	HP	VSD (Y/N)	

[1] *Status: N - New, A – Altered, E – Existing*

H5. SYSTEM SPECIAL FEATURES

1	2	3	4	5	6
System Name	Optimum Start	Window Interlocks per §140.4(n)	Evaporative Cooling	Heat Recovery	Other Controls
(N) HVAC System (RTU-1)	Optimum Start	NA	No Evaporative Cooler	No Heat Recovery	No DCV Controls, DDC Controls No Economizer No Supply Air Temp. Control
(E) Water Heater1 - SHW	NA	NA	NA	NA	Fixed Temperature Control, No DDC

Notes: This table includes controls related to the performance path only. For projects using the prescriptive path, mandatory and prescriptive controls requirements are documented on the NRCC-MCH-E.

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H6. MECHANICAL VENTILATION

1	2	3	4	5	6	7	8	9
Zone Name	Mechanical Ventilation							DCV or Occupant Sensor Controls, or Both
	Ventilation Function	# hotel rooms	# of people	# of bedrooms	Supply OA CFM	Exhaust CFM	Conditioned Area (sf)	
1-(E) Tech & Server Room	Misc - All others	0	0.39	0	39	50	261	NA
2-(E) Office	Office - Office space Office - Breakrooms Misc - All others Exhaust - Toilets, public Lodging - Lobbies/pre-function Misc - General manufacturing (excludes heavy industrial and process using chemicals) Misc - Warehouses	0	23.96	0	1361	0	7433	NA

Multifamily or Hotel/Motel Occupancy? (if "Yes", see DOMESTIC/SERVICE HOT WATER SYSTEM SUMMARY)	No
Does the Project include Zonal Systems?	Yes

H7. ZONAL SYSTEM AND TERMINAL UNIT SUMMARY

1	2	3	4	5	6	7	8	9	10	11	12
System ID	Zone Name	System Type	Rated Capacity (kBtuh)		Airflow (cfm)			Fan			
			Heating	Cooling	Design	Min.	Min. Ratio	BHP	Watts	Cycles	ECM Motor
(N) HVAC System (IDU-1 &	1-(E) Tech & Server Room	MiniSplitHP	18.00	18.00	450	NA	NA	0.150	130.8	☐	☐
2-(E) Office-Trm	2-(E) Office	Uncontrolled	NA	NA	4500	NA	0.00	NA	NA	NA	☐

H8. EVAPORATIVE COOLER SUMMARY

This Section Does Not Apply

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I1. WATER HEATER EQUIPMENT SUMMARY

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Name	Heater Element Type	Tank Type	Qty	Tank Vol (gal)	Rated Input	Rated Input Unit	Efficiency	Efficiency Unit	Tank Insulation R-value (Int/Ext)	Standby Loss Fraction	Heat Pump Type	1st Hour Rating or Flow Rate (gal)	Tank Location or Ambient Condition
A. O. SMITH EJC-102	Electricity	Storage	1	10.00	4.5	kW	0.92	EF	NA	NA	NA	80	NA

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L. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Table Instructions: Selections shall be made by Documentation Author to indicate which Certificates of Installation must be submitted for the features to be recognized for compliance. These documents bust be retained and provided to the building inspector during construction and can be found online at: https://www.energy.ca.gov/title24/2019standards/2019_compliance_documents/Nonresidential_Documents/NRCI/

Building Component	Form/Title
Envelope	NRCI-ENV-01-E - Must be submitted for all buildings
Mechanical	NRCI-MCH-01-E - Must be submitted for all buildings
Plumbing	NRCI-PLB-01-E - Must be submitted for all buildings

CA Building Energy Efficiency Standards- 2019 Nonresidential Compliance Report Version: NRCC-PRF-01-E-12202021-6384 Report Generated at: 2022-02-10 01:24:51

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M. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

Table Instructions: Selections shall be made by Documentation Author to indicate which Certificates of Acceptance must be submitted for the features to be recognized for compliance. These documents must be provided to the building inspector during construction and must be completed through an Acceptance Test Technician Certification Provider (ATTCP). For more information visit:https://www.energy.ca.gov/title24/2019standards/2019_compliance_documents/Nonresidential_Documents/NRCA/

Building Component	Form/Title
Envelope	NRCA-ENV-02-F - NRFC label verification for fenestration
Mechanical	NRCA-MCH-02-A Outdoor Air must be submitted for all newly installed HVAC units. Note: MCH02-A can be performed in conjunction with MCH-07-A Supply Fan VFD Acceptance (if applicable) since testing activities overlap
	NRCA-MCH-03-A Constant Volume Single Zone HVAC

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DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

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

Documentation Author Name: Viranchi Shah	Signature: *Viranchi Shah*
Company: www.gettitle24.com	
Address: 14730 Beach Blvd.	Signature Date: 2022-02-10
City/State/Zip: La Mirada CA 90638	CEA/ HERS Certification Identification (if applicable):
Phone: 7148884736	

RESPONSIBLE PERSON'S DECLARATION STATEMENT

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

1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer)
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.

Responsible Envelope Designer Name:	Signature:	
Company: [illegible]		
Address: 726 Foxbrough Pl	Date Signed:	
City/State/Zip: Pleasanton CA 94566		
Phone:	Title:	License #:
Responsible Lighting Designer Name:	Signature: NOT IN SCOPE	
Company: [illegible]		
Address: 726 Foxbrough Pl	Date Signed:	
City/State/Zip: Pleasanton CA 94566		
Phone:	Title:	License #:
Responsible Mechanical Designer Name: - specify	Signature:	
Company: [illegible]		
Address: 726 Foxbrough Pl	Date Signed:	
City/State/Zip: Pleasanton CA 94566		
Phone:	Title:	License #:

CA Building Energy Efficiency Standards- 2019 Nonresidential Compliance Report Version: NRCC-PRF-01-E-12202021-6384 Report Generated at: 2022-02-10 01:24:51

STATE OF CALIFORNIA
Indoor Lighting
NRCC-LTI-E CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE NRCC-LTI-E

This document is used to demonstrate compliance with requirements in §110.9, §110.12(c), §130.0, §130.1, §140.6 and §141.0(b)2 for indoor lighting scopes using the prescriptive path.

Project Name:	1934 Kellogg Ave TI	**Report Page:**	**(Page 1 of 9)**
Project Address:	1934 Kellogg Ave	**Date Prepared:**	

A. GENERAL INFORMATION

01	Project Location (city)	Carlsbad	04 Total Conditioned Floor Area (ft²)	7,693.99
02	Climate Zone	7	05 Total Unconditioned Floor Area (ft²)	0
03	Occupancy Types Within Project (select all that apply):		06 # of Stories (Habitable Above Grade)	2

☒ Office ☐ Retail ☒ Warehouse ☐ Hotel/Motel ☐ School ☒ S
☐ Parking Garage ☐ High-Rise Residential ☐ Relocatable ☐ Healthcare ☒ Other (Write in)

B. PROJECT SCOPE

This table includes any lighting systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in §1 §141.0(b)2 for alterations.

Scope of Work	Conditioned Spaces		Unconditioned Sp	
01	02	03	04	
My Project Consists of (check all that apply):	Calculation Method	Area (ft²)	Calculation Method	
☐ New Lighting System				
☐ New Lighting System - Parking Garage				
☒ Altered Lighting System	Area Category Method	7693.99	Area Category Method	0
Total Area of Work (ft²)	7693.99		0	

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

T24 P
WWW.
viranchi@
PHONE:

TITLE 24 ENERGY COMPLIANCE REPORT
SHEET 1 OF 2

1934 Kellogg Ave TI
ADDRESS: 1934 Kellogg Ave
Carlsbad, CA 92008

T24-1

STATE OF CALIFORNIA
Indoor Lighting
NRCC-LTI-E — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-LTI-E
Project Name:	1934 Kellogg Ave TI	Report Page:	(Page 2 of 9)
Project Address:	1934 Kellogg Ave	Date Prepared:	2/10/2022

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

Lighting in conditioned and unconditioned spaces must not be combined for compliance per §140.6(b)2	Allowed Lighting Power per §140.6(b) (Watts) 01 Complete Building §140.6(c)1 (See Table I)	02 Area Category §140.6(c)2 (See Table I)	03 Area Category Additional §140.6(c)2G (+) (See Table J)	04 Tailored §140.6(c)3 (+) (See Table K)		05 Total Allowed (Watts)		Adjusted Lighting Power per §140.6(a) (Watts) 06 Total Designed (Watts) (See Table F)	07 Adjustments PAF Lighting Control Credits §140.6(a)2 (-) (See Table P)		08 Total Adjusted (Watts) *Includes Adjustments	Compliance Results 09 05 must be >= 08 §140.6
Conditioned		3,982.9	0		=	3,983	≥	3,377	0	=	3377	COMPLIES
Unconditioned					=		≥			=		
Controls Compliance (See Table H for Details)												COMPLIES
Rated Power Reduction Compliance (See Table Q for Details)												

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

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

F. INDOOR LIGHTING FIXTURE SCHEDULE
This table includes all permanent designed lighting and all portable lighting in offices.

Designed Wattage: Conditioned Spaces

01 Name or Item Tag	02 Complete Luminaire Description	03 Modular (Track) Fixture	04 Small Aperture & Color Change[1]	05 Watts per luminaire[2]	06 How is Wattage determined	07 Total Number of Luminaires	08 Excluded per §140.6(a)3	09 Design Watts	10 Field Inspector Pass	Fail
A	1 x 4' Surface Mounted Lighting 25 W	No	No	25	Mfr. Spec	25	No	625	☐	☐

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F. INDOOR LIGHTING FIXTURE SCHEDULE

B	2 x 4' Recessed Light 40 W	No	No	40	Mfr. Spec	39	No	1,560	☐	☐
C	6" Ceiling Recessed LED 20 W	No	No	20	Mfr. Spec	59	No	1,180	☐	☐
w	Exit Sign 2W	No	No	2	Mfr. Spec	6	No	12	☐	☐
Total Designed Watts: CONDITIONED SPACES								3,377		

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

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

G. MODULAR LIGHTING SYSTEMS
This section does not apply to this project.

H. INDOOR LIGHTING CONTROLS (Not including PAFs)
*This table includes lighting controls for conditioned and unconditioned spaces. When a control having a * is shown, the notes section of this table provides more detail on how compliance is achieved. The lighting controls section of the Compliance Summary Table on the first page will show "DOES NOT COMPLY" if the notes are left blank.*

Building Level Controls

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

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H. INDOOR LIGHTING CONTROLS (Not including PAFs)
Area Level Controls

04 Area Description	05 Complete Building or Area Category Primary Function Area	06 Area Controls §130.1(a)	07 Multi-Level Controls §130.1(b)	08 Shut-Off Controls §130.1(c)	09 Primary/Sky lit Daylighting §130.1(d)	10 Secondary Daylighting §140.6(d)	11 Interlocked Systems §140.6(a)1	12 Field Inspector Pass	Fail
Office	Office greater than 250 square feet	Manual ON/OFF	Dimmer	Other	N/A	N/A	No	☐	☐
Storage	Warehouse	Manual ON/OFF	Dimmer	Other	N/A	N/A	No	☐	☐
Break Room	Lounge Breakroom or Waiting Area	Manual ON/OFF	Exempt*	Other	N/A	N/A	No	☐	☐
Restroom	Restrooms	Manual ON/OFF	Exempt*	Occupancy Sensor	N/A	N/A	No	☐	☐
Lobby	Corridor Area	Manual ON/OFF	Dimmer	Other	N/A	N/A	No	☐	☐
Tech & Server Room	Electrical Mechancial Telephone Room	Manual ON/OFF	Exempt*	Other	N/A	N/A	No	☐	☐
Electrical Room	Electrical Mechancial Telephone Room	Manual ON/OFF	Exempt*	Other	N/A	N/A	No	☐	☐
Production	Warehouse	Manual ON/OFF	Dimmer	Other	N/A	N/A	No	☐	☐
Warehouse	Warehouse	Manual ON/OFF	Exempt*	Other	N/A	N/A	No	☐	☐
Tech Room	Electrical Mechancial Telephone Room	Manual ON/OFF	Exempt*	Other	N/A	N/A	No	☐	☐

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H. INDOOR LIGHTING CONTROLS (Not including PAFs)
*NOTES: Controls with a * require a note in the space below explaining how compliance is achieved.
EX: Conference 1: Primary/Skylight Daylighting: Exempt because less than 120 watts of general lighting; EXCEPTION 1 to §130.1(d)2

13 — Plan Sheet Showing Daylit Z...

Office	
Storage	
Break Room	Area is <150 SF
Restroom	Area is <150 SF
Lobby	
Tech & Server Room	Installed LPD is < 0.5 W/SF
Electrical Room	Installed LPD is < 0.5 W/SF
Production	
Warehouse	Installed LPD is < 0.5 W/SF
Tech Room	Installed LPD is < 0.5 W/SF

I. LIGHTING POWER ALLOWANCE: COMPLETE BUILDING OR AREA CATEGORY METHODS
Each area complying using the Complete Building or Area Category Methods per §140.6(b) are included in this table. Column 06 indicates if additional lighting power allowances per §140.6(c) or adjustments per §140.6(a) are being used .

Conditioned Spaces

01	02	03	04	05	06

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

Area Description	Complete Building or Area Category Primary Function Area	Allowed Density (W/ft^2)	Area (ft^2)	Allowed Wattage (Watts)	Additional Allowance / Adjustment: Area Category	PAF
(E) Tech & Server Room	Electrical Mechancial Telephone Room	0.4	261.2	104.5	No	No
(E) Office	Office greater than 250 square feet	0.65	619	402.4	No	No
(E) Break Room	Lounge Breakroom or Waiting Area	0.65	112.16	72.9	No	No
(E) Storage	Commercial Industrial Storage Area	0.45	985.73	443.6	No	No
(E) Restroom	Restrooms	0.65	125.79	81.8	No	No
(E) Lobby	Corridor Area	0.6	645.39	387.2	No	No
(E) Electrical Room	Electrical Mechancial Telephone Room	0.4	55.56	22.2	No	No
(E) Production	General Commercial Industrial Work AreaLow Bay	0.6	1,816.44	1,089.9	No	No
(E) Tech Room	Electrical Mechancial Telephone Room	0.4	86.72	34.7	No	No
(E) Warehouse (2nd Floor)	Commercial Industrial Storage Area	0.45	2,986	1,343.7	No	No
		TOTALS:	7,693.99	3,982.9	See Tables J, or P for detail	

J. ADDITIONAL ALLOWANCE: AREA CATEGORY METHOD QUALIFYING LIGHTING SYSTEM
This section does not apply to this project.

K. TAILORED METHOD GENERAL LIGHTING POWER ALLOWANCE
This section does not apply to this project.

L. ADDITIONAL LIGHTING ALLOWANCE: TAILORED WALL DISPLAY
This section does not apply to this project.

M. ADDITIONAL LIGHTING ALLOWANCE: TAILORED FLOOR AND TASK LIGHTING
This section does not apply to this project.

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N. ADDITIONAL LIGHTING ALLOWANCE: TAILORED ORNAMENTAL/SPECIAL EFFECTS
This section does not apply to this project.

O. ADDITIONAL LIGHTING ALLOWANCE: TAILORED VERY VALUABLE MERCHANDISE
This section does not apply to this project.

P. POWER ADJUSTMENT: LIGHTING CONTROL CREDIT (POWER ADJUSTMENT FACTOR (PAF))
This section does not apply to this project.

Q. RATED POWER REDUCTION COMPLIANCE FOR ALTERATIONS
This section does not apply to this project.

R. 80% LIGHTING POWER FOR ALL ALTERATIONS - CONTROLS EXCEPTIONS
This section does not apply to this project.

S. DAYLIGHT DESIGN POWER ADJUSTMENT FACTOR (PAF)
This section does not apply to this project.

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

Yes	No	Form/Title	Field Inspector Pass	Fail
●	○	NRCI-LTI-01-E - Must be submitted for all buildings	☐	☐
○	●	NRCI-LTI-02-E- Must be submitted for a lighting control system, or for an Energy Management Control System (EMCS), to be recognized for compliance.	☐	☐
○	●	NRCI-LTI-04-E - Must be submitted for two interlocked systems serving an auditorium, a convention center, a conference room, a multipurpose room or a theater to be recognized for compliance.	☐	☐
○	●	NRCI-LTI-05-E- Must be submitted for a Power Adjustment Factor (PAF) to be recognized for compliance.	☐	☐
○	●	NRCI-LTI-06-E- Must be submitted for additional wattage installed in a video conferencing studio to be recognized for compliance.	☐	☐

U. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE
Selections have been made based on information provided in this document. If any selection have been changed by the permit applicant, an explanation should be included in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and any with "-A" in the form name must be completed through an Acceptance Test Technician Certification Provider (ATTCP). For more information visit: http://www.energy.ca.gov/title24/attcp/providers.html

Yes	No	Form/Title	Field Inspector Pass	Fail
●	○	NRCA-LTI-02-A - Must be submitted for occupancy sensors and automatic time switch controls.	☐	☐
○	●	NRCA-LTI-03-A - Must be submitted for automatic daylight controls.	☐	☐
○	●	NRCA-LTI-04-A - Must be submitted for demand responsive lighting controls.	☐	☐
○	●	NRCA-LTI-05-A. - Must be submitted for institutional tuning power adjustment factor (PAF)	☐	☐

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DOCUMENTATION AUTHOR'S DECLARATION STATEMENT
I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Viranchi Shah	Documentation Author Signature: Viranchi Shah
Company: www.gettitle24.com	Signature Date: 2/10/2022
Address: 14730 Beach Blvd.	CEA/ HERS Certification Identification (if applicable):
City/State/Zip: La Mirada CA 90638	Phone: 7148884736

RESPONSIBLE PERSON'S DECLARATION STATEMENT
I certify the following under penalty of perjury, under the laws of the State of California:

1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer)
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.

Responsible Designer Name:	Responsible Designer Signature:
Company: [illegible]	Date Signed: [illegible]
Address: [illegible]	License:
City/State/Zip: [illegible]	Phone:

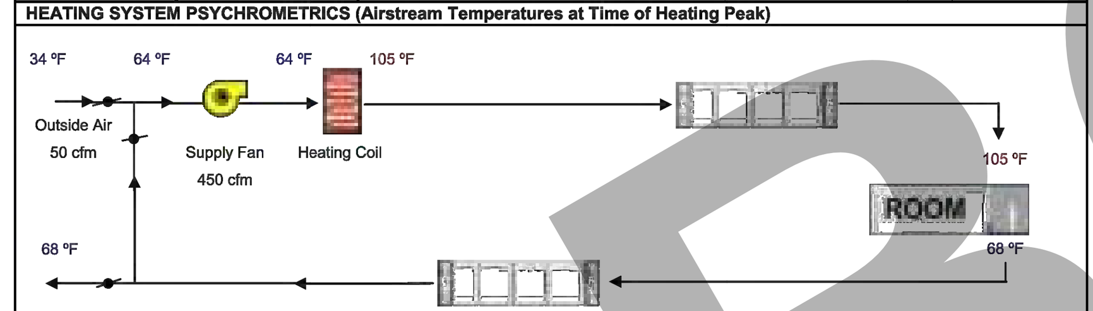
HVAC SYSTEM HEATING AND COOLING LOADS SUMMARY

Project Name: 1934 Kellogg Ave TI	Date: 2/10/2022
System Name: (N) HVAC System (IDU-1 & OU-1)	Floor Area: 261

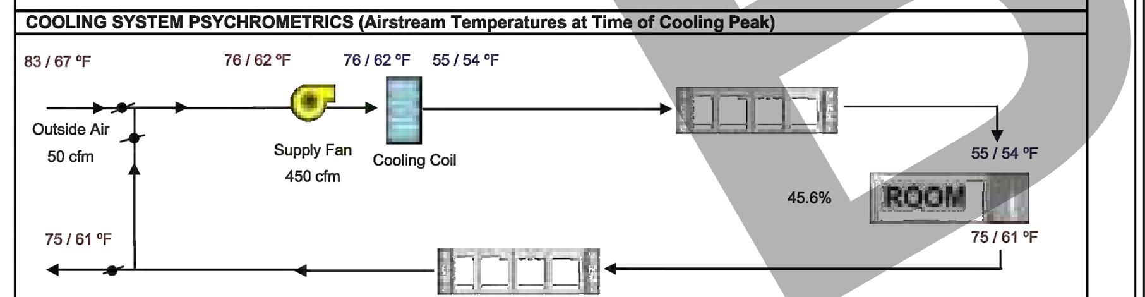
ENGINEERING CHECKS	
Number of Systems	1
Heating System	
Output per System	18,000
Total Output (Btuh)	18,000
Output (Btuh/sqft)	68.9
Cooling System	
Output per System	18,000
Total Output (Btuh)	18,000
Total Output (Tons)	1.5
Total Output (Btuh/sqft)	68.9
Total Output (sqft/Ton)	174.1
Air System	
CFM per System	450
Airflow (cfm)	450
Airflow (cfm/sqft)	1.72
Airflow (cfm/Ton)	300.0
Outside Air (%)	11.1%
Outside Air (cfm/sqft)	0.19
Note: values above given at ARI conditions	

SYSTEM LOAD	Coil Cooling Peak CFM	Sensible	Latent	Coil Htg. Peak CFM	Sensible
Total Room Loads	73	1,568	122	15	601
Return Vented Lighting		0			
Return Air Ducts		78			30
Return Fan		0			0
Ventilation	50	406	463	50	1,830
Supply Fan		0			0
Supply Air Ducts		78			30
TOTAL SYSTEM LOAD		2,132	584		2,491
HVAC EQUIPMENT SELECTION					
Carrier 40MPHAQ18XA3		16,633	983		13,770
Total Adjusted System Output (Adjusted for Peak Design conditions)		16,633	983		13,770
TIME OF SYSTEM PEAK			Jul 4 PM		Jan 1 AM

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



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



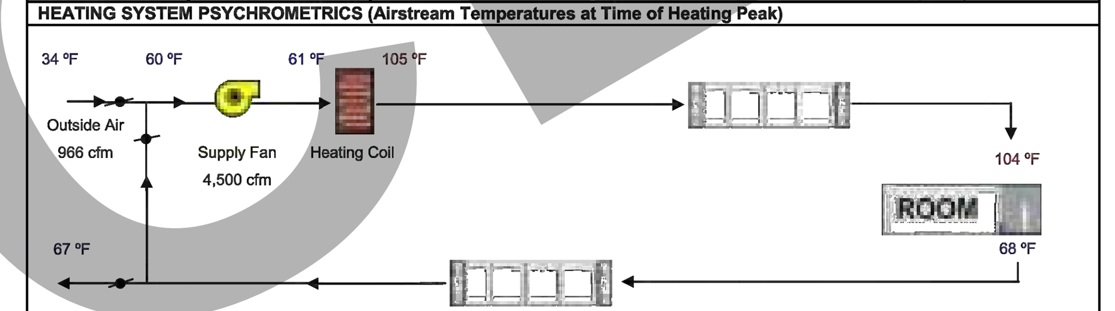
HVAC SYSTEM HEATING AND COOLING LOADS SUMMARY

Project Name: 1934 Kellogg Ave TI	Date: 2/10/2022
System Name: (N) HVAC System (RTU-1)	Floor Area: 7,433

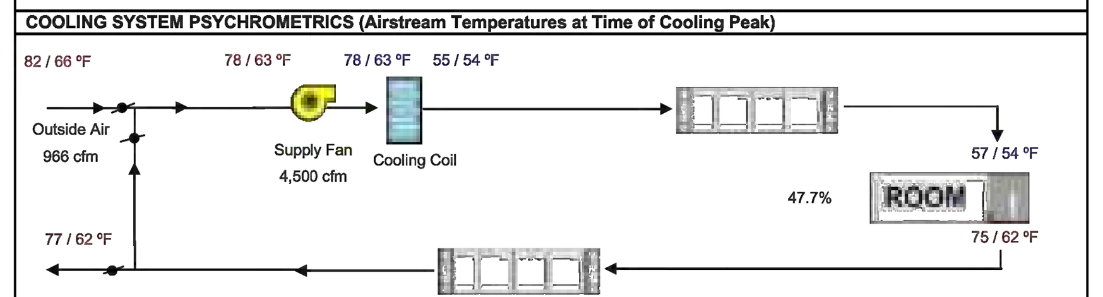
ENGINEERING CHECKS	
Number of Systems	1
Heating System	
Output per System	324,000
Total Output (Btuh)	324,000
Output (Btuh/sqft)	43.6
Cooling System	
Output per System	324,000
Total Output (Btuh)	324,000
Total Output (Tons)	27.0
Total Output (Btuh/sqft)	43.6
Total Output (sqft/Ton)	275.3
Air System	
CFM per System	4,500
Airflow (cfm)	4,500
Airflow (cfm/sqft)	0.61
Airflow (cfm/Ton)	166.7
Outside Air (%)	21.5%
Outside Air (cfm/sqft)	0.13
Note: values above given at ARI conditions	

SYSTEM LOAD	Coil Cooling Peak CFM	Sensible	Latent	Coil Htg. Peak CFM	Sensible
Total Room Loads	8,172	161,557	10,506	2,061	80,377
Return Vented Lighting		0			
Return Air Ducts		8,078			4,019
Return Fan		0			0
Ventilation	966	5,452	7,093	966	34,548
Supply Fan		3,035			-3,035
Supply Air Ducts		8,078			4,019
TOTAL SYSTEM LOAD		186,199	17,599		119,928
HVAC EQUIPMENT SELECTION					
Carrier 48HC-D17		305,490	20,645		247,856
Total Adjusted System Output (Adjusted for Peak Design conditions)		305,490	20,645		247,856
TIME OF SYSTEM PEAK			Aug 1 PM		Jan 1 AM

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



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



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WWW.G
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TITLE 24 ENERGY COMPLIANCE REPORT
SHEET 2 OF 2

1934 Kellogg Ave TI
ADDRESS: 1934 Kellogg Ave
Carlsbad, CA 92008

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