

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

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

HVAC GENERAL NOTES

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 "GUIDELINES FOR SEISMIC RESTRAINTS OF MECHANICAL SYSTEMS AND PLUMBING PIPING SYSTEMS" BY THE SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION (SMACNA). ALL EQUIPMENT SHALL BE ANCHORED TO RESIST THE LATERAL FORCE REQUIREMENTS OF CHAPTER 16 OF THE 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 AS REQUIRED. COORDINATE LOCATIONS OF GAS & CONDENSATE LINES WITH PLUMBING CONTRACTOR. COORDINATE LOCATIONS OF POWER, DISCONNECTS, AND CONTROL CONDUIT WITH THE ELECTRICAL CONTRACTOR. COORDINATE LOCATIONS OF ALL DIFFUSERS, REGISTERS, AND GRILLES WITH ARCHITECTURAL PLANS, ELECTRICAL LIGHTING PLANS AND ARCHITECTURAL ELEVATIONS.
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 EQUIPPED 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 MECHANICAL CODE. DUCTS NOT REQUIRING DAMPERS SHALL COMPLY WITH SECTION 714 & 717 OF THE 2019 CALIFORNIA BUILDING CODE.
12. INSTALL SMOKE 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 ELECTRICAL CONTRACTOR UNLESS NOTED 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 THEIR SEQUENCES OF OPERATION. BALANCE ALL AIR FLOWS WITHIN 5% OF DESIGN VALUES. PERMANENTLY MARK BALANCE POSITION OF ALL REGULATING DEVICES.
16. PROVIDE OWNER WITH THREE SETS OF AS-BUILT PLANS AND OPERATIONS AND MAINTENANCE MANUALS. CLEARLY IDENTIFY ALL EQUIPMENT WITH PERMANENT PLASTIC OR METAL LABELS/TAGS (PEN MARKING NOT ACCEPTABLE).
17. PROVIDE ONE YEAR WARRANTY ON ALL LABOR, PARTS AND MATERIALS.
18. ANY CHANGE OR DEVIATION FROM THESE PLANS OR SPECIFICATIONS SHALL REQUIRE THE WRITTEN APPROVAL OF THE ENGINEER PRIOR TO COMMENCEMENT OF SUCH WORK. 19.0
 - a) DUCTS FOR DEMAND CONTROLLED VENTILATION SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE FAN MANUFACTURER'S INSTALLATION INSTRUCTIONS, THE PROVISIONS ASHRAE 62.2, TABLE 5.3, OR THE AIRFLOW SHALL BE MEASURED AS REQUIRED BY AND IN COMPLIANCE WITH ASHRAE 62.2, 5.4.
 - 1) DUCTS FOR KITCHEN COOKTOPS OR RANGES SHALL BE SHOWN OF METAL WITH A SMOOTH INTERIOR.
- a) DUCTS FOR DOMESTIC CLOTHES DRYERS SHALL BE INSTALLED IN ACCORDANCE WITH CMC 504.0.
- b) DUCTS FOR DOMESTIC CLOTHES DRYERS SHALL BE RIGID METALLIC DUCTS WITH A MINIMUM MILL THICKNESS OF 16 (0.016-INCH). SHALL HAVE A MINIMUM 4-INCH DIAMETER AND A SMOOTH INTERIOR. THE COMBINED HORIZONTAL AND VERTICAL LENGTH OF THE DUCTS OF THE DUCTS SHALL BE 14-FEET, WHICH SHALL BE REDUCED BY 2-FEET FOR EVERY 90-DEGREE ELBOW IN EXCESS OF TWO ELBOWS.
- c) LISTED CLOTHES DRYER TRANSITION DUCTS NOT MORE THAN 6-FEET IN LENGTH SHALL BE PERMITTED TO CONNECT THE DRYER TO THE EXHAUST DUCTS AS LONG AS THEY ARE NOT CONCEALED WITHIN CONSTRUCTION, AND THEY ARE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.

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

SPECIAL NOTICE TO CONTRACTORS

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

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[illegible]

MULTIPLE USE OF THIS DRAWING FOR ANY OTHER SITE MUST HAVE THE WRITTEN AGREEMENT AND PERMISSION OF THE OWNER.

ANY INFRINGEMENT OF THESE OWNER'S RIGHTS WILL BE LIABLE FOR LEGAL ACTION.

DATE	PURPOSE	ISSUED TO	SETS

[illegible]

PROJECT NO.	PL/TUR31/22
SCALE	NTS
DATE	2022.12.08
DRAWN	MN
CHECKED	MN

PLOT OF SURVEY & LOCATION MAP

M 0.00

CALIFORNIA MECHANICAL CODE CHECKING:

DUCT SIZING, THICKNESS & INSULATION

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

604.0 Insulation of Ducts.

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

Exceptions:

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

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

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

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

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

CONDENSATE DRAIN:

310.0 Condensate Wastes and Control.

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

310.3 Condensate Waste Pipe Material and Sizing.

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

TABLE 310.3
MINIMUM CONDENSATE WASTE PIPE SIZE

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

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

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

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

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

AIR INTAKE AND EXHAUST:

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

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

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

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

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

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

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

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

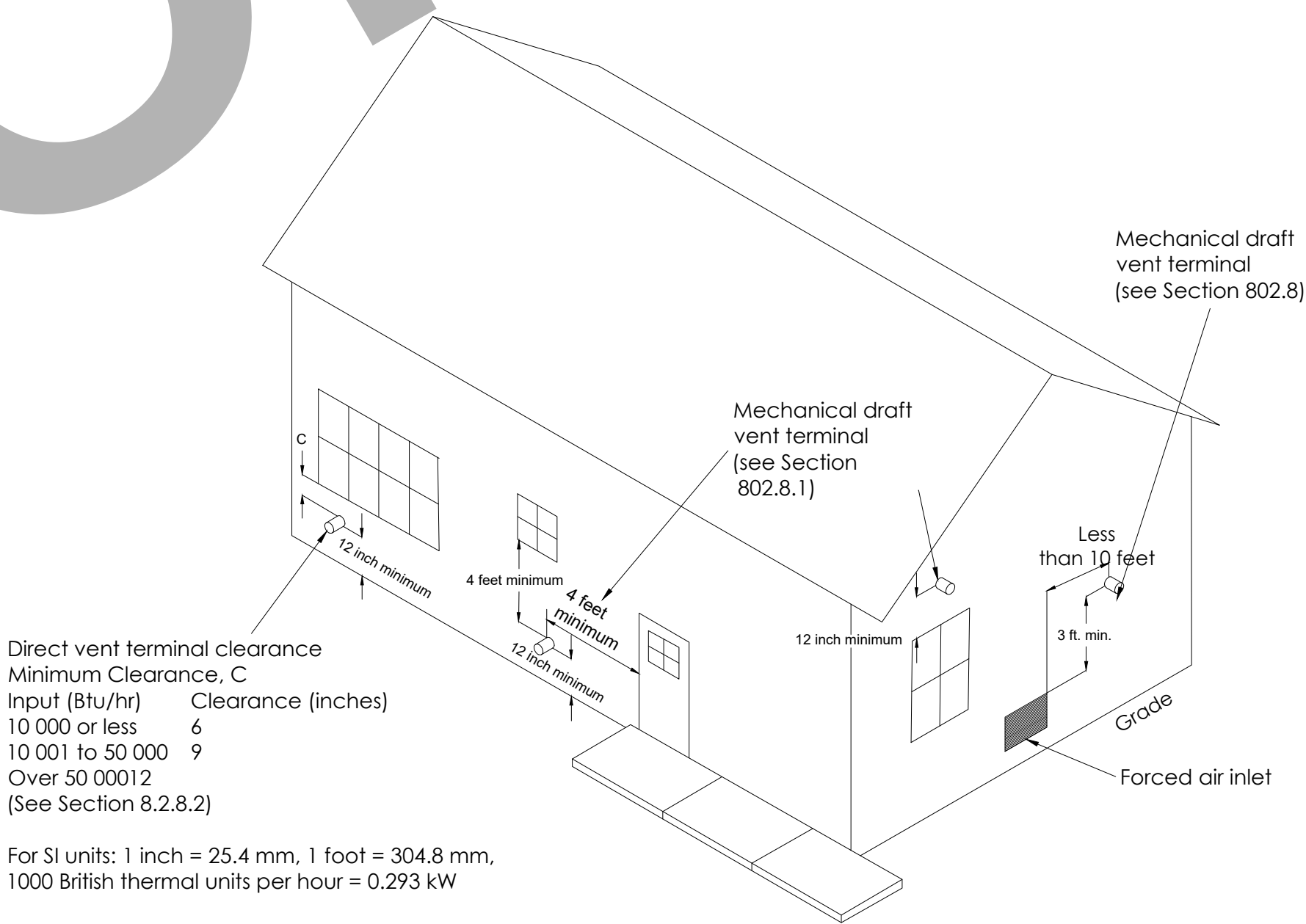


FIGURE 802.8
EXIT TERMINALS OF MECHANICAL DRAFT AND DIRECT-VENT VENTING SYSTEMS
[NFPA 54: FIGURE A.12.9]

GAS CLOTHES DRYER:

502.1 Exhaust Opening Protection. Exhaust openings terminating to the outdoors shall be covered with a corrosion-resistant screen having not less than 1/4 of an inch (6.4 mm) openings, and shall have not more than 1/2 of an inch (12.7 mm) openings.
Exception: Clothes dryers.

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

504.4.1 Provisions for Makeup Air. Make up air shall be provided in accordance with the following:
(1) Makeup air shall be provided for Type 1 clothes dryers in accordance with the manufacturer's instructions. [NFPA 54: 10.4.3.1] Where a closet is designed for the installation of a clothes dryer, an opening of not less than 100 square inches (0.065 m²) for makeup air shall be provided in the door or by other approved means.
(2) Provision for makeup air shall be provided for Type 2 clothes dryers, with a free area of not less than 1 square inch (0.0006 m²) for each 1000 British thermal units per hour (Btu/g) (0.293 kW) total input rating of the dryer(s) installed [NFPA 54:10.4.3.2].

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

504.4.3.1 Exhaust Ducts for Type 2 Clothes Dryers. Exhaust ducts for Type 2 clothes dryers shall comply with the following:
(1) Exhaust ducts for Type 2 clothes dryers shall comply with Section 504.4. [NFPA 54:10.4.5.1]
(2) Exhaust ducts for Type 2 clothes dryers shall be constructed of sheet metal or other noncombustible material. Such ducts shall be equivalent in strength and corrosion resistance to ducts 0.0195 of an inch (0.4953 mm) thick. [NFPA 54:10.4.5.2]
(3) Type 2 clothes dryers shall be equipped or installed with lint-controlling means. [NFPA 54:10.4.5.3]
(4) Exhaust ducts for Type 2 clothes dryers shall be installed with a clearance of not less than 6 inches (152 mm) from adjacent combustible material. Where exhaust ducts for Type 2 clothes dryers are installed with reduced clearances, the adjacent combustible material shall be protected in accordance with Table 303.10.1. [NFPA 54:10.4.5.4]
(5) Where ducts pass through walls, floors, or partitions, the space around the duct shall be sealed with noncombustible material. [NFPA 54:10.4.5.4]

FACTORY-MADE AIR DUCTS	RECTANGULAR DUCTS	COMBUSTIBLES WITHIN DUCTS OR PLENUMS	NOTES ON DUCTS MATERIAL & CONSTRUCTION: FLEXIBLE AIR DUCTS
FACTORY-MADE AIR DUCTS SHALL BE LISTED AND LABELED IN ACCORDANCE WITH UL 181 AND INSTALLED IN ACCORDANCE WITH THE TERMS OF THEIR LISTING, THE MANUFACTURER'S INSTALLATION INSTRUCTIONS, AND SMACNA HVAC DUCT CONSTRUCTION STANDARDS-METAL AND FLEXIBLE. FACTORY-MADE AIR DUCTS SHALL NOT BE USED FOR VERTICAL RISERS IN AIR-DUCT SYSTEMS SERVING MORE THAN TWO STORIES AND SHALL NOT PENETRATE A FIRE-RESISTANCE-RATED ASSEMBLY OR CONSTRUCTION. FACTORY-MADE AIR DUCTS SHALL BE INSTALLED WITH NOT LESS THAN 4 INCHES (102 MM) OF SEPARATION FROM EARTH, EXCEPT WHERE INSTALLED AS A LINER INSIDE OF CONCRETE, TILE, OR METAL PIPE AND SHALL BE PROTECTED FROM PHYSICAL DAMAGE. THE TEMPERATURE OF THE AIR TO BE CONVEYED IN A DUCT SHALL NOT EXCEED 250°F (121° C). FLEXIBLE AIR CONNECTORS SHALL NOT BE PERMITTED.	SUPPORTS FOR RECTANGULAR DUCTS SHALL BE INSTALLED ON TWO OPPOSITE SIDES OF EACH DUCT AND SHALL BE RIVETED, BOLTED, OR METAL SCREWED TO EACH SIDE OF THE DUCT AT INTERVALS SPECIFIED. METAL DUCTS DUCTS SHALL BE SUPPORTED AT EACH CHANGE OF DIRECTION AND IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS-METAL AND FLEXIBLE. RISER DUCTS SHALL BE HELD IN PLACE BY MEANS OF METAL STRAPS OR ANGLES AND CHANNELS TO SECURE THE RISER TO THE STRUCTURE. METAL DUCTS SHALL BE INSTALLED WITH NOT LESS THAN 4 INCHES (102 MM) SEPARATION FROM EARTH. DUCTS SHALL BE INSTALLED IN A BUILDING WITH CLEARANCES THAT WILL RETAIN THE FULL THICKNESS OF FIRE-PROOFING ON STRUCTURAL MEMBERS.	MATERIALS EXPOSED WITHIN DUCTS OR PLENUMS SHALL BE NONCOMBUSTIBLE OR SHALL HAVE A FLAME SPREAD INDEX NOT TO EXCEED 25 AND A SMOKE-DEVELOPED INDEX NOT TO EXCEED 50, WHERE TESTED AS A COMPOSITE PRODUCT IN ACCORDANCE WITH ASTM E84 OR UL 723. EXCEPTIONS: 1. RETURN-AIR AND OUTSIDE-AIR DUCTS, PLENUMS, OR CONCEALED SPACES THAT SERVE A DWELLING UNIT. 2. AIR FILTERS IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 311.2. 3. WATER EVAPORATION MEDIA IN AN EVAPORATIVE COOLER. 4. CHARCOAL FILTERS WHERE PROTECTED WITH AN APPROVED FIRE SUPPRESSION SYSTEM. 5. PRODUCTS LISTED AND LABELED FOR INSTALLATION WITHIN PLENUMS IN ACCORDANCE WITH SECTION 602.2.1 THROUGH SECTION 602.2.3. 6. SMOKE DETECTORS. 7. DUCT INSULATION, COVERINGS, AND LININGS AND OTHER SUPPLEMENTARY MATERIALS INSTALLED IN ACCORDANCE WITH SECTION 604.0. 8. MATERIALS IN A HAZARDOUS FABRICATION AREA INCLUDING THE AREAS ABOVE AND BELOW THE FABRICATION AREA SHARING A COMMON AIR RECIRCULATION PATH WITH THE FABRICATION AREA.	FLEXIBLE AIR DUCTS SHALL COMPLY WITH UL 181, AND SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND SMACNA HVAC DUCT CONSTRUCTION STANDARDS-METAL AND FLEXIBLE. FLEXIBLE AIR DUCT INSTALLATIONS SHALL COMPLY WITH THE FOLLOWING: 1. DUCTS SHALL BE INSTALLED USING THE MINIMUM REQUIRED LENGTH TO MAKE THE CONNECTION. 2. HORIZONTAL DUCT RUNS SHALL BE SUPPORTED AT NOT MORE THAN 4 FEET (1219 MM) INTERVALS. 3. VERTICAL RISERS SHALL BE SUPPORTED AT NOT MORE THAN 6 FEET (1829 MM) INTERVALS. 4. SAG BETWEEN SUPPORT HANGERS SHALL NOT EXCEED 1/2 INCH (12.7 MM) PER FOOT (305 MM) OF SUPPORT SPACING. 5. SUPPORTS SHALL BE RIGID AND SHALL BE NOT LESS THAN 1 1/2 INCHES (38 MM) WIDE AT POINT OF CONTACT WITH THE DUCT SURFACE. 6. DUCT BENDS SHALL BE NOT LESS THAN ONE DUCT DIAMETER BEND RADIUS. 7. SCREWS SHALL NOT PENETRATE THE INNER LINER OF NON-METALLIC FLEXIBLE DUCTS UNLESS PERMITTED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. 8. FITTINGS FOR ATTACHING NON-METALLIC DUCTS SHALL BE BEADED AND HAVE A COLLAR LENGTH OF NOT LESS THAN 2 INCHES (51 MM) FOR ATTACHING THE DUCT. 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 WITH THE 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.

VILLAGE SEAL

PROJECT NO. PLTUR31/22

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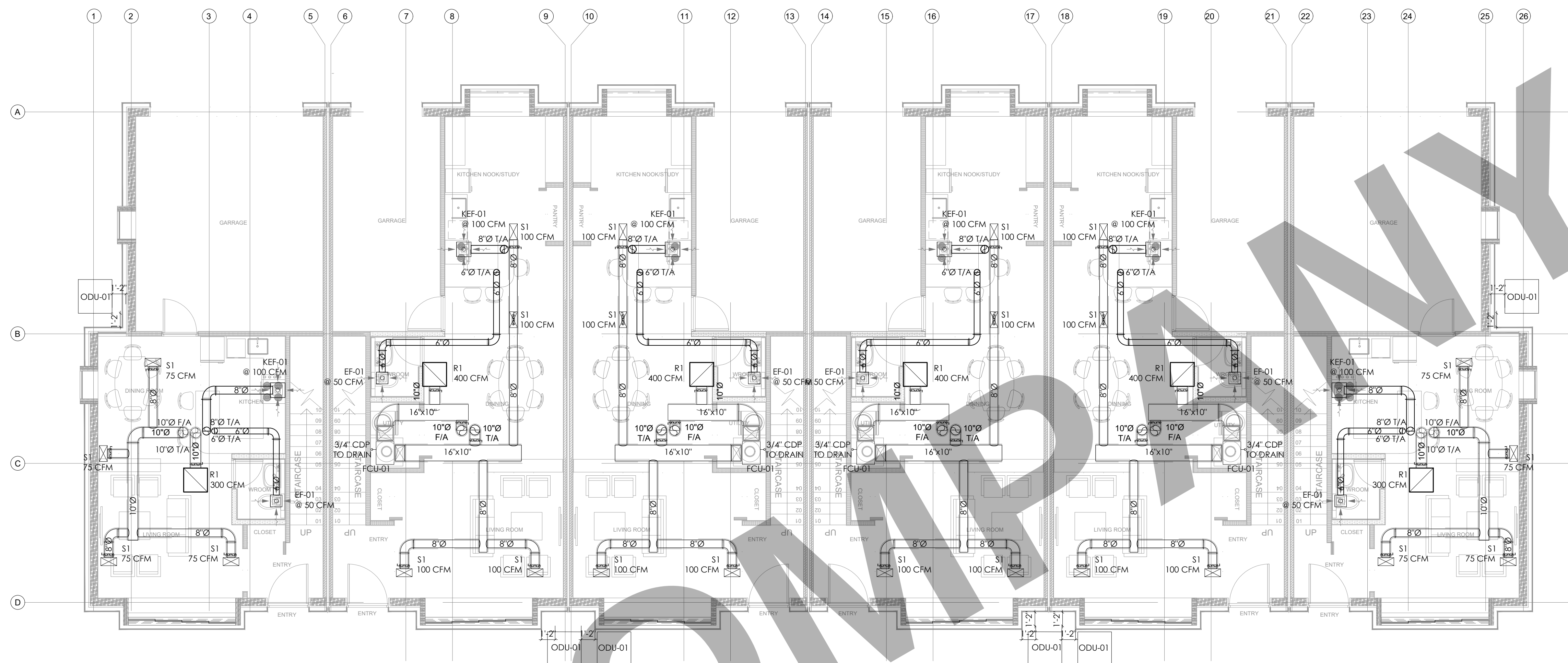
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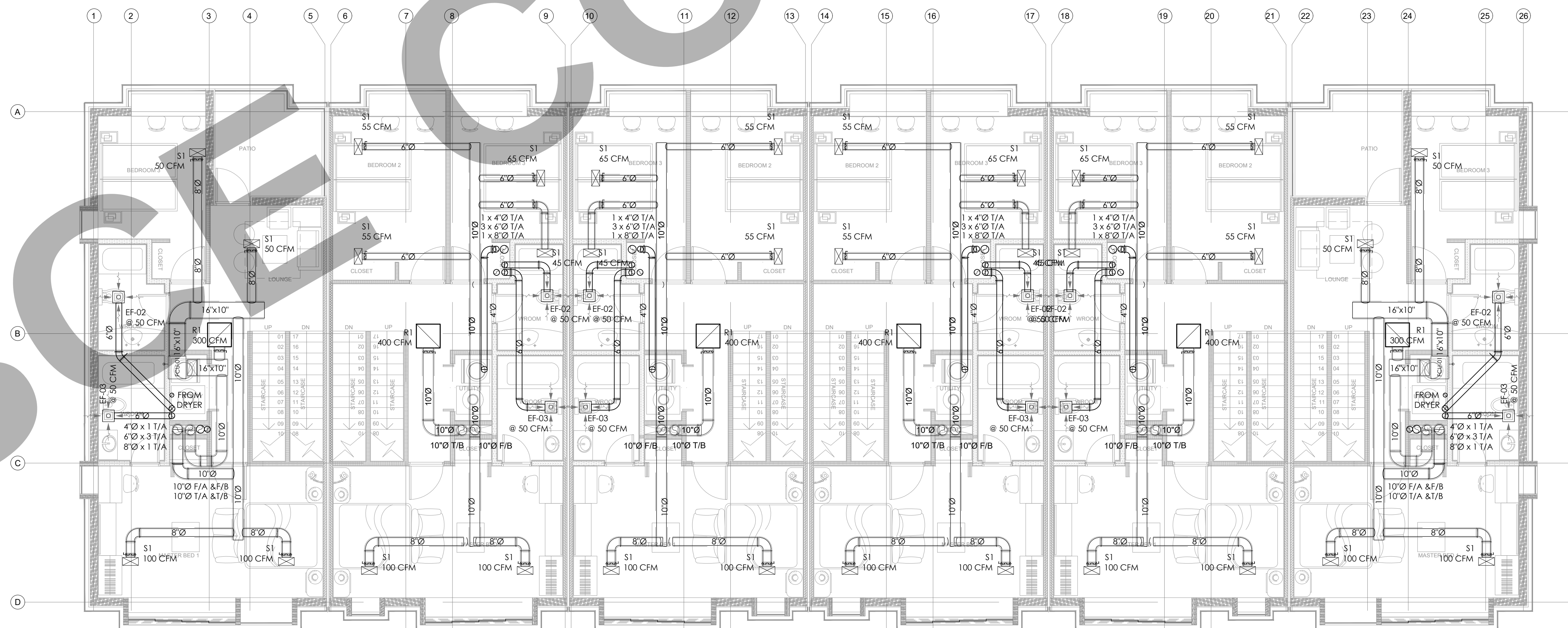
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PLOT OF SURVEY & LOCATION MAP

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FIRST FLOOR MECHANICAL LAYOUT



SECOND FLOOR MECHANICAL LAYOUT

VILLAGE SEAL

NOTICE: THIS DRAWING MUST BE READ AND NEVER MEASURED.
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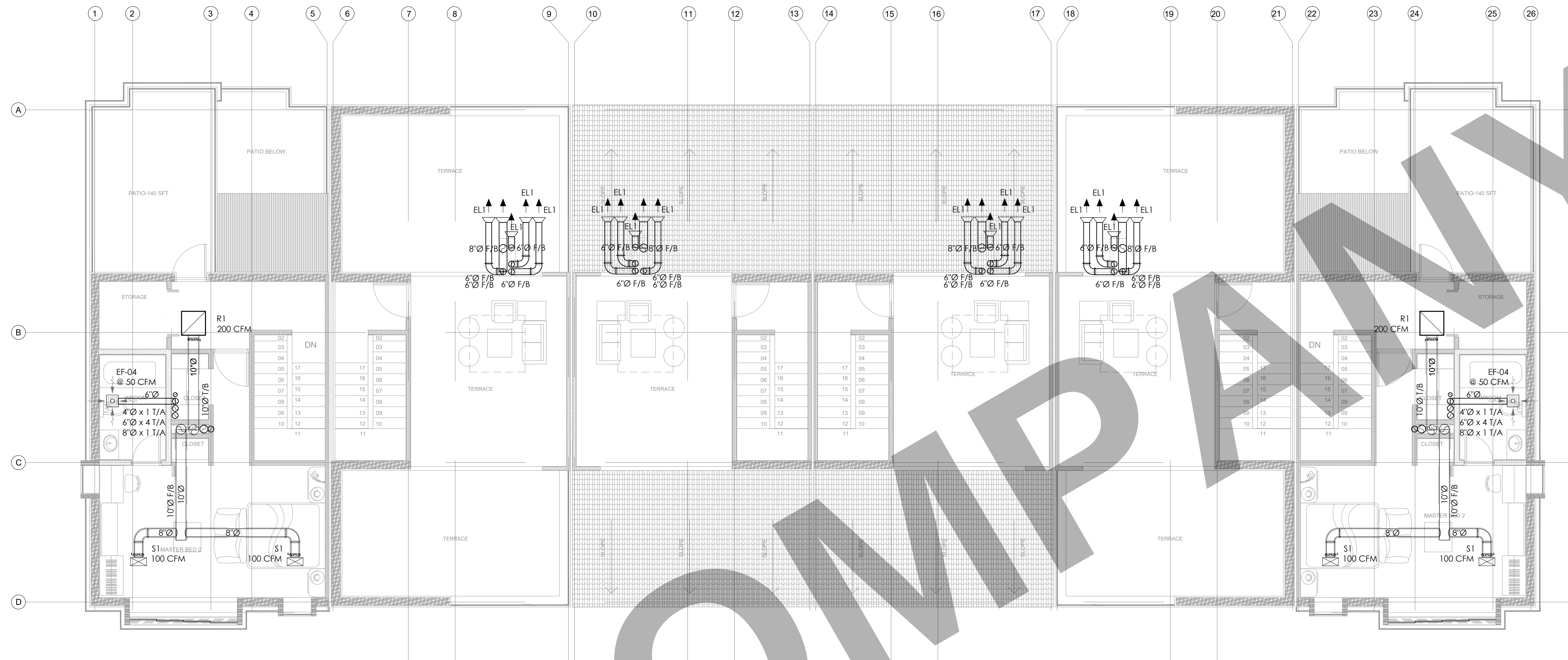
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DATE NO. REVISIONS

PROJECT NO. PLTUR31/22
SCALE 3/16"=1'-0"
DATE 2022.12.08
DRAWN MN
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PLOT OF SURVEY &
LOCATION MAP

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THIRD FLOOR MECHANICAL LAYOUT

VILLAGE SEAL

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PLOT OF SURVEY &
LOCATION MAP

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HEAT PUMP - INDOOR & OUTDOOR UNIT

TAG	FCU-01, ODU-01
SERVING	ALL
MANUFACTURER	CARRIER
INDOOR MODEL	FX4DNF025
POWER SUPPLY	208-230/1/60
MCA (A)	28.5
MOCP (A)	30.0
AIR FLOW (CFM) - MEDIUM SPEED	800
EXTERNAL STATIC PRESSURE (INCHES OF WATER)	0.50
COOLING CAPACITY (BTU/H)	24,000
HEATING CAPACITY (BTU/H)	25,100
MOTOR (HP)	1/3
OUTDOOR MODEL	25VNA424A
POWER SUPPLY	208-230/1/60
MINIMUM CIRCUIT AMPACITY	16.4
MAX OVERCURRENT DEVICE	25.0

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.

AIR OUTLETS

TAG	DESCRIPTION	MANUFACTURER	MODEL	MOUNTING
S1	SUPPLY DIFFUSER	TITUS	16in. x 8in.	Duct Mounted
R1	RETURN DIFFUSER	TITUS	24in. x 24in.	Duct Mounted

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

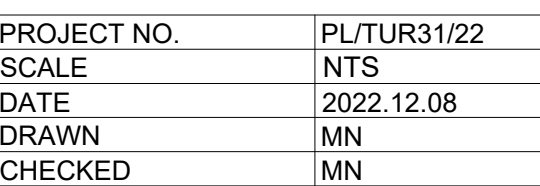
LOUVERS

TAG	TYPE	CFM	PR. DROP W.G.	MANUFACTURER MODEL
EL-1	EXHAUST AIR	50/100	0.03	RUSKIN ELF6375DX

FAN SCHEDULE

TAG	EF-01,02,03	KEF-01
LOCATION	BATHROOMS	KITCHEN
SELECTED FLOW (CFM)	50	100
SELECTED PRESSURE DROP (IN. H2O)	0.25"	0.75"
ELECTRICAL (V / PH / HZ)	120 / 1 / 60	120 / 1 / 60
POWER / Amps	25 W	160 W
MOTOR SPEED (RPS)	MULTI SPEED	MULTI SPEED
FAN TYPE	CEILING FANS	CEILING FANS
MANUFACTURER	PANASONIC	CAPTEVEAIRE
MODEL	WHISPER FV-0511VKS2	CFA250CA

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



M 2.01

FX4D Comfort™ Series Fan Coil Units 019 thru 061

Product Data



AIR HANDLER TECHNOLOGY AT ITS FINEST

The FX4D fan coils combine the proven technology of Carrier fan coils with Puron®, the environmentally sound refrigerant. These fan coils are loaded with popular features. Factory-installed, refrigerant-specific, automatic expansion valves (EXVs) are standard with these fan coil designs. The design features compact condenser fins with integral, heat exchanger, ensuring the life cycle of the fan coil is the same as the cooling duty cycle. The lack of scaling condensation and corrosion free pump impeller (API) and product life, feature low-maintenance, approximately 10 years.

Standard features include gasketed copper tubing and increased aluminum fins. The large face area of the refrigerant coils provide superior efficiency for high SEER and EER performance. Coil cleaning has also been updated to make the most of all Carrier fan coil units for air conditioning. Also, some coils with solid rate coils, coils with 1/2" (12.7mm) thick fins, coils with 1/2" (12.7mm) multi-speed motors, and fully-ventilated coils. Units can accommodate heavy- under field-installed heaters from 3 to 30 kW.

It also should be noted that the unique cabinet design of these fan coils meet new stringent regulations for cabinet air leakage – a requirement of 2% cabinet leakage rate when tested at 1.0 inches of static pressure.

The FX4D fan coil is the Puron® refrigeration design loaded with popular features. It comes in a pre-purged (copper manifold) gasketed and coming and is shipped with a standard, permanent filter and a factory-welded power plug. ArmorCoat™ provides a plating of the indoor coil copper heliops. This causes a barrier between the condenser-cooling elements and the coil. These fan coils utilize the latest in electronic communication (ECM) technology through the use of high efficiency, X3, blowers motors.

MODEL NUMBER NOMENCLATURE

CARRIER FAN COILS

Product Type
Fan Coil, Multiple with Pumps

Electrical
N = 208/230V, 1 ph, 60 Hz

Cabinet Style
B = Modular
D = Single Piece

Heating Size
000 = No Heat
001 = 3 kW
002 = 6 kW
003 = 9 kW
004 = 12 kW
005 = 15 kW

Cooling Capacity
0 = Standard
1 = Armored Coil

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UNIT CONNECTIONS

	Manual S Compliance Report			Job#: 891									
	Entire House			Date: Sep 23, 2022									
				File: HSC - HWSOCE2									
Project Information													
For:	3 Bed-1 Car Garage Park Way, #118, Ingers Road, Turbot, CA 95362												
Cooling Equipment													
Design Conditions													
Outdoor design DB:	95.0°F	Sensible gain:	14693 Btu/h	Entering coil DB:	75.0°F								
Outdoor design WB:	70.0°F	Latent gain:	1192 Btu/h	Entering coil WBS:	62.0°F								
Indoor design DB:	75.0°F	Total gain:	15885 Btu/h										
Indoor RH:	50%	Estimated airflow:	713 cfm										
Manufacturer's Performance Data at Actual Design Conditions													
Equipment type:	Split/ASHP												
Manufacturer:	Carrier												
Actual airflow:	713 cfm	Model:	CH14H8E3Q3GDAU-FPMMBUDN24										
Sensible capacity:	15428 Btu/h	112% of load											
Latent capacity:	2702 Btu/h	23% of load											
Total capacity:	19140 Btu/h	121% of load	SHR: 0.86%										
Heating Equipment													
Design Conditions													
Outdoor design DB:	34.0°F	Heat loss:	14885 Btu/h	Entering coil DB:	68.0°F								
Indoor design DB:	68.0°F												
Manufacturer's Performance Data at Actual Design Conditions													
Equipment type:	Split/ASHP												
Manufacturer:	Carrier												
Actual airflow:	713 cfm	Model:	CH14H8E3Q3GDAU-FPMMBUDN24										
Output capacity:	17907 Btu/h	137% of load											
Supplemental heat required:	0 Btu/h												
Capacity imbalance: 23 % Sensible imbalance: -90 %													
Meets all requirements of ACCA Manual S.													
 www.wrightsoft.com Email: sales@wrightsoft.com Tel: 800-451-0000 ext. 200 Fax: 800-451-0000 ext. 200													

[illegible]



Project Summary Entire House

Job: 891
 Date: 2018-07-26
 By: MOE-INNOVEX

Project Information

For: 3 Bed-1 Car Garage
 Park View, #118, Tigher Road, Turlock, CA 95362

Notes:

Design Information

Weather: Turlock, CA, US

Winter Design Conditions

Outside db

68 °F

Design To

34 °F

Summer Design Conditions

Outside db

79 °F

Design To

24 °F

Day range

50 %

Relative humidity

80 %

Moisture difference

-1 gr/s

Heating Summary

Structure

14085 Btu/h

Ducts

0 Btu/h

(none)

Humanification

0 Btu/h

Equipment load

14085 Btu/h

Infiltration

Method

Control

Control quality

Finest

Spillout

0

Heating

14085 Btu/h

Cooling

1000 Btu/h

1000 Btu/h

0 Btu/h

Area (ft²)

1300 ft²

Volume (ft³)

6200 ft³

Air change (per hour)

0.25

Heating and Cooling Summary

Make

Carrier

Model

CH14N2000Q00A0

APR150

Carrier

Model

CH14N2000Q00A0

APR150

Efficiency

82 HSPF

Heating output

22000 Btu/h

Heating input

4747 W

As for load

713 dB

As for load

0.35 H2O

Static pressure

0.35 in H2O

Space maintain

Capacity balance point > 25 °F

Sensible Cooling Load Listing

Structure

14085 Btu/h

Ducts

0 Btu/h

(none)

Humanification

0 Btu/h

Equipment load

14085 Btu/h

Use manufacturer's data

1.04

Retaining multiplier

15280 Btu/h

Equipment sensible load

15280 Btu/h

Latent Cooling Equipment Load Listing

Structure

0 Btu/h

Ducts

0 Btu/h



AED Assessment
Entire House

Job: 091
Date: Sep 21, 2022
By: MDC - MDC022

Project Information

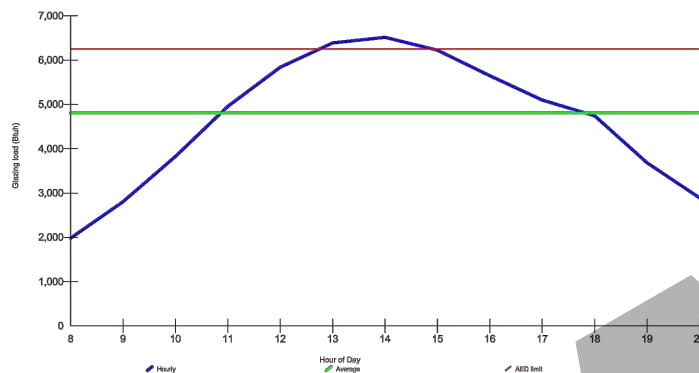
For: 3 Bed-1 Car Garage
Park View, 1118, Tigner Road, Turbot, CA 95302

Design Conditions

Location:			Heating	Cooling
Turbot, CA, US			68	75
Elevation: 100 ft			34	24
Latitude: 38°N			50	50
Outdoor:	Heating	Cooling		
Dry bulb (°F)	34	68	Initiation:	
Wet bulb (°F)	34	65 (H)		
Daily range (°F)	15.0	7.5		
Wind speed (mph)				
			25.1	-0.9
			Relative humidity (%)	
			Moisture difference (gr/lb)	

Test for Adequate Exposure Diversity

Hourly Glazing Load



Month	Monthly Average Glazing Load (Btu/sq ft)
1	2,500
2	3,500
3	4,500
4	5,500
5	6,000
6	6,500
7	6,000
8	5,500
9	4,500
10	3,500
11	2,500
12	2,500

Maximum hourly glazing load exceeds average by 35%.

House does not have adequate exposure diversity (AED), based on AED limit of 30%.

AED exclusion: 265 Bluh (PG-0.13-AF0)



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Page 1

**Right-3-Worksheet
Entre House**

Job: 001
Date: Sep 20, 2022
MOE - INNOVACE

S	P	Description Material Room/height Room/height Room/height Room/height Room/height	Entre House 2022 S										Bedrooms (3) 2022 S				Total Cost
			1402.0 S										S.O. 1				1402.0 S
			Qty	Unit (B.A.B.T.)	Qx	Unit (B.A.B.T.)	Cost	Unit (B.A.B.T.)	Cost	Unit (B.A.B.T.)	Cost	Unit (B.A.B.T.)	Area (m ²)	Qx	Unit (B.A.B.T.)	Cost	Unit (B.A.B.T.)
6	W	150 door	0.000	1	2.2	1.02	218	1/2	218	1/2	134	1/2	134	1/2	84	1/2	10
13	W	150 door	0.000	1	2.2	1.02	218	1/2	218	1/2	134	1/2	134	1/2	84	1/2	10
		150 door	0.000	1	2.2	1.02	218	1/2	218	1/2	134	1/2	134	1/2	84	1/2	10
		150 door	0.000	1	2.2	1.02	218	1/2	218	1/2	134	1/2	134	1/2	84	1/2	10
		150 door	0.000	1	2.2	1.02	218	1/2	218	1/2	134	1/2	134	1/2	84	1/2	10
		150 door	0.000	1	2.2	1.02	218	1/2	218	1/2	134	1/2	134	1/2	84	1/2	10
		150 door	0.000	1	2.2	1.02	218	1/2	218	1/2	134	1/2	134	1/2	84	1/2	10
		150 door	0.000	1	2.2	1.02	218	1/2	218	1/2	134	1/2	134	1/2	84	1/2	10
14	W	150 door	0.000	1	2.2	1.02	218	1/2	218	1/2	134	1/2	134	1/2	84	1/2	10
		150 door	0.000	1	2.2	1.02	218	1/2	218	1/2	134	1/2	134	1/2	84	1/2	10
		150 door	0.000	1	2.2	1.02	218	1/2	218	1/2	134	1/2	134	1/2	84	1/2	10
15	W	150 door	0.000	1	2.2	1.02	218	1/2	218	1/2	134	1/2	134	1/2	84	1/2	10
16	W	150 door	0.000	1	2.2	1.02	218	1/2	218	1/2	134	1/2	134	1/2	84	1/2	10
17	W	150 door	0.000	1	2.2	1.02	218	1/2	218	1/2	134	1/2	134	1/2	84	1/2	10
18	W	150 door	0.000	1	2.2	1.02	218	1/2	218	1/2	134	1/2	134	1/2	84	1/2	10
19	W	150 door	0.000	1	2.2	1.02	218	1/2	218	1/2	134	1/2	134	1/2	84	1/2	10
20	W	150 door	0.000	1	2.2	1.02	218	1/2	218	1/2	134	1/2	134	1/2	84	1/2	10
21	W	150 door	0.000	1	2.2	1.02	218	1/2	218	1/2	134	1/2	134	1/2	84	1/2	10
22	W	150 door	0.000	1	2.2	1.02	218	1/2	218	1/2	134	1/2	134	1/2	84	1/2	10
23	W	150 door	0.000	1	2.2	1.02	218	1/2	218	1/2	134	1/2	134				

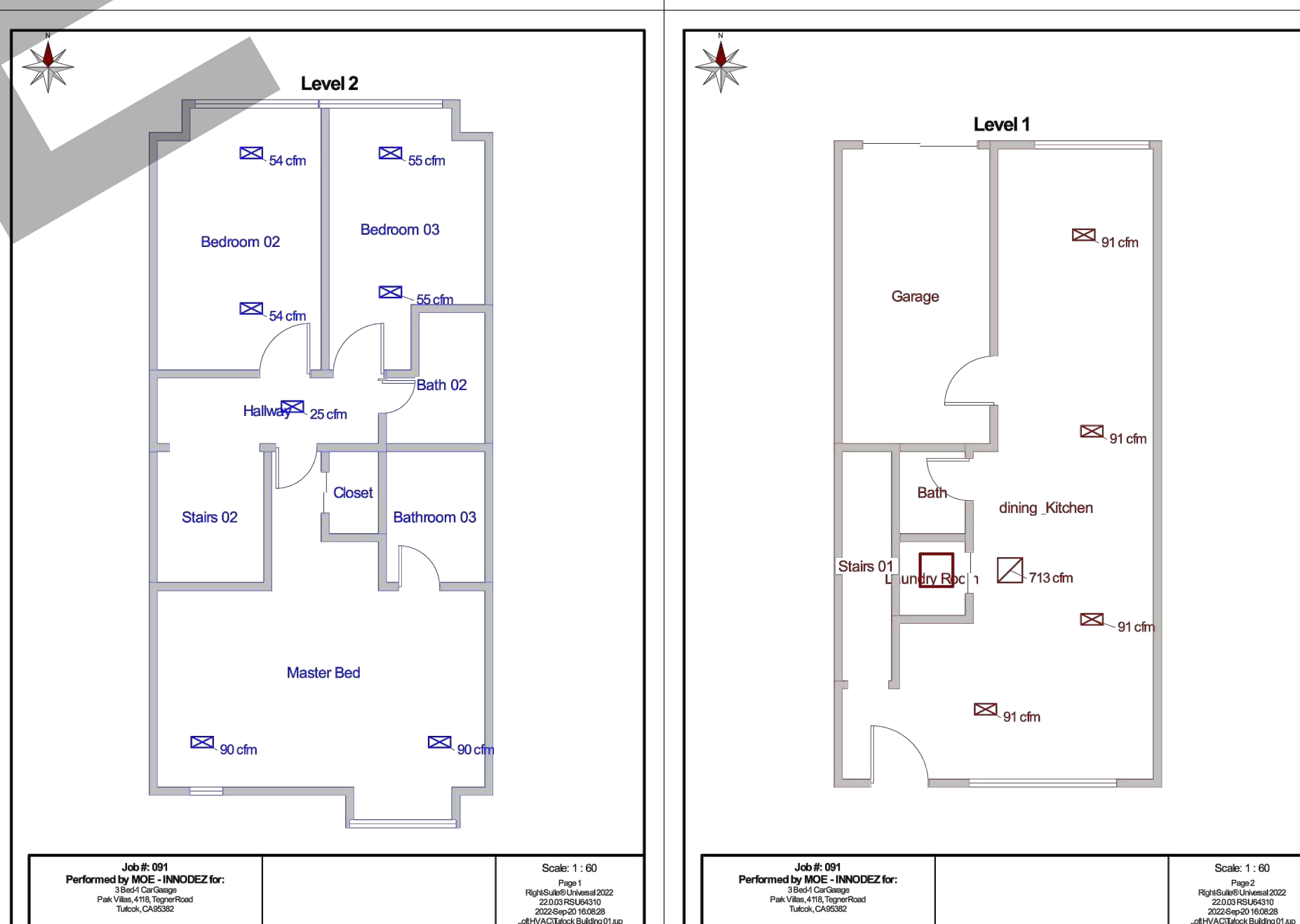
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		Right-Job Worksheet Entire House				JAL: 091 Estn: Sep 28, 2022 By: MDC - NICKOZ							
1	2	Room view	3	4	5	6				7			
						Balcony (S)				Close			
						S.O. S. E. S. East				S.O. S. E. S. East			
8	9	Room height	10	11	12	13				14			
						S.O. S. E. S. East				S.O. S. E. S. East			
15	16	Construction material	17	18	19	20				21			
						Heat				Cool			
22	23	Area (sq ft)	24	25	26	27				28			
						Heat				Cool			
29	30	Material	31	32	33	34				35			
						Heat				Cool			
36	37	Material	38	39	40	41				42			
						Heat				Cool			
43	44	Material	45	46	47	48				49			
						Heat				Cool			
50	51	Material	52	53	54	55				56			
						Heat				Cool			
57	58	Material	59	60	61	62				63			
						Heat				Cool			
64	65	Material	66	67	68	69				70			
						Heat				Cool			
71	72	Material	73	74	75	76				77			
						Heat				Cool			
78	79	Material	80	81	82	83							

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wrightsoft		Right@Worksheet Entre House		JAH: Date: 26.03.2022 By: MOE - INNOVEX	
1	Account name			Sheet1	
2	Account type			14.2 x 14.2	
3	Account number			50.0 x 50.0	
4	Account description			14.2 x 14.2	
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78	Account type			14.2 x 14.2	
79	Account number			50.0 x 50.0	
80	Account description			14.2 x 14.2	
81	Account name				

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PRINTS			
DATE	PURPOSE	ISSUED TO	SETS

DATE	PURPOSE	ISSUED TO	SET

DATE	NO	REVISIONS	

DATE	NO.	REVISIONS

PROJECT NO.	PL/TUR31/22
SCALE	NTS

DATE	2022.12.08
DRAWN	MN
CHECKED	MN

CHECKED	MN
PLOT OF SURVEY &	

LOCATION MAP

M 4.01

1. MECHANICAL CONTRACTOR SHALL EXAMINE ALL OTHER SPECIFICATIONS, DRAWINGS AND ALL FEATURES OF BUILDING CONSTRUCTION WHICH MAY AFFECT HIS WORK AND SHALL BE GOVERNED BY THESE AND OTHER SPECIFICATIONS, INCLUDING THE GENERAL CONDITIONS AND PARTICULAR INSTRUCTIONS T ALL BIDDER AND SUPPLIERS
2. ALL WORK SHALL BE EXECUTED AND INSPECTED IN STRICT ACCORDANCE WITH ALL LOCAL CODES AND/OR STATE CODES, LAWS, ORDINANCES, RULES AND REGULATIONS APPLICABLE TO THIS PARTICULAR CLASS OF WORK, AND EACH CONTRACTOR SHALL INCLUDE IN HIS PRICE ALL APPLICABLE SERVICE CHARGES, FEES, PERMITS, TAXES, AND OTHER SIMILAR COSTS IN CONNECTION THEREWITH.
3. PRIOR TO FABRICATION OF DUCTWORK, THE MECHANICAL CONTRACTOR SHALL EXAMINE AND VERIFY ALL CONDITIONS ABOVE AND BELOW THE CEILING WHICH MAY INTERFERE WITH THE DUCT SYSTEM AND NOTIFY THE ARCHITECT OF ANY CONFLICT ENCOUNTERED. CONTRACTOR SHALL PROVIDE ALL OFFSETS, ETC. WHICH MAY BE REQUIRED, WITHOUT ADDITIONAL COST TO THE OWNER
4. ALL SHEET METAL DUCT CONSTRUCTION SHALL BE IN STRICT ACCORDANCE WITH "SMACNA" LOW PRESSURE DUCT CONSTRUCTION STANDARD
5. TURNING VANES SHALL BE INSTALLED IN ALL BENDS IN RECTANGULAR DUCT EXCEEDING 30"
6. ALL DUCTS SHALL BE SUPPORTED WITH 1" WIDE, 16 GAUGE, GALVANIZED STEEL BANDS.
7. ALL RECTANGULAR DUCT SHALL BE INSULATED WITH A MIN. OF 1" INTERNAL LINER, 2 LBS. DENSITY R-60. ALL ROUND DUCTS AND DIFFUSER TOPS SHALL HAVE A MIN. 2" THICK OF FOIL BACKED BLANKET TYPE INSULATION R=4-4.2, WITH ALL JOINTS BUTTED AND TAPED.
8. ALL DUCT DIMENSIONS SHOWN ON PLANS ARE INTERNAL
9. THE MECHANICAL CONTRACTOR SHALL COORDINATE THE LOCATION OF SUPPLY AND RETURN AIR REGISTERS, DUCTS, GRILLES AND DIFFUSERS WITH LIGHTING AND CEILING PATTERNS
10. PROVIDE LATERAL BRACING OF ALL DUCTS AND PIPES AS REQUIRED BY CODE.
11. INSULATE AND SEAL ALL DUCTWORK PER CHAPTER 10 OF THE STATE MECHANICAL CODE (T-24, PART 4)
12. MOUNT ALL THERMOSTATS AT 48" ABOVE FINISHED FLOOR
13. ALL BRACING OF DUCTS AND PIPING SHALL BE INSTALLED IN ACCORDANCE WITH SMACNA GUIDELINES
14. WHERE BRACING DETAILS ARE NOT SHOWN ON THE DRAWINGS OR IN THE GUIDELINES, THE FIELD INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE ARCHITECT AND THE MECHANICAL ENGINEER
15. DUCT SMOKE DETECTOR SHALL BE INSTALLED BELOW THE ROOF
16. ALL MECHANICAL EQUIPMENT AND SYSTEMS INSTALLED AS PART OF PROJECT SHALL COMPLY WITH ALL REQUIREMENTS OF THE 2019 CALIFORNIA MECHANICAL CODE AND THE 2019 CALIFORNIA BUILDING CODE AND THE 2019 CALIFORNIA BUILDING ENERGY EFFICIENCY STANDARDS.
17. OUTSIDE AIR FOR A HEATING OR COOLING SYSTEM SHALL NOT BE TAKEN FROM CLOSER THAN 10 FEET FROM AN APPLIANCE VENT OUTLET, VENT OPENING OF A PLUMBING SYSTEM, OR THE DISCHARGE OUTLET OF EXHAUST FAN, UNLESS THE OUTLET IS 3 FT. ABOVE THE OUTSIDE AIR INLET (CMC 314.3)
18. PROVIDE 120 VOLT ELECTRICAL OUTLETS WITHIN 25 FT. OF ALL MECH. EQUIPT. (CMC 309)
19. HEATING, VENTILATING, AND AIR CONDITIONING SYSTEMS SHALL BE BALANCED IN ACCORDANCE WITH ONE OF THE FOLLOWING METHODS IN ACCORDANCE WITH CMC 317.1 REQUIREMENTS.
 - A. AABC NATIONAL STANDARDS FOR TOTAL SYSTEM BALANCE
 - B. ACCA MANUAL B
 - C. ASHRAE 111
 - D. NEBB PROCEDURAL STANDARDS FOR TESTING, ADJUSTING, AND BALANCING OF ENVIRONMENTAL SYSTEMS
 - E. SMACNA HVAC TESTING, ADJUSTING, AND BALANCING
20. MATERIALS EXPOSED WITHIN DUCTS OR PLENUMS SHALL BE NON COMBUSTIBLE OR SHALL HAVE A FLAME SPREAD INDEX NOT TO EXCEED 25 AND A SMOKE DEVELOPED INDEX NOT TO EXCEED 50 WHERE TESTED AS A COMPOSITE PRODUCT IN ACCORDANCE WITH ASTM E84 OR UL 723

TRANSITIONS

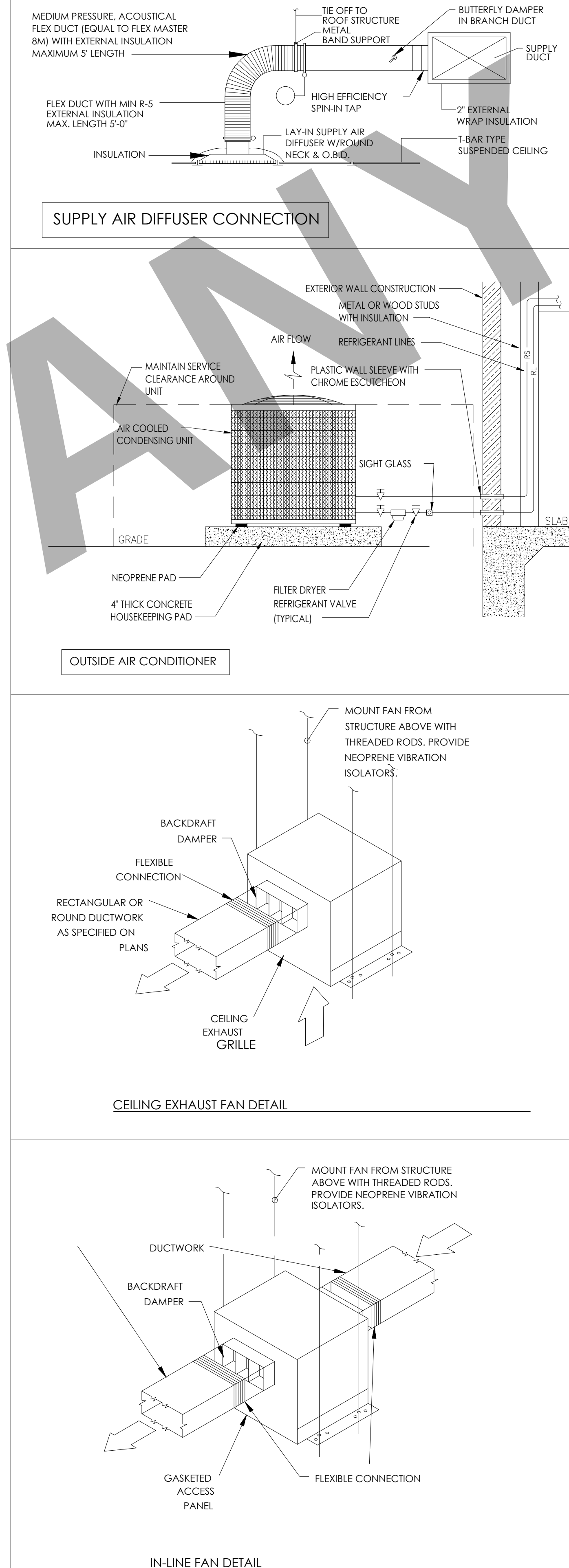
MAIN BRANCH TAKE-OFFS

RISERS

SIDEWALL REGISTERS

DUCT CROSSOVERS

SUB-BRANCH TAP AND TEE

[illegible]

M 5.01

	WALL MOUNTED LED LIGHTING FIXTURE WITH POWER ISVA
	LIGHT FIXTURE - CEILING SURFACE [x INDICATES CONTROL REF.] WITH POWER 30VA
	RECESSED MOUNTED ROUND LED LIGHTING FIXTURE SIMILAR TO PHILIPS DN1308 D1.65 1xLED 05/840
	CEILING MOUNTED FAN INCLUDING LIGHTING
	WALL SCONCE
	LINEAR CABINET UNDER-MOUNT LIGHT
	CEILING MOUNTED JUNCTION BOX FOR EXHAUST FAN
	OUTDOOR FLOOD LIGHT IP67 WITH POWER OF 70VA
	SURFACE MOUNTED VACANCY DETECTOR
	ONE WAY ONE GANG LIGHT SWITCH - WALL MOUNTED @ +48" AFF. F.L.
	TWO WAY ONE GANG LIGHT SWITCH - WALL MOUNTED @ +48" AFF. F.L.
	120/208V. PANEL BOARD
	SINGLE RECEPTACLE - WALL MOUNTED @ +18" AFF. UNLESS NOTED
	DUPLEX RECEPTACLE - WALL MOUNTED @ +18" AFF. UNLESS NOTED
	QUADRUPLE RECEPTACLE - WALL MOUNTED @ +18" AFF. UNLESS NOTED
	JUNCTION BOX - WALL MOUNTED - HEIGHT AS INDICATED
	JUNCTION BOX
	NON-FUSED DISCONNECT SWITCH - SIZE AS INDICATED
	CONDUITS IN CEILING
	CONDUITS UNDER TILES

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

	SELF CONTAINED SMOKE DETECTOR/ANNUNCIATOR (120 W/BATTERY BACKUP) - CEILING MOUNTED
	SELF CONTAINED SMOKE/CARBON MONOXIDE (120 W/BATTERY BACKUP) - CEILING MOUNTED

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

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.

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.

7. USE GALVANIZED RIGID STEEL CONDUIT WHERE EXPOSED 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.

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 FACTORY.
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:

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

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, DINES, BEDROOMS, SUNROOMS, RECREATION ROOMS, CLOSETS, HALLWAYS, OR SIMILAR ROOMS OR AREAS SHALL BE PROTECTED BY A LISTED ARC-FAULT CIRCUIT INTERRUPTER, COMBINATION-TYPE INSTALLED TO PROVIDE PROTECTION OF THE BRANCH CIRCUIT. CEC 2019 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

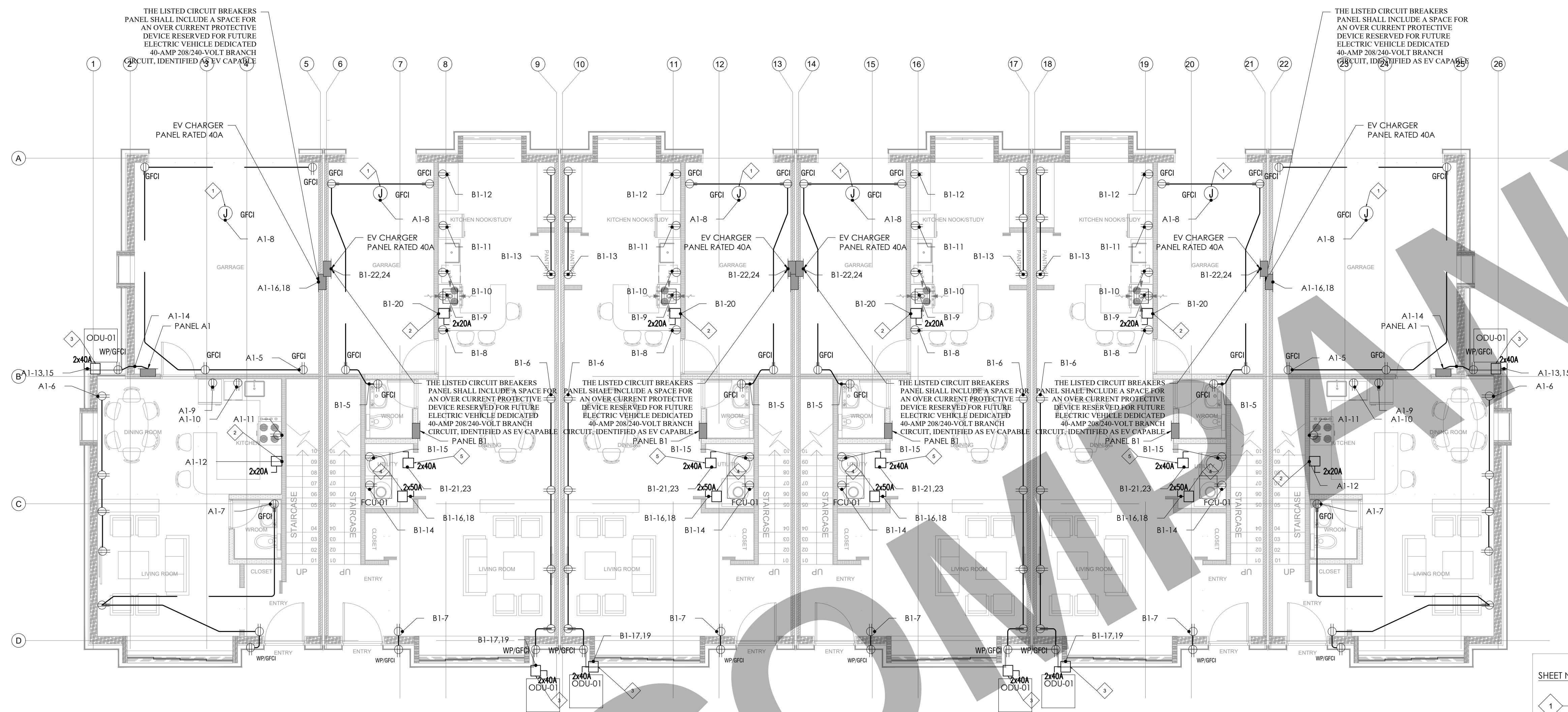
45. ALL RECESSED LED STRIP LIGHTING SHALL BE BY KLUS.

E0.00

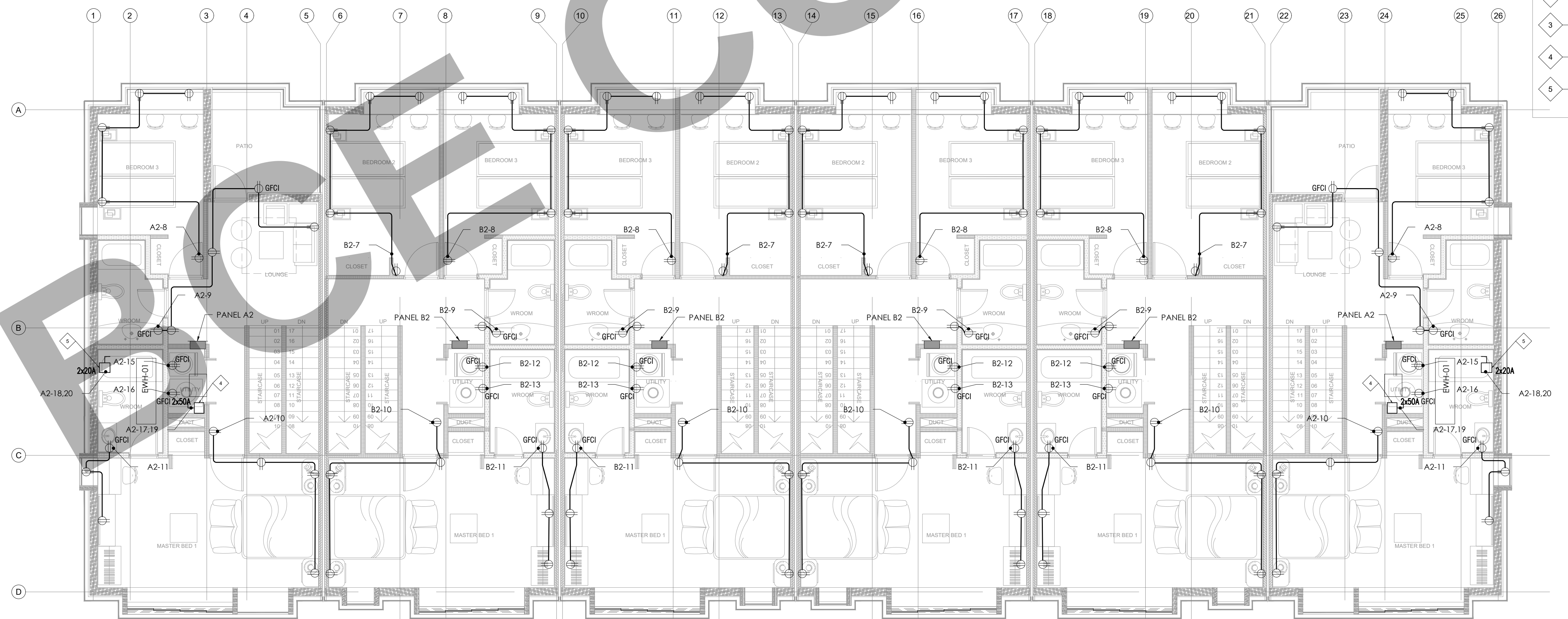


1 → FURNISH AND INSTALL SMOKE OR COMBINATION SMOKE AND CARBON MONOXIDE DETECTOR AS REQUIRED. INTERLOCK WITH OTHER DETECTORS

1. REFER TO FUTURE SCHEDULE/LEGEND FOR ADDITIONAL INFORMATION ON LIGHT FIXTURES
2. NON LOW VOLTAGE SWITCHES SHALL BE DECORA TYPE WITH SLIDE DIMMER. SWITCHES AND PLATE COLORS SHALL BE WHITE.
3. OUTLET BOXES OR OUTLET BOX SYSTEM USED AS SOLE SUPPORT OF A CEILING SUSPENDED PADDLE FAN SHALL BE LISTED. SHALL BE MARKED BY THEIR MANUFACTURER AS SUITABLE FOR THIS PURPOSE. AND SHALL NOT SUPPORT CEILING-SUSPENDED (PADDLE) FANS THAT WEIGHT MORE THAN 70lb. FOR OUTLET BOXES OUR OUTLET BOX SYSTEM DESIGNED TO SUPPORT CEILING-SUSPENDED (PADDLE) FANS THAT WEIGHT MORE THAN 35 lb. THE REQUIRED MARKING SHALL ICLUDE THE MAXIMUM WEIGHT TO BE SUPPORTED. [CEC 2019 ARTICLE 314.27 (C)]
4. LUMINAIRES IN CLOTHES CLOSETS SHALL BE INSTALLED IN ACCORDANCE WITH CEC 2019 ARTICLE 410.16
5. ALL permanently installed lighting fixtures shall be high-efficacy luminaires in accordance with Table 150.0-A of California Energy Code. Provide a complete luminaire schedule on the Electrical schedule, which shall include the luminaire type and type of lamp for each luminaire fixture. [CEC 2019 section 150.0.1(1)(A)]
6. ALL 120 VOLT, SINGLE PHASE 15 AND 20 AMPERE BRANCH CIRCUIT SUPPLYING OUTLETS INSTALLED IN DWELLING UNIT FAMILY ROOMS, DINING ROOMS, LIVING ROOMS, PARLORS, LIBRARIES, DEN'S, BEDROOMS, SUNROOMS, RECREATION ROOMS, CLOSETS, HALLWAYS, OR SIMILAR AREAS SHALL BE PROTECTED BY A LISTED ARC-FAULT CIRCUIT INTERRUPTER, COMBINATION TYPE INSTALLED TO PROVIDE PROTECTION OF THE BRANCH CIRCUIT. [CEC 2019 ARTICLE 210.12(A)]



FIRST FLOOR POWER LAYOUT



SECOND FLOOR POWER LAYOUT

SHEET NOTES:

- 1 APPROXIMATE LOCATION OF AUTOMATIC GARAGE DOOR SENSOR COORDINATE SPECIFIC STUB OUT LOCATION IN FIELD INSTALLED ON CEILING
- 2 JUNCTION BOX FOR EXHAUST FAN
- 3 DISCONNECT SWITCH FOR OUTDOOR UNIT
- 4 DISCONNECT SWITCH FOR INDOOR UNIT
- 5 DISCONNECT SWITCH FOR WATER HEATER

NOTICE: THIS DRAWING MUST BE READ AND NEVER MEASURED. THE CONTRACTOR MUST VERIFY ALL DIMENSIONS ON SITE AND ANY AMBIGUITY MUST BE BROUGHT TO THE CLIENT REP'S NOTICE BEFORE COMMENCEMENT OF THE WORK.

THIS DRAWING IS THE PROPERTY OF MMB DESIGN CONSULTANT & MUST NOT BE COPIED, XEROXED, PRINTED OR HANDS OVER TO ANY UNAUTHORIZED PERSON OR A GROUP OF PERSONS WITHOUT THE WRITTEN PERMISSION OF THE LEGAL OWNER OF THIS PROJECT. ALL DRAWINGS ISSUED TO ANY PERSON FOR THE SOLE PURPOSE FOR WHICH THIS DRAWING WAS MADE MUST RETURN ALL COPIES TO THE OWNER AFTER THE COMPLETION OF THE PROJECT.

MULTIPLE USE OF THIS DRAWING FOR ANY OTHER SITE MUST HAVE THE WRITTEN AGREEMENT AND PERMISSION OF THE OWNER. ANY INFRINGEMENT OF THESE OWNERS RIGHTS WILL BE LIABLE FOR LEGAL ACTION.

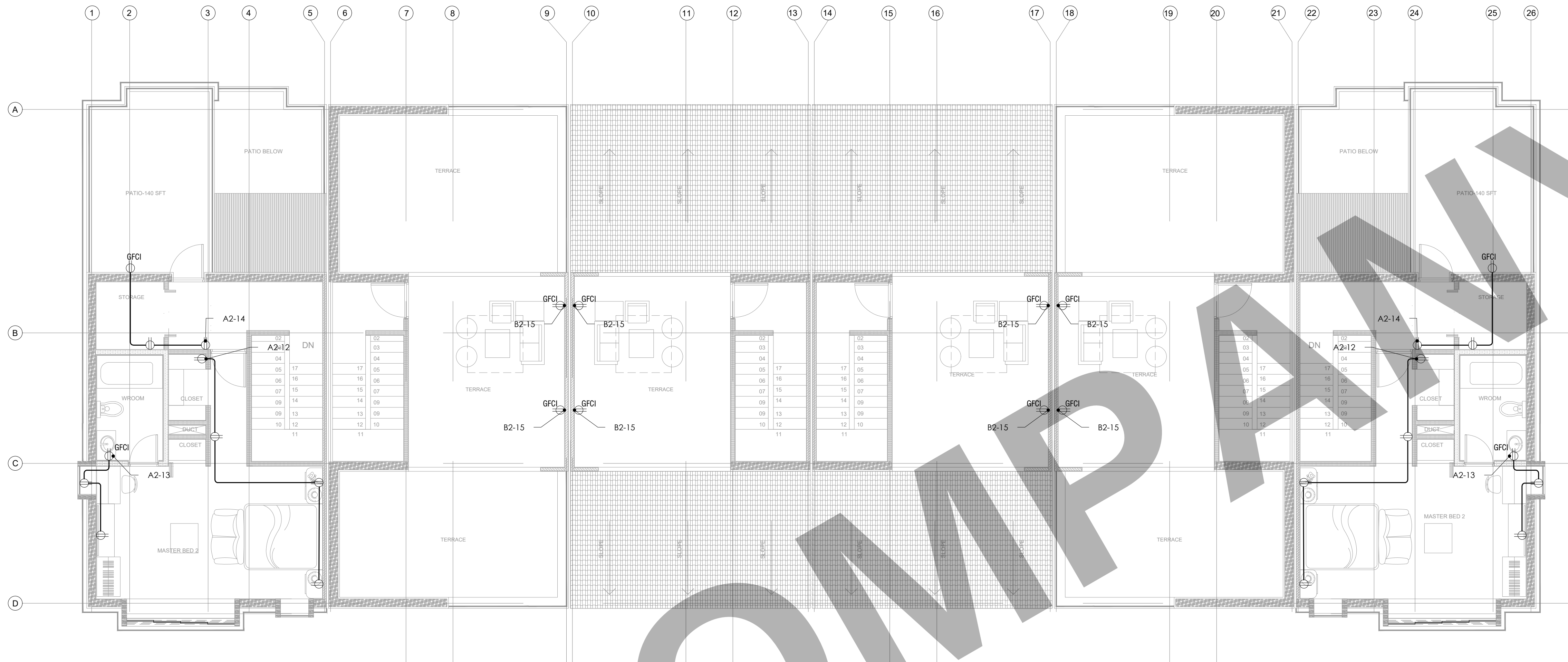
PRINTS
DATE PURPOSE ISSUED TO SETS

DATE NO. REVISIONS

PROJECT NO. PL/TUR31/22
SCALE 3/16"=1'-0"
DATE 2022.12.08
DRAWN MN
CHECKED MN

PLOT OF SURVEY &
LOCATION MAP

E2.0



THIRD FLOOR POWER LAYOUT

GENERAL NOTES

- ALL 120 VOLTE, SINGL PHASE 15 AND 20 AMPERE BRANCH CIRCUIT SUPPLYINH OUTLETS INSTALLED IN DWELLING UNIT FAMILY ROOMS, DINING ROOMS, LIVING ROOMS, PARLORS, LIBRARIES, DENS, BEDROOMS, SUNROOMS, RECREATION ROOMS, CLOSETS, HALLWAYS, OR SIMILAR AREAS SHALL BE PROTECTED BY A LISTED ARC-FAULT CIRCUIT INTERRUPTER, COMBINATION TYPE INSTALLED TO PROVIDE PROTECTION OF THE BRANCH CIRCUIT. (CEC ARTICLE 210.12(A))
- IN EVERY KITCHEN, FAMILY ROOM, DINING ROOM, LIVING ROOM, PARLOR, LIBRARY, DEN, SUNROOM, BEDROOM, RECREATION ROOM OR SIMILAR ROOM OR AREA OF DWELLING UNITS RECEPTACLE OUTLETS SHALL BE INSTALLED IN ACCORDANCE WITH THE GENERAL PROVISIONS SPECIFIED IN THE FOLLOWING ARTICLES.
 - CEC ARTICLE 210.52(A) (1) SPACING. RECEPTACLES SHALL BE INSTALLED SI THAT NO POINT ALONG THE FLOOR LINE OF THE WALL IS MORE THAN 6-FEET FROM A RECEPTACLE.
 - CEC article 210.52(a) (2) AS AMENDED WALL SPACE. ANY WALL 24-INCHES OR MORE IN LENGTH SHALL BE PROVIDED WITH A RECEPTACLE OUTLET. WALL SPACE SHALL INCLUDE AROUND CORNERS, THE FIRST SLIDING PANEL OF A SLIDING DOOR, FIXED ROOM DEVIDERS SUCH AS A FREESTANDING BAR TYPE COUNTER. WALL SPACE NED NOT INCLUDE THE SPACE BEHIND OPERABLE DOORS, AND NEED NOT INCLUDE ENTRIES, HALLWAYS ETC. LESS THAN 5-FEET WIDE LOCATED IN BEDROOMS.
 - CEC ARTICLE 210.52(A) (3) AS AMENDED FLOOR RECEPTACLES.
- IN EVERY KITCHEN, FAMILY ROOM, DINING ROOM, LIVING ROOM, PARLOR, LIBRARY, DEN, SUNROOM, BEDROOM, RECREATION ROOM OR SIMILAR ROOM OR AREA OF DWELLING UNITS, ALL 125 VOLT 15 AND 20 AMP RECEPTACLES SHALL BE LISTED TAMPER-RESISTANT RECEPTACLES CEC 406.12)

SHEET NOTES:

- APPROXIMATE LOCATION OF AUTOMATIC GARAGE DOOR SENSOR COORDINATE SPECIFIC STUB OUT LOCATION IN FIELD INSTALLED ON CEILING
- JUNCTION BOX FOR EXHAUST FAN
- DISCONNECT SWITCH FOR OUTDOOR UNIT
- DISCONNECT SWITCH FOR INDOOR UNIT
- DISCONNECT SWITCH FOR WATER HEATER

VILLAGE SEAL

NOTICE: THIS DRAWING MUST BE READ AND NEVER MEASURED. THE CONTRACTOR MUST VERIFY ALL DIMENSIONS ON SITE AND ANY AMBIGUITY MUST BE BROUGHT TO THE CLIENT REP'S NOTICE BEFORE COMMENCEMENT OF THE WORK. THIS DRAWING IS THE PROPERTY OF MMB DESIGN CONSULTANT & MUST NOT BE COPIED, XEROXED, PRINTED OR HANDS OVER TO ANY UNAUTHORIZED PERSON OR A GROUP OF PERSONS WITHOUT THE WRITTEN PERMISSION OF THE LEGAL OWNER OF THIS OF THE PROJECT. ALL DRAWINGS ISSUED TO ANY PERSON FOR THE SOLE PURPOSE FOR WHICH THIS DRAWING WAS MADE MUST RETURN ALL COPIES TO THE OWNER AFTER THE COMPLETION. MULTIPLE USE OF THIS DRAWING FOR ANY OTHER SITE MUST HAVE THE WRITTEN AGREEMENT AND PERMISSION OF THE OWNER. ANY INFRINGEMENT OF THESE OWNER'S RIGHTS WILL BE LIABLE FOR LEGAL ACTION.

PRINTS
DATE PURPOSE ISSUED TO SETS

DATE NO. REVISIONS

PROJECT NO. PL/TUR31/22
SCALE 3/16"=1'-0"
DATE 2022.12.08
DRAWN MN
CHECKED MN

PLOT OF SURVEY &
LOCATION MAP

E2.1

Location: ELEC				CONNECTED LOAD			DEMAND TOTAL
* LOAD SUMMARY	CL	DF		A	B	C	
L Lighting	3.05	1.25		1.55	1.50		3.05
R Convenience Recept	2.70			0.54		2.16	2.70
H Heating (Space)	2.26	1.25			1.13	1.13	2.26
C Cooling		1.00					
A HVAC	9.25	1.00		1.66	2.96	4.62	9.25
P Process		1.00					
O Other Continuous	2.25	1.25			1.13	1.13	2.81
K Kitchen	6.00	0.65		4.08	4.50	2.25	3.90
N Noncontinuous		1.00					
M Motor	0.20	1.00		0.20			0.20
Total	25.71			8.03	11.22	11.29	24.17
Total Demand Load (KVA)				24.17			
Total Demand Current (A)				67.09			
Min. Feeder Ampacity (A)				83.86			

DESCRIPTION	*	WIRE	GRD	CB	KVA	A	B	C	KVA	CB	WIRE	GRD	DESCRIPTION	*
1 Ltg. Garage & Kitchen	L	2X 12 AWG - #12G		15A-1P	0.80	1.55			0.75	15A-1P	2X 12 AWG - #12G		Ltg. Dining Room	L 2
3 Ltg. Living Room	L	2X 12 AWG - #12G		15A-1P	0.85		1.50		0.65	15A-1P	2X 12 AWG - #12G		Ltg. Entrance & Toilet	L 4
5 Receptacles Garage	R	2X 10 AWG - #10G		20A-1P	1.08			2.16	1.08	20A-1P	2X 10 AWG - #10G		Receptacles Dining & Living Rooms	R 6
7 Receptacles Living Room	R	2X 10 AWG - #10G		20A-1P	0.54	2.04			1.50	20A-1P	2X 10 AWG - #10G		Kitchen Power Receptacle	K 8
9 Oven	K	2X 10 AWG - #10G		20A-1P	1.50		3.00		1.50	20A-1P	2X 10 AWG - #10G		Microw ave	K 10
11 Fridge	K	2X 10 AWG - #10G		20A-1P	0.75			2.25	1.50	20A-1P	2X 10 AWG - #10G		Kitchen Power Receptacle	K 12
13 Receptacles Pantry	K	2X 10 AWG - #10G		20A-1P	1.08	2.58			1.50	20A-1P	2X 10 AWG - #10G		Washing Machine	K 14
15 Dryer Machine	K	2X 10 AWG - #10G		20A-1P	1.50		4.46		2.96	40A-2P	2X 8 AWG - #8G		Indoor Unit FCU-01	A 16
17 Outdoor Unit OU-01	A	2X 8 AWG - #8G		30A-2P	1.66			4.62	2.96	20A-1P	2X 10 AWG - #10G		Kitchen Exhaust Fan	M 20
19	A				1.66	1.86			0.20	40A-2P	2X 8 AWG - #8G		EV CHARGER SERVICE PANEL	O 22
21 Electrical Water Heater	H	2X 8 AWG - #8G		40A-2P	1.13		2.26		1.13	20A-1P			Spare	26
23	H				1.13			2.26	1.13	20A-1P			Spare	28
25 Spare				20A-1P						20A-1P			Spare	30
27 Spare				20A-1P						20A-1P			Spare	32
29 Spare				40A-2P						20A-1P			Spare	
31														
(KVA)					8.03	11.22	11.29							
Total Connected Load					8.03	11.22	11.29							

PANEL B1	
PANELBOARD DESIGNATION	
SYSTEM VOLTAGE	208/120V, 3Φ, 4W
BUS SIZE	100
SYSTEM TYPE	NORMAL
FEEDER PROT	100A-3P C/B Bus Plug
CONDUCTOR SIZE	2 AWG - #8G CU
CONDUCTOR/PHASE	1
MAINS	100A MCB
SCCR	SERIES RATED
MCB RATING	80%
GROUND FAULT	NO
FEEDER LENGTH (FT)	20
FEEDER V. DROP (%)	0.324
FAULT CURRENT	
KAIC RATING	22
ENCLOSURE	TYPE 3R

Location: ELEC				CONNECTED LOAD			DEMAND TOTAL
* LOAD SUMMARY	CL	DF		A	B	C	
L Lighting	4.60	1.25		1.60	1.80	1.20	4.60
R Convenience Recept	5.40			2.16	2.16	1.08	5.40
H Heating (Space)	2.25	1.25		1.13	1.13		2.25
C Cooling		1.00					
A HVAC		1.00					
P Process		1.00					
O Other Continuous		1.25					
K Kitchen	1.50	0.65		1.50		1.50	0.98
N Noncontinuous		1.00					
M Motor		1.00					
Total	13.75			6.39	5.09	3.78	13.23
Total Demand Load (KVA)				13.23			
Total Demand Current (A)				36.71			
Min. Feeder Ampacity (A)				45.89			

DESCRIPTION	*	WIRE	GRD	CB	KVA	A	B	C	KVA	CB	WIRE	GRD	DESCRIPTION	*
1 Ltg. Lounge	L	2X 12 AWG - #12G		15A-1P	1.00	1.60		0.60	1.60	15A-1P	2X 12 AWG - #12G		Ltg. Roof Patio	L 2
3 Ltg. Master Bed Room	L	2X 12 AWG - #12G		15A-1P	0.90		1.80	0.90	0.90	15A-1P	2X 12 AWG - #12G		Ltg. Master Bed Room	L 4
5 Ltg. Bed Room 3	L	2X 12 AWG - #12G		15A-1P	0.60			1.20	0.60	15A-1P	2X 12 AWG - #12G		Ltg. Bed Room 2	L 6
7 Receptacles Bed Room 2	R	2X 10 AWG - #10G		20A-1P	1.08	2.16			1.08	20A-1P	2X 10 AWG - #10G		Receptacles Bed Room 3	R 8
9 Receptacles Corridor & Toilets	R	2X 10 AWG - #10G		20A-1P	0.54		1.62		1.08	20A-1P	2X 10 AWG - #10G		Receptacles Master Bed Room	R 10
11 Receptacles Master Bed Room	R	2X 10 AWG - #10G		20A-1P	1.08			2.58	1.50	20A-1P	2X 10 AWG - #10G		Washing Machine	K 12
13 Dryer Machine	K	2X 10 AWG - #10G		20A-1P	1.50	2.63			1.13	20A-1P			Spare	H 14
15 Receptacles Roof	R	2X 10 AWG - #10G		20A-1P	0.54		1.67		1.13	20A-1P			Spare	H 16
17 Spare				20A-1P	1.50			1.50		20A-1P			Spare	18
19 Spare				20A-1P	1.50	1.50				20A-1P			Spare	20
21 Spare				40A-2P						40A-2P			Spare	22
23														24
25 Spare				20A-1P						20A-1P			Spare	26
27 Spare				20A-1P						20A-1P			Spare	28
29 Spare				20A-1P						20A-1P			Spare	30
31 Spare				40A-2P						20A-1P			Spare	32
(KVA)					7.89	5.09	5.28							
Total Connected Load					7.89	5.09	5.28							

Location: ELEC				CONNECTED LOAD			DEMAND TOTAL
* LOAD SUMMARY	CL	DF		A	B	C	
L Lighting		1.25					
R Convenience Recept							
H Heating (Space)		1.25					
C Cooling		1.00					
A HVAC		1.00					
P Process		1.00					
O Other Continuous		1.25					
K Kitchen		0.65					
N Noncontinuous	48.80	1.00		15.92	16.31	16.57	48.80
M Motor		1.00					
Total	48.80			15.92	16.31	16.57	48.80
Total Demand Load (KVA)				48.80			
Total Demand Current (A)				135.46			
Min. Feeder Ampacity (A)				169.32			

PANEL DP-B	
PANELBOARD DESIGNATION	
SYSTEM VOLTAGE	208/120V, 3Φ, 4W
BUS SIZE	200
SYSTEM TYPE	NORMAL
FEEDER PROT	200A-3P C/B Bus Plug
CONDUCTOR SIZE	4/0 AWG - #2/0G CU
CONDUCTOR/PHASE	1
MAINS	200A MCB
SCCR	SERIES RATED
MCB RATING	80%
GROUND FAULT	NO
FEEDER LENGTH (FT)	50
FEEDER V. DROP (%)	0.508
FAULT CURRENT	
KAIC RATING	22
ENCLOSURE	TYPE 3R

DESCRIPTION	*	WIRE	GRD	CB	KVA	A	B	C	KVA	CB	WIRE	GRD	DESCRIPTION	*
1 PANEL B1	N				8.03	15.92			7.89					N 2
3	N	4X 2 AWG - #8G		100A-3P	11.22		16.31		5.09	100A-3P	4X 2 AWG - #8G		PANEL B2	N 4
5	N				11.29			16.57	5.28					N 6
7														8
9 SPARE				60A-3P						60A-3P			SPARE	10
11														12
(KVA)					15.92	16.31	16.57							
Total Connected Load					15.92	16.31	16.57							

PANEL BOARD SCHEDULE



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PRINTS
DATE PURPOSE ISSUED TO SETS

DATE NO. REVISIONS

PROJECT NO. PL/TUR31/22
SCALE NTS
DATE 2022.12.08
DRAWN MN
CHECKED MN

PLOT OF SURVEY &
LOCATION MAP

E3.0

Location: ELEC				CONNECTED LOAD			DEMAND
* LOAD SUMMARY	CL	DF		A	B	C	TOTAL
L Lighting	2.85	1.25		1.35	1.50		2.85
R Convenience Recept	4.26			2.10		2.16	4.26
H Heating (Space)		1.25					
C Cooling		1.00					
A HVAC	3.32	1.00		1.66	1.66		3.32
P Process		1.00					
O Other Continuous	4.00	1.25			2.00	2.00	5.00
K Kitchen	1.50	0.65			2.25	1.50	0.98
N Noncontinuous		1.00					
M Motor	0.20	1.00				0.20	0.20
Total	16.13			5.11	7.41	5.86	16.61

Total Demand Load (KVA)	16.61
Total Demand Current (A)	46.10
Min. Feeder Ampacity (A)	57.63

PANEL A1	
PANELBOARD DESIGNATION	
SYSTEM VOLTAGE	208/120V, 3Ø, 4W
BUS SIZE	100
SYSTEM TYPE	NORMAL
FEEDER PROT	100A-3P C/B Bus Plug
CONDUCTOR SIZE	2 AWG - #6G CU
CONDUCTOR/PHASE	1
MAINS	100A MCB
SCCR	SERIES RATED
MCB RATING	80%
GROUND FAULT	NO
FEEDER LENGTH (FT)	20
FEEDER V. DROP (%)	0.324
FAULT CURRENT	
KAIC RATING	22
ENCLOSURE	TYPE 3R

DESCRIPTION	* WIRE	GRD	CB	KVA	A	B	C	KVA	CB	WIRE	GRD	DESCRIPTION	*
1 Ltg. Garage	L 2X 12 AWG - #12G		15A-1P	0.60	1.35			0.75	15A-1P	2X 12 AWG - #12G		Ltg. Dining Room & Kitchen	L 2
3 Ltg. Living Room	L 2X 12 AWG - #12G		15A-1P	0.85		1.50		0.65	15A-1P	2X 12 AWG - #12G		Ltg. Entrance & Toilet	L 4
5 Receptacles Garage	R 2X 10 AWG - #10G		20A-1P	1.08			2.16	1.08	20A-1P	2X 10 AWG - #10G		Receptacles Dining & Living Rooms	R 6
7 Receptacles Living Room & Toilet	R 2X 10 AWG - #10G		20A-1P	1.08	1.83			0.75	20A-1P	2X 10 AWG - #10G		Garage Door	R 8
9 Fridge	K 2X 10 AWG - #10G		20A-1P	0.75		2.25		1.50	20A-1P	2X 10 AWG - #10G		Microwave	K 10
11 Oven	K 2X 10 AWG - #10G		20A-1P	1.50			1.70	0.20	20A-1P	2X 10 AWG - #10G		Kitchen Exhaust Fan	M 12
13 Outdoor Unit OU-01	A 2X 8 AWG - #8G		30A-2P	1.66	1.93			0.27	20A-1P	2X 10 AWG - #10G		Receptacles Outdoor	R 14
15 Spare				1.66		3.66		2.00	40A-2P	2X 8 AWG - #8G		EV CHARGER SERVICE PANEL	O 16
17 Spare			20A-1P				2.00	2.00					O 18
19 Spare			20A-1P						20A-1P			Spare	20
21 Spare													22
23 Spare			30A-2P						40A-2P			Spare	24
25 Spare			20A-1P						20A-1P			Spare	26
27 Spare			20A-1P						20A-1P			Spare	28
29 Spare									20A-1P			Spare	30
31 Spare			40A-2P						20A-1P			Spare	32
(KVA)													
Total Connected Load				5.11	7.41	5.86							

Location: ELEC				CONNECTED LOAD			DEMAND
* LOAD SUMMARY	CL	DF		A	B	C	TOTAL
L Lighting	5.70	1.25		2.50	1.80	1.40	5.70
R Convenience Recept	6.48			2.16	2.43	1.89	6.48
H Heating (Space)	2.25	1.25		1.13		1.13	2.25
C Cooling		1.00					
A HVAC	5.92	1.00		2.96		2.96	5.92
P Process		1.00					
O Other Continuous		1.25					
K Kitchen	1.50	0.65		0.81	3.00		0.98
N Noncontinuous		1.00					
M Motor		1.00					
Total	21.85			9.56	7.23	7.38	21.33

Total Demand Load (KVA)	21.33
Total Demand Current (A)	59.20
Min. Feeder Ampacity (A)	74.00

PANEL A2	
PANELBOARD DESIGNATION	
SYSTEM VOLTAGE	208/120V, 3Ø, 4W
BUS SIZE	100
SYSTEM TYPE	NORMAL
FEEDER PROT	100A-3P C/B Bus Plug
CONDUCTOR SIZE	2 AWG - #6G CU
CONDUCTOR/PHASE	1
MAINS	100A MCB
SCCR	SERIES RATED
MCB RATING	80%
GROUND FAULT	NO
FEEDER LENGTH (FT)	20
FEEDER V. DROP (%)	0.324
FAULT CURRENT	
KAIC RATING	22
ENCLOSURE	TYPE 3R

DESCRIPTION	* WIRE	GRD	CB	KVA	A	B	C	KVA	CB	WIRE	GRD	DESCRIPTION	*
1 Ltg. Lounge	L 2X 12 AWG - #12G		15A-1P	1.00	1.60			0.60	15A-1P	2X 12 AWG - #12G		Ltg. Bed Room 3	L 2
3 Ltg. Master Bed Room	L 2X 12 AWG - #12G		15A-1P	0.90		1.80		0.90	15A-1P	2X 12 AWG - #12G		Ltg. Master Bed Room	L 4
5 Ltg. Third Floor Corridor & Store	L 2X 12 AWG - #12G		15A-1P	0.50			1.40	0.90	15A-1P	2X 12 AWG - #12G		Ltg. Third Floor Master Bed Room	L 6
7 Ltg. Third Floor Master Bed Room	L 2X 12 AWG - #12G		15A-1P	0.90	2.25			1.35	20A-1P	2X 10 AWG - #10G		Receptacles Bed Room 3	R 8
9 Receptacles Living Room	R 2X 10 AWG - #10G		20A-1P	1.35		2.43		1.08	20A-1P	2X 10 AWG - #10G		Receptacles Master Bed Room 1	R 10
11 Receptacles Master Bed Room 1	R 2X 10 AWG - #10G		20A-1P	0.81			1.89	1.08	20A-1P	2X 10 AWG - #10G		Receptacles Master Bed Room 2	R 12
13 Receptacles Master Bed Room 2	K 2X 10 AWG - #10G		20A-1P	0.81	1.62			0.81	20A-1P	2X 10 AWG - #10G		Receptacles Corridor	R 14
15 Washing Machine	K 2X 10 AWG - #10G		20A-1P	1.50		3.00		1.50	20A-1P	2X 10 AWG - #10G		Dryer Machine	K 16
17 Indoor Unit FCU-01	A 2X 8 AWG - #8G		50A-2P	2.96			4.09	1.13	40A-2P	2X 8 AWG - #8G		Electrical Water Heater	H 18
19 Spare				2.96	4.09			1.13					H 20
21 Spare			40A-2P						40A-2P			Spare	22
23 Spare													24
25 Spare			20A-1P						20A-1P			Spare	26
27 Spare			20A-1P						20A-1P			Spare	28
29 Spare									20A-1P			Spare	30
31 Spare			40A-2P						20A-1P			Spare	32
(KVA)													
Total Connected Load				9.56	7.23	7.38							

Location: ELEC				CONNECTED LOAD			DEMAND
* LOAD SUMMARY	CL	DF		A	B	C	TOTAL
L Lighting		1.25					
R Convenience Recept							
H Heating (Space)		1.25					
C Cooling		1.00					
A HVAC		1.00					
P Process		1.00					
O Other Continuous		1.25					
K Kitchen		0.65					
N Noncontinuous	42.55	1.00		14.67	14.64	13.24	42.55
M Motor		1.00					
Total	42.55			14.67	14.64	13.24	42.55

Total Demand Load (KVA)	42.55
Total Demand Current (A)	118.11
Min. Feeder Ampacity (A)	147.63

PANEL DP-A	
PANELBOARD DESIGNATION	
SYSTEM VOLTAGE	208/120V, 3Ø, 4W
BUS SIZE	200
SYSTEM TYPE	NORMAL
FEEDER PROT	200A-3P C/B Bus Plug
CONDUCTOR SIZE	4/0 AWG - #2/0G CU
CONDUCTOR/PHASE	1
MAINS	200A MCB
SCCR	SERIES RATED
MCB RATING	80%
GROUND FAULT	NO
FEEDER LENGTH (FT)	50
FEEDER V. DROP (%)	0.508
FAULT CURRENT	
KAIC RATING	22
ENCLOSURE	TYPE 3R

DESCRIPTION	* WIRE	GRD	CB	KVA	A	B	C	KVA	CB	WIRE	GRD	DESCRIPTION	*
1 PANEL A1	N			5.11	14.67			9.56	100A-3P	4X 2 AWG - #6G		PANEL A2	N 2
3	N	4X 2 AWG - #6G	100A-3P	7.41		14.64		7.23	100A-3P	4X 2 AWG - #6G			N 4
5	N			5.86			13.24	7.38					N 6
7													8
9 SPARE			60A-3P						60A-3P			SPARE	10
11													12
(KVA)													
Total Connected Load				14.67	14.64	13.24							

PANEL BOARD SCHEDULE

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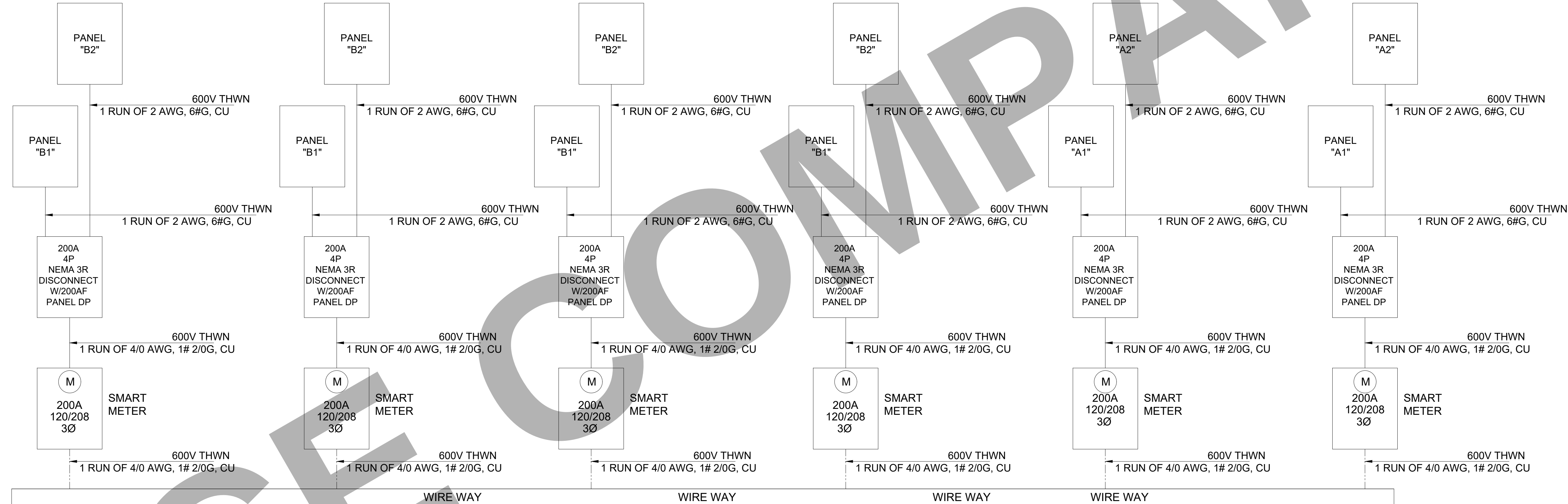
PROJECT NO. PL/TUR31/22
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DATE 2022.12.08
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PLOT OF SURVEY &
LOCATION MAP

E3.1



VILLAGE SEAL



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PROJECT NO.	PL/TUR31/22
SCALE	NTS
DATE	2022.12.08
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CHECKED	MN

PLOT OF SURVEY & LOCATION MAP

E4.0

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, AS/JSS-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 #902-1 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 PERMITTED BY CODE/LOCAL AUTHORITIES. INSTALLATION: THOROUGHLY CLEAN ITEMS BEFORE INSTALLATION. CAP PIPE OPENINGS TO EXCLUDE DIRT UNTIL FIXTURES ARE INSTALLED AND FINAL CONNECTIONS HAVE BEEN MADE. PROCEED AS RAPIDLY AS CONSTRUCTION WILL PERMIT. SET FIXTURES LEVEL AND IN PROPER ALIGNMENT. INSTALL SUPPLIES IN PROPER ALIGNMENT WITH FIXTURES. INSTALL SILICONE SEALANT BETWEEN FIXTURES AND ADJACENT MATERIAL, FOR SANITARY JOINT, AND OMIT ESCUTCHEONS. REPAIR EXISTING PLUMBING SYSTEM COMPONENTS DAMAGED BY CONSTRUCTION OPERATIONS AND RESTORE TO ORIGINAL CONDITIONS. TEST WATER SYSTEM UNDER 150 PSIG HYDROSTATIC PRESSURE, FOR FOUR (4) HOURS MINIMUM. WHEN TESTING INDICATES MATERIALS OR WORKMANSHIP IS DEFICIENT, REPLACE OR REPAIR AS REQUIRED, AND REPEAT TEST UNTIL STANDARDS ARE ACHIEVED. ROOF PENETRATIONS SHALL COMPLY WITH "SMACNA" AND "NRCA" STANDARDS, AND WITH THE REQUIREMENTS OF THE EXISTING ROOFING WARRANTY, IF APPLICABLE. DO NOT PERFORM ROOFING PENETRATIONS IN A MANNER WHICH WOULD VOID OR OTHERWISE LIMIT THE EXISTING ROOFING WARRANTY.

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

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

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

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

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

SHOWERS AND TUB-SHOWERS COMBINATIONS IN ALL BUILDINGS SHALL BE PROVIDED WITH INDIVIDUAL CONTROL VALVES OF THE PRESSURE BALANCE, THERMOSTATIC, OR COMBINATION OF BOTH THAT PROVIDE SCALD AND THERMAL SHOCK PROTECTION. VALVES SHALL BE ADJUSTED TO DELIVER A MAXIMUM MIXED WATER SETTING OF 120 DEGREES FAHRENHEIT. THE WATER HEATER THERMOSTAT SHALL NOT BE CONSIDERED A SUITABLE CONTROL FOR MEETING THIS PROVISION.

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

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

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

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: Added and 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 5.303.1, 3.2.
- 4-Landscape irrigation water use shall have weather or soil based controllers. CGC Section 4.304.1.
- 5-The plans shall specify 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 water heating, ventilation, and air conditioning equipment. CGC Section 4.410.1.
- 8-The gas fireplaces shall be a direct-vented sealed, combustion type. Woodstove or pellet stoves must be US EPA Phase II rated appliances. CGC Section 4.503.1.

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

1. THE MAXIMUM VOLUME OF WATER PER FLUSH FROM A SINK OR A FAUCET OR A FAUCET AERATOR SHALL NOT EXCEED 0.5 GALLONS OF WATER PER MINUTE AT A PRESSURE OF 60 PSIG 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 1.2 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.

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.

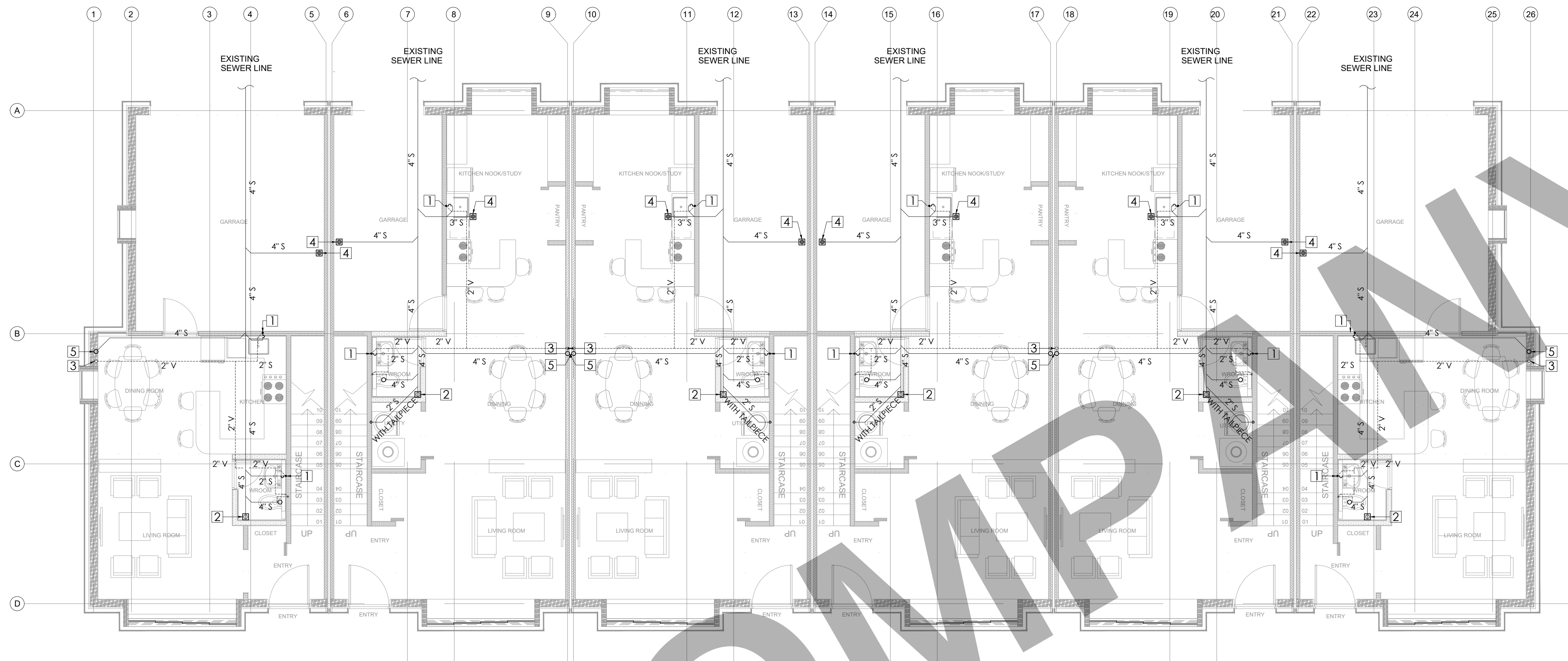
NOTICE: THIS DRAWING MUST BE READ AND NEVER MEASURED.
THE CONTRACTOR MUST VERIFY ALL DIMENSIONS ON SITE AND ANY AMBIGUITY MUST BE BROUGHT TO THE CLIENT RE: NOTICE BEFORE COMMENCEMENT OF THE WORKS.
THIS DRAWING IS THE PROPERTY OF MSNB DESIGN CONSULTANT & MUST NOT BE COPIED, REPRODUCED, PRINTED OR HANDLED OVER TO ANY UNAUTHORIZED PERSON OR A GROUP OF PERSONS WITHOUT THE WRITTEN PERMISSION OF THE LEGAL OWNER OF THIS OF THE PROJECT.
ALL DRAWINGS ISSUED TO ANY PERSON FOR THE SOLE PURPOSE FOR WHICH THE DRAWING WAS MADE, MUST RETURN ALL COPIES TO THE OWNER AFTER THE COMPLETION

PRINTS

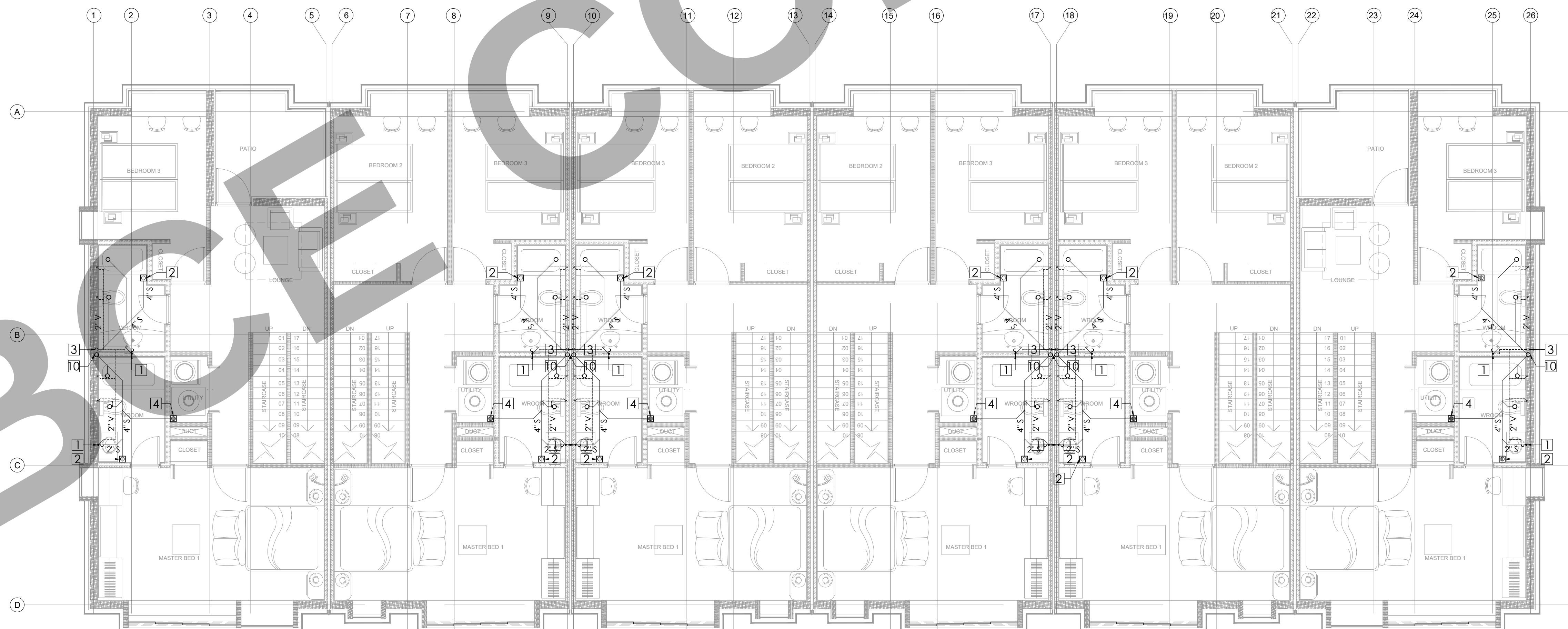
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FIRST FLOOR SEWER LAYOUT



SECOND FLOOR SEWER LAYOUT

VILLAGE SEAL

NOTICE: THIS DRAWING MUST BE READ AND NEVER MEASURED.
THE CONTRACTOR MUST VERIFY ALL DIMENSIONS ON SITE AND ANY AMBIGUITY MUST BE BROUGHT TO THE CLIENT REP'S NOTICE BEFORE COMMENCEMENT OF THE WORK.
THIS DRAWING IS THE PROPERTY OF MIND DESIGN CONSULTANT & MUST NOT BE COPIED, XEROXED, PRINTED OR HANDLED OVER TO ANY UNAUTHORIZED PERSON OR A GROUP OF PERSONS WITHOUT THE WRITTEN PERMISSION OF THE LEGAL OWNER OF THIS OF THE PROJECT.
ALL DRAWINGS ISSUED TO ANY PERSON FOR THE SOLE PURPOSE FOR WHICH THIS DRAWING WAS MADE MUST RETURN ALL COPIES TO THE OWNER AFTER THE COMPLETION OF THE PROJECT.

MULTIPLE USE OF THIS DRAWING FOR ANY OTHER SITE MUST HAVE THE WRITTEN AGREEMENT AND PERMISSION OF THE OWNER.
ANY INFRINGEMENT OF THESE OWNER'S RIGHTS WILL BE LIABLE FOR LEGAL ACTION.

PRINTS
DATE PURPOSE ISSUED TO SETS

DATE NO. REVISIONS

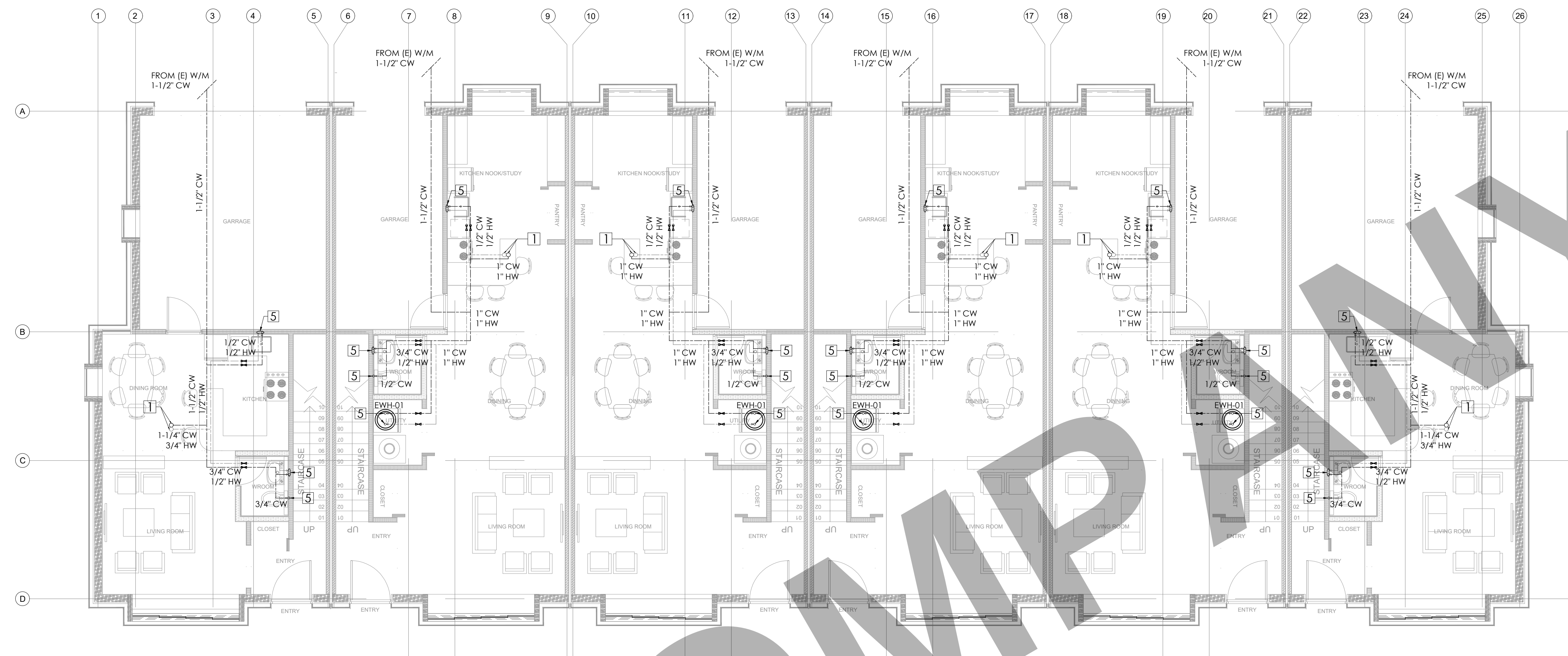
PROJECT NO. PL/TUR31/22
SCALE 3/16"=1'-0"
DATE 2022.12.08
DRAWN MN
CHECKED MN

PLOT OF SURVEY &
LOCATION MAP

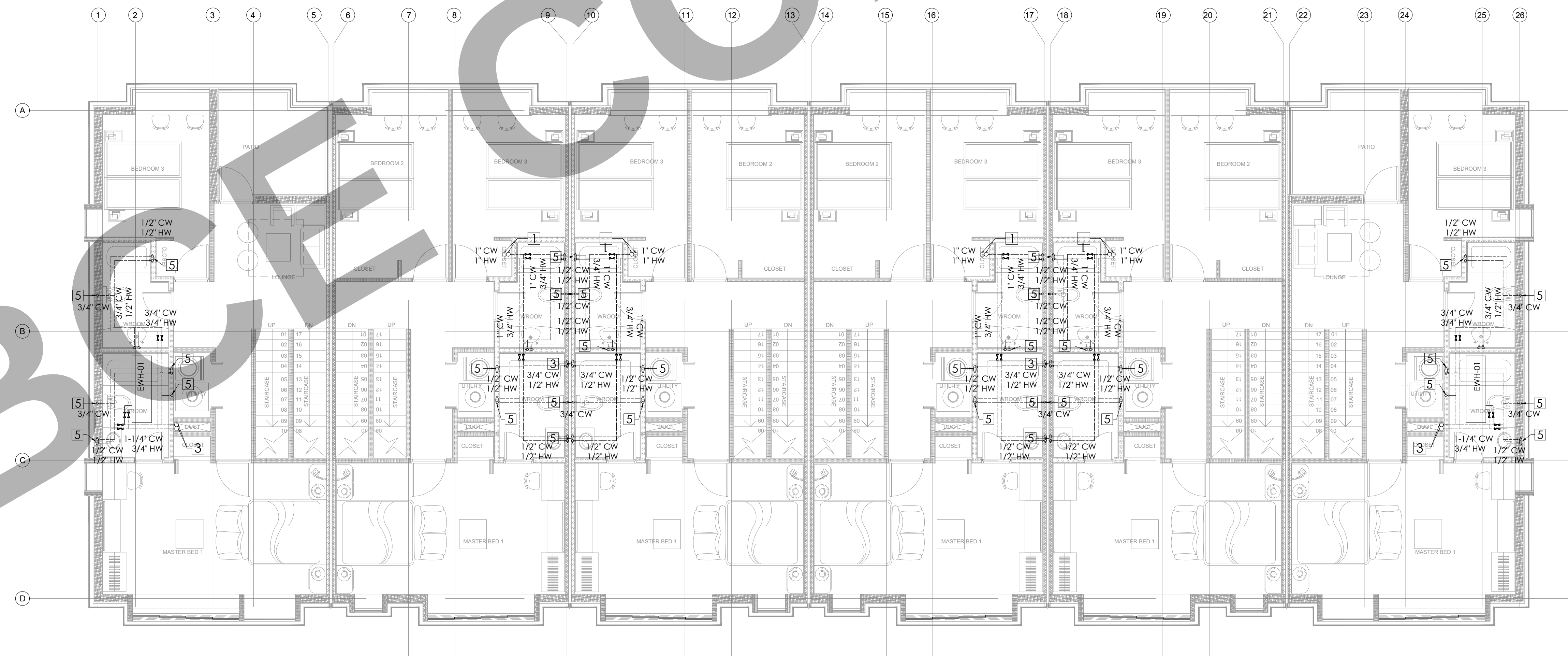
P 1.01



P 1.02



FIRST FLOOR WATER SUPPLY LAYOUT



SECOND FLOOR WATER SUPPLY LAYOUT

VILLAGE SEAL

NOTICE: THIS DRAWING MUST BE READ AND NEVER MEASURED. THE CONTRACTOR MUST VERIFY ALL DIMENSIONS ON SITE AND ANY AMBIGUITY MUST BE BROUGHT TO THE CLIENT REP'S NOTICE BEFORE COMMENCEMENT OF THE WORK. THIS DRAWING IS THE PROPERTY OF MMB DESIGN CONSULTANT & MUST NOT BE COPIED, XEROXED, PRINTED OR HANDLED OVER TO ANY UNAUTHORIZED PERSON OR A GROUP OF PERSONS WITHOUT THE WRITTEN PERMISSION OF THE LEGAL OWNER OF THIS OF THE PROJECT. ALL DRAWINGS ISSUED TO ANY PERSON FOR THE SOLE PURPOSE FOR WHICH THIS DRAWING WAS MADE MUST RETURN ALL COPIES TO THE OWNER AFTER THE COMPLETION.

MULTIPLE USE OF THIS DRAWING FOR ANY OTHER SITE MUST HAVE THE WRITTEN AGREEMENT AND PERMISSION OF THE OWNER. ANY INFRINGEMENT OF THESE OWNERS RIGHTS WILL BE LIABLE FOR LEGAL ACTION.

PRINTS
DATE PURPOSE ISSUED TO SETS

DATE NO. REVISIONS

PROJECT NO. PL/TUR31/22
SCALE 3/16"=1'-0"
DATE 2022.12.08
DRAWN MN
CHECKED MN

PLOT OF SURVEY &
LOCATION MAP

P 2.01



GENERAL NOTES:

- WATER SUPPLY SHEET NOTES:

- ## MINIMUM PIPE SIZE PER FIXTURE

PLUMBING PIPING MATERIAL SCHEDULE

TOTAL BUILDING WATER LOAD

SCHEDULE No. 1

HEAT PUMP WATER HEATER SCHEDULE

FROM 2019 CPC - TABLE 610.3:

WATER SUPPLY FIXTURE UNITS LOADS :

AS PER 2019 CPC - TABE 610.4:
THE LONGEST RUN IS APPROX. 150 FT. AT 20.5 W.S.F.U
AND FOR W/M PRESSURE RANGE 30-45 PSI,
THE W/M SIZE NOT LESS THAN 1-1/4"
AND MAIN CWP TO NOT LESS THAN 1-1/4"

NOTICE:	THIS DRAWING MUST BE READ AND NEVER MEASURED.
THE CONTRACTOR MUST VERIFY ALL DIMENSIONS ON SITE AND ANY AMBIGUITY MUST BE BROUGHT TO THE CLIENT REP'S NOTICE BEFORE COMMENCEMENT OF THE WORK	
THIS DRAWING IS THE PROPERTY OF M&B DESIGN CONSULTANT & MUST NOT BE COPIED, XEROXED, PRINTED OR HANDED OVER TO ANY UNAUTHORISED PERSON OR A GROUP OF PERSONS WITHOUT THE WRITTEN PERMISSION OF THE LEGAL OWNER OF THIS OF THE PROJECT	
ALL DRAWINGS ISSUED TO ANY PERSON FOR THE SOLE PURPOSE FOR WHICH THIS DRAWING WAS MADE MUST RETURN ALL COPIES TO THE OWNER AFTER THE COMPLETION	
MULTIPLE USE OF THIS DRAWING FOR ANY OTHER SITE MUST HAVE THE WRITTEN AGREEMENT AND PERMISSION OF THE OWNER	
ANY INFRINGEMENT OF THESE OWNERS RIGHTS WILL BE LIABLE FOR LEGAL ACTION	

PRINTS

DATE	NO.	REVISIONS
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PROJECT NO.	PL/TUR31/22
SCALE	3/16"=1'-0"
DATE	2022.12.08
DRAWN	MN
CHECKED	MN

PLOT OF SURVEY & LOCATION MAP

Project no:	Date: 25/9/2022	Sheet no.: 1 of 1	Computed by: Innodez
Subject: Park Villas,Turlock Hot Water Calculation			Checked by: Innodez
			Approved by: Innodez

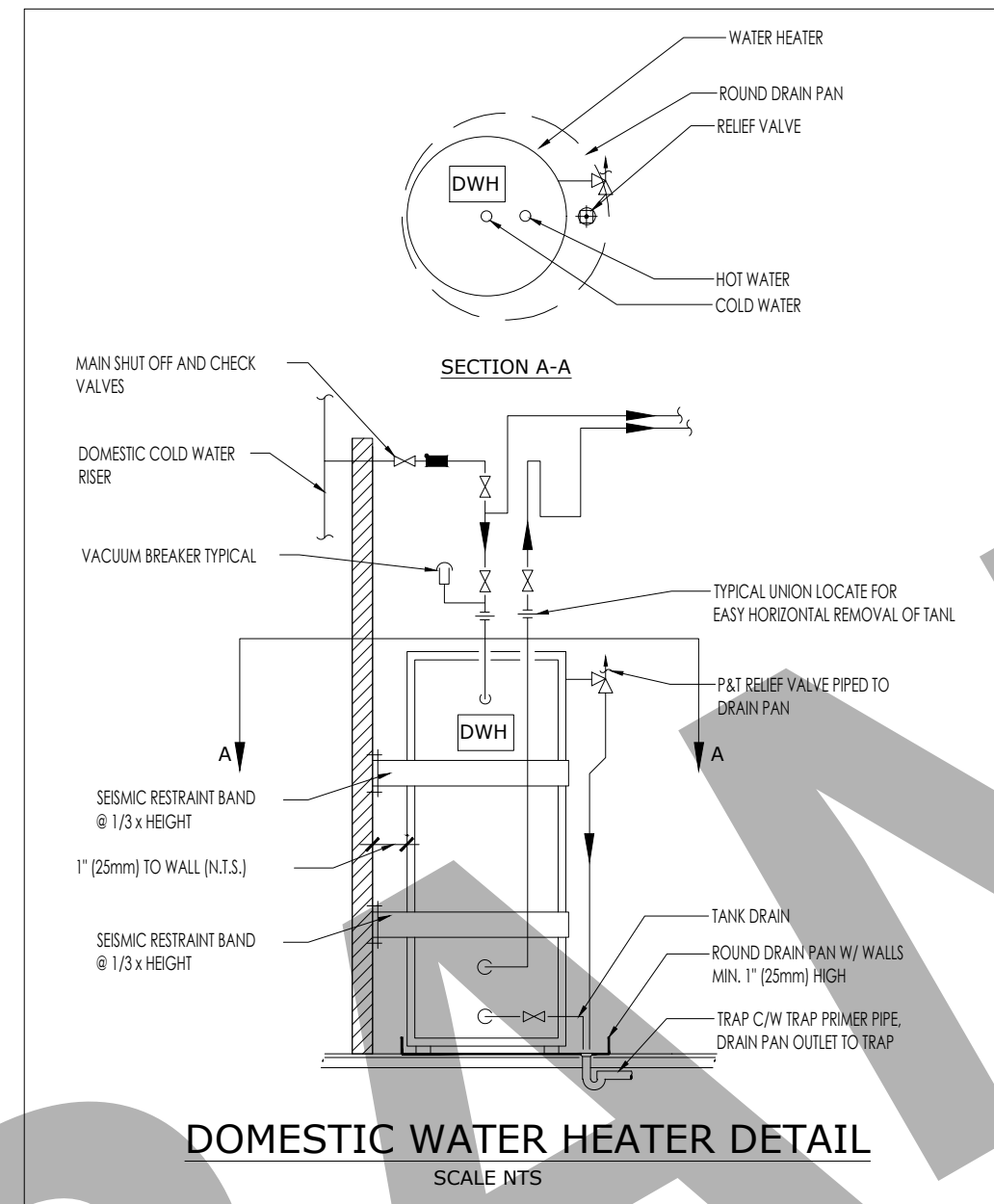
Other	GPH	QTY.
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Maximum Possible Demand	=	86	gph
Demand Factor (Custom)	=	0.3	gph
Maximum Probable Demand	=	25.8	gpm
Maximum Probable Demand	=	0.43	gpm
	=	0.03	L/s
Heater Recovery Capacity	=	0.43	gpm
Storage Factor (Custom)	=	0.8	
Storage Tank Capacity	=	20.6	gal
		78.1	liters
	Actual Selection	79	Liter
x ΔT	/ Efficiency		
x 90	/ 0.9	= 21,500	btu/h
		= 6.4	kW
	Actual Selection	= 7	kW

Plumbing fixtures and fittings shall comply with the following:

- PLUMBING FIXTURE CERTIFICATION REQUIRED:**
A plumbing fixture certification must be completed and signed by either a licensed general contractor, or a plumbing subcontractor, or the building owner certifying the flow rate of the fixtures installed. A copy of the certification can be obtained from the development services department.

A plumbing fixture certification must be completed and signed by either a licensed general contractor, or a plumbing subcontractor, or the building owner certifying the flow rate of the fixtures installed. A copy of the certification can be obtained from the development services department.



VILLAGE SEAL

PERFORMANCE PLATINUM™



The new degree of comfort.*

PERFORMANCE PLATINUM™ Hybrid Electric is the most efficient water heater available

Efficiency

- High 3.45 - 3.75 UEF reduces operating cost
- ENERGY STAR® rated

Performance

- Delivers hot water faster than most standard electric water heaters – 40-67 gallons first-hour delivery, depending on model
- Ambient operating range: 37-145°F is widest in class, offering more days of HP operation annually designed to meet Northern Climate Spec (Tier 4)

Easy Installation

- Easy access side connections
- Quick access to electrical junction box
- Easily replaces a standard electric water heater

Integration

- Electronic control for easy temperature adjustment and mode management
- Audible alarm for service alerts

Operation Modes

- Energy Saver
- Heat Pump
- High Demand
- Electric
- Vacation/Away: 2-28 days (or placed on hold indefinitely)

Plus...

- Premium grade anode rod with resistor extends the life of the tank
- 3/4" NPT water inlet and outlet
- 3/4" condensation drain connections
- Incoloy stainless steel resistor elements
- Dry-fire protection
- Easy access, top mounted washable air filter
- 2" Non-CFC foam insulation
- Enhanced flow brass drain valve
- Temperature and pressure relief valve installed
- Low lead compliant



15 Amps

Warranty

- 10-Year limited warranty for tank and parts, 1-year full in-home labor warranty

See Residential Warranty Certificate for complete information

Units meet or exceed AHJ requirements and have been tested according to D.O.E. procedures. Units meet or exceed the energy efficiency requirements of NAECA, ASHRAE standard 90, CEC Code and all state energy efficiency performance criteria.



Integrated EcoNet® WiFi-connected technology (2.4 GHz only) and free mobile app gives users control over water systems, allowing for customizable temperature, vacation settings, energy savings and system monitoring at home or away.

Visit Phiem.com/EcoNetConnect

PERFORMANCE PLATINUM
Hybrid
40, 50, 65 and 80-Gallon
Capacities
208-240 Volt / 1 PH
Electric



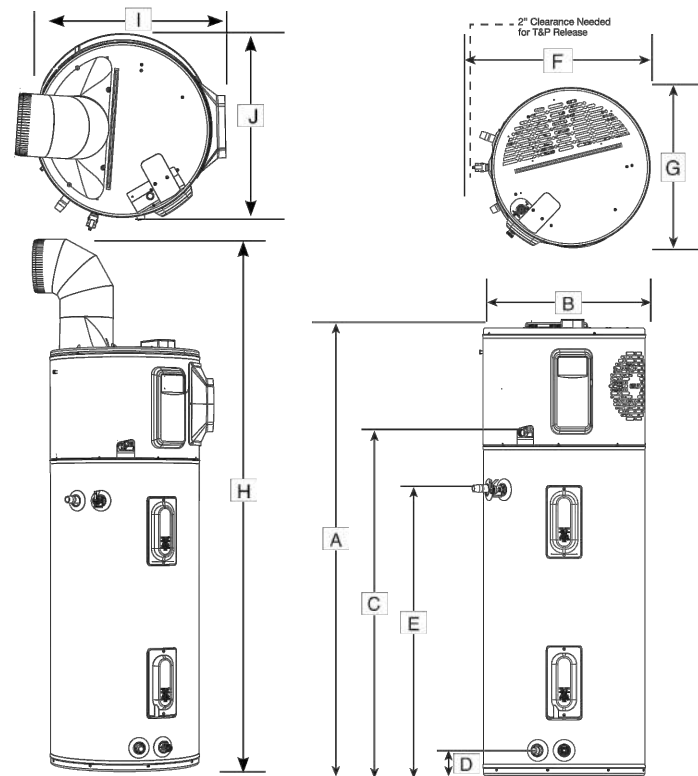
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LEED Partner + 3

*PH broadband internet connection required

See specifications chart on back.

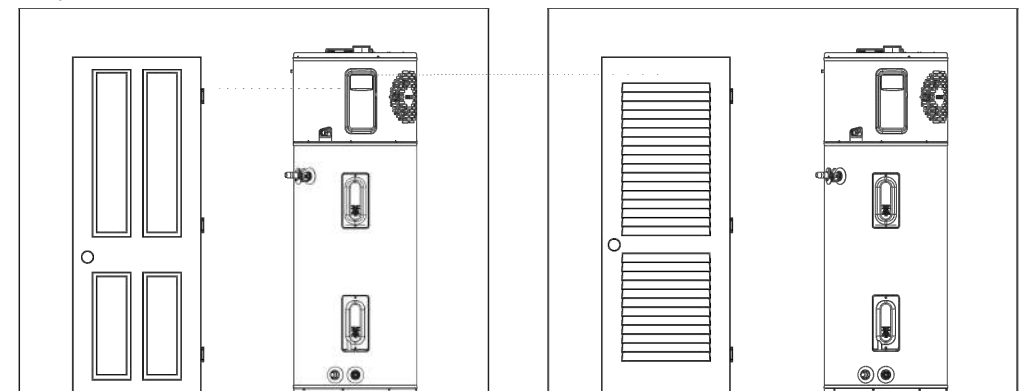
04-20 FORM NO. TDK-PPH016-15

PERFORMANCE PLATINUM™ Hybrid Specifications																		
Foot Type	Desc.	Nominal Gals. Con.	Rated Gals. Con.	Model Number	Model Weight	Electric Motor Size	Estimated Fuel (SEF)	Nearly Empty Engine Hours	Distance Traveled (mi.)	Compressor Shift	Peak Flow Rate (GPM)	Recovery Time (Hrs.)	Weight & Height (Lbs. x Ft.)	Class.	Rel. to Gold Medal & Silver Value	Unit Wt. (Lbs.)	Agency (U.S. EPA)	
15 MPS																		
Tall	40	36	38	X150T150200	700476	15	375	520	2,500	4000	48	16	62.5"x16"	20"x14"	3.56*	358*	177	178
Tall	50	46	48	X150T150250	700475	15	375	510	2,500	4000	48	16	62.5"x16"	22"x14"	3.56*	358*	178	178
Tall	75	70	72	X150T150350	700474	15	375	510	2,500	4000	48	16	62.5"x16"	24"x14"	3.57*	359*	202	202
Tall	70	62	64	X150T150280	700477	15	370	530	2,500	4000	48	16	74.3"x16"	24"x14"	3.76*	340*	244	241

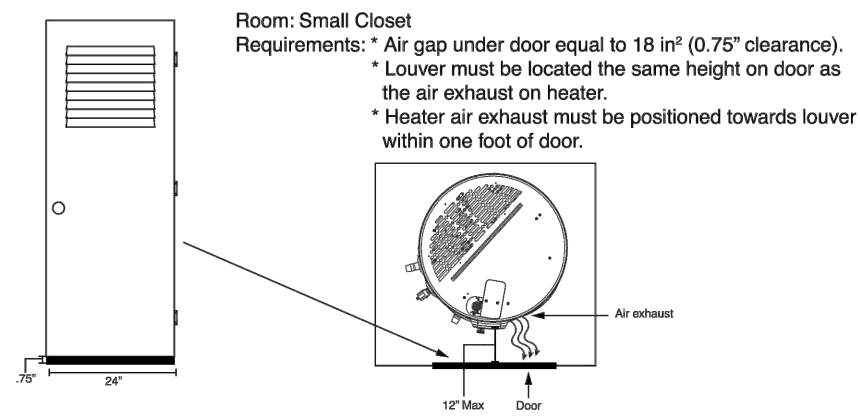


DESCRIPTION		DIMENSIONS (SHOWN IN INCHES)									
NOMINAL DILLOIN CAPACITY	MODEL NUMBER	A	B	C	D	E	F	G	H	I	J
40	XE0110H4SUJ	62-5/16	20-1/4	47	3-5/8	39-5/8	25-3/8	20-1/2	78-7/8	22-3/8	20-1/4
50	XE0110H4SUJ	61-3/4	22-1/4	47	3-5/8	39-5/8	25-3/8	22-1/2	78-5/8	24-3/8	25-9/16
65	XE0110H4SUJ	64-3/16	24-1/4	49	3-7/8	42-3/8	27-1/2	24-5/8	81-1/8	26-1/2	27-3/8
80	XE0110H4SUJ	74-3/16	24-1/4	59	3-7/8	52-3/8	27-1/2	24-5/8	91	26-1/2	27-3/8

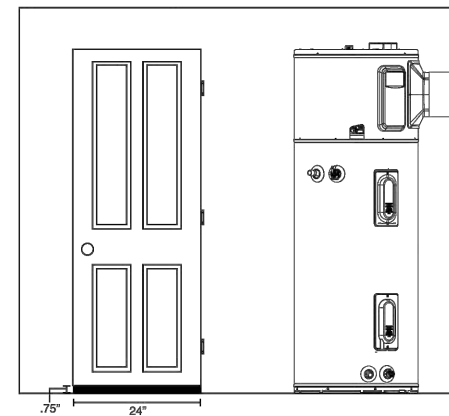
Heater: Not Ducted
Room size: Larger than 700 ft³ (e.g. 7' x 10' x 10').
Requirements: No additional ventilation needed.



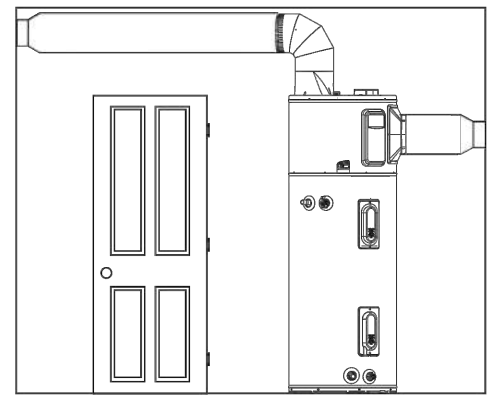
Room: Small Closet
Requirements: * Air gap under door equal to 18 in² (0.75" clearance).
* Louver must be located the same height on door as the air exhaust on heater.
* Heater air exhaust must be positioned towards louver within one foot of door.



Room size: Any size room
Requirements: Air gap under door equal to 18 in
(0.75" clearance)



Room size: Any size room
Requirements: No additional ventilation needed.



In keeping with its policy of continuous progress and product improvement, Rheem reserves the right to make changes without notice.

Rheem Water Heating • 1115 Northmeadow Parkway, Suite 100
Roswell, Georgia 30076 • www.rheem.com

04/20 FORM NO. THD-PFENIS-

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PRINTS

DATE	PURPOSE	ISSUED TO	SETS
------	---------	-----------	------

[illegible]

DATE	NO.	REVISIONS
------	-----	-----------

[illegible]

PROJECT NO.	PL/TUR31/22
SCALE	NTS
DATE	2022.12.08
DRAWN	MN
CHECKED	MN

PLOT OF SURVEY & LOCATION MAP

P 3.01



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PROJECT NO.	PL/TUR31/22
SCALE	NTS
DATE	2022.12.08
DRAWN	MN
CHECKED	MN

PLOT OF SURVEY & LOCATION MAP

P 4.01

VILLAGE SEAL

CERTIFICATE OF COMPLIANCE
Project Name: Park Villas, 4118 - 6 Units
Calculation Date/Time: 2022-11-20T08:55:08-08:00
Calculation Description: Title 24 Analysis
Input File Name: Turlock - 6 Units.rbd19x

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GENERAL INFORMATION	
01	Project Name: Park Villas, 4118 - 6 Units
02	Run Title: Title 24 Analysis
03	Project Location: Tipton Road
04	City: Turlock
05	Zip code: 95302
06	Climate Zone: 12
07	Software Version: EnergyPro 8.3
08	Building Type: Multifamily
09	Number of Dwelling Units: 6
10	Project Scope: New Construction
11	Number of Bedrooms: 18
12	Number of Stories: 3
13	Addition Cond. Floor Area (ft²): 0
14	Existing Cond. Floor Area (ft²): n/a
15	Penetration Average U-Factor: 0.23
16	Glassing Percentage (%): 12.69%
17	ADU Bedroom Count: n/a
18	ADU Bedroom Count: n/a
19	ADU Bedroom Count: n/a
20	Is Natural Gas Available? No
21	ADU Bedroom Count: n/a
22	ADU Bedroom Count: n/a

COMPLIANCE RESULTS

01 Building Complies with Computer Performance

02 This building incorporates features that require field testing and/or verification by a certified HERS rater under the supervision of a CEC-approved HERS provider.

03 This building incorporates one or more Special Features shown below

CERTIFICATE OF COMPLIANCE
Project Name: Park Villas, 4118 - 6 Units
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ENERGY DESIGN RATINGS	
Energy Design Ratings	
Standard Design	Proposed Design
Efficiency (EDR)	Total ¹ (EDR)
Standard Design	Proposed Design
North Facing	25.5
East Facing	25.6
South Facing	25.7
West Facing	25.8
Overall	25.8

RESULTS: COMPLIES

¹ Efficiency EDR includes improvements to the building envelope and more efficient equipment.
² Total EDR includes efficiency and demand response measures such as photovoltaic (PV) systems and batteries.
³ Building complies when efficiency and total compliance margins are greater than or equal to zero.

Standard Design PV Capacity: 18.41 kWdc
 Proposed PV Capacity Scaling: North (18.41 kWdc) East (18.41 kWdc) South (18.41 kWdc) West (18.41 kWdc)

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ENERGY USE SUMMARY				
Energy Use (kWh/m²-yr)	Standard Design	Proposed Design	Compliance Margin	Percent Improvement
Space Heating	23.5	25.4	-1.9	-8.1
Space Cooling	35.92	21.28	14.64	40.8
Water Heating	4.36	4.36	0	0
Self Utilization Credit	n/a	0	0	n/a
North Facing Compliance Total	81.33	67.91	13.42	16.5
Space Heating	25.5	25.6	-0.1	-0.4
Space Cooling	35.92	32.42	3.5	9.7
Water Heating	4.36	4.36	0	0
Self Utilization Credit	n/a	0	0	n/a
East Facing Compliance Total	81.33	67.91	13.42	16.5
Space Heating	25.5	25.6	-0.1	-0.4
Space Cooling	35.92	32.42	3.5	9.7
Water Heating	4.36	4.36	0	0
Self Utilization Credit	n/a	0	0	n/a
South Facing Compliance Total	81.33	67.91	13.42	16.5
Space Heating	25.5	25.6	-0.1	-0.4
Space Cooling	35.92	32.42	3.5	9.7
Water Heating	4.36	4.36	0	0
Self Utilization Credit	n/a	0	0	n/a
West Facing Compliance Total	81.33	67.91	13.42	16.5

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REQUIRED PV SYSTEMS - SIMPLIFIED											
01	02	03	04	05	06	07	08	09	10	11	12
DC System Size (kWdc)	Exception	Module Type	Array Type	Power Electronics	CH	Altitude (deg)	Tilt Input	Array Angle (deg)	Tilt (x in 12)	Inverter Eff (%)	Annual Solar Access (%)
18.41	NA	Standard	Fixed	none	true	150.370	n/a	n/a	<+7.12	96	98

REQUIRED SPECIAL FEATURES

The following are features that must be installed as condition for meeting the modeled energy performance for this computer analysis.

- Cool roof
- Ceiling has high level of insulation
- Non-standard Back-Feed (any location other than attic)
- Multifamily: No leaks or regulating pump
- Advanced Energy Efficiency (ENERGY STAR) listed heat pump water heater, spa/hot tub, brand/model, or equivalent, must be installed

HERS RATER SUMMARY

The following is a summary of the features that must be field-verified by a certified HERS Rater as condition for meeting the modeled energy performance for this computer analysis. Additional detail is provided in the building features below. Registered CP2 and CP3s are required to be completed in the HERS Registry

Building envelope verification:
 • Quality insulation installation (C3)
 • Indoor air quality verification
 • Enclosure air leakage for each dwelling unit
 • Kitchen range hood
 • Cooling System Verification:
 • Minimum Airflow
 • Verified EER
 • Verified Refrigerant Charge
 • Sanitization Water/Hot Water
 • Heating System Verification:
 • Verified HERS
 • Verified heat pump rated heating capacity
 • Heating System Verification:
 • Verified HERS
 • Verified heat pump rated heating capacity
 • Domestic Hot Water System Verification:
 • Pipe insulation, All Lines

Registration Number: 422-P010102571A-000-000-000000-0000
 Registration Date/Time: 12/08/2022 11:09
 HERS Provider: CHEERS
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BUILDING - FEATURES INFORMATION						
01	02	03	04	05	06	07
Project Name	Conditioned Floor Area (ft²)	Number of Dwelling Units	Number of Bedrooms	Number of Zones	Number of Ventilation Cooling Systems	Number of Water Heating Systems
Park Villas, 4118 - 6 Units	8464	6	18	6	0	6

ZONE INFORMATION				
01	02	03	04	05
Zone Name	Zone Type	Zone Floor Area (ft²)	Avg. Ceiling Height	Number of Dwelling Units
Unit 01	Conditioned	1540	9	1
Unit 02	Conditioned	1346	9	1
Unit 03	Conditioned	1346	9	1
Unit 04	Conditioned	1346	9	1
Unit 05	Conditioned	1346	9	1
Unit 06	Conditioned	1346	9	1

DWELLING UNIT INFORMATION		
01	02	03
Dwelling Unit Name	Dwelling Unit Type	Zone
DDU-1 Unit 01 (L1)	Unit 01	Unit 01
DDU-2 Unit 01 (L1)	Unit 02	Unit 02
DDU-3 Unit 01 (L1)	Unit 03	Unit 03
DDU-4 Unit 01 (L1)	Unit 04	Unit 04
DDU-5 Unit 01 (L1)	Unit 05	Unit 05
DDU-6 Unit 01 (L1)	Unit 06	Unit 06

Registration Number: 422-P010102571A-000-000-000000-0000
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DWELLING UNIT TYPES						
01	02	03	04	05	06	07
Name	CFR (B2)	Number of Bedrooms	Number in Building	Space Conditioning Systems Assigned	DHW System Name	IAQ Vent Fan Name
DDU-1 Unit 01	1540	3	1	DDU-1 Unit 01 (1) Heat Pump System 1-Air Distribution System 2-HVAC Fan 2-2.3	DHW Sys 1	Minimum Exhaust IAQ Fan
DDU-2 Unit 01	1346	3	1	DDU-2 Unit 01 (1) Heat Pump System 2-Air Distribution System 2-HVAC Fan 2-2.3	DHW Sys 3	Minimum Exhaust IAQ Fan
DDU-3 Unit 01	1346	3	1	DDU-3 Unit 01 (1) Heat Pump System 3-Air Distribution System 2-HVAC Fan 2-2.3	DHW Sys 5	Minimum Exhaust IAQ Fan
DDU-4 Unit 01	1346	3	1	DDU-4 Unit 01 (1) Heat Pump System 4-Air Distribution System 2-HVAC Fan 2-2.3	DHW Sys 7	Minimum Exhaust IAQ Fan
DDU-5 Unit 01	1346	3	1	DDU-5 Unit 01 (1) Heat Pump System 5-Air Distribution System 2-HVAC Fan 2-2.3	DHW Sys 9	Minimum Exhaust IAQ Fan
DDU-6 Unit 01	1540	3	1	DDU-6 Unit 01 (1) Heat Pump System 6-Air Distribution System 2-HVAC Fan 2-2.3	DHW Sys 11	Minimum Exhaust IAQ Fan

OPAQUE SURFACES							
01	02	03	04	05	06	07	08
Name	Zone	Construction	Altitude	Orientation	Gross Area (ft²)	Window and Door Area (ft²)	TIR (deg)
North Walls	Unit 01	R-19 Wall	0	Front	202	85	90
East Walls	Unit 01	R-19 Wall	90	Left	202	85	90
South Walls	Unit 01	R-19 Wall	180	Back	34	12	90
West Walls	Unit 01	R-19 Wall	0	Front	202	107	90
North Walls 2	Unit 01	R-19 Wall	90	Left	104	24	90
East Walls 2	Unit 01	R-19 Wall	180	Back	209	113	90
South Walls	Unit 01	R-19 Wall	270	Right	104	0	90
West Walls 3	Unit 01	R-19 Wall	0	Front	200	21	90

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OPAQUE SURFACES							
01	02	03	04	05	06	07	08
Name	Zone	Construction	Altitude	Orientation	Gross Area (ft²)	Window and Door Area (ft²)	TIR (deg)
North Walls 3	Unit 01	R-19 Wall	90	Left	260	12	90
East Walls 3	Unit 01	R-19 Wall	180	Back	200	66	90
South Walls	Unit 01	R-19 Wall	270	Right	260	0	90
West Walls 4	Unit 02	R-19 Wall	0	Front	194	85	90
East Walls 4	Unit 02	R-19 Wall	180	Back	55	49	90
West Walls 5	Unit 02	R-19 Wall	0	Front	200	112	90
East Walls 5	Unit 02	R-19 Wall	180	Back	200	42	90
West Walls 6	Unit 03	R-19 Wall	0	Front	194	85	90
East Walls 6	Unit 03	R-19 Wall	180	Back	55	49	90
West Walls 7	Unit 03	R-19 Wall	0	Front	200	112	90
East Walls 7	Unit 03	R-19 Wall	180	Back	200	42	90
West Walls 8	Unit 04	R-19 Wall	0	Front	194	85	90
East Walls 8	Unit 04	R-19 Wall	180	Back	55	49	90
West Walls 9	Unit 04	R-19 Wall	0	Front	200	112	90
East Walls 9	Unit 04	R-19 Wall	180	Back	200	42	90
West Walls 10	Unit 05	R-19 Wall	0	Front	200	112	90
East Walls 10	Unit 05	R-19 Wall	180	Back	200	42	90
West Walls 11	Unit 05	R-19 Wall	0	Front	194	85	90
East Walls 11	Unit 05	R-19 Wall	180	Back	55	49	90
West Walls 12	Unit 06	R-19 Wall	0	Front	194	85	90
East Walls 12	Unit 06	R-19 Wall	180	Back	55	49	90
West Walls 13	Unit 06	R-19 Wall	0	Front	200	107	90
East Walls 13	Unit 06	R-19 Wall	180	Back	200	112	90
West Walls 14	Unit 06	R-19 Wall	270	Right	415	24	90
East Walls 14	Unit 06	R-19 Wall	0	Front	200	21	90

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OPAQUE SURFACES							
01	02	03	04	05	06	07	08
Name	Zone	Construction	Altitude	Orientation	Gross Area (ft²)	Window and Door Area (ft²)	TIR (deg)
North Walls 4	Unit 06	R-19 Wall	90	Left	260	0	90
East Walls 14	Unit 06	R-19 Wall	180	Back	200	66	90
South Walls 4	Unit 06	R-19 Wall	270	Right	260	12	90
Adjacent to Unit 2	Unit 01-Unit 02	Unit Adjacent to Unit	n/a	n/a	214	0	n/a
Adjacent to Garage	Unit 01-Unit 02	Unit Adjacent to Garage	n/a	n/a	164	0	n/a
Adjacent to Unit 02	Unit 01-Unit 02	Unit Adjacent to Unit	n/a	n/a	410	0	n/a
Adjacent to Unit 1	Unit 01-Unit 02	Unit Adjacent to Unit	n/a	n/a	295	0	n/a
Adjacent to Unit 3	Unit 02-Unit 03	Unit Adjacent to Unit	n/a	n/a	295	0	n/a
Adjacent to Garage 2	Unit 02-Unit 03	Unit Adjacent to Garage	n/a	n/a	270	0	n/a
Adjacent to Unit 01	Unit 02-Unit 03	Unit Adjacent to Unit	n/a	n/a	410	0	n/a
Adjacent to Unit 06	Unit 02-Unit 03	Unit Adjacent to Unit	n/a	n/a	410	0	n/a
Adjacent to Unit 2 2	Unit 02-Unit 03	Unit Adjacent to Unit	n/a	n/a	295	0	n/a
Adjacent to Unit 4	Unit 03-Unit 04	Unit Adjacent to Unit	n/a	n/a	295	0	n/a
Adjacent to Garage 3	Unit 03-Unit 04	Unit Adjacent to Garage	n/a	n/a	270	0	n/a
Adjacent to Unit 4 2	Unit 03-Unit 04	Unit Adjacent to Unit	n/a	n/a	410	0	n/a
Adjacent to Unit 04	Unit 03-Unit 04	Unit Adjacent to Unit	n/a	n/a	410	0	n/a
Adjacent to Unit 3 2	Unit 03-Unit 04	Unit Adjacent to Unit	n/a	n/a	295	0	n/a
Adjacent to Unit 5	Unit 04-Unit 05	Unit Adjacent to Unit	n/a	n/a	295	0	n/a
Adjacent to Garage 4	Unit 04-Unit 05	Unit Adjacent to Garage	n/a	n/a	270	0	n/a
Adjacent to Unit 3 2	Unit 04-Unit 05	Unit Adjacent to Unit	n/a	n/a	410	0	n/a

VILLAGE SEAL

CERTIFICATE OF COMPLIANCE

Project Name: Park Villas, 4118 - 6 Units
Calculation Date/Time: 2022-11-20T08:55:08-08:00
Input File Name: Turlock - 6 Units.rbd13x

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01	02	03	04	05	06	07	08	09	10	11	12	13	14
Name	Type	Surface	Orientation	Altitude	Width (ft)	Height (ft)	U-factor	U-factor	SHGC	Shading	U-factor	SHGC	Shading
Window 15	Window	West Walls 7	Front	0	1	11.3	0.23	NFRC	0.23	NFRC	Rug Screen		
Window 16	Window	East Walls 7	Back	180	0	1	42	0.23	NFRC	0.23	NFRC	Rug Screen	
Window 17	Window	West Walls 8	Front	0	1	63	0.23	NFRC	0.23	NFRC	Rug Screen		
Window 18	Window	East Walls 8	Back	180	0	1	49	0.23	NFRC	0.23	NFRC	Rug Screen	
Window 19	Window	West Walls 9	Front	0	1	11.3	0.23	NFRC	0.23	NFRC	Rug Screen		
Window 20	Window	East Walls 9	Back	180	0	1	42	0.23	NFRC	0.23	NFRC	Rug Screen	
Window 21	Window	West Walls 10	Front	0	1	11.3	0.23	NFRC	0.23	NFRC	Rug Screen		
Window 22	Window	East Walls 10	Back	180	0	1	42	0.23	NFRC	0.23	NFRC	Rug Screen	
Window 23	Window	West Walls 11	Front	0	1	63	0.23	NFRC	0.23	NFRC	Rug Screen		
Window 24	Window	East Walls 11	Back	180	0	1	49	0.23	NFRC	0.23	NFRC	Rug Screen	
Window 25	Window	West Walls 12	Front	0	1	49	0.23	NFRC	0.23	NFRC	Rug Screen		
Window 26	Window	South Walls 2	Right	270	1	12	0.23	NFRC	0.23	NFRC	Rug Screen		
Window 27	Window	East Walls 12	Back	180	0	1	12	0.23	NFRC	0.23	NFRC	Rug Screen	
Window 28	Window	West Walls 13	Front	0	1	85	0.23	NFRC	0.23	NFRC	Rug Screen		
Window 29	Window	East Walls 13	Back	180	1	11.3	0.23	NFRC	0.23	NFRC	Rug Screen		
Window 30	Window	South Walls 3	Right	270	1	24	0.23	NFRC	0.23	NFRC	Rug Screen		
Window 31	Window	East Walls 14	Back	180	1	66	0.23	NFRC	0.23	NFRC	Rug Screen		
Window 32	Window	South Walls 4	Right	270	1	12	0.23	NFRC	0.23	NFRC	Rug Screen		
Window 33	Window	North Walls 5	Left	90	1	12	0.23	NFRC	0.23	NFRC	Rug Screen		
Window 34	Window	South Walls 5	Right	270	1	12	0.23	NFRC	0.23	NFRC	Rug Screen		

01	02	03	04
Name	Side of Building	Area (ft ²)	U-factor
Door	West Walls	22	0.2

Registration Number: 422-P01010271A-000-000-000000-0000
Registration Date/Time: 12/06/2022 11:09
HERS Provider: CHEERS
CA Building Energy Efficiency Standards - 2019 Residential Compliance
Report Version: 2019.2.000
Report Generated: 2022-11-20 09:06:00

CERTIFICATE OF COMPLIANCE

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01	02	03	04	05	06	07	08
Name	Side of Building	Area (ft ²)	Perimeter (ft)	Edge Insul. R-value and Depth	Edge Insul. R-value and Depth	Carpeted Fraction	Heated
Door 1	West Walls 2	22	21	0.2	0.2	0	0
Door 2	West Walls 3	21	21	0.2	0.2	0	0
Door 3	West Walls 4	22	22	0.2	0.2	0	0
Door 4	West Walls 5	21	21	0.2	0.2	0	0
Door 5	West Walls 6	22	22	0.2	0.2	0	0
Door 6	West Walls 7	21	21	0.2	0.2	0	0
Door 7	West Walls 8	22	22	0.2	0.2	0	0
Door 8	West Walls 9	21	21	0.2	0.2	0	0
Door 9	West Walls 10	22	22	0.2	0.2	0	0
Door 10	West Walls 11	21	21	0.2	0.2	0	0
Door 11	East Walls 12	90	51	0.7	0.7	0	0
Door 12	East Walls 13	51	51	0.7	0.7	0	0
Door 13	East Walls 14	51	51	0.7	0.7	0	0
Door 14	East Walls 15	51	51	0.7	0.7	0	0
Door 15	East Walls 16	51	51	0.7	0.7	0	0
Door 16	East Walls 17	51	51	0.7	0.7	0	0

01	02	03	04	05	06	07	08
Name	Zone	Area (ft ²)	Perimeter (ft)	Edge Insul. R-value and Depth	Edge Insul. R-value and Depth	Carpeted Fraction	Heated
Slab-on-Grade 1	Unit 01	390	77	none	0	80%	No
Slab-on-Grade 2	Unit 02	390	34	none	0	80%	No
Slab-on-Grade 3	Unit 03	390	34	none	0	80%	No
Slab-on-Grade 4	Unit 04	390	0.1	none	0	80%	No

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01	02	03	04	05	06	07	08
Name	Zone	Area (ft ²)	Perimeter (ft)	Edge Insul. R-value and Depth	Edge Insul. R-value and Depth	Carpeted Fraction	Heated
Slab-on-Grade 5	Unit 05	390	34	none	0	80%	No
Slab-on-Grade 6	Unit 06	390	77	none	0	80%	No
Slab-on-Grade 7	Unit 07	390	34	none	0	80%	No
Slab-on-Grade 8	Unit 08	390	34	none	0	80%	No
Slab-on-Grade 9	Unit 09	390	34	none	0	80%	No
Slab-on-Grade 10	Unit 10	390	34	none	0	80%	No
Slab-on-Grade 11	Unit 11	390	34	none	0	80%	No
Slab-on-Grade 12	Unit 12	390	34	none	0	80%	No
Slab-on-Grade 13	Unit 13	390	34	none	0	80%	No

01	02	03	04	05	06	07	08
Construction Name	Surface Type	Construction Type	Framing	Total Ceiling R-value	Interior / Exterior Continuous R-value	U-factor	Assembly Layers
R-19 Wall	Exterior Walls	Wood Framed Wall	2x6 @ 16 in. O. C.	R-19	None / None	0.074	Inside Finish: Gypsum Board Cavity / Frame: R-19 @ 16 in. O. C. / 2x6 Exterior Finish: Gypsum Board
ceiling of R-13 roof	Cathedral Ceilings	Wood Framed Ceiling	2x12 @ 16 in. O. C.	R-30	None / None	0.035	Inside Finish: Gypsum Board Cavity / Frame: R-30 @ 16 in. O. C. / 2x12 Inside Finish: Gypsum Board

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CERTIFICATE OF COMPLIANCE

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Construction Name	Surface Type	Construction Type	Framing	Total Ceiling R-value	Interior / Exterior Continuous R-value	U-factor	Assembly Layers
ceiling of R-13 roof No Attic	Cathedral Ceilings	Wood Framed Ceiling	2x12 @ 16 in. O. C.	R-30	None / None	0.035	Inside Finish: Gypsum Board Cavity / Frame: R-30 @ 16 in. O. C. / 2x12 Inside Finish: Gypsum Board
Garage Adjacent to Garage	Interior Walls	Wood Framed Wall	2x4 @ 16 in. O. C.	R-11	None / None	0.039	Inside Finish: Gypsum Board Cavity / Frame: R-11 @ 16 in. O. C. / 2x4 Outside Finish: Gypsum Board
Garage Adjacent to Unit	Interior Walls	Wood Framed Wall	2x4 @ 16 in. O. C.	R-11	None / None	0.039	Inside Finish: Gypsum Board Cavity / Frame: R-11 @ 16 in. O. C. / 2x4 Outside Finish: Gypsum Board
Unit Adjacent to Unit	Interior Walls	Wood Framed Wall	2x4 @ 16 in. O. C.	R-13	None / None	0.032	Inside Finish: Gypsum Board Cavity / Frame: R-13 @ 16 in. O. C. / 2x4 Outside Finish: Gypsum Board
Unit Adjacent to Garage	Interior Walls	Wood Framed Wall	2x4 @ 16 in. O. C.	R-11	None / None	0.039	Inside Finish: Gypsum Board Cavity / Frame: R-11 @ 16 in. O. C. / 2x4 Outside Finish: Gypsum Board
Attic RoofUnit 01	Attic Roof	Wood Framed Ceiling	2x4 @ 16 in. O. C.	R-0	None / None	0.644	Roofing: Light Roof (Asphalt Shingles) Roof Deck: Wood Siding/Insulating/Decking: Cavity / Frame: R-0 / 2x4
Attic RoofUnit 02	Attic Roof	Wood Framed Ceiling	2x4 @ 16 in. O. C.	R-0	None / None	0.644	Roofing: Light Roof (Asphalt Shingles) Roof Deck: Wood Siding/Insulating/Decking: Cavity / Frame: R-0 / 2x4

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01	02	03	04	05	06	07	08
Construction Name	Surface Type	Construction Type	Framing	Total Ceiling R-value	Interior / Exterior Continuous R-value	U-factor	Assembly Layers
Attic RoofUnit 03	Attic Roof	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-0	None / None	0.644	Roofing: Light Roof (Asphalt Shingles) Roof Deck: Wood Siding/Insulating/Decking: Cavity / Frame: R-0 / 2x4
Attic RoofUnit 04	Attic Roof	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-0	None / None	0.644	Roofing: Light Roof (Asphalt Shingles) Roof Deck: Wood Siding/Insulating/Decking: Cavity / Frame: R-0 / 2x4
Attic RoofUnit 05	Attic Roof	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-0	None / None	0.644	Roofing: Light Roof (Asphalt Shingles) Roof Deck: Wood Siding/Insulating/Decking: Cavity / Frame: R-0 / 2x4
Attic RoofUnit 06	Attic Roof	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-0	None / None	0.644	Roofing: Light Roof (Asphalt Shingles) Roof Deck: Wood Siding/Insulating/Decking: Cavity / Frame: R-0 / 2x4
B49 Ceiling (below attic)	Interior Floors	Wood Framed Ceiling	2x12 @ 16 in. O. C.	R-49	None / None	0.021	Over Ceiling Joists: R-38 Insul. Cavity / Frame: R-23 / 2x12 Inside Finish: Gypsum Board
R-13 Roof No Crawlspace	Interior Floors	Wood Framed Floor	2x6 @ 16 in. O. C.	R-13	None / None	0.06	Floor Surface: Carpeted Floor Deck: Wood Siding/Insulating/Decking: Cavity / Frame: R-13 / 2x6 Caving Below Floor: Gypsum Board

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BUILDING ENVELOPE - HERS VERIFICATION								
01		02		03		04		
Quality Insulation Installation (QI)		High-R-value Spray Foam Insulation		Building Envelope Air Leakage		CFM50		
Required		Not Required		Not Required		n/a		

WATER HEATING SYSTEMS								
01	02	03	04	05	06	07	08	09
Name	System Type	Number of Systems in Building	Multi-Family Distribution Type	Overriding Unit Distribution Type	Water Heater Name (N)	Solar Heating System	Compact Distribution	HERS Verification
CHW Sys 1	Domestic Hot Water (DHW)	1	Multi-Family: No boxes or metric pump	HERS Verified Pipe Insulation check	DHW Heater 1 (1)	n/a	None	CHW Sys 1 1-hrs-dhw
CHW Sys 3	Domestic Hot Water (DHW)	1	Multi-Family: No boxes or metric pump	HERS Verified Pipe Insulation check	DHW Heater 3 (1)	n/a	None	CHW Sys 3 3-hrs-dhw
CHW Sys 5	Domestic Hot Water (DHW)	1	Multi-Family: No boxes or metric pump	HERS Verified Pipe Insulation check	DHW Heater 5 (1)	n/a	None	CHW Sys 5 5-hrs-dhw
CHW Sys 7	Domestic Hot Water (DHW)	1	Multi-Family: No boxes or metric pump	HERS Verified Pipe Insulation check	DHW Heater 7 (1)	n/a	None	CHW Sys 7 7-hrs-dhw
CHW Sys 9	Domestic Hot Water (DHW)	1	Multi-Family: No boxes or metric pump	HERS Verified Pipe Insulation check	DHW Heater 9 (1)	n/a	None	CHW Sys 9 9-hrs-dhw
DrHr Sys 11	Domestic Hot Water (DHW)	1	Multi-Family: No boxes or metric pump	HERS Verified Pipe Insulation check	DHW Heater 11 (1)	n/a	None	DrHr Sys 11 15-hrs-dhw

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01	02	03	04	05	06	07	08	09	10	11	12
Name	Heating Element Type	Task Type	# of Units	Task Type	Energy Factor of Efficiency	Input Rating or Recovery (kW)	Task Insulation (R-value)	Standby Loss or Recovery (kW)	100% Hot Water at Flow Rate (gpm)	NEEA Heat Pump (kW)	Task Location or Ambient Condition
DHW Heater 1	Heat Pump	n/a	1	NEEA Rated	> 12 kW	n/a	n/a	n/a	n/a	Rheem/VESTIT/D12 200 (100 gal)	Conditioned
DHW Heater 2	Heat Pump	n/a	1	NEEA Rated	> 12 kW	n/a	n/a	n/a	n/a	Rheem/VESTIT/D12 200 (100 gal)	Conditioned
DHW Heater 3	Heat Pump	n/a	1	NEEA Rated	> 12 kW	n/a	n/a	n/a	n/a	Rheem/VESTIT/D12 200 (100 gal)	Conditioned
DHW Heater 4	Heat Pump	n/a	1	NEEA Rated	> 12 kW	n/a	n/a	n/a	n/a	Rheem/VESTIT/D12 200 (100 gal)	Conditioned
DHW Heater 5	Heat Pump	n/a	1	NEEA Rated	> 12 kW	n/a	n/a	n/a	n/a	Rheem/VESTIT/D12 200 (100 gal)	Conditioned
DHW Heater 6	Heat Pump	n/a	1	NEEA Rated	> 12 kW	n/a	n/a	n/a	n/a	Rheem/VESTIT/D12 200 (100 gal)	Conditioned
DHW Heater 7	Heat Pump	n/a	1	NEEA Rated	> 12 kW	n/a	n/a	n/a	n/a	Rheem/VESTIT/D12 200 (100 gal)	Conditioned
DHW Heater 8	Heat Pump	n/a	1	NEEA Rated	> 12 kW	n/a	n/a	n/a	n/a	Rheem/VESTIT/D12 200 (100 gal)	Conditioned
DHW Heater 9	Heat Pump	n/a	1	NEEA Rated	> 12 kW	n/a	n/a	n/a	n/a	Rheem/VESTIT/D12 200 (100 gal)	Conditioned
DHW Heater 10	Heat Pump	n/a	1	NEEA Rated	> 12 kW	n/a	n/a	n/a	n/a	Rheem/VESTIT/D12 200 (100 gal)	Conditioned
DHW Heater 11	Heat Pump	n/a	1	NEEA Rated	> 12 kW	n/a	n/a	n/a	n/a	Rheem/VESTIT/D12 200 (100 gal)	Conditioned

01	02	03	04	05	06	07	08
Name	Pipe Insulation	Parallel Piping	Compact Distribution	Compact Distribution Type	Recirculation Control	Central DHW Distribution	Shower Drain Water Heat Recovery
DHW Unit 01 / DHW Set 1	Required	Not Required	Not Required	None	Not Required	Not Required	Not Required
DHW Unit 02 / DHW Set 2	Required	Not Required	Not Required	None	Not Required	Not Required	Not Required
DHW Unit 03 / DHW Set 3	Required	Not Required	Not Required	None	Not Required	Not Required	Not Required
DHW Unit 04 / DHW Set 4	Required	Not Required	Not Required	None	Not Required	Not Required	Not Required
DHW Unit 05 / DHW Set 5	Required	Not Required	Not Required	None	Not Required	Not Required	Not Required
DHW Unit 06 / DHW Set 6	Required	Not Required	Not Required	None	Not Required	Not Required	Not Required
DHW Unit 07 / DHW Set 7	Required	Not Required	Not Required	None	Not Required	Not Required	Not Required
DHW Unit 08 / DHW Set 8	Required	Not Required	Not Required	None	Not Required	Not Required	Not Required
DHW Unit 09 / DHW Set 9	Required	Not Required	Not Required	None	Not Required	Not Required	Not Required
DHW Unit 10 / DHW Set 10	Required	Not Required	Not Required	None	Not Required	Not Required	Not Required

