MECHANICAL SPECIFICATIONS

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

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

HVAC GENERAL NOTES

1. THE INTENT OF THESE PLANS AND SPECIFICATIONS IS TO INCLUDE ALL LABOR, EQUIPMENT, MATERIALS, AND SERVICES NECESSARY TO FURNISH, INSTALL, TEST, AND ADJUST A COMPLETE WORKABLE HEATING, VENTILATION, AND AIR CONDITIONING SYSTEM AS SHOWN, PRESCRIBED, OR REASONABLY IMPLIED BUT NOT LIMITED TO THAT EXPLICITLY INDICATED IN THE CONTRACT DOCUMENTS, BUT NECESSARY FOR THE PROPER EXECUTION AND COMPLETION OF THE INTENT THEREOF.
2. THE ENTIRE INSTALLATION SHALL CONFORM TO THE APPLICABLE CODES AND REGULATIONS REQUIRED BY AUTHORITIES HAVING JURISDICTION. IN THE EVENT OF CONFLICT BETWEEN SPECIFICATIONS, CODES, AND REGULATIONS, THE MORE RESTRICTIVE SHALL APPLY.
3. DRAWINGS FOR HVAC WORK ARE DIAGRAMATIC SHOWING THE GENERAL LOCATION, TYPE, LAYOUT, AND EQUIPMENT REQUIRED. THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENT, REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS. PROVIDE ALL DUCTWORK, MATERIALS, CONNECTIONS, ACCESSORIES, FITTINGS, OFFSETS, TRANSITIONS, DAMPERS AS REQUIRED FOR A COMPLETE WORKABLE SYSTEM.
4. ALL EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND APPROVED LISTING. ALL EQUIPMENT, PIPING AND SUPPORTS SHALL BE RESTRAINED IN ACCORDANCE WITH THE LATEST EDITION OF THE "GUIDLINES FOR SEISMIC RESTRAINTS OF MECHANICAL SYSTEMS AND PLUMBING PIPING SYSTEMS" BY THE SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION (SMACNA). ALL EQUIPMENT SHALL BE ANCHORED TO RESIST THE LATERAL FORCE REQUIREMENTS OF CHAPTER 16 OF THE 2012 CAILFORNIA BUILDING CODE.
5. COORDINATE THE INSTALLATION OF THE HVAC SYSTEM WITH ALL OTHER TRADES PRIOR TO FABRICATION OR INSTALLATION. COORDINATE THE LOCATIONS OF PENETRATIONS AND FINAL LOCATION OF ALL EQUIPMENT WITH THE GENERAL CONTRACTOR. PROVIDE EQUIPMENT WEIGHTS, EQUIPMENT DIMENSIONS, PLATFORM SIZES & LOCATIONS, CURB SIZES & LOCATIONS, CONCRETE PAD SIZES AND LOCATIONS AST REQUIRED. COORDINATE LOCATIONS OF GAS & CONDENSATE LINES WITH PLUMBING CONTRACTOR. COORDINTAE LOCATIONS OF POWER, DISCONNECTS, AND CONTROL CONDUIT WITH THE ELECTICAL CONTRACTOR. COORDINATE LOCATIONS OF ALL DIFFUSERS, REGISTERS, AND GRILLES WITH ARCHITECTURAL PLANS, ELECTRICAL LIGHTING PLANS AND ARCHITECTURAL ELEVATIONS.
6. DETAILS FOR EQUIPMENT PADS, PLATFORMS, AND FLASHINGS SHALL BE AS INDICATED BY THE ARCHITECTURAL/STRUCTURAL/CIVIL DRAWINGS, UNLESS NOTED OTHERWISE.
7. ALL EQUIPMENT, DUCTS, PIPING, SUPPORTS, AND OTHER DEVICES OUTSIDE OF THE BUILDING OR EXPOSED TO WEATHER, SHALL BE COMPLETELY WEATHER-PROOFED.
8. OUTSIDE AIR INTAKES SHALL BE AT LEAST 10 FT. AWAY OR 3 FT. BELOW ANY VENT OR EXHAUST DISCHARGE.
9. ALL DUCT SIZES ARE CLEAR INSIDE DIMENSIONS. DUCTWORK SHALL BE CONSTRUCTED, ERECTED, INSULATED AND TESTED IN ACCORDANCE CHAPTER 6 OF THE 2022 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 2022 CALIFORNIA BUILDING CODE.
12. INSTALL SMOKED DETECTORS AND PROVIDE FOR SMOKE DETECTION AND AUTOMATIC SHUT-OFF OF ALL AIR HANDLING EQUIPMENT IN ACCORDANCE WITH SECTION 606 OF THE 2022 CALIFORNIA MECHANICAL CODE.
13. UNLESS NOTED OTHERWISE, ALL LINE VOLTAGE WIRING, CONDUIT, FINAL CONNECTIONS, DISCONNECTS, STARTERS, AND OVER CURRENT PROTECTION DEVICES SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR AS INDICATED ON THESE MECHANICAL DRAWINGS AND/OR ELECTRICAL DRAWINGS AND/OR ELECTRICAL SECTION OF THE SPECIFICATIONS.
14. INSTALL ALL LOW VOLTAGE HVAC CONTROL WIRE AND DEVICES PER PLAN. ALL WIRE SHALL BE IN CONDUIT PROVIDED AND INSTALLED BY THE ELECTICAL CONTRACTOR UNLESS NOTEDED OTHERWISE.
15. PROVIDE OWNER WITH THREE COPIES OF A CERTIFIED AIR BALANCE REPORT PREPARED IN BY A THIRD PARTY CERTIFIED BY THE AABC OR NEBB. TEST, ADJUST AND BALANCE THE HVAC SYSTEM IN ACCORDANCE WITH AABC OR NEBB PROCEDURES. PROVIDE START-UP/TEST REPORTS FOR ALL AIR HANDLING EQUIPMENT, FANS, AND REFRIGERATION EQUIPMENT. TEST AND VERIFY PROPER OPERATION OF ALL MAKE-UP AIR/EXHAUST AIR INTERLOCK SYSTEMS AND THIER SEQUENCES OF OPERATION. BALANCE ALL AIR FLOWS WITHIN 5% OF DESIGN VALUES. PERMANENTLY MARK BALANCE POSITION OF ALL REGULATING DEVICES.
16. PROVIDE OWNER WITH THREE SETS OF AS-BUILT PLANS AND OPERATIONS AND MAINTENANCE MANUALS. CLEARLY IDENTIFY ALL EQUIPMENT WITH PERMANENT PLASTIC OR METAL LABELS/TAGS (PEN MARKING NOT ACCEPTABLE).
17. PROVIDE ONE YEAR WARRANTY ON ALL LABOR, PARTS AND MATERIALS.
18. ANY CHANGE OR DEVIATION FROM THESE PLANS OR SPECIFICATIONS SHALL REQUIRE THE WRITTEN APPROVAL OF THE ENGINEER PRIOR TO COMMENCEMENT OF SUCH WORK. 19.0

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

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

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

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

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

LEGEND

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

SPECIAL NOTICE TO CONTRACTORS

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

MECHANICAL LIST OF DRAWINGS (LoD):

SHEET TAG	TITLE	SCALE
M 0.00	MECH GENERAL NOTES AND SPECIFICATIONS.	NTS
M 0.01	MECHANICAL CODE CHECKING.	NTS
M 1.01	MAIN FLOOR - MECHANICAL LAYOUT.	1/4"=1'-0"
M 1.02	SECOND FLOOR - MECHANICAL LAYOUT.	1/4"=1'-0"
M 1.03	MAIN FLOOR - UNDER FLOOR HEATING LAYOUT.	1/4"=1'-0"
M 1.04	SECOND FLOOR - UNDER FLOOR HEATING LAYOUT.	1/4"=1'-0"
M 2.01	MECHANICAL EQUIPMENT SCHEDULE.	NTS
M 3.01	MECHANICAL EQUIPMENT DATA SHEETS.	NTS
M 4.01	MECHANICAL GENERAL DETAILS.	NTS

CLIENT:

ADDRESS:

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NOTES:

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

REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

DAPHNE CO

TITLE:

MECH GENERAL NOTES AND SPECIFICATIONS

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

DRAWING NO.

M 0.00

REV.

CALIFORNIA MECHANICAL CODE CHECKING:

DUCT SIZING, THICKNESS & INSULATION

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

604.0 Insulation of Ducts.

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

Exceptions:

(1) Factory-installed plenums, casings, or ductwork furnished as part of HVAC equipment tested and rated in accordance with approved energy efficiency standards.

(2) Ducts or plenums located in conditioned spaces where heat gain or heat loss will not increase energy use.

(3) For runouts less than 10 feet (3048 mm) in length to air terminals or air outlets, the rated R-value of insulation need not exceed R-3.5.

(4) Backs of air outlets and outlet plenums exposed to unconditioned or indirectly conditioned spaces with face areas exceeding 5 square feet (0.5m^2) need not exceed R-2; those 5 square feet (0.5m^2) or smaller need to be insulated.

(5) Ducts and plenums used exclusively for evaporative cooling systems.

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

E 502.4.1 Insulation and Ducts. Portions of the air distribution system installed in or on buildings for heating and cooling shall be R-8. Where the mean outdoor dew-point temperature in a month exceeds 60°F (16°C), vapor retarders shall be installed on conditioned-air supply ducts. Vapor retarders shall have a water vapor permeance not exceeding 0.5 perm [2.87 E-11 kg/(Pa.s.m^2)] where tested in accordance with Procedure A in ASTM E96.

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

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

CONDENSATE DRAIN:

310.0 Condensate Wastes and Control.

310.1 Condensate Disposal. Condensate from air washers, air-cooling coils, condensing appliances, and the overflow from evaporative coolers and similar water-supplied equipment or similar air-conditioning equipment shall be collected and discharged to an approved plumbing fixture or disposal area. Where discharged into the drain system, equipment shall drain by means of an indirect waste pipe. The Waste pipe shall have a slope of not less than ⅛ inch per foot (10.4 mm/m) or 1 percent slope and shall be of approved corrosion-resistant material not smaller than the outlet size in accordance with Section 310.3 or Section 310.4 for air-cooling coils or condensing appliances, respectively. Condensate or wastewater shall not drain over a public way.

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

TABLE 310.3
MINIMUM CONDENSATE WASTE PIPE SIZE

EQUIPMENT CAPACITY IN TONS OF REFRIGERATION	MINIMUM CONDENSATE PIPE DIAMETER (inches)
Up to 20	¾
21 – 40	1
41 – 90	1 ¼
91 – 125	1 ½
126 – 250	2

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

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

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

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

AIR INTAKE AND EXHAUST:

402.4 Outdoor Air Intake Protection. Required outdoor-air intakes shall be covered with a screen having not less than ¼ of an inch (6.4 mm) openings, and shall have not more than ½ of an inch (12.7 mm) openings.

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

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

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

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

701.10.1 Minimum Screen Mesh Size. Screens shall be not less than ¼ of an inch (6.4 mm) mesh. [NFPA 54:9.3.7.2]

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

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

(2) Less than 10 feet (3048 mm) above the surface of an abut ting public way, sidewalk, street, alley, or driveway.

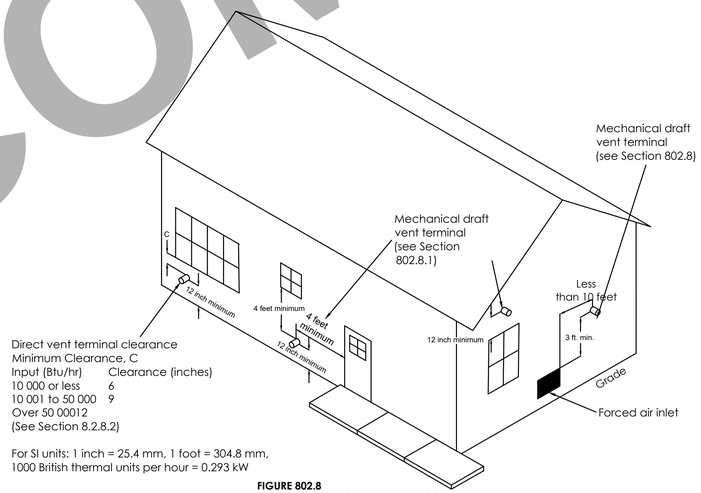

FIGURE 802.8
EXIT TERMINALS OF MECHANICAL DRAFT AND DIRECT-VENT VENTING SYSTEMS [NFPA 54: FIGURE A.12.9]

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 ¼ of an inch (6.4 mm) openings, and shall have not more than ½ of an inch (12.7 mm) openings.
Exception: Clothes dryers.

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

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

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

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

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

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

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

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

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

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

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

FACTORY-MADE AIR DUCTS

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

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

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

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

RECTANGULAR DUCTS

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

METAL DUCTS

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

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

COMBUSTIBLES WITHIN DUCTS OR PLENUMS

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

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

NOTES ON DUCTS MATERIAL & CONSTRUCTION:
FLEXIBLE AIR DUCTS: FLEXIBLE AIR DUCTS SHALL COMPLY WITH UL 181, AND SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND SMACNA HVAC DUCT CONSTRUCTION STANDARDS-METAL AND FLEXIBLE.
FLEXIBLE AIR DUCT INSTALLATIONS SHALL COMPLY WITH THE FOLLOWING:
1. DUCTS SHALL BE INSTALLED USING THE MINIMUM REQUIRED LENGTH TO MAKE THE CONNECTION.
2. HORIZONTAL DUCT RUNS SHALL BE SUPPORTED AT NOT MORE THAN 4 FEET (1219 MM) INTERVALS.
3. VERTICAL RISERS SHALL BE SUPPORTED AT NOT MORE THAN 6 FEET (1829 MM) INTERVALS.
4. SAG BETWEEN SUPPORT HANGERS SHALL NOT EXCEED 1/2 INCH (12.7 MM) PER FOOT (305 MM) OF SUPPORT SPACING.
5. SUPPORTS SHALL BE RIGID AND SHALL BE NOT LESS THAN 11/2 INCHES (38 MM) WIDE AT POINT OF CONTACT WITH THE DUCT SURFACE.
6. DUCT BENDS SHALL BE NOT LESS THAN ONE DUCT DIAMETER BEND RADIUS.
7. SCREWS SHALL NOT PENETRATE THE INNER LINER OF NON-METALLIC FLEXIBLE DUCTS UNLESS PERMITTED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
8. FITTINGS FOR ATTACHING NON-METALLIC DUCTS SHALL BE BEADED AND HAVE A COLLAR LENGTH OF NOT LESS THAN 2 INCHES (51 MM) FOR ATTACHING THE DUCT. EXCEPTION: A BEAD SHALL NOT BE REQUIRED WHERE METAL WORM-GEAR CLAMPS ARE USED OR WHERE ATTACHING METALLIC DUCTS USING SCREWS IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
9. DUCT INNER LINER SHALL BE INSTALLED AT NOT LESS THAN 1 INCH (25.4 MM) ON THE COLLAR AND PAST THE BEAD PRIOR TO THE APPLICATION OF THE TAPE AND MECHANICAL FASTENER. WHERE MASTIC IS USED INSTEAD OF TAPE, THE MASTIC SHALL BE APPLIED IN ACCORDANCE THE MASTIC MANUFACTURER'S INSTRUCTIONS.
10. DUCT OUTER VAPOR BARRIERS SHALL BE SECURED USING TWO WRAPS OF APPROVED TAPE. A MECHANICAL FASTENER SHALL BE PERMITTED TO BE USED IN PLACE OF, OR IN COMBINATION WITH, THE TAPE.
11. FLEXIBLE AIR DUCTS SHALL NOT PENETRATE A FIRE-RESISTANCE-RATED ASSEMBLY OR CONSTRUCTION.
12. THE TEMPERATURE OF THE AIR TO BE CONVEYED IN A FLEXIBLE AIR DUCT SHALL NOT EXCEED 250°F (121 °C).
13. FLEXIBLE AIR DUCTS SHALL BE SEALED IN ACCORDANCE WITH SECTION 603.10.

COMPLIANCE WITH 2022 CMC REQUIREMENT {608 (PREVIOUSLY {609) SHALL BE MET FOR AIR HANDLING UNITS (AHU)/ AIR MOVING SYSTEM GLOBAL/AGGREGATE SIMULTANEOUS SMOKE SHUTDOWN OF AREA SERVED PER CSFM INTERPRETATION # 02-024 & 08-065 UPON ACTIVATION OF AY SINGLE DUCT SMOKE DETECTOR.

ALL AHU/HVAC UNIT DUCT-SMOKE DETECTORS SHALL BE CONNECTED TO BUILDING FIRE ALARM PANEL TO INITIATE A SUPERVISORYSIGNAL UPON ACTIVATION, BE INTERCONNECTED AND SHALL SHUT DOWN ALL UNITS SIMULTANEOUSLY UPON ACTIVATION OF ANY ONE SINGLE DETECTOR.

ALL AHU/HVAC UNIT DUCT-SMOKE DETECTORS SHALL BE TESTED BY CALIBRATED MANOMETER PROVIDED BY THE INSTALLING CONTRACTOR TO INSURE AIR VOLUME AND VELOCITIES ARE WITHIN TOLERANCE SPECIFICATIONS OF THE RATINGS REQUIRED BY THE MANUFACTURER'S DATA ON EACH DUCT SMOKE DETECTOR INSTALLED WITHIN THE UNIT/DUCTWORK. 2022 CFC {907.3.1, 2019 NFPA 72 {17.74 & 2022 CMC {608.

CLIENT:

ADDRESS:

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NOTES:

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

REV. NO.	DESCRIPTION	DATE	BY

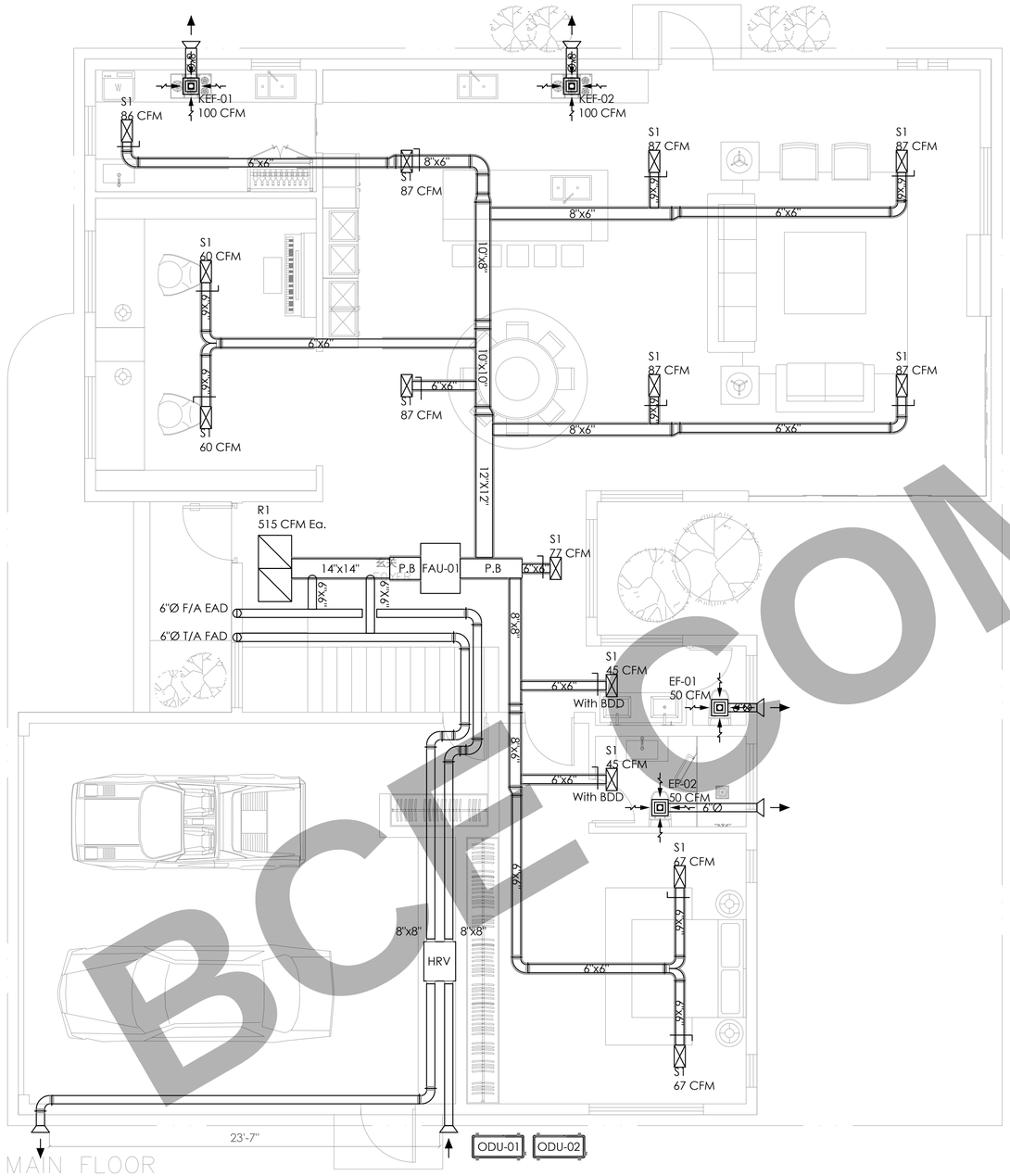
PROJECT:
DAPHNE CO

TITLE:
MECHANICAL CODE CHECKING.

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

DRAWING NO.
M 0 . 0 1

REV.



GENERAL NOTES:

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

SPECIAL NOTES:

1. 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.
2. Balancing Dampers shall be installed in branch ducts, and the axis of the damper shall be installed parallel to the direction of airflow in the main duct.
3. Duct systems shall be sized in accordance with ACCA Manual D.
   Velocity in main duct shall not exceed 1000 feet per minute.
   Velocity in section branches shall not exceed 600 feet per minute.
4. Outdoor air intake and exhaust systesm shall be equipment with motorized dampers that will automatically shut when the systems or spaces served are not in use.
   Exceptions: Back-draft gravity dampers shall be permitted for exhaust and relief in buildings less than 3 stories in height.

CLIENT:

ADDRESS:

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NOTES:

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

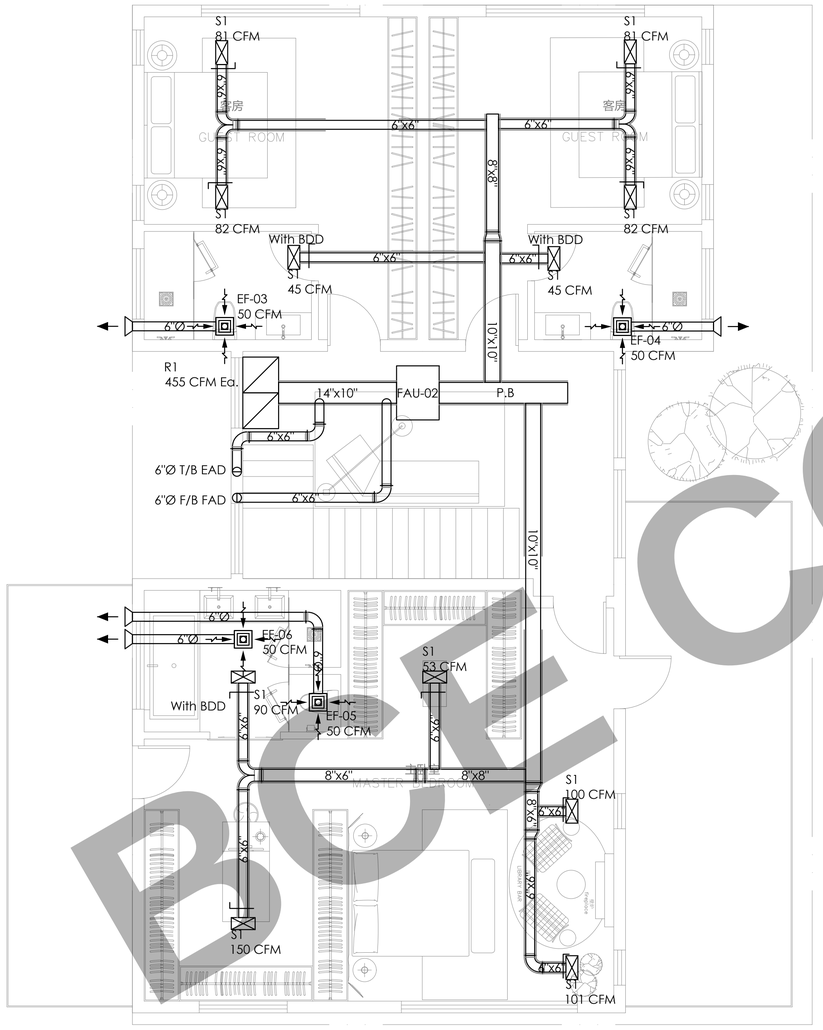
DAPHNE CO

TITLE:

MAIN FLOOR MECHANICAL LAYOUT

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

DRAWING NO.	REV.
M 1 . 0 1	



SECOND FLOOR

GENERAL NOTES:

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2. CONTRACTOR TO CUT AND PATCH AS REQUIRED TO PERFORM THE WORK.
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9. CONTRACTOR TO CONFIRM ADEQUATE RETURN AIR PATH BACK TO MAIN AIR HANDLING UNIT.

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   Velocity in section branches shall not exceed 600 feet per minute.
4. Outdoor air intake and exhaust systesm shall be equipment with motorized dampers that will automatically shut when the systems or spaces served are not in use.
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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

DAPHNE CO

TITLE:

SECOND FLOOR MECHANICAL LAYOUT.

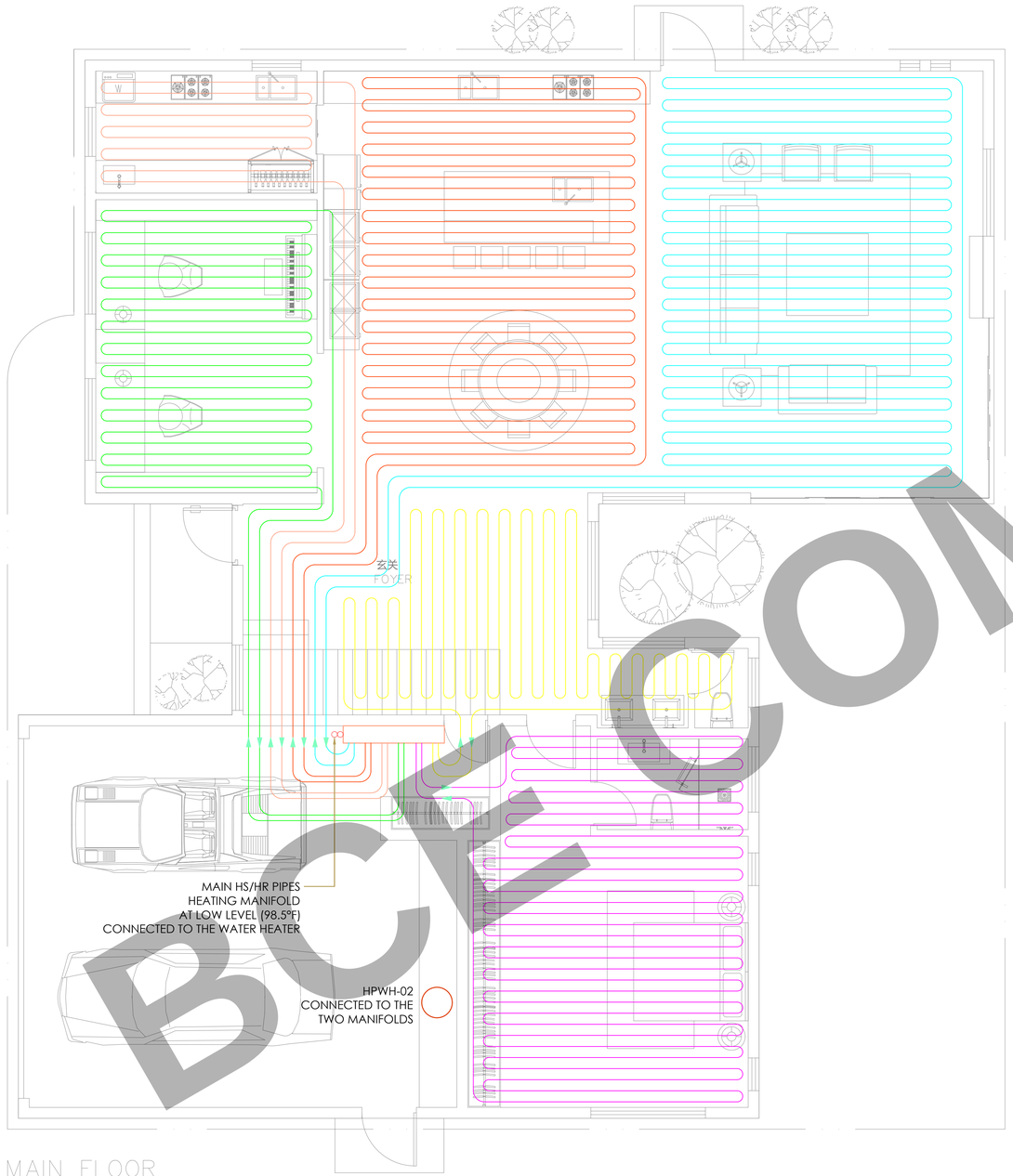
PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36:
		1/4"=1'-0"

DRAWING NO.

M 1 . 0 2

REV.

ROOM	AREA	HTNG LOAD	FLOW	SIZE	TOTAL LENGTH (FT.)
KITCHEN AREA:	100 sq.ft	2,400 btu/hr	0.24 gpm	3/8"	240
PIANO:	235 sq.ft	5,640 btu/hr	0.57 gpm	3/4"	430
LIVING:	510 sq.ft	12,240 btu/hr	1.23 gpm	1"	685
DINING	510 sq.ft	12,240 btu/hr	1.23 gpm	1"	750
HALLWAY:	310 sq.ft	7,440 btu/hr	0.75 gpm	1/2"	305
BEDROOM:	370 sq.ft	8,880 btu/hr	0.89 gpm	1"	560
MAIN HR/HS:	**2,035 sq.ft**	**48,840 btu/hr**	**4.91 gpm**	**1"**	**-**



MAIN FLOOR

Special Notes:

1- Manifolds shall be equipped with isolation valves on the supply and return lines. Manifolds shall be capable of withstanding the pressure and temperature of the system. The material of the manifold shall be compatible with the system fluid and shall be installed in accordance with the manufacturer's installation instructions.

SCHEDULE No. 1

HEAT PUMP WATER HEATER SCHEDULE

TAG	HPWH-02
LOCATION	GARAGE
MANUFACTURER	SANCO2
MODEL	SAN-43SSAQA
TYPE	HEAT PUMP
RATED STORAGE (GAL.)	43
GPH (@ 90°F RISE)	69
UEF	3.1
POWER SUPPLY	208/230-1-60
MCA (A)	7.2
APPROX. WEIGHT (lbs)	88
DIAMETER (in.)	24.5
HEIGHT (in)	38-1/8
WATER CONNECTION SIZE	3/4"

CLIENT:

ADDRESS:

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

DAPHNE CO

TITLE:

MAIN FLOOR
UNDER-FLOOR HEATING.

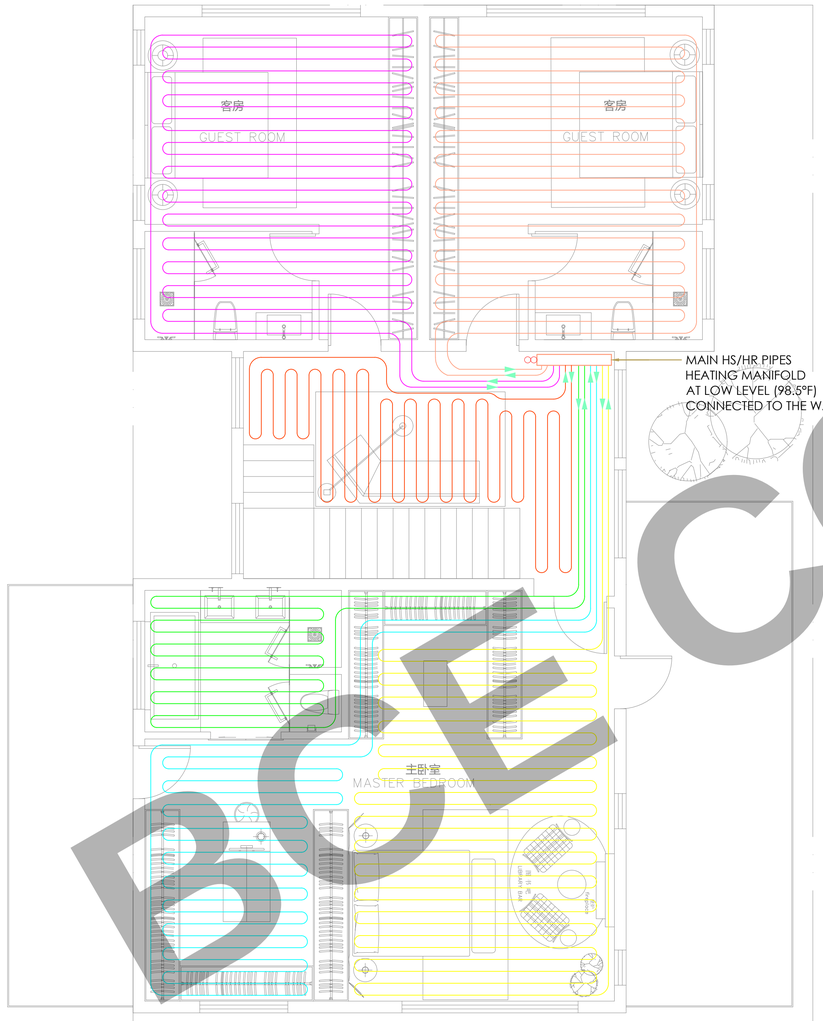
PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36:
		1/4=1'-0"

DRAWING NO.

M 1 . 0 3

REV.

ROOM	AREA	HTNG LOAD	FLOW	SIZE	TOTAL LENGTH (FT.)
GUEST ROOM:	275 sq.ft	6,600 btu/hr	0.66 gpm	5/8"	405
GUEST ROOM:	275 sq.ft	6,600 btu/hr	0.66 gpm	5/8"	410
CORRIDOR:	260 sq.ft	6,000 btu/hr	0.60 gpm	3/8"	205
MASTER B.RM.	340 sq.ft	8,160 btu/hr	0.82 gpm	3/4"	450
TOILET:	87 sq.ft	2,088 btu/hr	0.21 gpm	3/8"	180
CLOSET:	145 sq.ft	3,500 btu/hr	0.35 gpm	1/2"	285
MAIN HR/HS:	**1,382 sq.ft**	**32,948 btu/hr**	**3.3 gpm**	**1"**	**-**



SECOND FLOOR

Special Notes:

1- Manifolds shall be equipped with isolation valves on the supply and return lines.
Manifolds shall be capable of withstanding the pressure and temperature of the system.
The material of the manifold shall be compatible with the system fluid and shall be installed in accordance with the manufacturer's installation instructions.

CLIENT:

ADDRESS:

-

NOTES:

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

DAPHNE CO

TITLE:

SECOND FLOOR UNDER-FLOOR HEATING.

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

DRAWING NO.

M 1 . 0 4

REV.

SCHEDULE No. 1
GAS/ELECTRIC - INDOOR & OUTDOOR UNIT

TAG	FAU-01 & ODU-01	FAU-02 & ODU-02
SERVING	LEVELS 1	LEVELS 2
MANUFACTURER	CARRIER	CARRIER
INDOOR MODEL	40MBDQ48---3	40MBDQ36---3
POWER SUPPLY	208/230-1-60	208/230-1-60
MCA (A)	3.2	2.45
AIR FLOW (CFM) - MEDIUM SPEED	1,030.0	910.0
EXTERNAL STATIC PRESSURE (INCHES OF WATER)	0.64	0.64
COOLING CAPACITY (BTU/H)	48,000	36,000
INDOOR DIMENSIONS (H x W x D) (inch)	11.81 x 47.24 x 34.41	9.8 x 53.54 x 30.47
OUTDOOR MODEL	38MBRBQ48A--3	38MBRBQ36A--3
POWER SUPPLY	208/230-1-60	208/230-1-60
MINIMUM CIRCUIT AMPACITY	36.5	30.0
COMPRESSOR RLA	-	-
MAX OVERCURRENT DEVICE	50.0	45.0

NOTES:

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

SCHEDULE No. 3
FAN SCHEDULE

TAG	EF-01 TO EF-05	KEF-01 & KEF-02
LOCATION	BATHROOMS	KITCHEN
SELECTED FLOW (CFM)	50	100
SELECTED PRESSURE DROP (IN. H2O)	0.25"	0.25"
ELECTRICAL (V / PH / HZ)	120 / 1 / 60	120 / 1 / 60
POWER / Amps	25 W	25 W
MOTOR SPEED (RPS)	MULTI SPEED	MULTI SPEED
FAN TYPE	CEILING FANS	CEILING FANS
MANUFACTURER	PANASONIC	PANASONIC
MODEL	WHISPER FV-0511VKS2	WHISPER FV-0511VKS2

NOTES:

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

SCHEDULE No. 2
ERV SCHEDULE

TAG	HRV
MANUFACTURER	PANASONIC
MODEL	INTELLI-BALANCE 200
LOCATION	GARAGE
DESIGN SUPPLY VOLUME (CFM)	200
DESIGN PRESSURE DROP (in. W.G)	0.4
ELECTRICAL (V / PH / HZ)	120 / 1 / 60
POWER (WATTS)	129
MAXIMUM EFFICIENCY	83%

SCHEDULE No. 4
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

NOTES:

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

VENTILATION REQUIREMENT

-O/A = 0.03 x A + 7.5 x (# BR. + 1)

* **FIRST FLOOR:**

- A = 2,066 FT2
- # BED ROOMS: 1
- **O/A = 0.03 x 2066+ 7.5 x (2) = 77 CFM**

* **SECOND FLOOR:**

- A = 1,475 FT2
- # BED ROOMS: 3
- **O/A = 0.03 x 1475 + 7.5 (4) = 74.25 CFM**

ENERGY RECOVER VENTILATOR WITH AN AIRFLOW OF 200 CFM WILL COVER THE MINIMUM VENTILATION REQUIREMENT FOR BOTH FLOORS. ERV TO RUN CONTINUOUSLY WHENEVER THE HOUSE IS IN OPERATION.

CLIENT:

ADDRESS:

-

NOTES:

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

REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

DAPHNE CO

TITLE:

MECHANICAL EQUIPMENT SCHEDULE.

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

DRAWING NO.

M 2 . 0 1

REV.

Performance™ Ducted Indoor Unit

FEATURES OUTDOOR

- Modes: Cool, Heat, Dry, Fan, Auto
- Vertical (sizes 36 & 48) or horizontal installation
- Up to 0.8 in W.C.
- Rear or bottom return
- Outside air intake
- Built-in condensate lift pump
- *Follow Me* (senses temperature at handheld remote)
- Heating Setback (46° F Heating Mode)
- Quiet indoor operation, as low as 38.5 dB(A)
- Anti-corrosive fin coating

COMPATIBLE WITH:

- 38MBR Outdoor Unit Single Zone (p 62)
- 38MBRB Outdoor Unit (p 64)

Performance SERIES

Sizes: 36 / 48 / 58

KEY FEATURES

Vertical or Horizontal Installation

Designed for maximum installation flexibility. The secondary drain built-in allows the unit to be mounted vertically allowing either a floor or ceiling-concealed installation depending on existing conditions. (Sizes 36 and 48 only.)

Built-in Condensate Lift Pump

Supplied with a condensate lift pump that is capable of lifting the water 29.5in. (750mm.) above the top of the unit.

CONTROLS

Wireless Remote Controller included with indoor unit

Wired Remote Controller (7-Day Programmable) included with indoor unit

Standard Wired Controller (7-Day Programmable) KSACN0701AAA — **Wireless Remote Controller**

ACCESSORIES

Wi-Fi® Smartphone control kit KSAIF0401AAA

24V Interface for third-party thermostat compatibility KSAIC0301230

SPECIFICATIONS:

40MBDQ Ducted — Heat Pump				
System				
Size		36	48	58
Indoor Model		40MBDQ36---3	40MBDQ48---3	40MBDQ58---3
Electrical				
Voltage, Phase, Cycle	V/Ph/Hz	208/230-1-60	208/230-1-60	208/230-1-60
Power Supply		Indoor Unit Powered From Outdoor Unit		
MCA	A	2.45	3.2	3.65
Controls				
Wireless Remote Controller (° F / ° C Convertible)		Standard	Standard	Standard
Wired Remote Controller (° F / ° C Convertible)		Standard	Standard	Standard
Operating Range				
Cooling Indoor DB Min - Max	° F (° C)	63~90 (17~32)	63~90 (17~32)	63~90 (17~32)
Heating Indoor DB Min - Max	° F (° C)	32~86 (0~30)	32~86 (0~30)	32~86 (0~30)
Piping				
Pipe Connection Size - Liquid	in (mm)	3/8 (9.52)	3/8 (9.52)	3/8 (9.52)
Pipe Connection Size - Suction	in (mm)	5/8 (16)	5/8 (16)	3/4 (19)
Indoor				
Unit Width	in (mm)	53.54 (1,360)	47.24 (1,200)	55.12 (1,400)
Unit Height	in (mm)	9.8 (249)	11.81 (300)	17.32 (440)
Unit Depth	in (mm)	30.47 (774)	34.41 (874)	33.78 (858)
Net Weight	lb (kg)	106.48 (48.3)	119.71 (54.3)	163 (74)
Number of Fan Speeds		3	3	3
Airflow (lowest to highest)	cfm	700/910/1,080	720/1,030/1,230	1,260/1,710/2,150
Sound Pressure (lowest to highest)	dB(A)	38.5/42/45.5	46/49.5/50.5	51/54/57
Max Static Pressure	in W.C.	0.64	0.64	0.80
Field Drain Pipe Size O.D.	in (mm)	1 (25.4)	1 (25.4)	1 (25.4)

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

COMPATIBILITY:

Indoor Unit	40MBDQ36---3	40MBDQ48---3	40MBDQ58---3
Outdoor Unit Single Zone	38MBRBQ36A--3	38MBRBQ48A--3	38MBRBQ58A--3

Backward compatible with 38MBQ Single Zone Systems.

Performance™ Commercial Heat Pump

FEATURES OUTDOOR

- Built-in basepan heater
- Condenser high-temperature protection
- Refrigerant leakage detection
- Quiet outdoor operation
- Anti-corrosive fin coating
- Piping length 213 ft. (65 m)
- Cooling operating range -13° ~ 122° F (-25° ~ 50° C)
- Heating operating range -22° ~ 86° F (-30° ~ 30° C)

COMPATIBLE WITH:

- 40MBAA Air Handler (p 74)
- 40MBCQ Cassette (p 68)
- 40MBDQ Ducted (p 70)
- 40MBFQ Floor Console (p 72)

Performance SERIES

Heat Pump with Basepan Heater

Inverter Compressor

Up to 18.0 SEER

Up to 11.5 HSPF

Sizes: 36 / 48

KEY FEATURES

Flexible Installation

Piping flexibility up to a total piping length of 213 ft. (65 m).

Low Ambient Cooling

SPECIFICATIONS:

38MBRB Outdoor Unit — Heat Pump			
System			
Size		36	48
Outdoor Model		38MBRBQ36AA3	38MBRBQ48AA3
Electrical			
Voltage-Phase-Cycle	V-Ph-Hz	208/230-1-60	208/230-1-60
MCA	A.	30	36.5
MOCP - Fuse Rating	A.	45	50
Operating Range			
Cooling Outdoor DB Min - Max	° F (° C)	-13~122 (-25~50)	-13~122 (-25~50)
Heating Outdoor DB Min - Max	° F (° C)	-22~86 (-30~30)	-22~86 (-30~30)
Piping			
Total Piping Length	ft (m)	213 (65)	213 (65)
Piping Lift*	ft (m)	98 (30)	98 (30)
Pipe Connection Size - Liquid	in (mm)	3/8 (9.52)	3/8 (9.52)
Pipe Connection Size - Suction	in (mm)	5/8 (16)	5/8 (16)
Refrigerant			
Type		R410A	R410A
Charge	lbs (kg)	7.05 (3.2)	9.92 (4.5)
Compressor			
Type		Rotary Inverter	Rotary Inverter
Outdoor			
Unit Width	in (mm)	41.1 (1,045)	40.5 (1,030)
Unit Height	in (mm)	31.9 (810)	52.4 (1,333)
Unit Depth	in (mm)	17.9 (455)	17.6 (448)
Net Weight	lbs (kg)	155.42 (70.5)	219.14 (99.4)
Airflow	CFM	2,118	4,500
Sound Pressure	dB(A)	61.7	62.9

*Condensing unit above or below indoor unit.

COMPATIBILITY:

Indoor Unit		Outdoor Unit: 38MBRBQ36AA3	Outdoor Unit: 38MBRBQ48AA3
40MBDQ Ducted	40MBDQ36---3	•	
	40MBDQ48---3		•
40MBAA Air Handler	40MBAAQ36XA3	•	
	40MBAAQ48XA3		•
40MBFQ Floor Console	40MBFQ36---3	•	
	40MBFQ48---3		•
40MBCQ Cassette	40MBCQ36---3	•	
	40MBCQ48---3		•

Adjustable Supply and Return Air Adaptors

Adjustable supply and return air adapters provide **greater installation flexibility**.

INSTALLATION

Mounting: Intelli-Balance™ 200 can easily be installed on the floor, from the ceiling or on the wall using the included chain mount or cleat hanger bar. Various mounting cleat positions allow for multiple wall installation configurations. Intelli-Balance™ 200 can also be chain mounted and suspended. Adjustable brackets and screws are provided to secure the unit to the joist on 4 corners.

Wiring: Power consumption at 200CFM, is 129 Watts at .4 static pressure with a power rating of 120/60 V/Hz.

Duct: Insulated 6" duct is recommended.

Static Pressure Access Ports: Intelli-Balance™ 200 incorporates static pressure ports for measuring the differential pressure of fresh air and exhaust air for balancing airflows.

Static Pressure Access Ports

LCD WALL CONTROL

The all-new ERV LCD Wall Control puts total control and monitoring of Intelli-Balance 200 at your fingertips. Easy operation from nine push buttons and an LCD display gives homeowners instant access to custom ventilation control settings and real-time air flow and temperature monitoring.

Functions & Settings

- Power on/off
- Air volume for supply and exhaust
- ASHRAE intermittent timer and air volume
- BOOST mode control
  - Sets supply and exhaust air to constant 200 CFM
  - Timer for BOOST activation adjustable from 10-60 minutes
- Filter reset

Display information

- Indoor/outdoor temperature and humidity
- Filter maintenance reminder
- ASHRAE air volume and boost timer
- Cosmos mode indicator
- Defrost mode indicator
- Supply and exhaust air volume
- System fault codes

LCD Wall Control

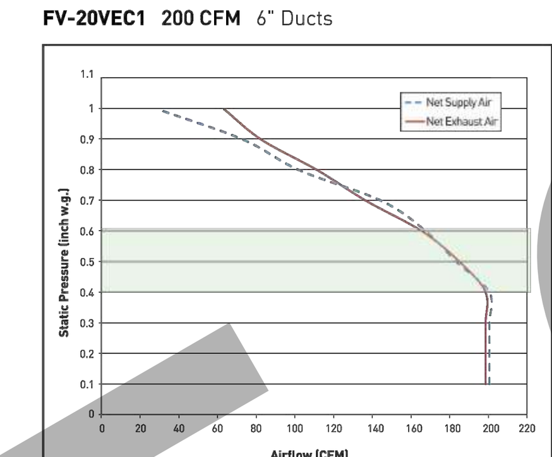
HEALTHY HOME SYSTEM

COSMOS Healthy Home System

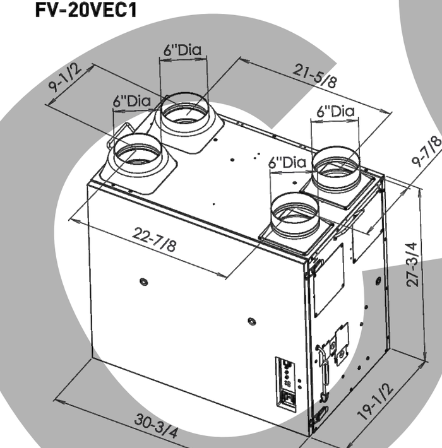
The Cosmos Healthy Home System monitors indoor air quality 24 x 7. Cosmos activates ventilation fans automatically and removes contaminated air from your home and brings in fresh air from outside.

Coming Soon: The Intelli-Balance™ 200 is Cosmos compatible by using an optional Cosmos communication module and will have several control functions through the Cosmos mobile application.

FV-20VEC1 200 CFM 6" Ducts



FV-20VEC1



Intelli-Balance™ 200	FV-20VEC1
Characteristics	COLD/TEMPERATE CLIMATE
Static pressure in inches w.g.	0.4
Net Exhaust Air Volume (CFM)	200
Net Supply Air Volume (CFM)	200
Power Consumption (Watts)	129
Power Rating (V/Hz)	120/60
ENERGY STAR® Certified	Yes*

Energy Performance								
MODE	Supply Temperature °F	Supply Temperature °C	Net Air Flow L/S	Net Air Flow CFM	Power Consumed (Watts)	Sensible Recovery Efficiency	Apparent Sensible Effectiveness	Net Moisture Transfer
Heating	32	0	32	67	22	83%	86%	81%
	32	0	59	124	46	77%	79%	73%
	32	0	80	170	92	73%	77%	78%
	-13	-25	31	66	46	67%	69%	70%
	-13	-25	50	107	104	61%	64%	64%
Cooling						Total Recovery Efficiency		
	95	35	34	71	25	70%		
	95	35	64	135	56	61%		

Intelli-Balance Accessory Kits					
Model No.	Description	Inlet Grille	Backdraft Damper	Clamp	Y-Adapter
FV-NLF04G	4" Inlet Grille + Metal Plate	1 (4")	-	-	-
FV-NLF06G	6" Inlet Grille + Metal Plate	1 (6")	-	-	-
PC-NLF04S	4" Single Inlet Kit	1 (4")	1 (4")	6	-
PC-NLF06S	6" Single Inlet Kit	1 (6")	1 (6")	6	-
PC-NLF04D	4" Double Inlet Kit	2 (4")	2 (4")	12	1 (4"- 4" x 2)
PC-NLF06D	6" Double Inlet Kit	2 (6")	2 (6")	12	1 (6"- 6" x 2)
PC-NLF64D	6"- 4" Double Inlet Kit	2 (4")	2 (4")	12	1 (6"- 4" x 2)
PC-NLF86Y	8"- 6" Y-Adapter	-	-	-	1 (8"- 6" x 2)
FV-NLF46RES	Recessed Inlet integrated dual 4" or 6" duct adaptor	-	-	-	-

[1] Meets strict energy efficiency guidelines set by Natural Resources Canada and is ENERGY STAR® certified for the Canadian market only

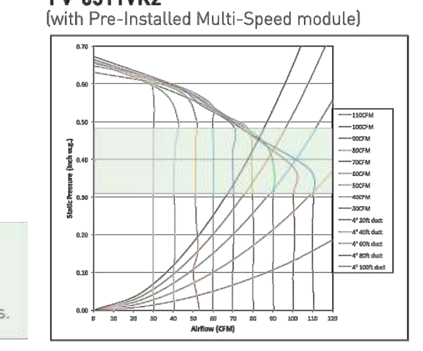
WhisperGreen® Select™ Connected Ventilation Fans

WhisperGreen® Select™ VENTILATION FAN

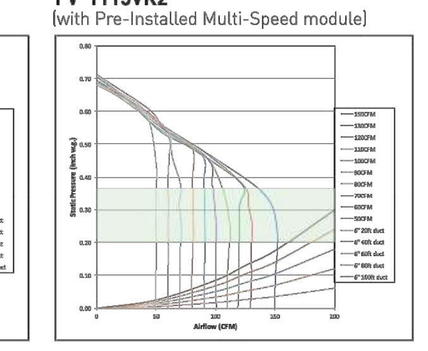
HEALTHY AIR, HEALTHY HOME

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

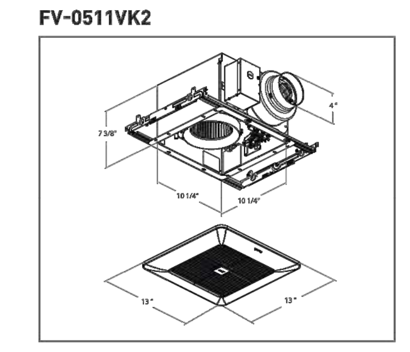
FV-0511VK2 (with Pre-Installed Multi-Speed module)



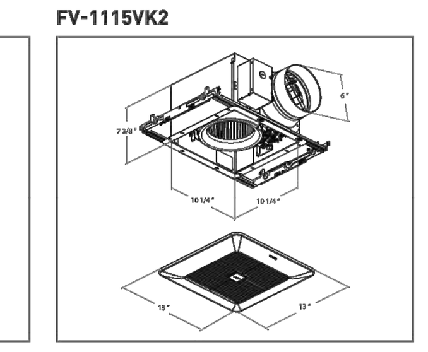
FV-1115VK2 (with Pre-Installed Multi-Speed module)



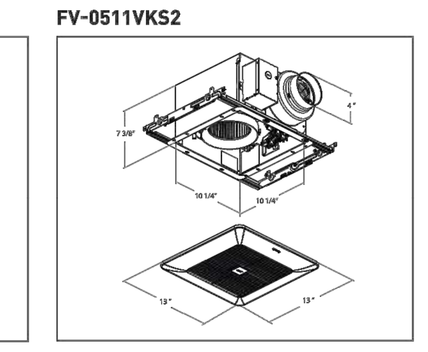
FV-0511VK2



FV-1115VK2



FV-0511VKS2



WhisperGreen® Select™ (Fan Only) — Base Fan — Characteristics (HVI tested data for 0.1" S.P.)

Specifications	FV-0511VK2									FV-1115VK2								
Static Pressure in inches w.g.	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375
Air Volume (CFM)	110	110	108	80	80	79	50	51	51	150	151	132	130	130	124	110	112	105
Noise (sones)	<0.3	0.8	-	<0.3	0.5	-	<0.3	0.4	-	<0.3	0.7	-	<0.3	0.4	-	<0.3	0.3	-
Power Consumption (watts)	9.9	15.4	20.0	5.1	9.6	13.4	3.1	6.2	9.6	12.9	22.0	24.4	9.2	16.5	22.1	6.9	12.8	17.9
Energy Efficiency (CFM/Watt)	11.1	7.1	5.4	15.7	8.3	5.9	16.2	8.3	5.3	11.7	6.8	5.4	14.2	7.9	5.6	16.0	8.7	5.8
Speed (RPM)	920	1182	1356	795	1113	1315	722	1054	1266	684	916	1084	645	900	1080	625	894	1083
Amps (Current)	0.10	0.16	0.20	0.06	0.10	0.14	0.04	0.07	0.10	0.14	0.22	0.24	0.10	0.17	0.22	0.08	0.13	0.18

WhisperGreen® Select™ (Fan Only) — Base Fan with Pre-Installed Multi-Speed — FV-0511VKS2 — Characteristics (HVI tested data for 0.1" S.P.)

Specifications																											
Static Pressure in inches w.g.	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375
Air Volume (CFM)	110	110	108	100	101	101	90	90	90	80	80	79	70	71	70	60	60	60	50	51	51	40	41	40	30	30	30
Noise (sones)	<0.3	0.8	-	<0.3	0.7	-	<0.3	0.6	-	<0.3	0.5	-	<0.3	0.5	-	<0.3	0.4	-	<0.3	0.4	-	<0.3	0.3	-	<0.3	0.3	-
Power Consumption (watts)	9.9	15.4	20.0	7.9	13.1	17.8	6.5	11.2	16.0	5.1	9.6	13.4	4.3	8.5	12.1	3.7	6.9	10.5	3.1	6.2	9.6	2.7	5.5	7.8	2.4	4.6	6.8
Energy Efficiency (CFM/Watt)	11.1	7.1	5.4	12.7	7.7	5.7	13.9	8.0	5.6	15.7	8.3	5.9	16.7	8.5	5.9	16.3	8.7	5.7	16.2	8.3	5.3	14.8	7.4	5.1	12.6	6.6	4.4
Speed (RPM)	920	1182	1356	889	1164	1356	839	1135	1351	795	1113	1315	760	1112	1309	751	1061	1287	722	1054	1266	707	1057	1251	711	1039	1259
Amps (Current)	0.10	0.16	0.20	0.09	0.14	0.18	0.07	0.12	0.16	0.06	0.10	0.14	0.05	0.09	0.13	0.05	0.08	0.11	0.04	0.07	0.10	0.04	0.07	0.09	0.04	0.06	0.08

WhisperGreen® Select™ (Fan Only) — Base Fan with Multi-speed Plug 'N Play Module — FV-0511VK2 + FV-VS15VK1 — Characteristics (HVI tested data for 0.1" S.P.)

Specifications																											
Static Pressure in inches w.g.	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375
Air Volume (CFM)	110	110	108	100	101	101	90	90	90	80	80	79	70	71	70	60	60	60	50	51	51	40	41	40	30	30	30
Noise (sones)	<0.3	0.8	-	<0.3	0.7	-	<0.3	0.6	-	<0.3	0.5	-	<0.3	0.5	-	<0.3	0.4	-	<0.3	0.4	-	<0.3	0.3	-	<0.3	0.3	-
Power Consumption (watts)	9.9	15.4	20.0	7.9	13.1	17.8	6.5	11.2	16.0	5.1	9.6	13.4	4.3	8.5	12.1	3.7	6.9	10.5	3.1	6.2	9.6	2.7	5.5	7.8	2.4	4.6	6.8
Energy Efficiency (CFM/Watt)	11.1	7.1	5.4	12.7	7.7	5.7	13.9	8.0	5.6	15.7	8.3	5.9	16.7	8.5	5.9	16.3	8.7	5.7	16.2	8.3	5.3	14.8	7.4	5.1	12.6	6.6	4.4
Speed (RPM)	920	1182	1356	889	1164	1356	839	1135	1351	795	1113	1315	760	1112	1309	751	1061	1287	722	1054	1266	707	1057	1251	711	1039	1259
Amps (Current)	0.10	0.16	0.20	0.09	0.14	0.18	0.07	0.12	0.16	0.06	0.10	0.14	0.05	0.09	0.13	0.05	0.08	0.11	0.04	0.07	0.10	0.04	0.07	0.09	0.04	0.06	0.08

Category	Specification	FV-0511VK2	FV-1115VK2	FV-0511VKS2	FV-0511VK2 + FV-VS15VK1
Characteristics	MAX. Amps (Current)	0.20	0.24	0.20	0.20
	Power Rating (V/Hz)	120/60	120/60	120/60	120/60
Specifications	Motor Type	ECM	ECM	ECM	DC
	Type of Motor Bearing	Ball	Ball	Ball	Ball
	Thermal Fuse Protection	Yes	Yes	Yes	Yes
	Blower Wheel Type	Sirocco	Sirocco	Sirocco	Sirocco
	ENERGY STAR Qualified	Yes	Yes	Yes	Yes
Installation	Duct Diameter (Inches)	4 & 6	6	4 & 6	4" or 6"
	Mounting Opening (Inches sq.)	10-1/2	10-1/2	10-1/2	10-1/2"
	Grille Size (Inches sq.)	13	13	13	13"
Light Specifications	Lamp Watts	N/A	N/A	N/A	N/A
	Lumens (lm)	N/A	N/A	N/A	N/A
	Lumens Per Watt (LPW)	N/A	N/A	N/A	N/A
	Color Rendering Index	N/A	N/A	N/A	N/A
	Color Temperature (Kelvin)	N/A	N/A	N/A	N/A
	Rated Life (hours)	N/A	N/A	N/A	N/A
	Lamp Model #	N/A	N/A	N/A	N/A
	Type of Lamp Socket	N/A	N/A	N/A	N/A
Night Light Specs	Night Light Watts	N/A*	N/A*	N/A*	N/A*
Shipping	Gross Weight (lbs)	11.80	11.95	11.90	11.9
Approved Code/ Standard/ Regulation	UL tub/Shower Enclosure	Yes	Yes	Yes	Yes
	Washington VIAQ Code	Yes	Yes	Yes	Yes
	Wall installation	No	No	No	No
	California Title 24 Compliant	Yes	Yes	Yes	Yes
	Mfg in ISO 9001 Certified Facility	Yes	Yes	Yes	Yes

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

ECM Motor with SmartFlow™ Technology

WhisperGreen® Select™ is designed to perform as rated. When the fan senses static pressure, its speed is automatically increased to ensure optimal CFM output. This feature provides peace of mind, as the installer doesn't have to worry about compromising the fan's performance.

LED Lighting

Includes a 10 Watt dimmable LED chip panel/3000 Kelvin Warm White/90CRI/700 lumens/70 LPW/ENERGY STAR® 2.0 certified/JA-8 compliant for CA Title 24/50,000 hours rated average life / <1W LED night light.

CLIENT:

ADDRESS:

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NOTES:

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

REV. NO.	DESCRIPTION	DATE	BY

PROJECT: **DAPHNE CO**

TITLE: MECHANICAL EQUIPMENT DATA SHEETS.

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

DRAWING NO. **M3.01**

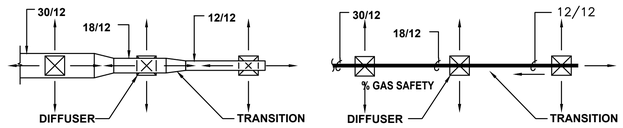
REV.

GENERAL NOTES

1. MECHANICAL CONTRACTOR SHALL EXAMINE ALL OTHER SPECIFICATIONS, DRAWINGS AND ALL FEATURES OF BUILDING CONSTRUCTION WHICH MAY AFFECT HIS WORK AND SHALL B GOVERNED BY THESE AND OTHER SPECIFICATIONS, INCLUDIN THE GENERAL CONDITIONS AND PARTICULAR INSTRUCTIONS T ALL BIDDER AND SUPPLIERS .
2. ALL WORK SHALL BE EXECUTED AND INSPECTED IN STRICT ACCORDANCE WITH ALL LOCAL CODES AND/OR STATE CODES, LAWS, ORDINANCES, RULES AND REGULATIONS APPLICABLE TO THIS PARTICULAR CLASS OF WORK, AND EACH CONTRACTOR SHALL INCLUDE IN HIS PRICE ALL APPLICABLE SERVICE CHARGES, FEES, PERMITS, TAXES, AND OTHER SIMILAR COSTS IN CONNECTION THEREWITH .
3. PRIOR TO FABRICATION OF DUCTWORK, THE MECHANICAL CONTRACTOR SHALL EXAMINE AND VERIFY ALL CONDITIONS ABOVE AND BELOW THE CEILING WHICH MAY INTERFERE WITH THE DUCT SYSTEM AND NOTIFY THE ARCHITECT OF ANY CONFLICT ENCOUNTERED CONTRACTOR.SHALL PROVIDE ALL OFFSETS, ETC WHICH MAY BE REQUIRED, WITHOUT ADDITIONAL COST TO THE OWNER
4. ALL SHEET METAL DUCT CONSTRUCTION SHALL BE IN STRICT ACCORDANCE WITH "SMACNA" LOW PRESSURE DUCT CONSTRUCTION STANDARD
5. TURNING VANES SHALL BE INSTALLED IN ALL BENDS IN RECTANGULAR DUCT EXCEEDING 30"
6. ALL DUCTS SHALL BE SUPPORTED WITH 1"WIDE, 16 GAUGE, GALVANIZED STEEL BANDS .
7. ALL RECTANGULAR DUCT SHALL BE INSULATED WITH A MIN OF 1"INTERNAL LINER, 2 LBS DENSITY R-60 ALL ROUND DUCTS AND DIFFUSER TOPS SHALL HAVE A MIN 2" THICK OF FOIL BACKED BLANKET TYPE INSULATION R=4-4 2, WITH ALL JOINTS BUTTED AND TAPED .
8. ALL DUCT DIMENSIONS SHOWN ON PLANS ARE INTERNAL
9. THE MECHANICAL CONTRACTOR SHALL COORDINATE THE LOCATION OF SUPPLY AND RETURN AIR REGISTERS, DUCTS, GRILLES AND DIFFUSERS WITH LIGHTING AND CEILING PATTERNS
10. PROVIDE LATERAL BRACING OF ALL DUCTS AND PIPES AS REQUIRED BY CODE .
11. INSULATE AND SEAL ALL DUCTWORK PER CHAPTER 10 OF THE STATE MECHANICAL CODE (T-24, PART 4)
12. MOUNT ALL THERMOSTATS AT 48" ABOVE FINISHED FLOOR .
13. ALL BRACING OF DUCTS AND PIPING SHALL BE INSTALLED IN ACCORDANCE WITH SMACNA GUIDELINES
14. WHERE BRACING DETAILS ARE NOT SHOWN ON THE DRAWINGS OR IN THE GUIDELINES, THE FIELD INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE ARCHITECT AND THE MECHANICAL ENGINEER .
15. DUCT SMOKE DETECTOR SHALL BE INSTALLED BELOW THE ROOF
16. ALL MECHANICAL EQUIPMENT AND SYSTEMS INSTALLED AS PART OF PROJECT SHALL COMPLY WITH ALL REQUIREMENTS OF THE 2022 CALIFORNIA MECHANICAL CODE AND THE 2022 CALIFORNIA BUILDING CODE AND THE 2022 CALIFORNIA BUILDING ENERGY EFFICIENCY STANDARDS .
17. OUTSIDE AIR FOR A HEATING OR COOLING SYSTEM SHALL NOT BE TAKEN FROM CLOSER THAN 10 FEET FROM AN APPLIANCE VENT OUTLET, VENT OPENING OF A PLUMBING SYSTEM, OR THE DISCHARGE OUTLET OF EXHAUST FAN, UNLESS THE OUTLET IS 3 FT ABOVE THE OUTSIDE AIR INLET (CMC 314.3) . .
18. PROVIDE 120 VOLT ELECTRICAL OUTLETS WITHIN 25 FT OF ALL MECH EQUIPT .(CMC 309)
19. HEATING,VENTILATING,ANDAIR CONDITIONING SYSTEMS SHALL BE BALANCED IN ACCORDANCE WITH ONE OF THE FOLLOWING METHODS IN ACCORDANCE WITH CMC 317 1 REQUIREMENTS
    - A. AABC NATIONAL STANDARDS FOR TOTAL SYSTEM BALANCE
    - B. ACCA MANUAL B
    - C. ASHRAE 111
    - D. NEBB PROCEDURAL STANDARDS FOR TESTING,ADJUSTING ADJUSTING BALANCING OF ENVIRONMENTAL SYSTEMS
    - E. SMACNA HVAC TESTING,ADJUSTING,AND BALANCING
20. MATERIALS EXPOSED WITHIN DUCTS OR PLENUMS SHALL BE NON COMBUSTIBLE OR SHALL HAVE A FLAME SPREAD INDEX NOT TO EXCEED 25 AND A SMOKE DEVELOPED INDEX NOT TO EXCEED 50 WHERE TESTED AS A COMPOSITE PRODUCT IN ACCORDANCE WITH ASTM E84 OR UL 723 .

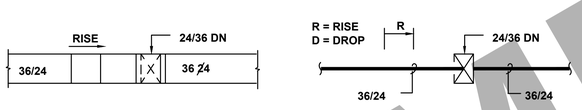
DUCTWORK SYMBOLS LEGEND

TRANSITIONS



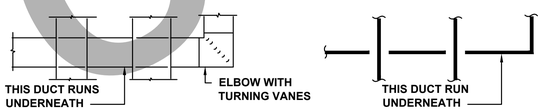
MAIN BRANCH TAKE-OFFS

RISERS

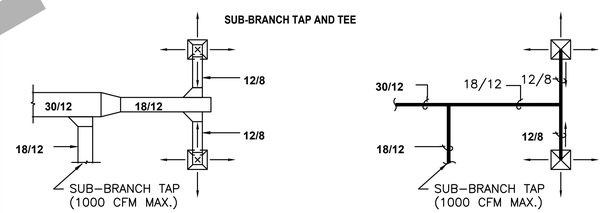


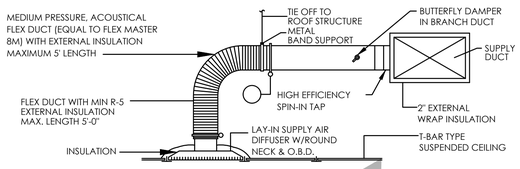
SIDEWALL REGISTERS

DUCT CROSSOVERS

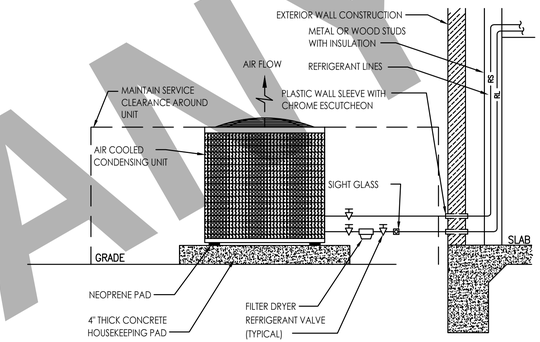


SUB-BRANCH TAP AND TEE

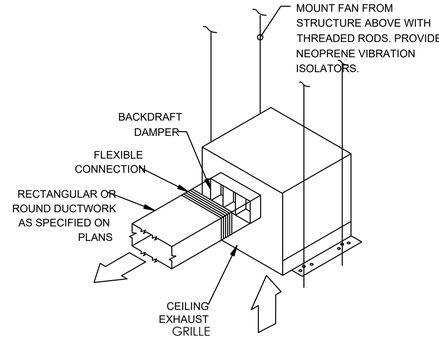




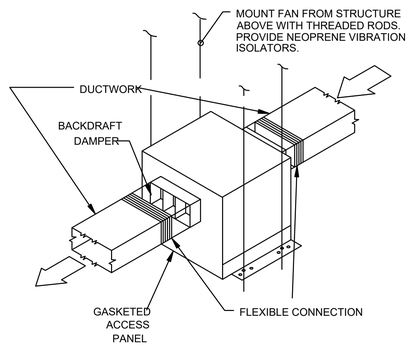
SUPPLY AIR DIFFUSER CONNECTION



OUTSIDE AIR CONDITIONER



CEILING EXHAUST FAN DETAIL



IN-LINE FAN DETAIL

CLIENT:

ADDRESS:

-

CONFIDENTIALITY STATEMENT:

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

NOTES:

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

REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

DAPHNE CO

TITLE:

MECHANICAL GENERAL DETAILS.

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

DRAWING NO.

M 4 . 0 1

REV.

LIST OF SYMBOLS AND SERVICES

	SURFACE MOUNTED RECTANGULAR 1'Wx4'L LED LIGHT	S	SELF CONTAINED SMOKE DETECTOR/ANNUNCIATOR (120 W/BATTERY BACKUP) - CEILING MOUNTED SPECIFIED UL217
	EXTERIOR WALL MOUNTED LED LIGHTING FIXTURE WITH POWER 15VA	C	SELF CONTAINED SMOKE/CARBON MONOXIDE (120 W/BATTERY BACKUP) - CEILING MOUNTED SPECIFIED UL2034/2075
	RECESSED MOUNTED ROUND LED LIGHTING FIXTURE SIMILAR TO PHILIPS DN130B D165 1xLED10S/840		PENDANT LIGHTING FIXTURE
S?	LIGHT SWITCH - WALL MOUNTED @ +48" AFF UNLESS NOTED SUBSCRIPTS: S2 = 2-POLE SWITCH S3 = 3 WAY SWITCH S4 = 4 WAY SWITCH D = DIMMER SWITCH K = KEY OPERATED SWITCH M = MOMENTARY CONTACT SWITCH P = SWITCH WITH PILOT LIGHT T = THERMAL OVERLOAD SWITCH OS=WITH BUILT IN OCCUPANCY SENSOR		
	120/240V, 1PH, 3W LOAD CENTER		
GFI	DUPLEX RECEPTACLE - WALL MOUNTED @ +18" AFF UNLESS NOTED WITH GROUND FAULT CIRCUIT INTERRUPTER		
	DUPLEX RECEPTACLE - WALL MOUNTED @ +18" AFF UNLESS NOTED		
J	JUNCTION BOX - WALL MOUNTED - HEIGHT AS INDICATED		
J	JUNCTION BOX		
YxXXA	NON-FUSED DISCONNECT SWITCH - SIZE AS INDICATED		
—— · ——	CONDUITS IN CEILING		
— · — · — · —	CONDUITS UNDER TILES		

INSTALLATION HEIGHTS:
- h1: 24 in
- h2: 42 in
- h3: 48 in
- h4: 72 in
- h5: 94 in
- h6: 60 in

GENERAL NOTES:

1. ALL WORK AND EQUIPMENT UNDER THIS DIVISION SHALL BE IN STRICT COMPLIANCE WITH THE CODES, STANDARDS AND PRACTICES LISTED HEREIN, AND THEIR RESPECTIVE DATES ARE FURNISHED AS THE MINIMUM LATEST REQUIREMENTS.

A. LIFE SAFETY CODE
B. NATIONAL FIRE PROTECTION ASSOCIATION
C. NATIONAL ELECTRICAL CODE
D. AMERICAN NATIONAL STANDARDS INSTITUTE
E. INSTITUTE IF ELECTRICAL AND ELECTRONIC ASSOCIATION
F. NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION (NEMA)
G. REQUIREMENTS OF LOCAL POWER COMPANY
H. BUILDING CODE

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

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

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

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

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

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

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

ELECTRICAL ABBREVIATIONS

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

CLIENT:

ADDRESS:

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:
DAPHNE CO

TITLE:
GENERAL NOTES AND ABBREVIATIONS

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

DRAWING NO.	REV.
E0.01	

ELECTRICAL SPECIFICATIONS

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

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

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

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

LIGHTING SCHEDULE

ID	SYMBOL	DESCRIPTION	MANUF.	MODEL	LUMINAIRE TYPE	COLOR / FINISH	REMARKS
L1	○	4" RECESSED LED CAN LIGHT	HALO	HL36SA20WFL940ED010ICAT	LED	WHITE	RATED IC / AT FOR FLAT CEILING;
L2	○	4" RECESSED LED CAN LIGHT	Klus		LED	WHITE	RATED IC / AT FOR FLAT CEILING; WET LOCATION LISTED
L3	○	4" PENDANT LED CAN LIGHT	LITHONIA LTG	11536 BZA	LED	WHITE	RATED IC / AT FOR FLAT CEILING; ABOVE DINING TABLE
L4	○	4" EXTERIOR CAN LIGHT RECESSED LED	Klus		LED	WHITE	RATED IC / AT FOR FLAT CEILING; EXTERIOR LOCATION LISTED
L5	○	PENDANT LIGHT			LED		RATED IC / AT FOR FLAT CEILING;
L6	▽	EXTERIOR WALL LED SCONCE	WAC LIGHTINGS	6" TUBE ARCHITECTURAL DS-WS06-S27S-BK	LED	BLACK	CLEAR SKY COMPLIANT DOWNLIGHT; NO LIGHT TOWARDS NEIGHBORS
L7	▬	LED STRIP					
L8	▭	SURFACE MOUNTED 1'Wx4'L RECTANGULAR LED FIXTURE		GT8 2 32 A12 MVOLT GEB10IS			RATED IC / AT FOR FLAT CEILING;

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

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

CLIENT:

ADDRESS:

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REV. NO.	DESCRIPTION	DATE	BY

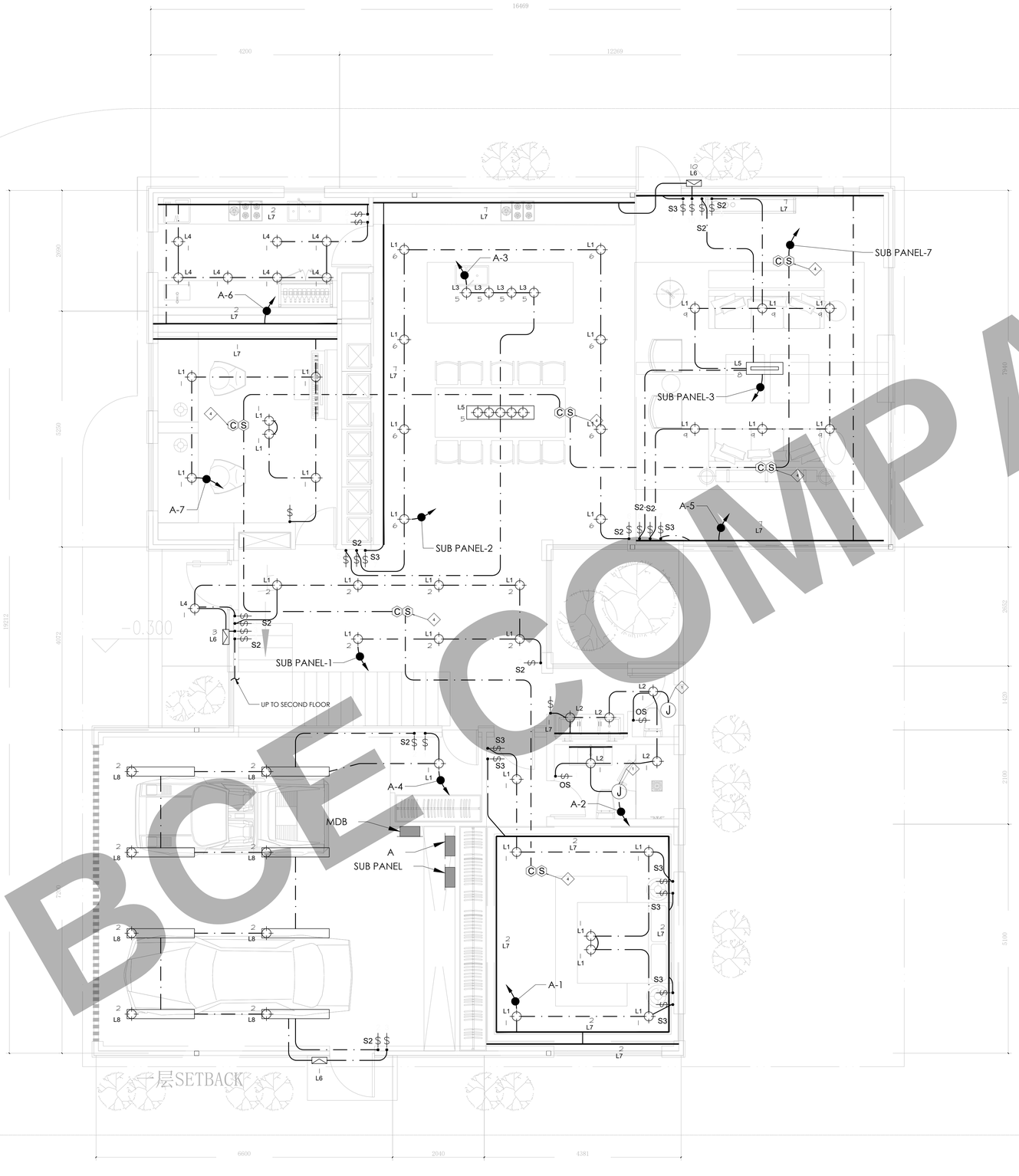
PROJECT:
DAPHNE CO

TITLE:
ELECTRICAL SPECIFICATIONS

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

DRAWING NO.
E1.01

REV.



1. JUNCTION BOX FOR EXHAUST FAN
2. DISCONNECT SWITCH FOR KITCHEN EXHAUST FAN
3. DISCONNECT SWITCH FOR INDOOR UNIT
4. FURNISH AND INSTALL SMOKE OR COMBINATION SMOKE AND CARBON MONOXIDE DETECTOR AS REQUIRED ,INTERLOCK WITH OTHER DETECTORS
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6. DISCONNECT SWITCH FOR WATER HEATER
7. DISCONNECT SWITCH FOR HRV
8. APPROXIMATE LOCATION OF AUTOMATIC GARAGE DOOR PUSH BUTTON +42". COORDINATE SPECIFIC STUB LOCATION FIELD
9. APPROXIMATE LOCATION OF AUTOMATIC GARAGE DOOR SENSOR COORDINATE SPECIFIC STUB OUT LOCATION IN FIELD INSTALLED ON CEILING
10. DISCONNECT SWITCH FOR EV CAR CHARGER

GENERAL NOTES

1. ALL 120 VOLT, SINGLE PHASE 15 AND 20 AMPERE BRANCH CIRCUIT SUPPLYING OUTLETS INSTALLED IN DWELLING UNIT FAMILY ROOMS, DINING ROOMS, LIVING ROOMS, PARLORS, LIBRARIES, DENS, BEDROOMS, SUNROOMS, RECREATION ROOMS, CLOSETS, HALLWAYS, OR SIMILAR AREAS SHALL BE PROTECTED BY A LISTED ARC-FAULT CIRCUIT INTERRUPTER, COMBINATION TYPE INSTALLED TO PROVIDE PROTECTION OF THE BRANCH CIRCUIT. (NEC ARTICLE 210.12(A))
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LEGEND:

- Smoke detector / Carbon monoxide
- Incandescent recessed downlight
- Pendant light
- DECORATIVE WALL SCONCE
- WALL SCONCE
- LED LIGHT
- ELECTRICAL FAN JUNCTION BOX
- SURFACE MOUNTED LIGHTING FIXTURE
- Switch - Single
- Switch -Two Way
- Switch -occupancy Sensor

CLIENT:

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

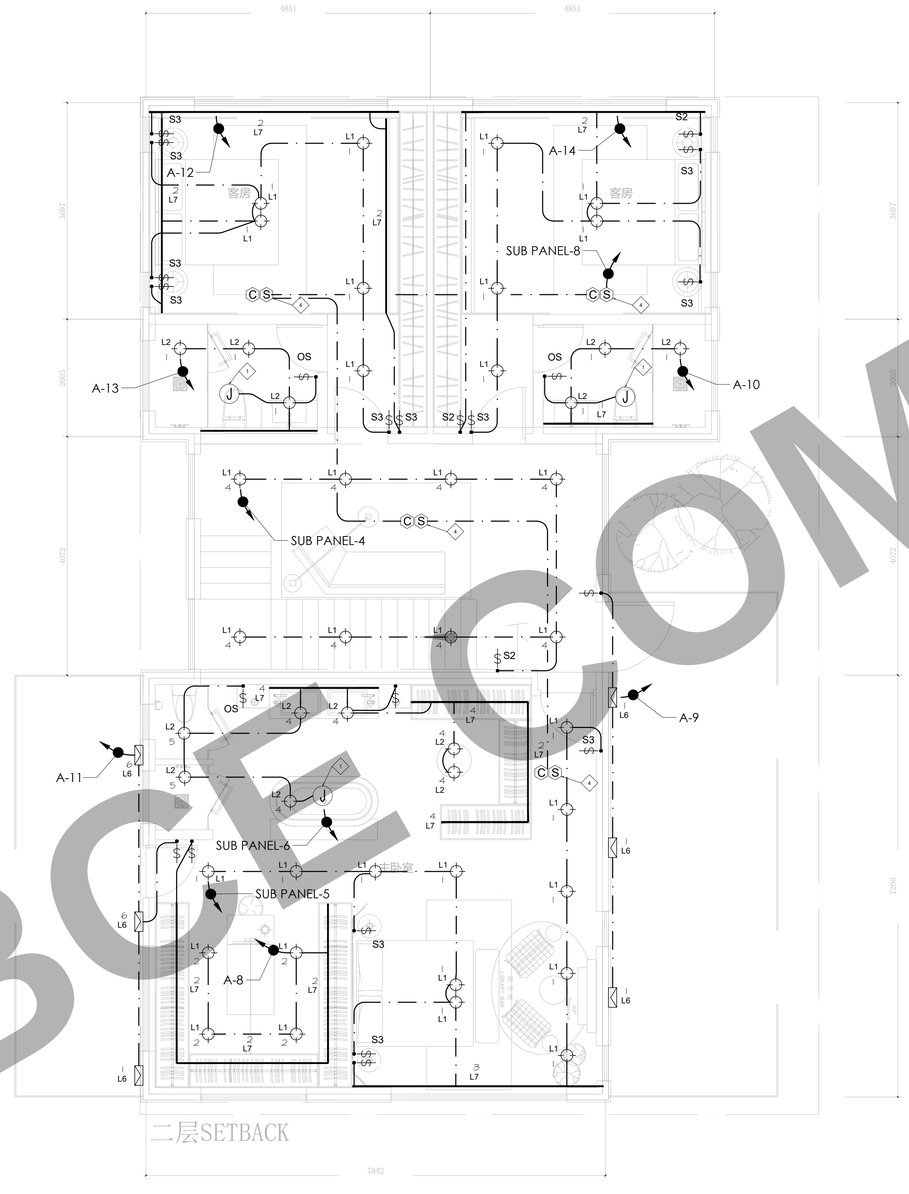
DAPHNE CO

TITLE:

FIRST FLOOR LIGHTING LAYOUT

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

DRAWING NO.	REV.
E2.01	



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- Pendant light
- DECORATIVE WALL SCONCE
- WALL SCONCE
- LED LIGHT
- J — ELECTRICAL FAN JUNCTION BOX
- SURFACE MOUNTED LIGHTING FIXTURE
- $ — Switch - Single
- $ S2 — Switch -Two Way
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PROJECT:

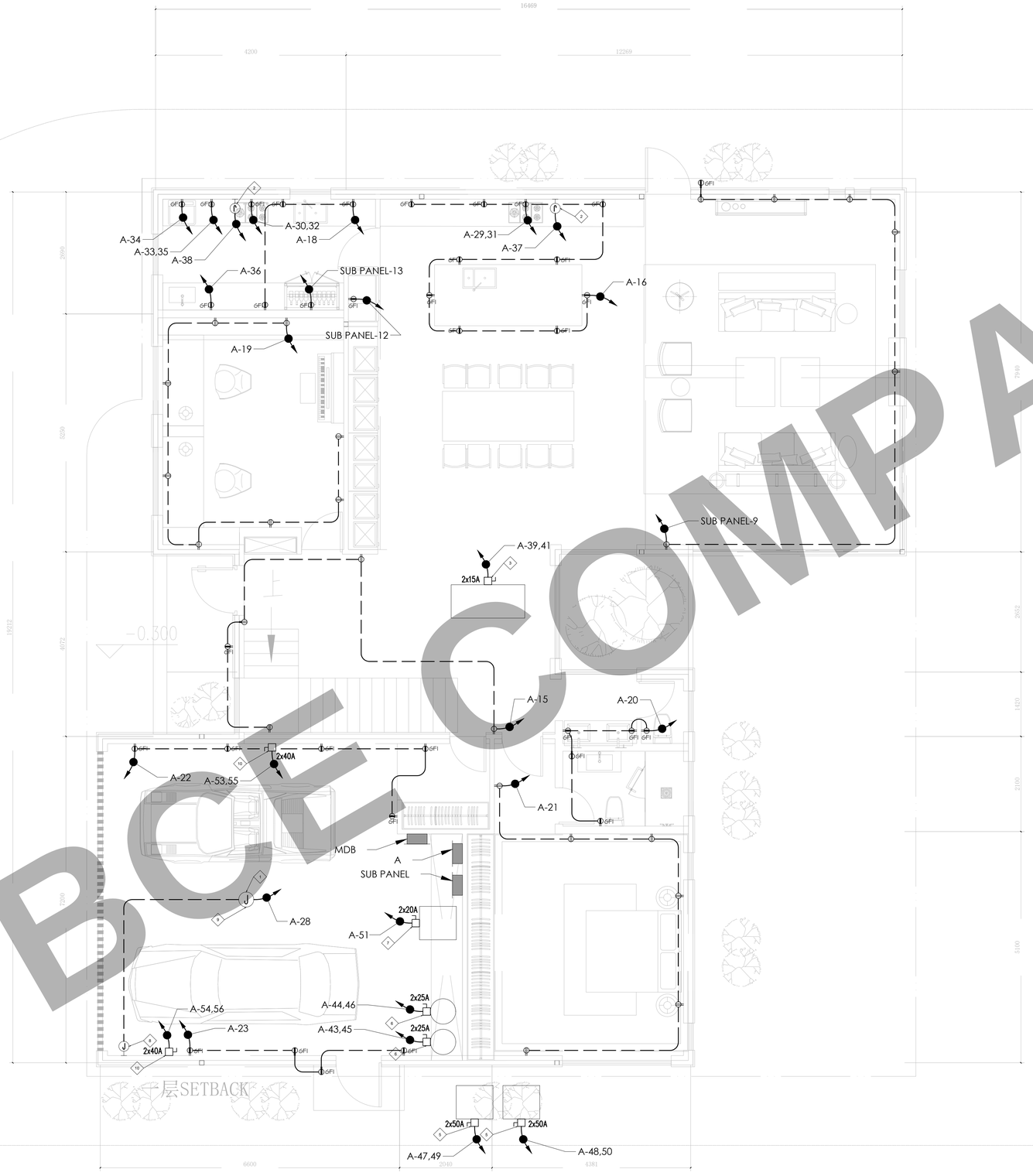
DAPHNE CO

TITLE:

SECOND FLOOR LIGHTING LAYOUT

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

DRAWING NO.	REV.
E2.02	



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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

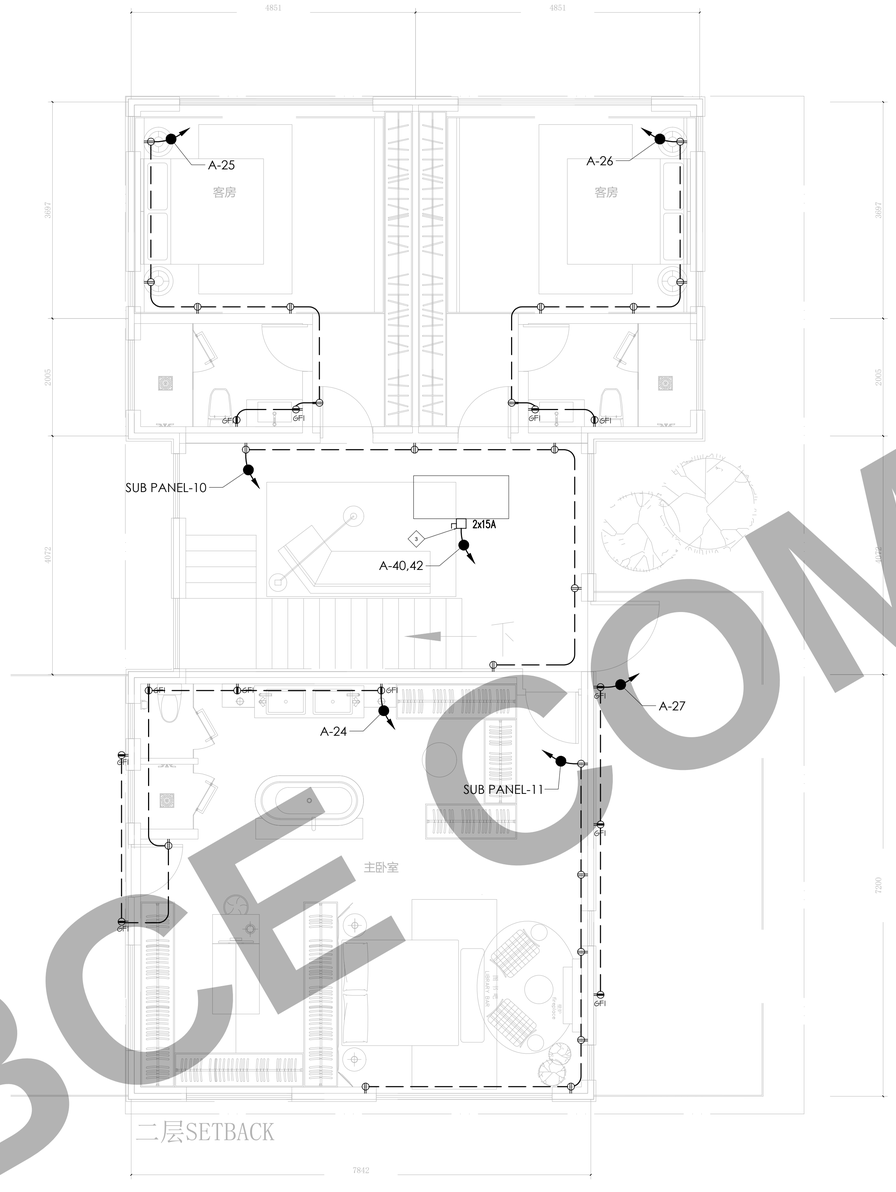
DAPHNE CO

TITLE:

FIRST FLOOR POWER LAYOUT

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

DRAWING NO.	REV.
E3.01	



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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

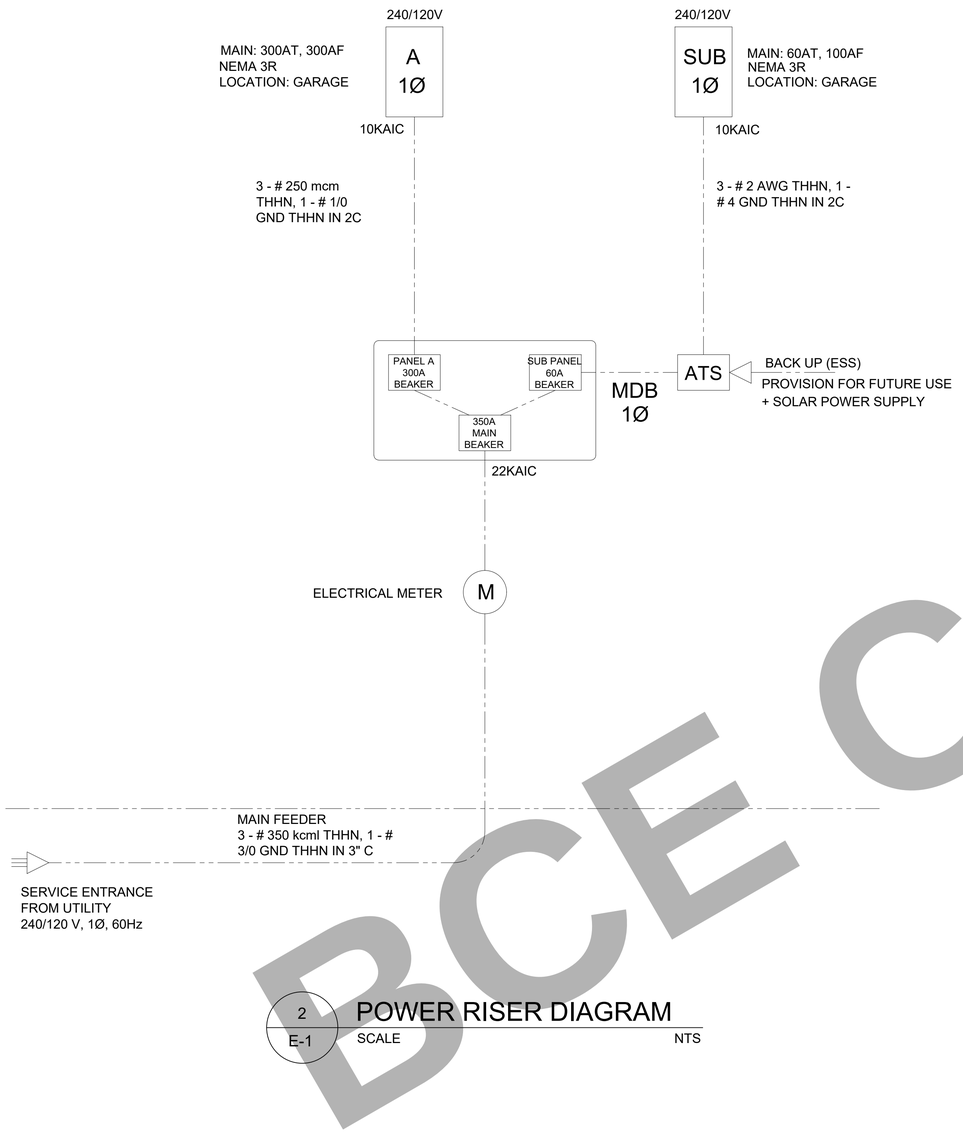
DAPHNE CO

TITLE:

SECOND FLOOR POWER LAYOUT

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

DRAWING NO.	REV.
E3.02	



2 POWER RISER DIAGRAM

E-1 SCALE NTS

Branch Panel: A
Location: GARAGE
Supply From: ELECTRICAL METER
Mounting:Surface

Enclosure Type 1

Volts: 120/240 Single
Phases: 1
Wires: 3

Feeder Size: 3-#250 mcm THHN, 1-#1/0 GND THHN IN 2-1/2" PVC

A.I.C Rating: 10kA
Mains Type: MCCB
Mains Rating: 300A

CKT	CIRCUIT DESCIRPTION	TRIP	POLES	A		B		POLES	TRIP	CIRCUIT DESRIPTION	CKT
1	LIGHTING GUEST BEDROOM	15A	1	400	400			1	15A	LIGHTING WC + GUEST BATHROOM	2
3	LIGHTING DINING AREA 2	15A	1			400	400	1	15A	LIGHTING GARAGE	4
5	LIGHTING LIVING AND DINING AREA LED	15A	1	350	300			1	15A	LIGHTING KITCHEN	6
7	LIGHTING GAMING ROOM	15A	1			300	300	1	15A	LIGHTING MASTER CLOSET	8
9	LIGHTING BALCONY 1	15A	1	300	300			1	15A	LIGHTING BATHROOM 2	10
11	LIGHTING BALCONY 2	15A	1			300	350	1	15A	LIGHTING BEDROOM 1	12
13	LIGHTING BATHROOM 1	15A	1	300	350			1	15A	LIGHTING BEDROOM 2	14
15	RECEPTACLES ENTRANCE	20A	1			500	600	1	20A	RECEPTACLES DINING AREA	16
17	SPARE	20A	1	0	600			1	20A	RECEPTACLES KITCHEN	18
19	RECEPTACLES GAMING ROOM	20A	1			600	500	1	20A	RECEPTACLES GUEST BATHROOM + WC	20
21	RECEPTACLES GUEST BEDROOM	20A	1	500	500			1	20A	RECEPTACLES GARAGE 1	22
23	RECEPTACLES GARAGE 2	20A	1			500	600	1	20A	RECEPTACLES MASTER BATHROOM + CLOSET	24
25	RECEPTACLES BEDROOM 1	20A	1	600	500			1	20A	RECEPTACLES BEDROOM 2	26
27	RECEPTACLES BALCONY	20A	1			500	500	1	20A	GARAGE AUTOMATIC DOOR	28
29	OVEN 1	50A	2	4000	4000			2	50A	OVEN 2	30
31						4000	4000				32
33	DRYER	30A	2	2500	1500			1	20A	WASHER	34
35						2500	1500	1	20A	DISHWASHER	36
37	KEF-01	20A	1	300	300			1	20A	KEF-02	38
39	IDU-01	15A	2			500	500	2	15A	IDU-02	40
41				500	500						42
43	HP.W.H.01	25A	2			2500	2500	2	25A	HP.W.H.02	44
45				2500	2500						46
47	ODU-01	50A	2			4000	3200	2	50A	ODU-02	48
49				4000	3200						50
51	HRV-01	20A	1			300	0	1	20A	SPARE	52
53	EV CAR CHARGER	40A	2	4000	4000			2	40A	EV CAR CHARGER	54
55						4000	4000				56
57	SPARE	15A	1	0	0			1	20A	SPARE	58
	TOTAL CONNECTED LOAD (VA)			31200		31850					
	TOTAL CONNECTED CURRENT (A)			260		265					

Legend:

Load Classification	Connected Load (VA)	Demand Factor	Estimated Demand (VA)	Panels Totals	
Lighting - Dwelling Unit	4750	70.00%	3325		
Receptacle	7000	60.00%	4200	**Total Conn. Load (kVA):**	79.05
Kitchen Equipment Dwelling Unit	24600	70.00%	17220	**Total Est. Demand (kVA):**	67.445
Mechanical Equipment	42700	100.00%	42700	**Total Conn. Current Per Phase(A):**	329.375
				Total Est. Demand Current Per Phase (A):	281.0208

Notes

Branch Panel: SUB PANEL
Location: GARAGE
Supply From: ELECTRICAL METER
Mounting:Surface

Enclosure Type 1

Volts: 120/240 Single
Phases: 1
Wires: 3

Feeder Size: 3-# 2 AWG THHN, 1-# 4 GND THHN IN 2-1/2" PVC

A.I.C Rating: 10kA
Mains Type: MCCB
Mains Rating: 50A

CKT	CIRCUIT DESCIRPTION	TRIP	POLES	A		B		POLES	TRIP	CIRCUIT DESRIPTION	CKT
1	LIGHTING ENTRANCE	15A	1	350	350			1	15A	LIGHTING DINING AREA 1	2
3	LIGHTING LIVING AREA	15A	1			350	300	1	15A	LIGHTING LIVING AREA SECOND FLOOR	4
5	LIGHTING MASTER BEDROOM	15A	1	350	350			1	15A	LIGHTING MASTER BATHROOM	6
7	SMOKE/CARBON DETECTOR'S FIRST FLOOR	15A	1			300	300	1	15A	SMOKE/CARBON DETECTOR'S SECOND FLOOR	8
9	RECEPTACLES LIVING AREA	20A	1	600	500			1	20A	RECEPTACLES LIVING AREA SECOND AREA	10
11	RECEPTACLES MASTER BEDROOM	20A	1			600	600	1	20A	FRIDGE	12
13	WINE COOLER	20A	1	600	0			1	20A	SPARE	14
15	SPARE	20A	1			0	0	1	20A	SPARE	16
	TOTAL CONNECTED LOAD (VA)			3100		2450					
	TOTAL CONNECTED CURRENT (A)			26		20					

Legend:

Load Classification	Connected Load (VA)	Demand Factor	Estimated Demand (VA)	Panels Totals	
Lighting - Dwelling Unit	2650	100.00%	2650		
Receptacle	1700	60.00%	1020	**Total Conn. Load (kVA):**	5.55
Kitchen Equipment Dwelling Unit	1200	70.00%	840	**Total Est. Demand (kVA):**	4.51
Mechanical Equipment	0	100.00%	0	**Total Conn. Current Per Phase(A):**	23.125
				Total Est. Demand Current Per Phase (A):	18.79167

Notes

CLIENT:

ADDRESS:

CONFIDENTIALITY STATEMENT:

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

NOTES:

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

REV. NO.	DESCRIPTION	DATE	BY

PROJECT:
DAPHNE CO

TITLE:
SINGLE LINE DIAGRAM & PANEL BOARD SCHEDULE

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

DRAWING NO.	REV.
E4.01	

PLUMBING SPECIFICATIONS

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

GENERAL NOTES

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

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

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

PLUMBING LEGEND

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

PLUMBING / GENERAL NOTES

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

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

SHOWERS AND TUB-SHOWERS COMBINATIONS IN ALL BUILDINGS SHALL BE PROVIDED WITH INDIVIDUAL CONTROL VALVES OF THE PRESSURE BALANCE, THERMOSTATIC, OR COMBINATION OF BOTH THAT PROVIDE SCALD AND THERMAL SHOCK PROTECTION. VALVES SHALL BE ADJUSTED TO DELIVER A MAXIMUM MIXED WATER
SETTING OF 120 DEGREES FAHRENHEIT. THE WATER HEATER THERMOSTAT SHALL NOT BE CONSIDERED A SUITABLE CONTROL FOR MEETING THIS PROVISION.
VERIFY AND WHERE WATER PRESSURE EXCEEDS 80 PSI AN APPROVED PRESSURE REGULATOR PRECEDED BY AN ADEQUATE STRAINER SHALL BE INSTALLED
1-INSTALL TEMPERATURE AND PRESSURE RELIEF VALVE WITH MINIMUM 34" DRAIN PIPE AND TERMINATE TO THE EXTERIOR OF THE BUILDING OVER WINDOW, DOOR OR VISIBLE LOCATION. DISCHARGE FROM A RELIEF VALVE INTO A WATER HEATER PAN SHALL BE PROHIBITED
.
2-PROVIDE (ON THE PLANS) A GAS PIPING DIAGRAM OF THE GAS PIPING SYSTEM THAT INCLUDES ALL PIPE SIZES, PIPE LENGTHS AND BTU RATINGS.

3-SUBMIT GAS LOAD CALCULATIONS IN ACCORDANCE WITH CPC TABLE 12-8 TO VERIFY THE PIPE SIZES ARE ADEQUATE FOR THE MAXIMUM DELIVERY CAPACITY OF CUBIC FEET OF GAS PER HOUR.
4- A WHOLE HOUSE HAS TEST IS REQUIRED UPON COMPLETION OF THE INSTALLATION, ALTERATION, OR REPAIR OF ANY GAS PIPING.
THE CITY SHALL BE NOTIFIED WHEN GAS PIPING IS READY FOR INSPECTION.
5- 2 GPM SHOWER FIXTURE, MAX.1.5 GPM BATHROOM FAUCET, MAX. 2 GPM KITCHEN FAUCET, AND MAX 1.28 WATER CLOSET TO CONFORM TO CITY GREEN REQUIREMENTS.
BATHROOMS: PROVIDE AN EXHAUST FAN (AT LEAST 50 CFM) DUCTED TO THE OUTSIDE (MINIMUM 4" DIAMETER FLEX DUCT WITH A MAXIMUM LENGTH OF 70')WITH A MINIMUM VENTILATION RATE OF 100 CFM, IDENTIFY THE REQUIREMENT FOR A BACKDRAFT DAMPER ON THE DUCT, AN ENERGY STAR COMPLIANT EXHAUST FAN THAT IS CONTROLLED BY A HUMIDITY SENSOR THAT IS CAPABLE OF BEING ADJUSTED BETWEEN ≤ 50-PERCENT TO 80-PERCENT HUMIDITY; AND A SEPARATE SWITCH FROM THE LIGHT UNLESS THE FAN IS ALLOWED TO OPERATE WITH THE LIGHT SWITCHED OFF.

6-NOTE THAT ALL PLUMBING VENTS SHALL TERMINATE NOT LESS THAN 6" ABOVE ROOF NOR LESS THAN 1' FROM ANY VERTICAL SURFACE. VENTS SHALL TERMINATE NOT LESS THAN 10" FROM OR 3' ABOVE ANY WINDOW, DOOR OPENING AIR INTAKE, OR VENT SHAFT NOR 3' FROM LOT LINE.
IF WATER PRESSURE EXCEEDS 80 PSI, AND EXPANSION TANK AND AN APPROVED PRESSURE REGULATOR SHALL BE INSTALLED.
NON-REMOVABLE BACK FLOW PRE-VENTER OR BIBB-TYPE VACUUM BREAKER WILL BE INSTALLED ON ALL EXTERIOR HOSE BIBS. HOT WATER RE-CIRCULATING SYSTEM IS INSTALLED, THE ENTIRE LENGTH OF HOT WATER PIPES SHALL BE INSULATED.

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

WATER SAVING STANDARDS.

THE WATER SAVING PERFORMANCE STANDARDS FOR A PLUMBING FIXTURE ARE THOSE ESTABLISHED BY THE AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI), CURRENT REVISION, OR THE FOLLOWING STANDARDS, WHICHEVER ARE THE MORE RESTRICTIVE
1-THE MAXIMUM FLOW FROM A SINK OR LAVATORY FAUCET OR A FAUCET AERATOR SHALL NOT EXCEED 0.5 GALLONS OF WATER PER MINUTE AT A PRESSURE OF 60 POUNDS PER SQUARE INCH WHEN TESTED IN ACCORDANCE WITH ANSI TESTING PROCEDURES. 2- THE MAXIMUM VOLUME OF WATER PER FLUSH FROM A TOILET SHALL NOT EXCEED AN AVERAGE OF 1 28 GALLONS WHEN TESTED IN ACCORDANCE WITH ANSI TESTING PROCEDURES
3- THE MAXIMUM VOLUME OF WATER PER FLUSH FROM A URINAL AND THE ASSOCIATED FLUSH VALVE, IF ANY, SHALL NOT EXCEED AN AVERAGE OF ONE GALLON WHEN TESTED IN ACCORDANCE WITH ANSI TESTING PROCEDURES

SPECIAL NOTICE TO CONTRACTORS

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

PLUMBING LIST OF DRAWINGS (LoD):

SHEET TAG	TITLE	SCALE
P 0.00	PLUMBING GENERAL NOTES AND SPECIFICATIONS.	NTS
P 0.01	PLUMBING CODE CHECKING.	NTS
P 1.01	MAIN FLOOR - WATER SUPPLY LAYOUT.	1/4"=1'-0"
P 1.02	SECOND FLOOR - WATER SUPPLY LAYOUT.	1/4"=1'-0"
P 2.01	MAIN FLOOR - SEWER LAYOUT.	1/4"=1'-0"
P 2.02	SECOND FLOOR - SEWER LAYOUT.	1/4"=1'-0"
P 3.01	MAIN FLOOR - GAS LAYOUT.	1/4"=1'-0"
P 4.01	GAS CODE CHECKING AND ISOM. RISER DIAGRAM.	NTS
P 5.01	HOT WATER CALCULATION AND DATA SHEETS.	NTS
P 6.01	PLUMBING GENERAL DETAILS.	NTS

CLIENT:

ADDRESS:
-

NOTES:

1. ALL DIMENSIONS HEREIN ARE IN IMPERIAL UNITS UNLESS STATED OTHERWISE.
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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:
DAPHNE CO

TITLE:
PLUMBING GENERAL NOTES AND SPECIFICATIONS

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

DRAWING NO.: **P 0.00**

REV.:

CALIFORNIA PLUMBING CODE CHECKING:

PIPE SUPPORTS:

TABLE 313.3
HANGERS AND SUPPORTS

MATERIALS	TYPES OF JOINTS	HORIZONTAL	VERTICAL
Cast	Lead and Oakum	5 feet, except 10 feet where 10 foot length are installed[1, 2, 3]	Base and each floor, not to exceed 15 feet
	Compression Gasket	Every other joint, unless over 4 feet then support each joint[1, 2, 3]	Base and each floor, not to exceed 15 feet
Cast-Iron Hubless	Shielded Coupling	Every other joint, unless over 4 feet then support each joint[1, 2, 3, 4]	Base and each floor, not to exceed 15 feet
Copper & Copper Alloys	Soldered, Brazed, Threaded, or Mechanical	1 ¼ inches and smaller, 6 feet; 2 inches and larger, 10 feet	Each floor, not to exceed 10 feet[5]
Steel Pipe for Water or DWV	Threaded or Welded	¾ inch and smaller, 10 feet; 1 inch and smaller, 12 feet	Every floor, not to exceed 25 feet[5]
Steel Pipe for Gas	Threaded or Welded	½ inch, 6 feet; ¾ inch and 1 inch, 8 feet; 1 ¼ inches and larger, 10 feet	½ inch, 6 feet; ¾ inch and 1 inch, 8 feet; 1 ¼ inches every floor level
Schedule 40 PVC and ABS DWV	Solvent Cemented	All sizes, 4 feet; allow for expansion every 30 feet[3]	Base and each floor; provide mid-story guides; provide for expansion every 30 feet
CPVC	Solvent Cemented	1 inch and smaller, 3 feet; 1 ¼ inches and larger, 4 feet	Base and each floor; provide mid-story guides
CPVC-AL-CPVC	Solvent Cemented	½ inch, 5 feet; ¾ inch, 65 inches; 1 inch, 6 feet	Base and each floor; provide mid-story guides
Lead	Wiped or burned	Continuous Support	Not to exceed 4 feet
Steel	Mechanical	In accordance with standards acceptable to the Authority Having Jurisdiction	
PEX	Cold Expansion, Insert and Compression	1 inch and smaller, 32 inches; 1 ¼ inches and larger, 4 feet	Base and each floor; provide mid-story guides
PEX-AL-PEX	Metal Insert and Metal compression	½ inch, ¾ inch, 1 inch — All sizes 98 inches	Base and each floor; provide mid-story guides
PE-AL-PE	Metal Insert and Metal compression	½ inch, ¾ inch, 1 inch — All sizes 98 inches	Base and each floor; provide mid-story guides
PE-RT	Insert and Compression	1 inch and smaller, 32 inches; 1 ¼ inches and larger, 4 feet	Base and each floor; provide mid-story guides
Polypropylene (PP)	Fusion weld (socket, but, saddle, electrofusion), threaded (metal threads only), or mechanical	1 inch and smaller, 32 inches; 1 ¼ inches and larger, 4 feet	Base and each floor; provide mid-story guides

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

Notes:

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

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

[3] Support at each horizontal branch connection.

[4] Hangers shall not be placed on the coupling.

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

DRAINAGE:

719.0 Cleanouts.

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

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

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

721.0 Location.

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

706.0 Changes in Direction of Drainage Flow.

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

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

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

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

Exceptions

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

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

708.0 Grade of Horizontal Drainage Piping.

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

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

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

WATER CONVERSION & WATER CONSUMPTION:

WATER CONSERVING PLUMBING FIXTURES AND FITTINGS	
Plumbing fixtures and fittings shall comply with the following: (2022 CGBSC, California Plumbing Code (CPC) and Table 1401.1 of the CPC)	
4303.1.1	All Water closets: ≤1.28 gal/flush Tank type water closet shall be certified to the performance criteria of the U.S. EPA WaterSense Specification for Tank-type Toilets.
4303.1.2	Urinals: ≤0.5 gal/flush
4303.1.3.1	Single showerheads: ≤1.8 gpm @ 80 psi
4303.1.3.2	Multiple showerheads: combined flow rate of all showerheads and/or other shower outlets controlled by a single valve shall not exceed 1.8 gpm @ 80 psi or only one shower outlet is to be in operation at a time.
4303.1.4.1	Residential Lavatory Faucets: 0.8 gpm @ 20 psi ≤ **Flow Rate** ≤1.2 gpm @ 60 psi
4303.1.4.2	Lavatory Faucets in common and Public Use Areas (outside of dwellings or sleeping units) in residential buildings: ≤0.5 gpm @ 60 psi
4303.1.4.3	Metering Faucets: ≤0.25 gallons per cycle
4303.1.4.4	Kitchen Faucets: ≤1.8 gpm @ 60 psi; Maximum Flow Rate of 1.8 gpm
PLUMBING FIXTURE CERTIFICATION REQUIRED: A plumbing fixture certification must be completed and signed by either a licensed general contractor, or a plumbing subcontractor, or the building owner certifying the flow rate of the fixtures installed. A copy of the certification can be obtained from the development services department.	

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

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

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

WATER HEATER:

501.1 Applicability.
The minimum capacity for storage water heaters shall be in accordance with the first-hour rating listed in Table 501.1(2).

Number of Bathrooms	1 to 1.5			2 to 2.5				3 to 3.5			
Number of Bedrooms	1	2	3	2	3	4	5	3	4	5	6
First hour rating,[2] Gallons	38	49	49	49	62	62	74	62	74	74	74

For SI units: 1 gallon = 3.785 L.

Notes:

[1] The first-hour rating is found on the "Energy Guide" label.

[2] Solar water heaters shall be sized to meet the appropriate first-hour rating as shown in the table.

504.0 Water Heater Requirements.

504.1 Location. Water heater installations in bedrooms and bathrooms shall comply with one of the following [NFPA54:10.27.1]:

(1) Fuel-burning water heaters shall be permitted to be installed in a closet located in the bedroom or bathroom provided the closet is equipped with a listed, gasketed door assembly and a listed self-closing device. The self- closing door assembly shall meet the requirements of Section 504.1.1. The door assembly shall meet the requirements of Section 504.1.2. Combustion air for such installations shall be obtained from the outdoors in accordance with Section 506.4. The closet shall be for the exclusive use of the water heater.

(2) Water heater shall be of the direct vent type. [NFPA 54: 10.27.1(2)]

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

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

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

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

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

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

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

VENT:

906.0 Vent Termination.

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

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

909.0 Special Venting for Island Fixtures.

909.1 General. Traps for island sinks and similar equipment shall be roughed in above the floor and shall be permitted to be vented by extending the vent as high as possible, but not less than the drainboard height and then returning it down- ward and connecting it to the horizontal sink drain immediately downstream from the vertical fixture drain. The return vent shall be connected to the horizontal drain through a wye-branch fitting and shall, in addition, be provided with a foot vent taken off the vertical fixture vent by means of a wye branch immediately below the floor and extending to the nearest partition and then through the roof to the open air, or shall be permitted to be connected to other vents at a point not less than 6 inches (152 mm) above the flood-level rim of the fixtures served. Drainage fittings shall be used on the vent below the floor level, and a slope of not less than ¼ inch per foot (20.8 mm/m) back to the drain shall be maintained. The return bend used under the drainboard shall be a one-piece fitting or an assembly of a 45 degree (0.79 rad), a 90 degree (1.57 rad), and a 45 degree (0.79 rad) elbow in the order named. Pipe sizing shall be as elsewhere required in this code.

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

WATER SUPPLY:

TABLE 611.4
SIZING OF RESIDENTIAL WATER SOFTENERS[4]

REQUIRED SIZE OF SOFTENER CONNECTION (inches)	NUMBER OF BATHROOM GROUPS SERVED[1]
¾	up to 2[2]
1	up to 4[3]

For Si units: 1 inch = 25 mm

Notes:

[1] Installation of a kitchen sink and dishwasher, laundry tray, and automatic clothes washer permitted without additional size increase.

[2] An additional water closet and lavatory permitted.

[3] Over four bathroom groups, the softener size shall be engineered for the specific installation.

[4] See also Appendix A, Recommended Rules for Sizing the Water Supply Systems, and Appendix C, Alternate Plumbing Systems, for alternate methods of sizing water supply systems.

A backflow preventer shall not be required to separate a stand-alone sprinkler syste from the water distribution system where the sprinkler system material is in accordance with the requirements of Section 604.0.

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

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

FIRESTOP PROTECTION

1404.0 Combustible Piping Installations.

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

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

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

1405.0 Noncombustible Piping Installations.

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

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

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

SIZE OF PIPE (inches)	1 ¼	1 ½	2	3	4	5	6	8	10	12
Maximum Units Drainage Piping[1]										
Vertical	1	2[2]	16[3]	48[4]	256	600	1380	3600	5600	8400
Horizontal	1	1	8[3]	35[4]	216[5]	428[5]	720[5]	2640[5]	4680[5]	8200[5]
Maximum Length Drainage Piping										
Vertical	45	65	85	212	300	390	510	750	–	–
Horizontal										
Vent Piping Horizontal and Vertical [6]										
Maximum Units	1	8[3]	24	84	256	600	1380	3600	–	–
Maximum Lengths, (feet)	45	60	120	212	300	390	510	750		

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

Notes:

[1] Excluding trap arm.

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

[3] Except for six-unit traps or water closets.

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

[5] Based on ¼ inch per foot (20.8 mm/m) slope, For ⅛ of an inch per foot (10.4 mm/m) slope, multiply horizontal fixture units by a factor of 0.8.

[6] The diameter of an individual vent shall be not less than 1 ¼ inches (32 mm) nor less than one-half the diameter of the drain to which it is connected. Fixture unit load values for drainage and vent piping shall be computed from Table 702.1 and Table 702.2(2). Not to exceed one third of the total permitted length of a vent shall be permitted to be installed in a horizontal position. Where vents are increased one pipe size for their entire length, the maximum length limitations specified in this table do not apply. This table is in accordance with the requirements of Section 901.3.

CLIENT:

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REV. NO.	DESCRIPTION	DATE	BY

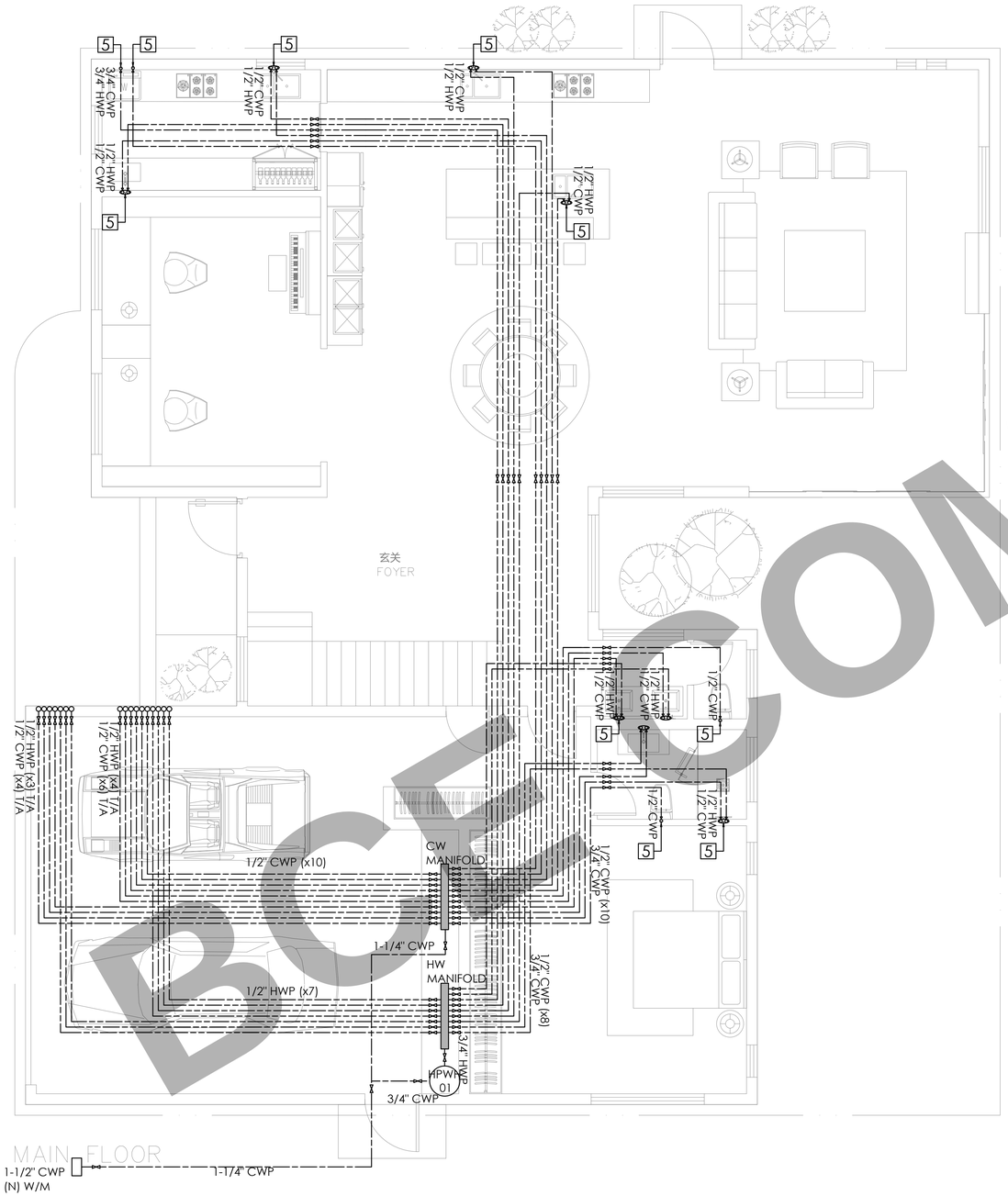
PROJECT:
DAPHNE CO

TITLE:
PLUMBING CODE CHECKING.

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

DRAWING NO.
P 0 . 0 1

REV.



GENERAL NOTES:

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

Special Notes:

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

WATER SUPPLY SHEET NOTES:

1. DCW, DHW RISE TO HIGH LEVEL.
2. DCW & DHW DROP IN WALL.
3. DCW FROM BELOW GRADE UP IN WALL.
4. DHW DOWN TO BELOW GRADE.
5. DCW/DHW/RHW TO FIXTURE CONNECTION.

FROM 2022 CPC - TABLE 610.3:
WATER SUPPLY FIXTURE UNITS LOADS:

FIXTURE	W.S.F.U	QTY.	TOTAL W.S.F.U
KITCHEN SINK	1.5	4	6.0
BATH TUB	1.5	4	6.0
WATER CLOSET	2.5	5	12.5
LAVATORY	1.0	7	7.0
WASHING MACHINE	1.5	1	1.5
TOTAL BUILDING WSFU =			**33.0**

AS PER 2022CPC -TABLE :610.4
- LONGEST RUN IS APPROX.200FT
- W/M PRESSURE RANGE: 30-40PSI
- MINIMUM MAIN PIPE SIZE: 1-1/4"
- MINIMUM WATER METER SIZE: 1-1/2"

SCHEDULE No. 1
HEAT PUMP WATER HEATER SCHEDULE

TAG	HPWH-01
LOCATION	GARAGE
MANUFACTURER	SANCO2
MODEL	SAN-43SSAQA
TYPE	HEAT PUMP
RATED STORAGE (GAL.)	43
GPH (@ 90°F RISE)	69
UEF	3.1
POWER SUPPLY	208/230-1-60
MCA (A)	7.2
APPROX. WEIGHT (lbs)	88
DIAMETER (in.)	24.5
HEIGHT (in)	38-1/8
WATER CONNECTION SIZE	3/4"

CLIENT:

ADDRESS:

-

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REV. NO.	DESCRIPTION	DATE	BY

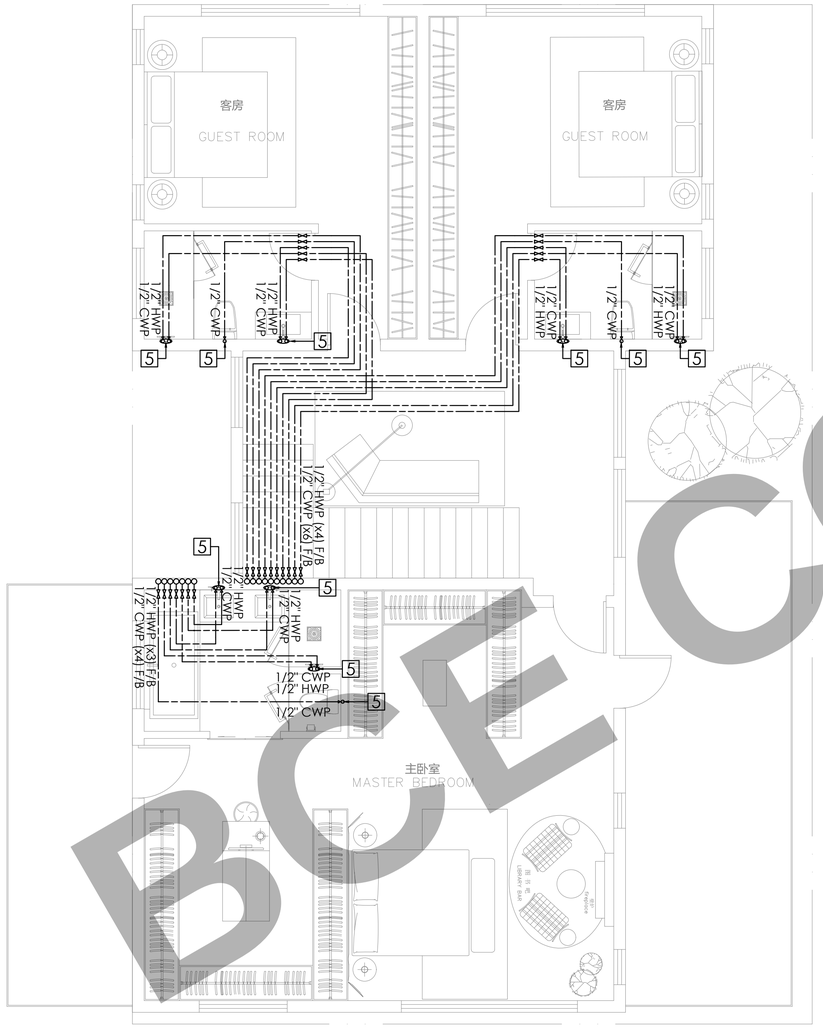
PROJECT:
DAPHNE CO

TITLE:
MAIN FLOOR WATER SUPPLY LAYOUT.

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

DRAWING NO.
P 1 . 0 1

REV.



SECOND FLOOR

GENERAL NOTES:

1. PRIOR TO PERFORMING WORK, CONTRACTOR TO COORDINATE EXACT PIPE SIZES, INVERT ELEVATIONS, PRESSURES FOR LOCATIONS OF ANY SEWER, WATER PIPING AND WATER METER WITH CIVIL UTILITIES DRAWINGS, AND ANY OTHER ENGINEER AS APPLICABLE.
2. PRIOR TO PERFORMING WORK, CONTRACTOR TO COORDINATE PIPE ROUTING WITH ALL OTHER TRADES AND EXISTING FIELD CONDITIONS.
3. REFER TO MECHANICAL PLANS FOR PLUMBING SPECIFICATION OF MATERIAL, INSULATION AND INSTALLATION REQUIREMENTS.
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7. ALL PLUMBING FIXTURES SHALL BE OF WATER CONSERVATION TYPE AS REQUIRED BY LOCAL AUTHORITY HAVING JURISDICTION.
8. ALL WATER PIPING SHALL BE INSTALLED ON INTERIOR SIDE OF THE BUILDING WALL INSULATION.
9. CONTRACTOR SHALL PROVIDE VALVES LOCATED ABOVE LAY-IN CEILING OR 24"x24" CEILING ACCESS PANEL COORDINATE FINAL LOCATION AND SIZE WITH ARCHITECT. PROVIDE BALANCING VALVES FOR HOT WATER RETURN SYSTEM AS REQUIRED.
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12. VENTS THAT TERMINATE AT THE ROOF SHALL BE A MINIMUM OF 10' FROM ANY FRESH AIR INTAKE.
13. REFER TO THE PLUMBING DIAGRAMS FOR GUIDANCE OF INSTALLATION INTENT. CONTRACTOR IS TO PROVIDE ALL COMPONENTS NECESSARY TO MEET THE DESIGN INTENT, WHETHER SHOWN IN DIAGRAM OR NOT.

WATER SUPPLY SHEET NOTES:

1 — DCW, DHW RISE TO HIGH LEVEL.
2 — DCW & DHW DROP IN WALL.
3 — DCW FROM BELOW GRADE UP IN WALL.
4 — DHW DOWN TO BELOW GRADE.
5 — DCW/DHW/RHW TO FIXTURE CONNECTION.

CLIENT:

ADDRESS:

-

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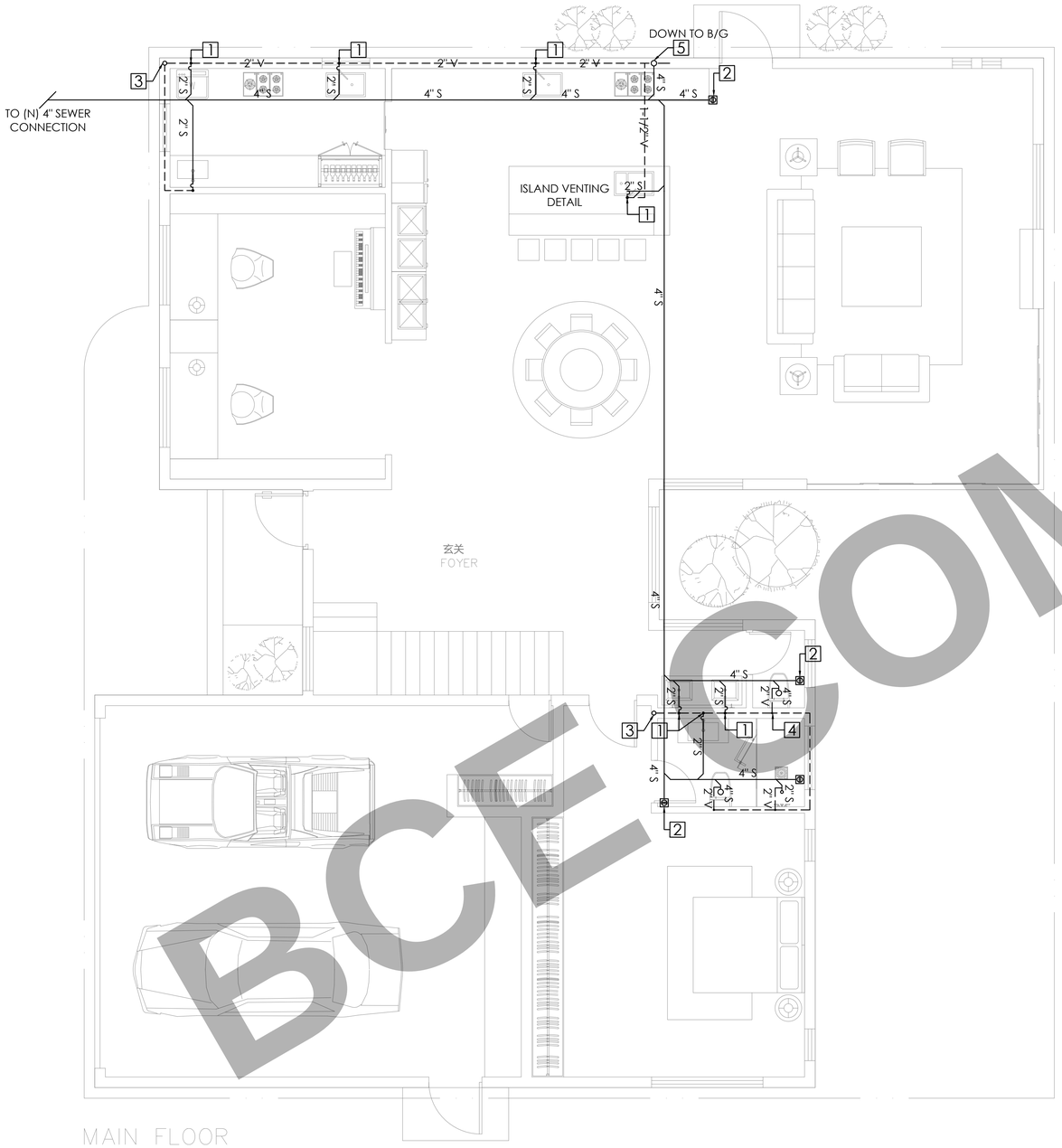
REV. NO.	DESCRIPTION	DATE	BY

PROJECT:
DAPHNE CO

TITLE:
SECOND FLOOR WATER SUPPLY LAYOUT.

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

DRAWING NO.	REV.
P 1 . 0 2	



MAIN FLOOR

GENERAL NOTES:

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SANITARY SHEET NOTES:

1. WASTE DROP AND 2" VENT RISE.
2. 4" FLOOR CLEAN-OUT.
3. 3" VENT STACK TO ABOVE.
4. 2" VENT RISE TO HIGH LEVEL.
5. 4" SOIL DROP FROM ABOVE.
6. WASTE DROP
7. SOIL DROP AND 4"VENT RISE.
8. SOIL DROP TP BELOW

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

FIXTURE	D.F.U	QTY.	TOTAL D.F.U
KITCHEN SINK	2.0	4	8.0
BATH TUB	2.0	4	8.0
WATER CLOSET	3.0	5	15.0
LAVATORY	1.0	7	7.0
WASHING MACHINE	2.0	1	2.0
TOTAL BUILDING DFU =			**40.0**

CLIENT:

ADDRESS:

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REV. NO.	DESCRIPTION	DATE	BY

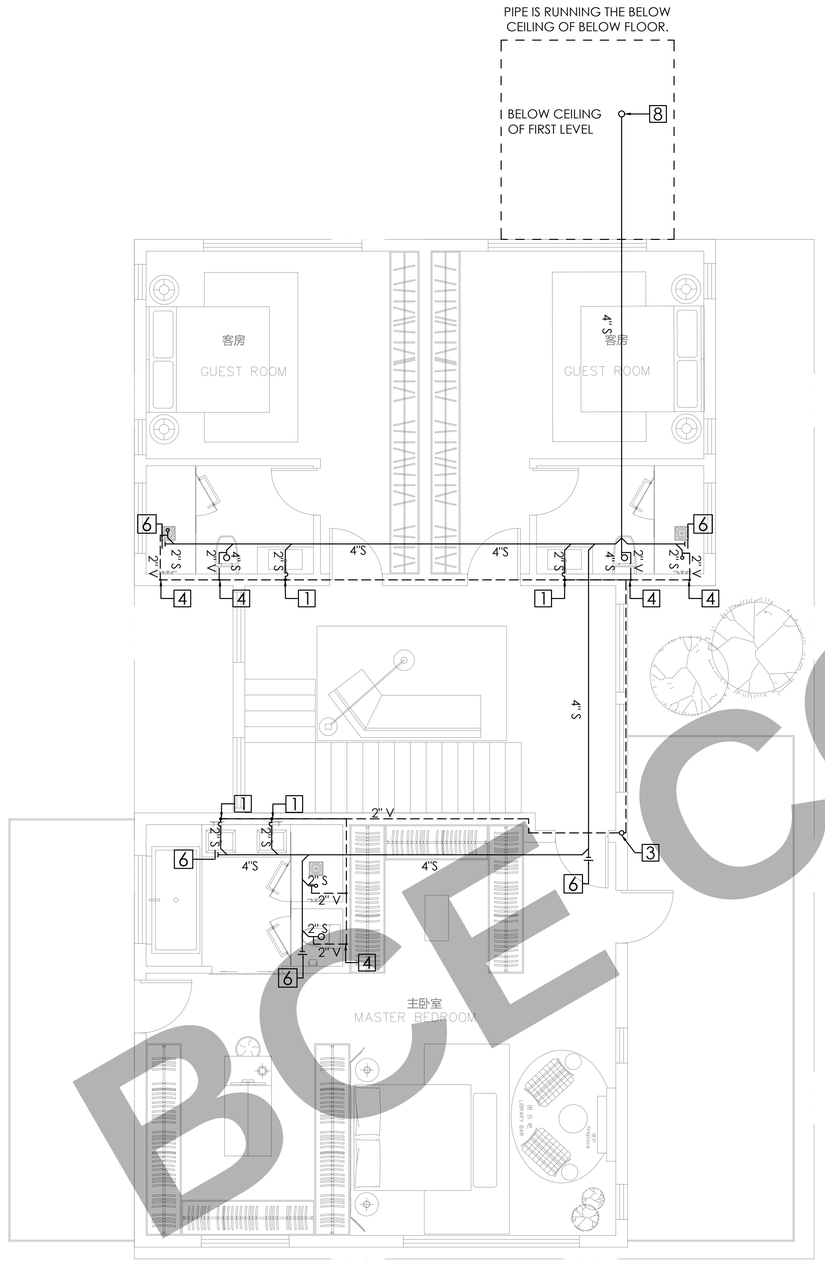
PROJECT:
DAPHNE CO

TITLE:
MAIN FLOOR SANITARY LAYOUT.

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

DRAWING NO.
P 2 . 0 1

REV.



SECOND FLOOR

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3 — 3" VENT STACK TO ABOVE.
4 — 3" FLOOR DRAIN.
5 — 4" SOIL DROP FROM ABOVE.
6 — CEILING CLEAN OUT
7 — SOIL DROP AND 4"VENT RISE.
8 — SOIL DROP TO BELOW

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

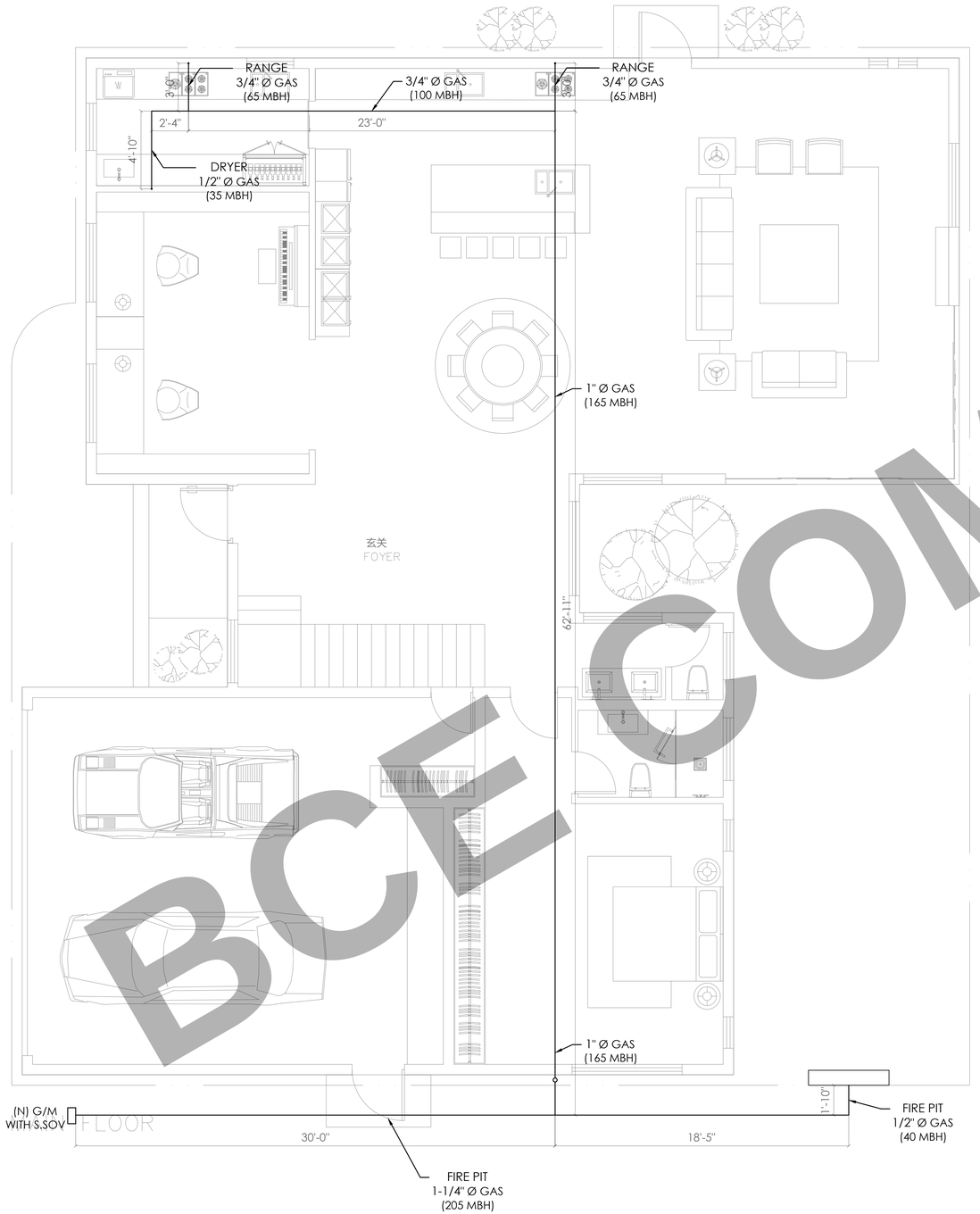
DAPHNE CO

TITLE:

SECOND FLOOR SANITARY LAYOUT.

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

DRAWING NO.	REV.
P 2 . 0 2	



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14. EACH VENT PIPE OR STACK SHALL EXTEND THROUGH ITS FLASHING AND SHALL TERMINATE VERTICALLY NOT LESS THAN 6 INCHES (152 MM) ABOVE THE ROOF NOR LESS THAN 1 FOOT (305 MM) FROM A VERTICAL SURFACE.
15. EACH VENT SHALL TERMINATE NOT LESS THAN 10 FEET (3048 MM) FROM, OR NOT LESS THAN 3 FEET (914 MM) ABOVE, AN OPENABLE WINDOW, DOOR, OPENING, AIR INTAKE, OR VENT SHAFT, OR NOT LESS THAN 3 FEET (914 MM) IN EVERY DIRECTION FROM A LOT LINE, ALLEY AND STREET EXCEPTED.

CLIENT:

ADDRESS:

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

DAPHNE CO

TITLE:

MAIN FLOOR GAS LAYOUT.

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

DRAWING NO.	REV.
P 3 . 0 1	

CALIFORNIA GAS CODE CHECKING:

GAS:

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

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

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

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

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

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

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

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

1210.0 Gas Piping Installation.

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

1212.6 Appliance Shutoff Valves and Connections.
Each appliance connected to a piping system shall have an accessible, approved manual shutoff valve with a non-displaceable valve member or a listed gas convenience outlet.
Appliance shutoff valves and convenience outlets shall serve a single appliance only. The shutoff valve shall be located within 6 feet (1829 mm) of the appliance it serves. Where a connector is used, the valve shall be installed upstream of the connector. A union or flanged connection shall be provided downstream from the valve to permit removal of appliance controls. Shutoff valves serving decorative appliances shall be permitted to be installed in fireplaces if listed for such use.
[NFPA 54:9.6.5, 9.6.5.1(A)(B)]

Exceptions:

(1) Shutoff valves shall be permitted to be accessible located inside or under an appliance where such appliance is removed without removal of the shutoff valve.

(2) Shutoff valves shall be permitted to be accessibly located inside wall heaters and wall furnaces listed for recessed installation where necessary maintenance is performed without removal of the shutoff valve.

TABLE 1208.4.1
APPROXIMATE GAS INPUT FOR TYPICAL APPLIANCES [NFPA 54: TABLE A.5.4.2.1]

APPLIANCE	INPUT (Btu/h approx.)
Space Heating Units	
Warm air furnace	
Single family	100 00
Multifamily, per unit	60 000
Hydronic boiler	
Single family	100 000
Multifamily, per unit	60 000
Space and Water Heating Units	
Hydronic boiler	
Single family	120 000
Multifamily, per unit	75 000
Water Heating Appliances	
Water heater, automatic storage	
30 to 40 gallon tank	35 000
Water heater, automatic storage	
50 gallon tank	50 000
Water heater, automatic instantaneous	
Capacity at 2 gallons per minute	142 800
Capacity at 4 gallons per minute	285 000
Capacity at 6 gallons per minute	428 400
Water heater, domestic, circulating or	
side-arm	35 000
Cooking Appliances	
Range, freestanding, domestic	65 000
Built-in oven or broiler unit, domestic	25 000
Built-in top unit, domestic	40 000
Other Appliances	
Refrigerator	3000
Clothes dryer, Type 1 (domestic)	35 000
Gas fireplace direct vent	40 000
Gas log	80 000
Barbecue	40 000
Gaslight	2500

5/18/22, 4:08 PM 1215.2 Tables for Sizing Gas Piping Systems

1215.2 Tables for Sizing Gas Piping Systems

Table 1215.2(1) through Table 1215.2(36) shall be used to size gas piping in conjunction with one of the methods described in Section 1215.1.1 through Section 1215.1.3, [NFPA 54:6.2]

TABLE 1215.2(1)
SCHEDULE 40 METALLIC PIPE [NFPA 54:TABLE 6.2(b)][1,2]

GAS:	NATURAL
INLET PRESSURE:	LESS THAN 2 psi
PRESSURE DROP:	0.5 in. w.c.
SPECIFIC GRAVITY:	0.60

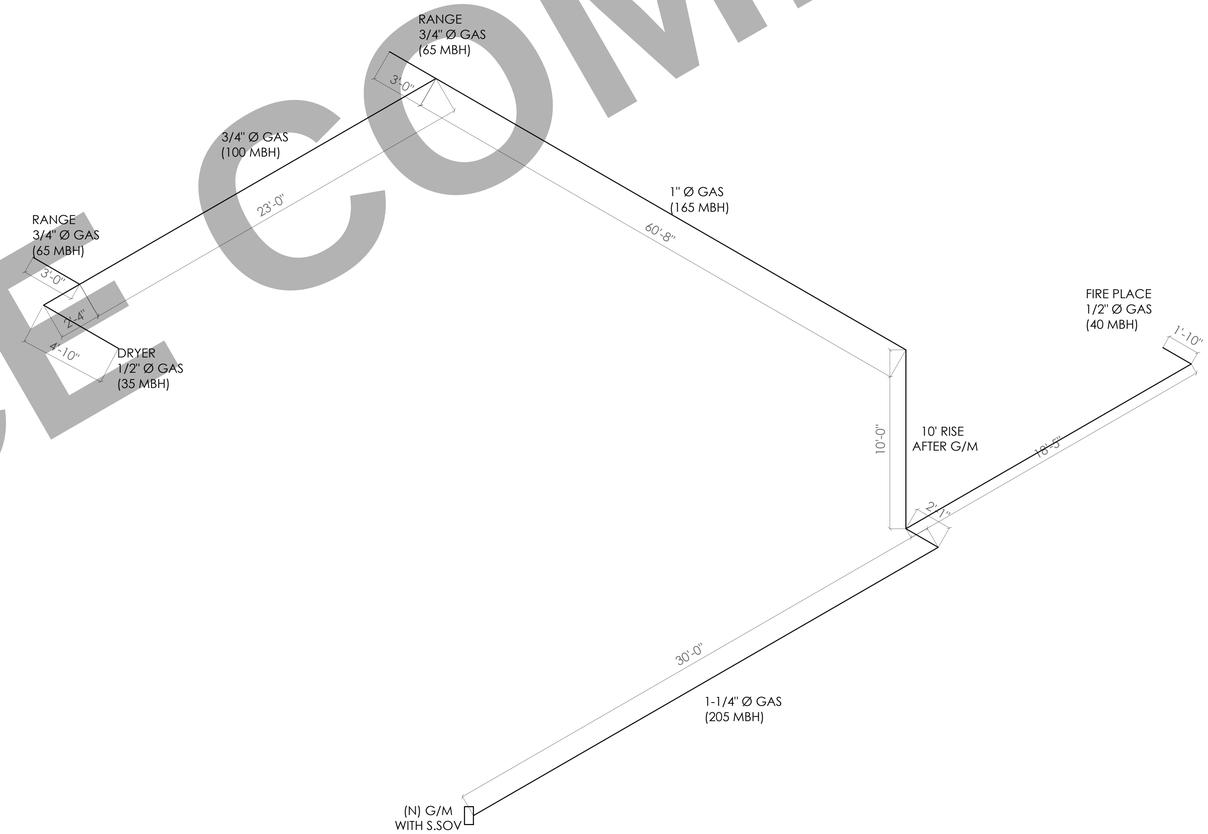
	PIPE SIZE (inch)												
NOMINAL:	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	5	6	8	10	12
ACTUAL ID:	0.622	0.824	1.049	1.380	1.610	2.067	2.469	3.068	4.026	5.047	6.065	7.981	10.020	11.938
LENGTH (feet)	CAPACITY IN CUBIC FEET OF GAS PER HOUR													
10	172	360	678	1390	2090	4020	6400	11 300	23 100	41 800	67 600	139 000	252 000	399 000
20	118	247	466	957	1430	2760	4400	7780	15 900	28 700	46 500	95 500	173 000	275 000
30	95	199	374	768	1150	2220	3530	6250	12 700	23 000	37 300	76 700	139 000	220 000
40	81	170	320	657	985	1900	3020	5350	10 900	19 700	31 900	65 600	119 000	189 000
50	72	151	284	583	873	1680	2680	4740	9660	17 500	28 300	58 200	106 000	167 000
60	65	137	257	528	791	1520	2430	4290	8760	15 800	25 600	52 700	95 700	152 000
70	60	126	237	486	728	1400	2230	3950	8050	14 600	23 600	48 500	88 100	139 000
80	56	117	220	452	677	1300	2080	3670	7490	13 600	22 000	45 100	81 900	130 000
90	52	110	207	424	635	1220	1950	3450	7030	12 700	20 600	42 300	76 900	122 000
100	50	104	195	400	600	1160	1840	3260	6640	12 000	19 500	40 000	72 600	115 000
125	44	92	173	355	532	1020	1630	2890	5890	10 600	17 200	35 400	64 300	102 000
150	40	83	157	322	482	928	1480	2610	5330	9650	15 600	32 100	58 300	92 300
175	37	77	144	296	443	854	1360	2410	4910	8880	14 400	29 500	53 600	84 900
200	34	71	134	275	412	794	1270	2240	4560	8260	13 400	27 500	49 900	79 000

ALL GAS PIPES ARE METALLIC SHCD40 .

THE TOTAL GAS PIPE LENGTH FROM GAS METER TO THE FARTHEST EQUIPMENT IS APPRX 125 .FEET.

GAS UNITS AND MBH:

ITEM	MBH
RANGE	65
RANGE	65
DRYER	35
FIRE PLACE	40
TOTAL =	205



GAS ISOMETRIC RISER DIAGRAM

CLIENT:

ADDRESS:

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:
DAPHNE CO

TITLE:
GAS CODE CHECKING AND ISOM. RISER DIAGRAM

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

DRAWING NO.
P 4 . 0 1

REV.

SANCO2

As a highly energy-efficient alternative to the traditional electric or gas water heater, our unique system saves money, reduces greenhouse gas emissions and eliminates the production of carbon monoxide.

The SANCO$_2$ heat pump water heater system consists of two parts. The heat pump unit, where the hot water is produced, using the CO_2 refrigerant to extract heat from the ambient air, and the 43, 83 and 119 gallon storage tank.

43 Gallon Tank
69-Gallon
first hour delivery

2 to 4 people

83 Gallon Tank
115-Gallon
first hour delivery

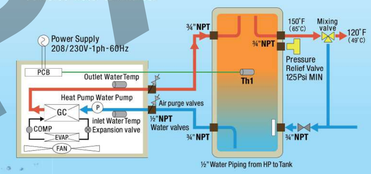
5+ people

Superior Features

- **Highest First Hour Rating of any residential electric water heater** (Resistance and Heat Pumps) **provides more hot water.**
- **Simple installation: only plumbing connections are required to connect storage tank and heat pump.**
- **Faster recovery from a hot water draw at 20+ GPH of 150°F water to the top of the tank.**
- **Heat pump will make hot water below -25°F to 104°F ambient temperature.**
- **Highest real world efficiency: 80% savings over electric resistance water heaters and 40%+ over a hybrid HPWH.**
- **Perfect for homes with Solar PV Panels as the unit will use less than 2,000 Watts maximum.**
- **Most environmentally friendly water heater on the market: CO_2 refrigerant has a low global warming potential.**
- **Longest and most comprehensive warranty on the market.**

Technology – How It Works

- The SANCO$_2$ Water Heater works like any other storage water heater with one exception. The tank is stratified rather than mixed.
- Cold Water connections are located at the bottom of the tank and Hot Water connections are at the top.
- The Hot Water stored in the tank is hotter than Mixing Valve for normal use in the home or building. The unit is supplied with a Thermostatic Mixing Valve that must be installed to temper the delivered water to fixtures.



High Performance

The SANCO$_2$ unit has the highest UFHR (Uniform First Hour Rating) **of any comparably sized Storage Electric or Heat Pump Water Heater.**

The Natural Refrigerant (CO_2) used by the SANCO$_2$ allows it to make and store hotter water than any other Heat Pump Water Heater. This means there is more energy stored in the tank which translates into more hot water delivered via the factory supplied Mixing Valve.

Energy Efficiency

The SANCO$_2$ unit works to maximize the UEF value not only in the test lab, but also in real world operation due to several of its unique features:

Inverter Compressor Inverter Compressors increase the efficiency of a heat pump by varying the speed of the compressor and hence the amount of electrical energy used.

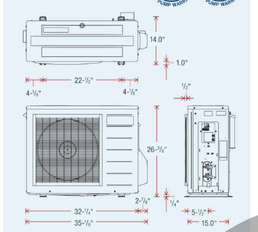
DC Fan Motor & Water Pump The other motors in the SANCO$_2$, the fan and water pump, are also powered by direct current (DC), just like the Inverter Compressor. This allows both to run at a speed based on load requirements to optimize energy efficiency.

SANCO$_2$ GEN4 Specifications

Heat Pump

All dimensions displayed in inches.

3 YEAR LABOR — 10 YEAR PARTS



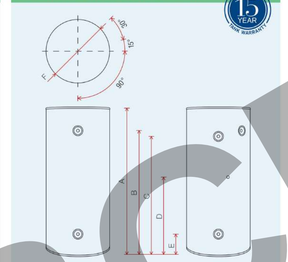
Outdoor Unit (Heat Pump) **Model No. GS4-45HPC**

Performance	43 Gal Sys	83 Gal Sys	119 Gal Sys
Uniform Energy Factor	3.1	3.75	3.4
First Hour Rating	69 gallons	115 gallons	125 gallons

Specifications	
Water Temperature Setting	145 or 150°F
Ambient Air Operating Range	-25 to 104°F
Nom Heating Capacity (Btu/h)	15,400 Btu/h
Nom Heating Capacity (kw)	4.5kw
Heating COP @ 60 / 47 / 17°F	5.5 / 4.2 / 2.8
Refrigerant Type	R744 (CO_2)
Power Voltage	208/230v-1Ph-60Hz
Breaker Size	15 Amps
MCA (Amps)	7.2 Amps
Compressor Type	Rotary
Noise Level (DbA)	37
Weight (lbs)	108lbs
Pipe Size (Tank to Heat Pump)	¾"(Both Hot Supply & Cold Return)
Max Length inc Vertical Sep	66 ft
Max Vertical Separation	23 ft
Max Incoming Water Pressure	95 Psi

Stainless Steel Storage Tank*

10 YEAR PRO RATA — 15 YEAR WARRANTY



Tank Model No:		SAN-43STAQA	SAN-83SSAQA	SAN-119GLBK*
A	Height	38-⅛"	68-⅞"	63-⅜"
B	Hot Water Outlet & PR Valve	29-⅛"	60-⅛"	55"
C	Heat Pump Return	25-⅛"	60-⅛"	60-⅛"
D	Sensor Port	9-⅜"	40-⅛"	56"
E	Cold Water Inlet / Cold Water to HP	8-⅜"	8-⅞"	4"
F	Diameter	24-½"	24-½"	28"
	Weight (lbs)	88 lbs	115 lbs	345 lbs
	Tank Capacity (gallons)	43 gallons	83 gallons	119 gallons
	Warranty	15 years	15 years	10 years*

Connection Sizes	
Cold Water Inlet	¾" NPT (1¼" SAN-119GLBK)
Hot Water Outlet	¾" NPT (1¼" SAN-119GLBK)
Cold Water to Heat Pump	¾" NPT
Hot Water Return from Heat Pump	¾" NPT
Pressure Relief Valve Setting (Psig)	125 Psig

REV 02032021

*SAN-119GLBK tank is a glass-lined steel tank with a 10 year warranty.
Note: Materials and specifications are subject to change without notice.

For more information, please call **1-844-SANDCO2** or email **info@eco2systemsllc.com**

Eco2 Systems LLC
P.O. Box 1358, Walled Lake, MI 48390
Phone : 1-844-726-3262 or 1-844-SANDCO2
E-mail : info@eco2systemsllc.com
Website : www.eco2waterheater.com

Eco2 Dealer

CLIENT:

ADDRESS:

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NOTES:

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REV. NO.	DESCRIPTION	DATE	BY

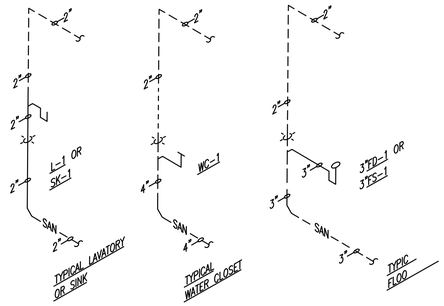
PROJECT:
DAPHNE CO

TITLE:
HOT WATER CALCULATION AND DATA SHEETS.

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

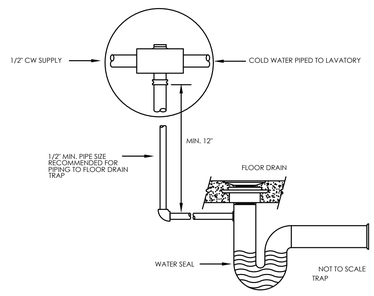
DRAWING NO.
P 5 . 0 1

REV.

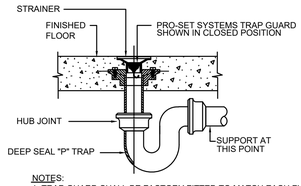


1 TYPICAL WASTE AND VENT RISERS

SCALE: NONE



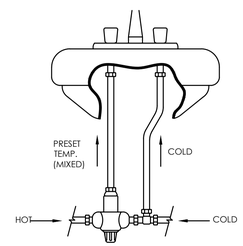
2 TRAP PRIMER



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

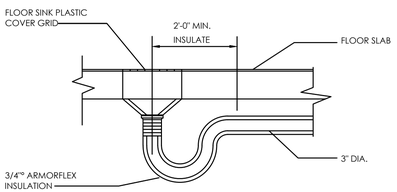
3 FLOOR DRAIN WITH TRAP SEAL PROTECTION

SCALE: NONE



ANTI-SCALD MIXING VALVE

NO SCALE

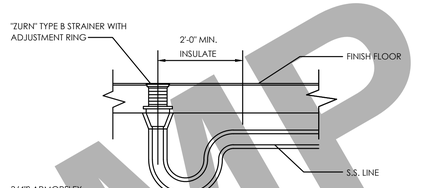


CONTRACTOR TO REFER TO PLUMBING DRAWINGS FOR SIZE AND LOCATION OF SANITARY SEWER LINE.

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

FLOOR SINK DETAIL

NO SCALE



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

NOTE:
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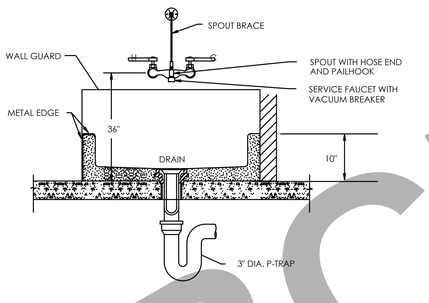
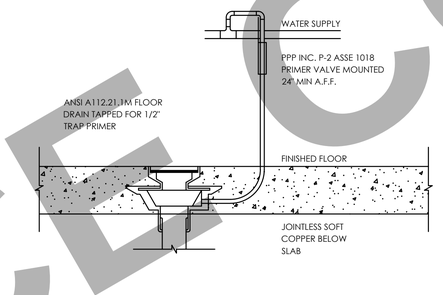
FLOOR DRAIN DETAIL

NO SCALE



MOP SINK DETAIL

NO SCALE



TRAP PRIMER DETAIL

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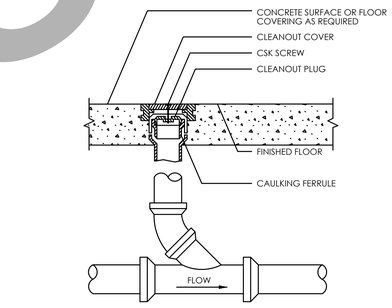
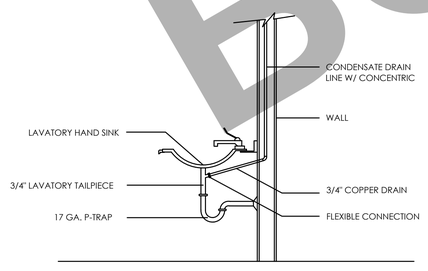


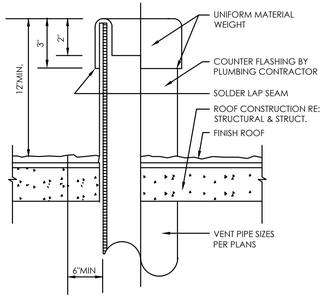
FLOOR CLEANOUT DETAIL

NO SCALE



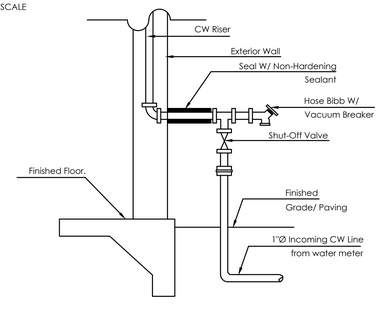
CONDENSATE DETAIL

NO SCALE



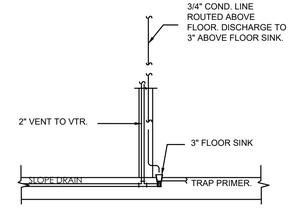
VENT THRU ROOF DETAIL

NO SCALE



WATER ENTRY DETAIL

NO SCALE



COND. ON FLOOR SINK DETAIL

NO SCALE

CLIENT:

ADDRESS:

-

CONFIDENTIALITY STATEMENT:

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

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

DAPHNE CO

TITLE:

PLUMBING GENERAL DETAILS.

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

DRAWING NO.

P 6 . 0 1

REV.

FIRE PROTECTION NOTES:

FIRE PROTECTION SUPPLY PIPE: ROUTE THE BUILDING FIRE MAIN TO THE WATER MAIN AND CONNECT TO THE SUPPLY LINE AT THE APPROPRIATE TIME AND LOCATION. CONTRACTOR SHALL FIELD VERIFY EXACT LOCATION OF WATER MAIN PRIOR TO START OF CONSTRUCTION. WORK INCLUDES BUT IS NOT LIMITED TO: INSTALLING A COMPLETE WET SYSTEM DESIGNED THROUGHOUT THE BUILDING . 1. RELATED WORK SPECIFIED ELSEWHERE:

1. WIRING OF FLOW ALARM SWITCHES AND TAMPER SWITCHES AND CONNECTION OF SWITCHES TO BUILDING ALARM SYSTEM ARE SPECIFIED IN ELECTRICAL DOCUMENTS. SPRINKLER DESIGN REQUIREMENTS: (FOR LIGHT HAZARD):
2. THE CONTRACTOR SHALL SUBMIT 4 COMPLETE SETS OF SPRINKLER SHOP DRAWINGS AND HYDRAULIC CALCULATIONS TO THE ARCHITECT FOR REVIEW, PRIOR TO ORDERING MATERIAL AND/OR CUTTING PIPE. CONTRACTOR SHALL NOT CUT ANY PIPING UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND ACCEPTED. THE CONTRACTOR SHALL SHOW IN DASHED LINES THE LOCATION OF ALL DUCTWORK, LIGHTS AND DIFFUSERS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING SPRINKLER PIPING AND HEADS LOCATIONS WITH OTHER TRADES. CONTRACTOR SHALL RELOCATE SPRINKLER PIPING AND HEADS AS NECESSARY IN ORDER TO AVOID CONFLICT WITH DUCTWORK, LIGHTS AND STRUCTURE.
4. PROVIDE AUXILIARY DRAINS AT LOW POINTS IN SYSTEM AND FOR TRAPPED SECTIONS AS REQUIRED BY NFPA-13. LOCATE AUXILIARY DRAINS IN MECHANICAL CLOSETS OR OTHER LOCATIONS OUT OF SIGHT.
5. THE CONTRACTOR SHALL INCLUDE A TEN POUND (10 PSI) BUFFER IN THE HYDRAULIC CALCULATIONS, I.E. THE PRESSURE REQUIRED FOR THE SPRINKLER SYSTEM (INCLUDING HOSE STREAM) SHALL BE A MINIMUM OF 10 PSI LESS THAN THE AVAILABLE PRESSURE AT THE REQUIRED FLOW.
6. THE CONTRACTOR SHALL PERFORM A FLOW TEST PRIOR TO COMMENCING DESIGN AND SHALL PROVIDE TEST INFORMATION TO THE ARCHITECT FOR APPROVAL. SPRINKLER SYSTEM DESIGN SHALL BE BASED UPON THE CONTRACTOR'S FLOW TEST. QUALITY CRITERIA: PERMITS, LICENSES, INSPECTION FEES:

1. OBTAIN AND PAY FOR PERMITS, LICENSES AND INSPECTION FEES AS MAY BE REQUIRED FOR PERFORMANCE AND APPROVAL OF THE WORK PERFORMED UNDER THIS SECTION OF THE SPECIFICATIONS.
2. COMPLY WITH ALL REQUIREMENTS OF NFPA 13D AND THE STATE FIRE MARSHALL AND LOCAL CODES. MATERIALS: MATERIALS SPECIFIED BY MANUFACTURER'S NAME SHALL BE USED UNLESS PRIOR APPROVAL OF A SUBSTITUTE IS GIVEN BY ADDENDA. SUBMITTALS: BEFORE MATERIALS AND EQUIPMENT ARE PURCHASED, SUBMIT FOR ARCHITECT'S APPROVAL, A COMPLETE SCHEDULE OF MATERIALS AND EQUIPMENT TO BE INCORPORATED IN THE WORK. SUBMITTALS SHALL INCLUDE THE FOLLOWING:

1. COMPLETE SHOP DRAWINGS WITH HYDRAULIC CALCULATIONS
2. ALL VALVES
3. SPRINKLER HEADS
4. TAMPER SWITCHES
5. PIPE HANGERS AND SUPPORTS
6. PIPE AND FITTINGS
7. CABINETS GROOVED JOINT COUPLINGS AND FITTINGS SHALL BE SHOWN ON DRAWINGS AND PRODUCT SUBMITTALS, AND BE SPECIFICALLY IDENTIFIED WITH THE APPLICABLE STYLE NUMBER. SPRINKLER HEADS SHALL BE REFERRED TO ON DRAWINGS, SUBMITTALS AND OTHER DOCUMENTATION, BY THE SPRINKLER IDENTIFICATION OR MODEL NUMBER AS SPECIFICALLY PUBLISHED IN THE APPROPRIATE AGENCY LISTING OR APPROVAL. TRADE NAMES OR OTHER ABBREVIATED DESIGNATIONS SHALL NOT BE ALLOWED. TESTING PIPE SYSTEMS: TESTS SHALL BE CONDUCTED IN THE PRESENCE OF THE ARCHITECT OR HIS DESIGNATED REPRESENTATIVE. EQUIPMENT, MATERIALS, AND INSTRUMENTS FOR TESTING SHALL BE FURNISHED BY THE CONTRACTOR WITHOUT ADDITIONAL COST TO THE OWNER. AUTOMATIC SPRINKLER PIPING: THE AUTOMATIC SPRINKLER SYSTEMS SHALL BE HYDROSTATICALLY TESTED IN THEIR ENTIRETY OR IN ZONES DEFINED BY SHUT-OFF VALVES. THE PIPING SHALL BE TESTED AT A PRESSURE OF 200 PSIG , MEASURED AT THE LOW POINT IN THE SYSTEM OR ZONE, AND SHALL BE PROVED TIGHT AT THIS PRESSURE FOR A PERIOD OF NOT LESS THAN TWO HOURS. LEAKS DETECTED SHALL BE REPAIRED BY TIGHTENING, REWELDING JOINTS, OR REPLACING DAMAGED PIPE OR FITTINGS. CAULKING OF JOINTS WILL NOT BE PERMITTED. DRY PIPE AIR TEST: ALL DRY PIPE PIPING SHALL BE TESTED AT 40 PSIG AND ALLOWED TO STAND FOR 24 HOURS. ALL LEAKS WHICH ALLOW A LOSS OF PRESSURE OVER 1½ PSI SHALL BE REPAIRED. COMPRESSED AIR SYSTEM: ALL PIPING SHALL BE PNEUMATICALLY TESTED AT A PRESSURE OF 150 PSIG FOR A PERIOD OF NOT LESS THAN 2 HOURS. NO LOSS IN PRESSURE WILL BE PERMITTED. LEAKS DETECTED SHALL BE REPAIRED BY TIGHTENING OR REPLACING PIPE AND FITTINGS. CAULKING OF JOINTS WILL NOT BE PERMITTED. OPERATION AND MAINTENANCE INSTRUCTIONS: OPERATING AND MAINTENANCE INSTRUCTIONS, PRINTED AND BOUND IN HARD COVER THREE RING LOOSE LEAF NOTEBOOKS, SHALL BE PROVIDED FOR EACH ITEM OF EQUIPMENT LISTED BELOW; 5 SEPARATE COPIES SHALL BE PROVIDED. EACH NOTEBOOK SHALL BE PROVIDED WITHIN AN IDENTIFYING LABEL UNDER A CLEAR PLASTIC COVER SHIELD ON THE FRONT COVER WHICH SHALL IDENTIFY THE PROJECT, ENGINEER, CONTRACTOR AND DATE.

1. NATIONAL FIRE PROTECTION ASSOCIATION PAMPHLET NO. 25. PHOTO COPIES ARE NOT ACCEPTABLE.
2. COPIES OF ALL APPROVED SUBMITTAL DATA (LISTED ABOVE UNDER SUBMITTALS).
3. AS-BUILT COPIES OF DESIGN DRAWINGS AND HYDRAULIC CALCULATIONS. SEISMIC REQUIREMENTS: PROVIDE SEISMIC PROTECTION FOR THE SPRINKLER SYSTEM. DESIGN AND INSTALL SEISMIC PROTECTION IN ACCORDANCE WITH THE REQUIREMENTS OF NFPA 13 SECTION TITLED "PROTECTION OF PIPING AGAINST DAMAGE WHERE SUBJECT TO EARTHQUAKES." SEISMIC REQUIREMENTS MAY BE WAIVED BY THE AUTHORITY HAVING JURISDICTION. PROVIDE WRITTEN DOCUMENTATION OF WAIVER. GUARANTEE: ALL EQUIPMENT SHALL BE GUARANTEED AS SPECIFIED UNDER THE GENERAL AND SPECIAL CONDITIONS. GUARANTEE ON ALL EQUIPMENT SHALL START AND COINCIDE WITH THE CONTRACTOR'S GUARANTEE OBLIGATIONS. PIPE AND FITTINGS: PIPE AND FITTINGS LISTED HEREIN SHALL BE FOR THE SERVICES INDICATED. SPRINKLER AND STANDPIPE:

JOINTS: MECHANICAL GROOVED JOINT COUPLINGS SHALL BE LISTED FOR USE IN FIRE PROTECTION SYSTEMS.

1. GROOVED END FITTINGS: FITTINGS SHALL BE DUCTILE IRON (ASTM A536); FORGED STEEL (ASTM A234); OR FABRICATED FROM CARBON STEEL PIPE (ASTM A53); WITH PRE-GROOVED ENDS FOR USE WITH MECHANICAL COUPLINGS OF THE SAME MANUFACTURER.
2. MECHANICAL COUPLINGS: COUPLING HOUSINGS SHALL BE DUCTILE IRON (ASTM A536). BOLTS AND NUTS SHALL BE CARBON STEEL TRACK-TYPE (ASTM A183), MINIMUM TENSILE 110,000 PSI. GASKETS SHALL BE GRADE "E" EPDM, FOR WATER SERVICES FROM -30 TO +230EF. AT JOINTS ALLOWING CONTROLLED MOVEMENT, EXPANSION, CONTRACTION OF DEFLECTION, FLEXIBLE COUPLINGS WITH SHALL BE USED. AT ALL JOINTS NOT REQUIRING FLEXIBILITY, A RIGID COUPLING SHALL BE USED.

a. RIGID TYPE: COUPLING HOUSINGS CAST WITH OFFSETTING, ANGLE-PATTERN BOLT PADS SHALL BE USED TO PROVIDE SYSTEM RIGIDITY AND SUPPORT AND HANGING IN ACCORDANCE WITH NFPA 13D.
b. FLEXIBLE TYPE: USE IN LOCATIONS WHERE VIBRATION ATTENUATION AND STRESS RELIEF ARE REQUIRED.

3. FLANGE ADAPTER: FLAT FACE, FOR DIRECT CONNECTION TO ANSI CLASS 125 OR 150 FLANGED COMPONENTS UNDERGROUND PIPE:

1. STANDARD WEIGHT DUCTILE IRON PIPE WITH MECHANICAL "BOLTED TYPE" JOINTS.
2. PROVIDE TIE RODS AND THRUST BLOCKS AT EACH CHANGE OF DIRECTION OF THE UNDERGROUND FIRE SERVICE PIPING. INSTALL TIE RODS AND THRUST BLOCKS IN ACCORDANCE WITH NFPA-24 REQUIREMENTS. FIRE DEPARTMENT VALVES: VALVES:

1. VALVES OF THE SAME TYPE SHALL HAVE THE NAME OR TRADEMARK OF THE MANUFACTURERS AND THE WORKING PRESSURE STAMPED OR CAST ON THE VALVE BODY.
2. ALL VALVES INSTALLED IN HORIZONTAL LINES SHALL BE INSTALLED WITH THE STEMS HORIZONTAL OR ABOVE. VALVE HANDWHEELS SHALL BE ORIENTED, WHEN INSTALLED, TO PROVIDE MAXIMUM ACCESSIBILITY FOR OPERATION.
3. ALL VALVES REQUIRING PACKING SHALL BE DESIGNED AND CONSTRUCTED SUCH THAT THEY CAN BE REPACKED UNDER PRESSURE.
4. VALVE HANDWHEELS SHALL BE MALLEABLE IRON.
5. FIRE DEPARTMENT VALVES: FIRE DEPARTMENT ANGLE VALVES SHALL BE 2½" SIZE PRESSURE REDUCING TYPE COMPLETE WITH CAP AND CHAIN. VALVES SHALL HAVE POLISHED BRASS FINISH AND SHALL BE ELKHART UP-25, POTTER-ROEMER 4085 OR EQUIVALENT BY NIBCO OR SIERRA. SPRINKLER HEADS: SPRINKLER HEADS SHALL BE GLASS-BULB TYPE. BODY SHALL BE DIE CAST BRASS, WITH HEX-SHAPED WRENCH BOSS CAST INTO THE BODY TO FACILITATE INSTALLATION AND REDUCE THE RISK OF DAMAGE DURING INSTALLATION. SPRINKLER HEAD TYPES SHALL BE COORDINATED WITH THE ARCHITECT. UPRIGHT SPRINKLER HEADS SHALL BE ½ INCH SPRAY TYPE WITH BRONZE FINISH. SPRINKLERS SHALL BE VIKING, CENTRAL SPRINKLER, RELIABLE, GRINNELL OR AUTOMATIC SPRINKLER. PENDENT SPRINKLER HEADS UNLESS OTHERWISE INDICATED PENDENT SPRINKLER HEADS SHALL BE QUICK RESPONSE ½ INCH SPRAY TYPE WITH CHROME PLATED FINISH AND WHITE ESCUTCHEON PLATE. SPRINKLERS SHALL BE VIKING, CENTRAL SPRINKLER, RELIABLE, GRINNELL OR AUTOMATIC SPRINKLER. SIDEWALL SPRINKLER HEADS SHALL BE QUICK RESPONSE ½ SPRAY TYPE WITH CHROME PLATED FINISH AND WHITE ESCUTCHEON. SPRINKLERS SHALL BE VIKING, CENTRAL SPRINKLER, RELIABLE, GRINNELL OR AUTOMATIC SPRINKLER. CONCEALED PENDENT SPRINKLER HEADS SHALL BE ½ INCH SPRAY TYPE WITH CHROME PLATED FINISH AND WHITE ESCUTCHEON AND CEILING PLAT. SPRINKLERS SHALL BE VIKING, CENTRAL SPRINKLER, RELIABLE, GRINNELL OR AUTOMATIC SPRINKLER. HANGERS: SUPPORTS FOR VERTICAL LINES PASSING THROUGH FLOOR SHALL BE RISER CLAMP TYPE, FEE & MASON FIG. NO. 241, CARPENTER AND PATTERSON NO. 126 OR EQUIVALENT BY B-LINE, ANVIL OR ERICO. GENERAL: UNLESS SPECIFICALLY STATED OTHERWISE, THE FIRE PROTECTION SYSTEM SHALL CONFORM TO ALL OTHER SECTIONS OF THIS SPECIFICATION WHICH APPLY TO PIPE INSTALLATION, ACCESSORIES AND CONTROLS. ALL THREADED HOSE OUTLETS SHALL COMPLY WITH THE LOCAL FIRE DEPARTMENT REQUIREMENTS. ALL SHOP DRAWINGS SUBMITTED ON ITEMS REQUIRING UNDERWRITERS' LISTING SHALL BEAR EVIDENCE OF UNDERWRITERS' APPROVAL. ALL EXPOSED FIRE SYSTEM PIPING INCLUDING VALVE ROOM PIPING SHALL BE CLEANED OF RUST, GREASE AND SCALED AND SHALL BE PROVIDED WITH A FIELD APPLIED PRIME COAT AND TWO COATS OF AN OIL BASED ENAMEL PAINT. COLOR SHALL BE RED OR AS DIRECTED BY ARCHITECT. THE CONTRACTOR SHALL PERFORM ALL TESTS OF FIRE PROTECTION SYSTEMS AS REQUIRED BY GOVERNING CODES AND LOCAL AUTHORITIES AT NO ADDITIONAL COST TO THE OWNER. TESTS SHALL BE PERFORMED IN THE PRESENCE OF THE OWNERS REPRESENTATIVE. INSTALLATION: COORDINATE SPRINKLER INSTALLATION WITH BUILDING STRUCTURE AND OTHER TRADES. ROUTE [DRY PIPE] [ALARM] VALVE DRAINS TO [OUTSIDE BUILDING] [FLOOR DRAIN] AND TERMINATE 9" AFG. VERIFY LOCATIONS OF LIGHTS AND DIFFUSERS PRIOR TO INSTALLING SPRINKLER HEADS AND PIPING. SPRINKLER HEADS SHALL BE INSTALLED ON CENTERLINE WITH LIGHTS, DIFFUSERS AND DOORS, IN LIVING UNITS. CEILING THE SPRINKLER HEADS SHALL BE INSTALLED IN THE CENTER OF 2' X 2' TILES AND IN THE CENTER OF THE ½ TILE IN 2' X 4' TILES. CONTRACTOR SHALL PURGE AIR FROM ALL WET PIPE SPRINKLER SYSTEM PIPING PRIOR TO FINAL SYSTEM COMPLETION. INSTALL A SPARE SPRINKLER CABINET NEAR THE SPRINKLER RISER. PROVIDE NUMBER OF SPARE SPRINKLERS AS REQUIRED BY NFPA-13D, WITH AT LEAST ONE SPARE FOR EACH TYPE OF HEAD INSTALLED.

FIRE PROTECTION LIST OF DRAWINGS (LoD):

SHEET TAG	TITLE	SCALE
F 0.00	FIRE GENERAL NOTES AND SPECIFICATIONS.	NTS
F 0.01	FIRE CODE CHECKING AND CALCULATIONS.	NTS
F 1.01	FIRE SYMBOLS, SCHEDULE AND HYDRAULIC INFO.	NTS
F 2.01	MAIN FLOOR - FIRE SPRINKLER LAYOUT.	1/4"=1'-0"
F 2.02	SECOND FLOOR - FIRE SPRINKLER LAYOUT.	1/4"=1'-0"
F 3.01	FIRE EQUIPMENT DATA SHEETS.	NTS
F 4.01	FIRE GENERAL DETAILS.	NTS

CLIENT:

ADDRESS:

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

DAPHNE CO

TITLE:

FIRE GENERAL NOTES AND SPECIFICATIONS

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

DRAWING NO.

F 0.00

REV.

NOTES FOR NFPA 13D SPRINKLER SYSTEMS

ONE & TWO FAMILY RESIDENTIAL FIRE SPRINKLER SYSTEMS

1. Scope of work: Design and installation of an automatic fire sprinkler system for a single or two-family dwelling.
2. One set of approved sprinkler plans with hydraulic calculations shall be retained at the job site at all times.
3. The system shall be designed and installed in accordance with 2016 NFPA 13D and amendments as adopted by the local jurisdiction.
4. All valves shall have permanently affixed signs that indicate their function.
5. The water flow switch shall be connected to the service panel on an uninterruptible house circuit.
6. Bells/alarms shall be sized and located to be clearly audible in all rooms over background noise with all intervening doors closed. At least one bell/alarm shall be located near the address side or front side of the structure and shall be listed for exterior use. At least on bell/alarm shall be located inside the structure and may be placed in the attic in audibility of 15 dB above ambient, but not less than 70 dB, is achieved throughout the residence.
7. Underground mains and lead-in connections shall be flushed before connection is make to sprinkler piping.
8. Water meter shall be installed prior to final.
9. Both rough and final inspections are required prior to occupancy being granted.
10. Systems shall be tested at a minimum of street pressure in accordance with NFPA 13D.
11. Exposed exterior riser valves shall be painted OSHA safety red. FIre sprinkler or supply pipe exposed or susceptible to wet conditions shall be painted (any color) or otherwise coated to inhibit corrosion. Stainless steel assemblies and piping may be left unpainted provided that any hose connections, valves, or other components operated by the fire department are painted red.
12. All sprinkler piping shall remain uncovered until inspected by City of La Habra Heights.
13. Ceiling configurations shall be in a final condition (pain, lights, etc.) at final inspection.
14. Fire Sprinkler heads shall not be installed at rough inspection. Only plugs shall be used.
15. Escutcheons shall be installed prior to final inspection. A spot check on fire sprinkler type may occur at final inspections.

THE TEST AND DRAIN VALVE MUST HAVE AN ORIFICE K-FACTOR NOT GREATER THAN THE SPRINKLER'S K-FACTOR, WHICH IS IN THIS CASE EQUALS TO 4.90.

SPRINKLER HEAD SCHEDULE (27 SPRINKLER HEAD)

SYMBOL	UPRIGHT	PENDANT	RECESSED (CORRISION RESISTANT)	DRY HORIZONTAL SIDEWALL	DRY PENDANT	EXTENDED COVERAGE SIDEWALL	CONCEALED PENDANT	CONCEALED DRY PENDANT	SIDEWALL	EXTENDED COVERAGE	EXIST SP HD TO BE REMOVED/RELOCATED	QUICK RESPONSE	GENERAL LOCATION OF SPRINKLER HEADS (REFER TO DRAWINGS FOR ACTUAL LOCATIONS)	NOTE: ALL FINISHES ARE SUBJECT TO APPROVAL BY ARCHITECT. TYPE/FINISH	MANUFACTURER MODEL No. & STYLE
							X						ALL FINISHED AREAS WITH HUNG CEILINGS UNLESS OTHERWISE NOTED	CONCEALED SPRINKLER, ORDINARY TEMP, FINISH SPECIFIED BY ARCHITECT	senju sprinkler Model RC-RES 4.9 K-factor

Table A.5.2.2(a) SDR 13.5 IPS Pipe (CPVC)

Nominal Pipe Size		Avg. Outside Diam.		Avg. Inside Diam.	
(in.)	(mm)	(in.)	(mm)	(in.)	(mm)
3/4	20	1.05	26.70	0.87	22.10
1	25	1.32	33.50	1.10	27.90
1-1/4	32	1.66	42.20	1.39	35.30
1-1/2	40	1.90	48.30	1.60	40.60
2	50	2.38	60.50	2.00	50.80
2-1/2	65	2.88	73.20	2.42	61.50
3	80	3.50	88.90	295.00	74.90

612.3.6.1 Additional Requirements for Pendent Sprinklers. Pendent sprinklers located within 3 feet (914) mm) of the center of a ceiling fan, surface-mounted ceiling luminaire, or similar object shall be considered to be obstructed, and additional sprinklers shall be provided.

612.3.8 Backflow Protection. *A backflow preventer shall not be required to separate a sprinkler system from the water distribution system provided that:*
(1) The system complies with NFPA 13D or Section R313, and
(2) Piping material are suitable for potable water in accordance with the California Plumbing Code, and
(3) The system does not contain antifreeze or have a fire department connection.

612.4 Sprinkler Piping System. Sprinkler piping systems shall be installed in accordance with Section 612.4.1 through Section 612.4.5.

612.3.6.2 Additional Requirements for Sidewall Sprinklers. Sidewall sprinklers located within 5 feet (1524 mm) of the center of a ceiling fan, surface-mounted ceiling luminaire, or similar object shall be considered to be obstructed and additional sprinklers shall be provided.

612.4.1 General. Sprinkler piping shall be installed in accordance with the requirements for water distribution piping. Sprinkler piping shall comply with the material requirements for cold water distribution piping. For multipurpose piping systems, the sprinkler piping shall connect to and be part of the cold water distribution piping system.

612.4.2 Nonmetallic Piping and Tubing. Nonmetallic pipe and tubing, such as CPVC, PEX-AL-PEX, PE-RT and PEX, shall be certified for residential sprinkler installations and shall have a pressure rating of not less than 130 psi (896 kPa) at 120°F (49°C).

612.4.5 Drain. A ¾ inch (15 mm) drain for the sprinkler system shall be provided on the system side of the water distribution shutoff valve.

612.3.2 Sprinkler Installation. Sprinklers shall be listed residential sprinklers and shall be installed in accordance with the sprinkler manufacturer's installation instructions.

612.3.3 Temperature Rating and Separation from Heat Sources. Sprinklers shall have a temperature rating of not less than 135°F (57°C) and not more than 170°F (77°C). Sprinklers shall be separated from heat sources in accordance with the sprinkler manufacturer's installation instructions.

Exception: Sprinklers located close to a heat source in accordance with Section 612.3.3.1 shall be intermediate temperature sprinklers.

612.3.3.1 Intermediate Temperature Sprinklers. Sprinklers shall have an intermediate temperature rating of not less than 175°F (79°C) and not more than 225°F(107°C) where installed in the following locations:

(1) Directly under skylights, where the sprinkler is exposed to direct sunlight.

(2) In attics and concealed spaces located directly beneath a roof.

(3) Within the distance to a heat source in accordance with Table 612.3.3.1.

612.3.5 Coverage Area Limit. The area of coverage of a single sprinkler shall be based on the sprinkler listing and the sprinkler manufacturer's installation instructions. The area of coverage of a single sprinkler shall not exceed 400 square feet (37.16 m^2).

NFPA13-D: 10.4.1
For specially listed piping products, friction loss for pipe and fittings shall be permitted to be calculated based on the manufacturer's data.
10.4.2 Minimum Pipe Size.
10.4.2.1
The minimum size of steel pipe shall be 1 in. (25 mm).
10.4.2.2
The minimum size of pipe other than steel pipe shall be 3⁄4 in. (20 mm) unless smaller sizes are permitted by 10.4.2.3.

NFPA 13-D: 7.2.6*
Where a pressure-reducing or pressure-regulating valve is installed on a stand-alone system, a test connection with a K-factor at least as large as the smallest sprinkler Kfactor on the system shall be installed downstream of the device.

NFPA 13-D: 7.4.4*
Sprinkler piping shall be supported in a manner that prevents the movement of piping upon sprinkler operation.

NFPA 13-D: 7.4.5*
Where sprinkler piping is exposed to the sprinkler protected area, it shall be supported with metal hangers or hangers made of the same material as the structure.

NFPA 13-D: 7.5.4
Quick-response sprinklers shall be permitted to be used in mechanical closets.

NFPA 13-D: 7.5.6 Temperature Ratings.
7.5.6.1
Sprinklers installed where maximum ambient ceiling temperatures do not exceed 100°F (38°C) shall be ordinary temperature–rated or intermediate–temperature rated sprinklers throughout unless modified by the requirements of 7.5.6.3.

NFPA 13-D: 7.5.6.2
Sprinklers installed where maximum ambient ceiling temperatures are between 101°F and 150°F (38°C and 65°C) shall be intermediate temperature–rated sprinklers unless modified by 7.5.6.3.

NFPA 13-D: 8.1.1.2
The sprinklers shall maintain the minimum listed spacing, but no less than 8 ft (2.4 m), measured in the plan view from one sprinkler to another, as shown in Figure 8.1.1.1.

NFPA 13-D: 8.1.4 Operating Pressure.
The minimum operating pressure of any sprinkler shall be the higher of the minimum operating pressure specified by the listing or 7 psi (0.5 bar).

NFPA 13-D: 10.1.1* Sprinklers That Are Listed with Specific Discharge Criteria.
The system shall provide at least the flow required to produce a minimum discharge density of 0.05 gpm/ft2 (2.0 mm/min) or the sprinkler listing, whichever is greater, to the design sprinklers.

NFPA 13-D: 7.2.4*
Where water flow alarms are provided, test connections shall be installed at locations that allow flow testing of water supplies, connections, and alarm mechanisms.

NFPA 13-D: 7.2.5
The test connections, where provided, shall contain a K-factor equal to or smaller than the smallest sprinkler K-factor installed in the system.

Project: Daphne Co

Pt SYSTEM PRESSURE CALCULATION SHEET

Pt = Psup - PLws - PLm - PLd - Ple - Psp

Pt: *Pressure used for sizing the system in Table 612.5.3.2(4) thourgh Table 612.5.3.2(9)*
Psup: *Pressure available from the water supply source (flowing pressure)*
PLws: *Pressure loss in the water service pipe*
PLm: *Pressure loss through the water meter*
PLd: *Pressure loss from devided other than the water meter*
Ple: *Pressure loss associated with changes in elevation*
Psp: *Maximum pressure required by a sprinkler*

System Type	**Multipurpose**	
Service Pipe Size=	1-1/4	inch.
Main Fire Pipe Size=	1	inch.
Service Pipe Length=	100	ft.
Elevation=	30	ft.
Sprinkler:		
Density=	0.05	gpm/sq.ft.
Coverage=	200	sq.ft.
Active Sprinkler=	2	No.
Sprinklers Flow	20	gpm
Additional System Flow	5	gpm
Total Flow=	**25**	**gpm**
Psup =	**44**	**PSI**
PLws	**11.4**	**PSI**
PLm=	**2**	**PSI**
PLd=	**3**	**PSI**
PLe=	**13**	**PSI**
Psp=	**7**	**PSI**
TOTAL PRESSURE DROP =	**36.4**	**PSI**
Pt =	**9.1**	**PSI**
Allowable CPVC Length	**382**	**FT.**
Actual Pipe Length	**100**	**FT.**

CLIENT:

ADDRESS:

-

NOTES:

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2. THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL RELEVANT DESIGNER, ENGINEER OR SPECIALIST DRAWINGS AND SPECIFICATIONS.
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4. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY TEMPORARY SUPPORT TO THE BUILDING AND ANY ADJACENT STRUCTURES.

REV. NO.	DESCRIPTION	DATE	BY

PROJECT:
DAPHNE CO

TITLE:
FIRE CODE CHECKING AND CALCULATIONS.

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

DRAWING NO.
F 0 . 0 1

REV.

GENERAL NOTES

1. SYSTEM DESIGN AND INSTALLATION SHALL COMPLY NFDA 13D 2016 AND LOCAL APPLICABLE CODES.
2. SYSTEM DESIGN BASIS: HYDRAULICALLY MOST DEMANDING 2 SPRINKLERS.
3. WATER SUPPLY:
   HYDRANT FLOW TEST: 150 GPM

   SYSTEM DEMAND:
   REQUIRED PRESSURE: 33.64 PSI
   TOTAL FLOW REQUIRED: 45.26 GPM
   SAFETY MARGIN UNDER
4. ALL PIPE SHALL BE U.D.N. UNDERGROUND - IPS POLLY PIPE RISER - CPVC OVERHEAD - CPVC
5. MANUFACTURERS OF RESIDENTIAL SPRINKLERS PUBLISH INFORMATION REGARDING THE SPACING OF THEIR SPRINKLERS WITH RESPECT TO HEAT PROUCING DEVICES (FIRE PLACES, RANGES, OVES, HEATING, VENTS, WATER HEATERS, FURNACES, ETC.) WHETHER OR NOT ALL HEAT PRODUCING DEVICES ARE SHOWN ON THE PLAN PROPER MINIMUM DISTANCES MUST BE MAINTAINED.
6. THE MINIMUM DISTANCE BETWEEN ANY 2 RESIDENTIAL SPRINKLERS ON THIS PRODUCT IS HYDRAULICALLY LIMITED TO 12 FEET. SPRIRNKLERS SHALL NT EXCEED 6 FEET FROM ANY WALL.
8. THE INIMUM DISTANCE A SPRINKLER CAN BE LOCATED FROM A WALL IS 4 INCHES.
9. PENDANT SPRINKLERS SHALL E A MINIMUM OF 36 FEET WAY FROM THE CENTER OF ANY OBSTRUCTIONS SUCH AS CEILING FANS AND LIGHT FIXTURES UNLESS THE REQUIREMENTS OF NFPA 13.3 8.2. ARE MET.
10. INSTALLATION OF ALL RESIDENTIAL SPRINKLERS SHALL BE IN STRICT COMPLIANCE WITH THE MANUFACTURERS INSTALLATION GUIDE.
11. PRIOR TO DRILLINGJOISTS, CONTACT STRUCTURAL ENGINEER FOR RECOMMENDED DRILLING GUIDELINES.

HANGER SPACING

PIPE MATERIAL	3/4"	1"	1-1/4"	1-1/2"	2"	2 1/2"	3"
COPPER	8	8	10	10	12	12	12
CPVC	5.5	6	6.5	7	8	9	10
SCHEDULE 40 &10 STEEL	•	12	12	15	15	15	15
THREADABLE THINWALL	•	12	12	12	12	12	12

HANGER NOTES

1. ALL LIGHTING SHOWN ARE THE MAXIMUM RECOMMENDED DISTANCE BETWEEN HANGERS EXPRESSED.
2. PROVIDE A HANGER ITHIN 6 INCHES OF ALL DROPS TO SPRINKLER HEADS WHEN USING CPVC PIPE.
3. + STEEL PIPE IS NOT ALLOWED IN SIZES LESS THAN 1 INCH.

HYDRAULIC INFORMATION

Remote Area	Guest Room
Occupancy Classification	Light Hazard
Density (gpm/ft2)	0.05
Total Hose Stream (GPM)	0
Total Heads Flowing	2
K-Factor	4.9
Total Water Required (GPM)	20.0
System Pressure P required (PSI)	25.0

Sprinkler Legend

Symbol	Spacing - Pressure - Flow	Manufacturer	SIN	Model	K	Type	Size	Finish	Temp.	QTY.
	8 FT. - 175 PSI -	Senju	SS8464	RC-RES	4.9	Pendent	1/2"	White	162 F	27

SYMBOLS AND ABBREVIATIONS

DESCRIPTION	SYMBOL
NOTE: SPRINKLER SYMBOLS AND ABBREVIATIONS INDICATED IS FOR CONVENIENCE ONLY AND ITEMS INDICATED ARE NOT NECESSARILY WITHIN THE SCOPE OF THE WORK.	
NODE NO	x
FIRE SPRINKLER	
FIRE STANDPIPE PIPING	SD
SPRINKLER PIPING (SP.)	SP
SPK DRAIN PIPING	D
OS & Y VALVE W/ LOCK AND CHAIN	
WATER FLOW SWITCH	
CAPPED OUTLET	
GATE VALVE (G.V.)	
LOCKSHIELD VALVE (GLOBE VALVE)	
CHECK VALVE (C.V.)	
PRESSURE REGULATING VALVE	
STRAINER	
SHOCK ABSORBER	
PRESSURE GAUGE	
UNION CONNECTION	
DOUBLE CHECK DETECTOR ASSEMBLY	DCDA
HOSE VALVE	HV
HOSE RACK	HR
SPRINKLER RIG ASSEMBLY	SR
ROOF MANIFOLD	RM

ABBREVIATIONS	
A.B.D.	AUTOMATIC BALL DRIP
A.D.	ACCESS DOOR
CLG.	CEILING
C.V.	CHECK VALVE
D.C.D.A.	DOUBLE CHECK DETECTOR ASSEMBLY
DN.	DOWN
ELEV.	ELEVATION
F.H.C.	FIRE HOSE CABINET
F.H.	FIRE HYDRANT
F.H.R.	FIRE HOSE RACK
FL.	FLOOR
G.V.	GATE VALVE
H.C.	HUNG CEILING
N.I.C.	NOT IN CONTRACT
O.S.&Y.	OUTSIDE SCREW & YOKE
P.O.	PLUGGED OUTLET
T.S.	TAMPER SWITCH
WFS	WATER FLOW SWITCH
TS	TAMPER SWITCH
SPK	SPRINKLER

FIRE PROTECTION MATERIAL SCHEDULE

SYSTEM	PIPE									FITTINGS						JOINTS			
NOTES: 1. FOR REQUIRED PRESSURE RATINGS SEE RISER DIAGRAM. 2. ALL MATERIALS SELECTED ON THIS SCHEDULE MUST BE APPROVED BY THE LOCAL AUTHORITIES. 3. TO BE USED DOWNSTREAM OF SPRINKLER FLOOR CONTROL VALVE. 4. TO BE USED ON RISERS AND MAINS.	REQUIRED	DUCTILE IRON	EXTRA HEAVY CAST IRON	CPVC SDR 13.5	STEEL SCHED 30	STEEL SCHED 40	STEEL SCHED 80	BLACK	GALVANIZED	CEMENT LINED	MALLEABLE IRON	CLASS D	LINED	BLACK	GALVANIZED	VICTAULIC	DUCTILE IRON	THREADED	MECH.JOINT-FLANGED	VICTAULIC	CAULKED
BURIED BUILDING FIRE SERVICE		●	●							●		●	●				●				●
SPRINKLER (SEE NOTE 3)				●							●					●	●	●	●	●	
SPRINKLER (SEE NOTE 4)				●							●					●	●	●	●	●	
SPRINKLER DRAIN PIPE				●		●			●						●			●			
FIRE STANDPIPE						●		●			●					●	●	●	●	●	

CLIENT:

ADDRESS:

-

NOTES:

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REV. NO.	DESCRIPTION	DATE	BY

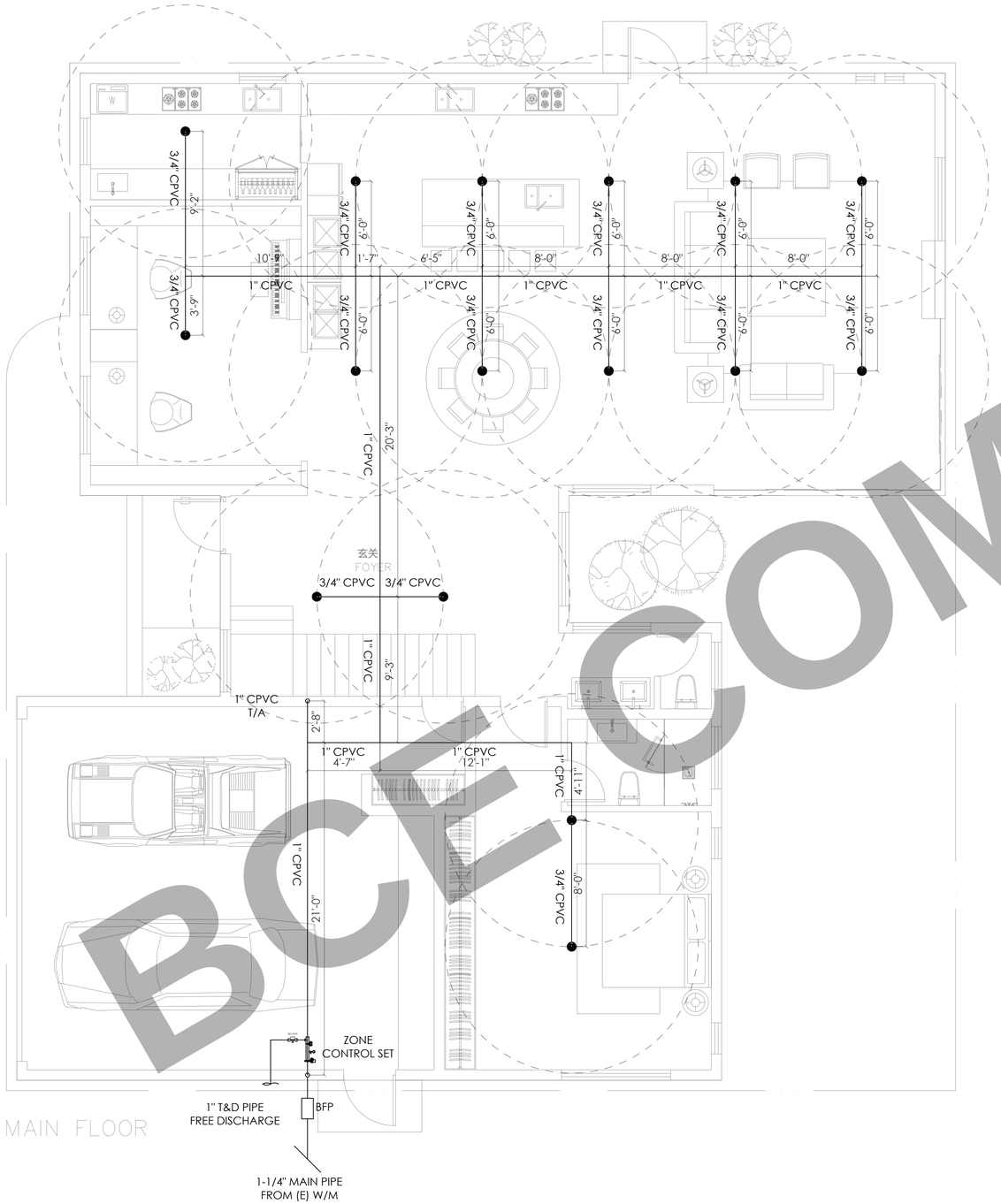
PROJECT:
DAPHNE CO

TITLE:
FIRE SYMBOLS, SCHEDULE AND HYDRAULIC INFO.

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

DRAWING NO.
F1.01

REV.



MAIN FLOOR

CLIENT:

ADDRESS:

-

CONFIDENTIALITY STATEMENT:

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

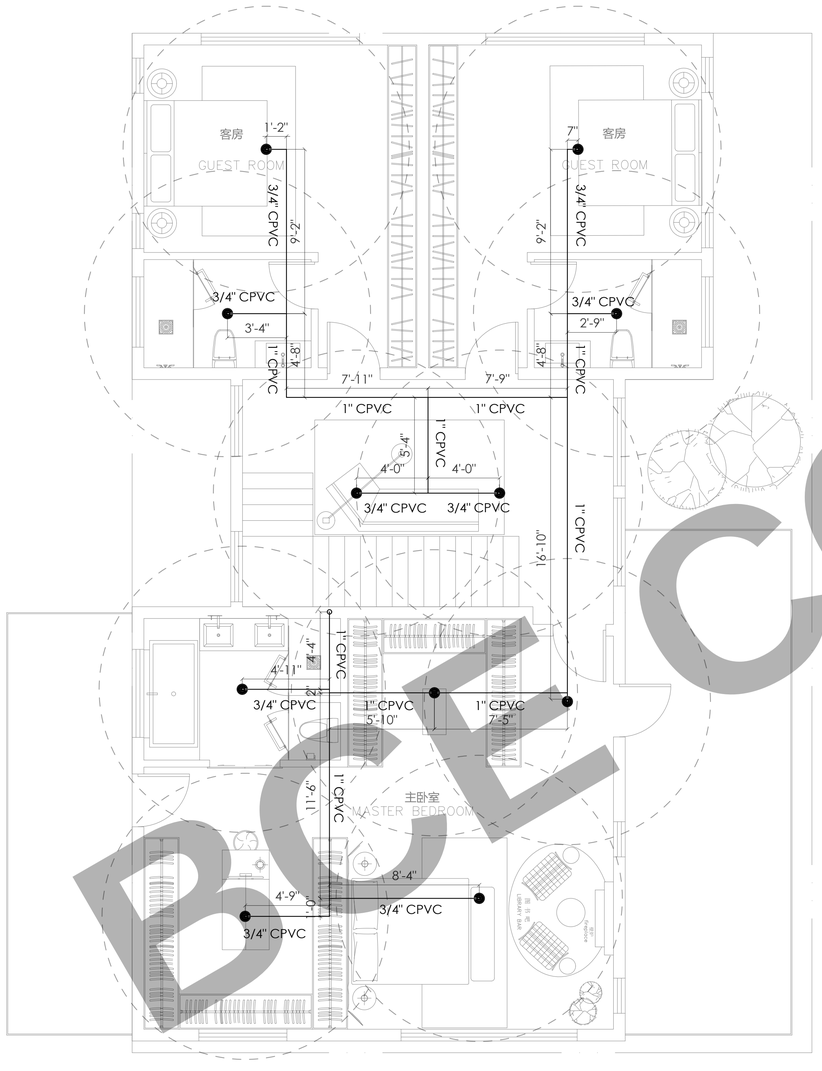
DAPHNE CO

TITLE:

MAIN FLOOR
FIRE SPRINKLER LAYOUT.

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

DRAWING NO.	REV.
F 2 . 0 1	



SECOND FLOOR

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ADDRESS:

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

DAPHNE CO

TITLE:

SECOND FLOOR
FIRE SPRINKLER LAYOUT.

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

DRAWING NO.

F 2 . 0 2

REV.

Senju Sprinkler

Model RC-RES

K-Factor: 4.9 • SIN: SS8464

Residential Lead Free
Flat Concealed Sprinkler, Pendent

cULus LISTED EU · NSF/ANSI/CAN 61 & 372

GENERAL DESCRIPTION

The Model RC-RES Residential Flat Concealed Sprinklers are automatic sprinklers of the compressed fusible solder type. They are decorative and fast responding. The Cover Plate Assembly hides the Deflector, Heat Responsive Element etc., which is concealed above the ceiling. The cover plate has a flat profile, and its diameter is extremely small (2-5/8 inch, 68mm). The push-on and/or thread-on, thread-off design of the concealed cover plate assembly allows for easy installation of the cover plate. Therefore, the Model RC-RES should be your first choice when aesthetics is the major consideration for ultimate appeal and unbeatable performance is desired. The Model RC-RES is designed for residential occupancies and is perfect for use in homes, hotels and other living quarters.

The Model RC-RES is to be used in wet pipe residential sprinkler systems for One- and Two- Family Dwellings and Manufactured Homes per NFPA 13D; wet pipe residential sprinkler systems for Residential Occupancies up to and Including Four Stories in Height per NFPA 13R; or, wet pipe sprinkler systems for the residential portions of any occupancies per NFPA 13.

The Model RC-RES has a 4.9 (70.6 LPM/bar$^{1/2}$) K-factor that meets the required residential flow rates with minimal residual pressure, which allows for smaller pipe sizes and water supply requirements. For extended installation flexibility, the Model RC-RES provides 1/2 inch (12.8mm) vertical adjustment. This adjustment in installation decreases the need for precise cutting of the pipe that drops to the sprinkler and allows for a perfect fit with a range of pipe lengths.

The heat sensitivity and water distribution design of Model RC-RES allows for an increased chance of residents to escape or evacuate in case of a fire. However, residential fire sprinkler systems are not a substitute for fire safety awareness or fire safety construction required by building codes.

"Lead Free" is defined in the Reduction of Lead in Drinking Water Act (S.3874) endorsed by AWWA's Water Utility Council, and California Assembly Bill #1953 as having less than or equal to a weighted average of 0.25% lead in wetted surface of pipes, plumbing fittings and fixtures.

WARNINGS

The Model RC-RES must be installed and maintained in accordance with the rules stated herein as well as in compliance with the applicable standards of the National Fire Protection Association regulations and the standards of any other authorities having jurisdiction.

In the event of this condition, consult the authorities having jurisdiction for guidance and approval. Failure to do so may impair the integrity of these devices.

It is the responsibility of the installing contractor to provide a copy of this document to the owner or their representative, and in turn, it is the obligation of the owner to provide a copy of this document to a succeeding owner. The owner is responsible for maintaining their fire protection system and devices in proper operating condition. The installing contractor or sprinkler manufacturer should be contacted with any related questions.

TECHNICAL DATA

- **Approvals:**
  - cULus Listed
  - UL-EU Listed (162°F (72°C) only)
  - NSF/ANSI/CAN 61, NSF/ANSI 372
- **Sprinkler Identification Number (SIN):** SS8464
- **Maximum Working Pressure:** 175psi (12.1bar)
- **Discharge Coefficient (Nominal K-Factor):**
  - K = 4.9 GPM/psi$^{1/2}$ (70.6 LPM/bar$^{1/2}$)
- **Temperature Rating:**
  - 162°F (72°C) Sprinkler with 140°F (60°C) Cover Plate
  - 205°F (96°C) Sprinkler with 162°F (72°C) Cover Plate
- **Color Code (Sprinkler)**
  - 162°F (72°C): Uncolored
  - 205°F (96°C): White
- **Color Code (Cover Plate)**
  - 140°F (60°C): No Mark
  - 162°F (72°C): White-Colored Mark
- **Vertical Adjustment:** 1/2 inch (12.8 mm)
- **Cover Plate Finishes:**
  - **Standard Finishes:** White, Ivory, Beige, Brown, Black, Nickel, Wood Grain
  - **Custom Finishes:** Custom color and custom pattern cover plates are available on special order. Contact a Senju Sprinkler representative with any custom orders. Please see chart on Page 8 for more detail.
- **Physical Characteristics:** Ref. Figures 1 and 1.1

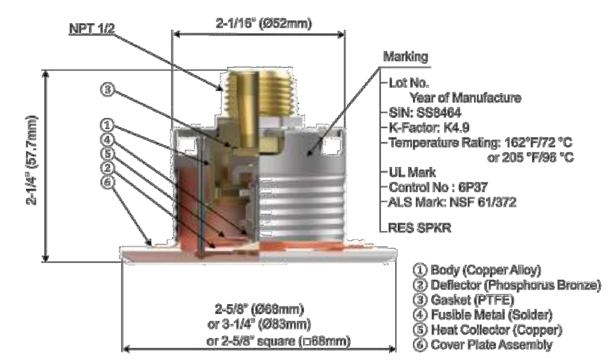


Figure 1: *Model RC-RES K = 4.9*

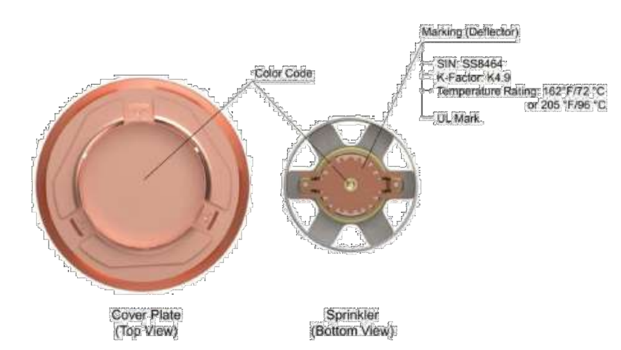


Figure 1.1: *Marking (Color Code)*

OPERATION

In case of fire, the solder component that holds together the Cover Plate and the Retainer melts. Then the Cover Plate is released at once. As a result, the Deflector drops down to the intended position. Two Heat Collectors are exposed to fire, and when sufficient heat from the fire is reached, internal components of the sprinkler fall apart. This leads to the water flow to be distributed on the affected fire area. (Ref. Figure 2)

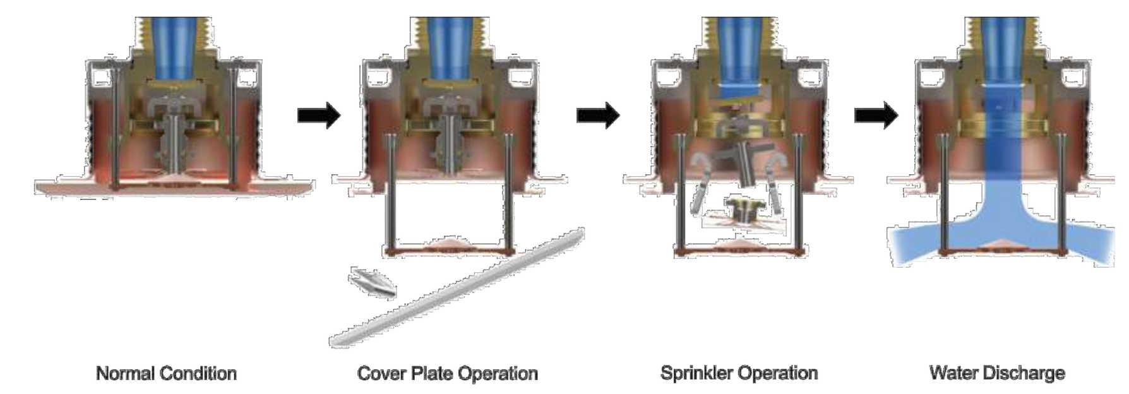


Figure 2: *Operation Process (For illustrative purposes only)*

DESIGN CRITERIA

The herein stated rules for use and installation of Model RC-RES are provided by the manufacturer and must be strictly implemented for safe and full results.

Notes

Residential Fire Sprinkler Systems should only be designed and installed by individuals who are completely familiar with automatic sprinkler system design, installation procedures, and techniques.

Several criteria may apply to the installation and usage of each sprinkler. Consequently, it is recommended that the sprinkler system designer review and develop a working understanding of the complete list of criteria prior to initiating the design of the sprinkler system.

Questions concerning sprinkler installation and usage criteria, which are not covered by the following instructions, should be submitted to your contracted company. Include sketches and technical details, as appropriate.

In some instances, the requirements of this document may concern specifications which are more stringent, and which take precedence over those specified in NFPA 13, 13D, 13R, or by the authority having jurisdiction.

The Model RC-RES must not be used in applications where the air pressure above the ceiling is greater than that below. Inspect all sprinklers after installation to ensure that both the gap between the cover plate, ceiling and the 6 slots in the cup are open and free from any air flow impediment.

The spray from the sprinkler is distributed radially outward and downward from the sprinkler deflector. Consequently, the sprinklers must be located such that there will be no blind spaces shielded from spray by partitions, room dividers, overhangs or other parts of the dwelling structure.

The number of sprinklers within each compartment (as defined by NFPA 13D, 13R, or 13) must be kept as few as possible while observing all guidelines relating to obstructions and spacing.

Use only the Cover Plate provided for the Model RC-RES. The sprinkler must be secured in place by firmly fastening the sprinkler system piping to the structure. If the sprinkler is not properly secured in position, reaction forces resulting from sprinkler operation could alter its orientation and its water distribution pattern.

Obstruction to Water Distribution

Locations of sprinklers must follow the obstruction rules of NFPA 13, 13D and 13R for Residential Sprinklers.

General Service Conditions

The Model RC-RES must only be utilized in WET PIPE sprinkler systems.

Heat Source Criteria

Refer to NFPA 13D, 13R or 13 for the requirements relating to the prevention of possible activation of the Heat Responsive Element of Model RC-RES, due to the exposure of a heat source other than an actual fire.

Available Sprinkler Temperature Ratings			
Sprinkler Temperature Classification	Sprinkler Nominal Temperature Rating	Maximum Ambient Ceiling Temperature	Temperature Rating of the Cover Plate Assembly
Ordinary	162°F (72°C)	100°F (38°C)	140°F (60°C)
Intermediate	205°F (96°C)	150°F (66°C)	162°F (72°C)

Precautionary Warnings for Corrosive Environments

Model RC-RES sprinklers should not be installed where they may be subjected to a corrosive environment including the following:

1. Chlorine ion and Chloride environment
Stress corrosion cracking may be caused by exposure to environments with Chlorine ion and Chloride. Exposure to this environment may result in sprinklers operating under Non-Fire conditions or Not Operating when exposed to an actual fire.

2. Sprinkler system piping with Copper
Sprinkler systems should be constructed in compliance with the applicable standards and the requirements for copper piping when copper piping is used in the sprinkler system. (Reference standards NFPA 13, ASTM B813, B828, and CDA (Copper Development Association) – Solder Joint)

All residual flux must be removed from the interior and exterior of the copper piping by thoroughly flushing before installation of the Sprinkler Heads. Otherwise, residues of flux may cause corrosion and/or leakage in the sprinkler system.

Hydraulic Design Criteria

The minimum required sprinkler flow rates for systems designed to NFPA 13D or 13R are given in Table A as a function of temperature rating and the maximum allowable coverage area. The sprinkler flow rate is the minimum required discharge from the most hydraulically demanding sprinkler from each of the total number of "design sprinklers" as specified in NFPA 13D or 13R.

For systems designed to NFPA 13, the number of designed sprinklers is to be the four most hydraulically demanding sprinklers. The minimum required discharge from each of the four sprinklers is to be the greater of the following:

- The flow rates given in Table A for NFPA 13D and 13R as a function of temperature rating and maximum allowable coverage area.
- A minimum discharge of 0.1GPM/sq.ft. [4.07LPM/sq.m] over the "design area" comprised of the four most hydraulically demanding sprinklers for the actual coverage area being protected by the four sprinklers.

Table A. NFPA 13D & 13R Wet Pipe Hydraulic Design Criteria for Model SS8464

For systems with ceiling types smooth flat horizontal, or beamed, or sloped, in accordance with NFPA 13D, 13R or 13 as applicable.

Maximum Coverage Area[a] Ft. x Ft. (m x m)	Maximum Spacing Ft. (m)	Ordinary Temperature Rating 162˚F (72˚C)		Intermediate Temperature Rating 205˚F (96˚C)		Deflector to Ceiling	Installation Type	Minimum Spacing Ft. (m)
		Flow[b] GPM (LPM)	Pressure[b] PSI (bar)	Flow[b] GPM (LPM)	Pressure[b] PSI (bar)			
12 x 12 (3.7 x 3.7)	12 (3.7)	13 (49.2)	7.0 (0.48)	13 (49.2)	7.0 (0.48)	Smooth Ceilings 3/8 to 7/8 Inches. Beamed Ceilings per NFPA 13D, 13R or 13. Installed in beam 3/8 to 7/8 inches below bottom of beam.	Concealed	8 (2.4)
14 x 14 (4.3 x 4.3)	14 (4.3)	13 (49.2)	7.0 (0.48)	13 (49.2)	7.0 (0.48)			
16 x 16 (4.9 x 4.9)	16 (4.9)	13 (49.2)	7.0 (0.48)	13 (49.2)	7.0 (0.48)			
18 x 18 (5.5 x 5.5)	18 (5.5)	17 (64.4)	12.0 (0.83)	17 (64.4)	12.0 (0.83)			
20 x 20 (6.1 x 6.1)	20 (6.1)	21 (79.5)	18.4 (1.27)	21 (79.5)	18.4 (1.27)			

a. For coverage area dimensions less than the above mentioned, it needs to use the minimum required flow for the Next Higher Coverage Area listed.

b. Requirement is based on minimum flow in GPM (LPM) from each sprinkler. The associated residual pressures are calculated using the nominal K-Factor. Refer to Hydraulic Design Criteria Section for details.

Sprinkler Spacing Criteria

The minimum spacing between sprinklers is 8 feet (2.4m). The maximum spacing between sprinklers cannot go beyond the coverage area calculated by using the specific hydraulic factors. (Ref. Table A)

INSTALLATION

The Model RC-RES must be installed in accordance with the following instructions:

NOTES

Do not use any sprinklers which have been subjected to potential mechanical damage. Do not use any sprinklers which show deformation or cracking in either the Sprinkler or the Protective Cap.

Prior to installation, sprinklers should be maintained in the original cartons and packaging until used to minimize the potential for damage to the sprinklers that could cause improper operation or non-operation.

The Protective Cap must remain on the sprinkler during installation. After the installation is completed, the Protective Cap must be removed to place the sprinkler in service.

Use a torque of 7 to 14 ft·lbs (9.5 to 19.0 N·m) to achieve a 1/2 inch NPT sprinkler joint. If you exceed the recommended maximum torque, this could result in damage to the sprinkler inlet, which may lead to leakage from the sprinkler.

Use only NR-H model wrench socket for installation of RC-RES sprinklers. Use of any other wrench or socket is prohibited and may cause damage to the sprinkler.

In case of insufficient adjustment in Cover Plate installation, do not try to overly tighten, screw the sprinkler too loosely or make any modification to the cover plate assembly. Readjust the sprinkler fitting for a better fit.

Do not rotate the Cap Removal Tool for RC to the left with force when placing the two hook arms into place. The installed sprinkler may become loosened, which may cause water leakage.

Installation Steps

Step 1: The installation requirements for the sprinkler are as follows: to be installed only in the pendent position with the waterway perpendicular to the ceiling. Install the sprinkler fitting so that the distance from the face of the fitting to the mounting surface will be nominally 2 inches (50.8mm) as shown in Figure 3.

Step 2: With pipe thread sealant applied to the threads, hand tighten the sprinkler into the sprinkler fitting. Then tighten it with the Socket NR-H or Ratchet (3/8" drive) & Socket NR-H Combination (Ref. Figure 4). The teeth of the Socket must fit perfectly with the grooves on the Sprinkler for proper installation (Ref. Figure 4).

Step 3: If desired, the Protective Cap may also be used to locate the center of the clearance hole by gently pushing the ceiling material against the center point of the Protective Cap. Before the installation of the ceiling, the sprinkler installation can be started with a 2-3/8 inch (60mm) diameter clearance hole (Ref. Figure 3). Use the "Vertical Adjustment" indicator on the Protective Cap to check for proper installation height (Ref. Figure 3).

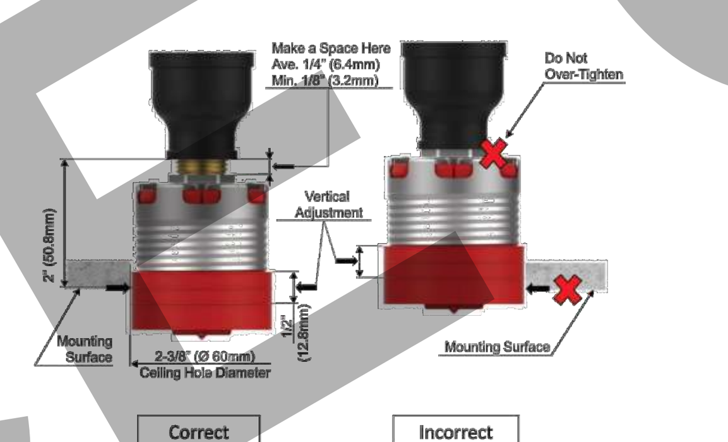


Figure 3: *Installation*

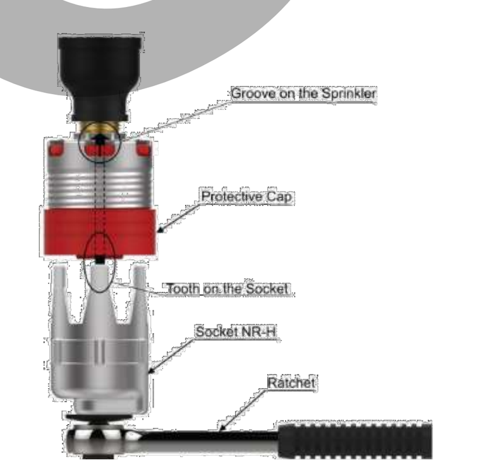


Figure 4: *Ratchet & Socket*

Step 4: Use the Cap Removal Tool for RC to remove the Protective Cap (Ref. Figure 5), and then push or screw a Cover Plate Assembly on the Cup of the Sprinkler by hand until its flange just has contact with the ceiling (Ref. Figure 6 and Figure 7). Stop tightening the Cover Plate Assembly once the flange has contact with the ceiling. If the ceiling has been lifted from its normal position in the process of tightening the Cover Plate Assembly, readjust the cover plate assembly as necessary. If the flange of the Cover Plate Assembly cannot contact the ceiling sufficiently, readjust the sprinkler fitting as necessary. When properly installed, there is a nominal 1/16 inch (1.6mm) air gap between the lip of the Cover Plate and the ceiling, as shown in Figure 6.

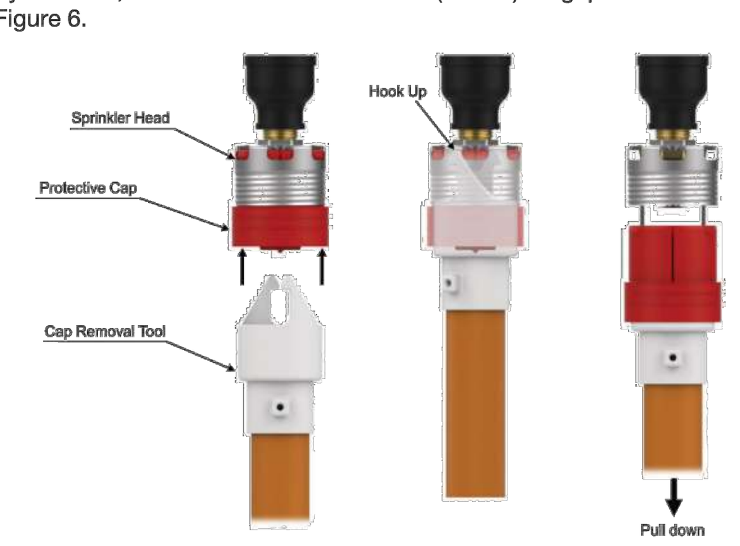


Figure 5: *Protective Cap Removal*

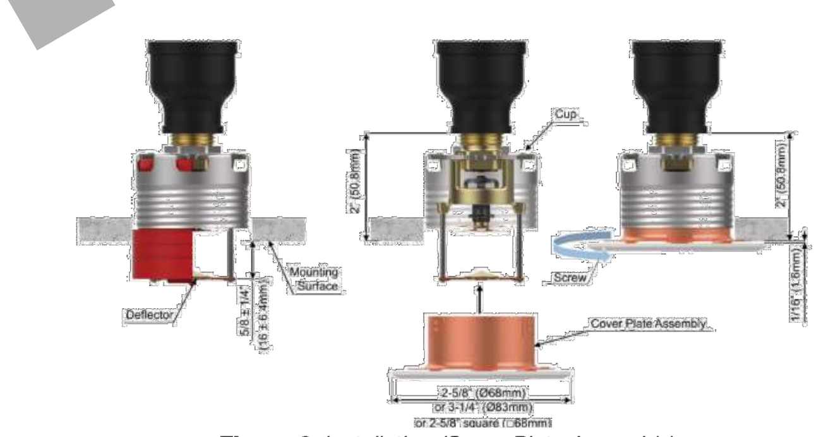


Figure 6: *Installation (Cover Plate Assembly)*

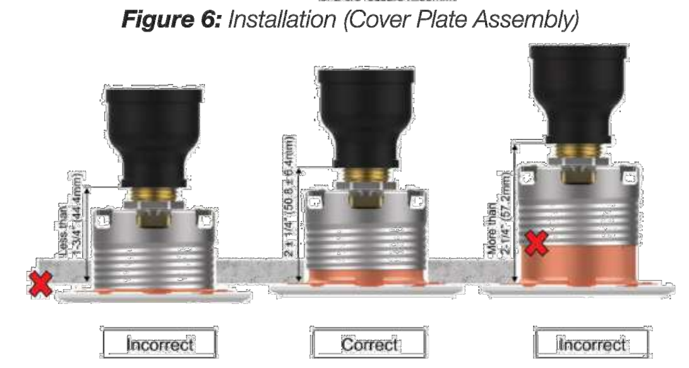


Figure 7: *Installation (Correct and Incorrect)*

CARE & MAINTENANCE

The following instructions must be implemented for the maintenance and service of the Model RC-RES.

Notes

Wet pipe sprinkler systems must be maintained at a minimum temperature of 40°F / 4°C to prevent freezing and bursting of the pipe and/or sprinklers.

Automatic sprinklers are not to be tested with a heat source. Operation of the heat responsive element can result.

Absence of a Cover Plate Assembly may delay the response time of the sprinkler in case of a fire.

Install the cover plate assembly properly, as shown in Figure 6. Improper installation of the cover plate assembly may cause improper operation or non-operation.

If the ceiling is to be repainted after the installation of the Sprinkler, care must be exercised to ensure that the new paint does not seal off any of the air gap.

Factory painted Cover Plates must not be repainted. They should be replaced, if necessary, by factory painted cover plates. Non-factory applied paint may adversely delay or prevent sprinkler operation in case of a fire.

Do not pull the Cover Plate. Separation may result.

In preparation for maintenance of the fire protection system, permission to close the main control valve must be obtained from the proper authorities, and all affected parties by this action, and must be informed before the maintenance session can commence.

Do NOT enclose any sprinklers within drapes, curtains, or valances.

Do NOT hang anything from the sprinklers.

Do NOT clean the sprinklers with soap and/or water, detergents, ammonia, cleaning fluids, or other chemicals. Remove dust, lint, cobwebs, cocoons, insects, and larvae by gently brushing with a feather duster or gently vacuuming with a soft bristle (i.e., dusting) brush attachment.

Exercise suitable safety precautions in the use and storage of highly flammable materials. The rapid rate of fire development and spread of these materials can reduce the ability of the sprinkler system to aid in the control of a fire involving such hazards.

Leaking or corroded sprinklers must be replaced.

Automatic Sprinklers must be kept in a cool and dry place.

Automatic sprinklers must never be physically altered, such as painted, plated, or coated, once shipped from the factory. If the sprinklers have been in any way modified, they must be replaced.

Great caution must be applied to prevent damage to the sprinklers at all stages - before, during, and after installation. Damaged units because of dropping, hitting, over-tightening, or wrench slippage, must be replaced.

The Model RC-RES must only be replaced with pendent sprinklers which are listed for residential fire protection service and which have the same nominal K-Factor, the same coverage area, and the same or lower flow ratings (as indicated under Table A "Hydraulic Design Criteria").

When remodeling, such as by adding false beams or light fixtures or changing the location of compartment walls, first verify that the new construction will not violate the installation requirements of the applicable standards of NFPA. Alter the new construction and/or the sprinkler system to suit the requirements of this document and the applicable NFPA regulations.

The owner is responsible for the maintenance of the sprinkler system, including inspection and testing of its compliance with this document, as well as the standards of the National Fire Protection Association (e.g., NFPA 25), and the regulations of any other authorities having jurisdiction. The owner should direct any questions regarding the above rules and regulations to the installing contractors or the sprinkler manufacturer. It is recommended that automatic sprinkler systems be inspected, tested, and maintained by a qualified Inspection Service in accordance with NFPA 25.

LIMITED WARRANTY

For details of warranty, refer to Sales Contract.

ORDER PROCEDURE

When placing an order, please contact a local distributor with the following information (Model Name, Temperature Rating and Finish).

Sprinkler

- Model: RC-RES
  SIN: SS8464, Residential Flat Concealed Sprinkler, Pendent, K4.9, Temperature: 162°F (72°C) or 205°F (96°C)

Cover Plate Assembly

- 2-5/8 inch (ϕ68mm) or 3-1/4 inch (ϕ83mm) or 2-5/8 inch square (□68mm), Order separately from Sprinkler
  Please refer to the chart below for available sizes, temperature, and finishes.

	Standard Finishes								Custom Finishes	
	White	Ivory	Beige	Brown	Black	Nickel	Copper	Wood Grain	Custom Color	Custom Pattern
2-5/8" Round, 140°F	⊘	⊘	-	-	-	-	-	-	⊘	⊘
3-1/4" Round, 140°F	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘
2-5/8" Square, 140°F	⊘	-	-	-	-	-	-	-	⊘	⊘
2-5/8" Round, 162°F	⊘	-	-	-	-	-	-	-	⊘	⊘
3-1/4" Round, 162°F	⊘	⊘	⊘	⊘	⊘	-	-	⊘	⊘	⊘
2-5/8" Square, 162°F	⊘	-	-	-	-	-	-	-	⊘	⊘

Tools & Accessories

- Socket NR-H
  for use with a 3/8" drive ratchet (not included)
- Socket NR-H Plastic
  for use with a 1/2" drive ratchet (not included)
- Cap Removal Tool for RC
- Cover Plate Installation Tool

CLIENT:

ADDRESS:

-

NOTES:

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

REV. NO.	DESCRIPTION	DATE	BY

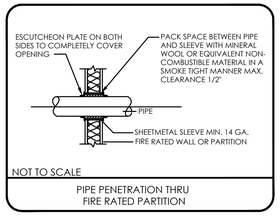
PROJECT:
DAPHNE CO

TITLE:
FIRE EQUIPMENT DATA SHEETS.

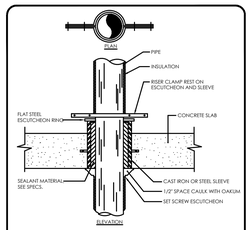
PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36: 1/4=1'-0"

DRAWING NO.
F3.01

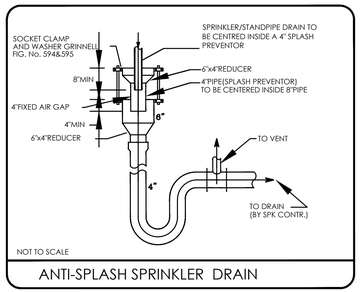
REV.



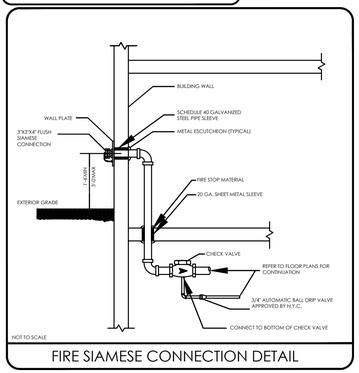
PIPE PENETRATION THRU FIRE RATED PARTITION



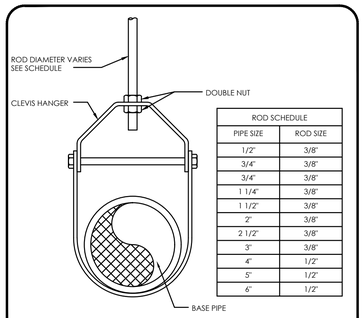
RISER CLAMP



ANTI-SPLASH SPRINKLER DRAIN

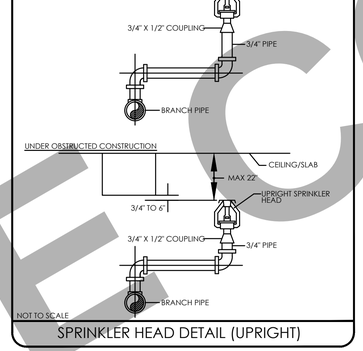


FIRE SIAMESE CONNECTION DETAIL

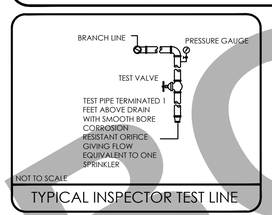


ROD SCHEDULE	
PIPE SIZE	ROD SIZE
1/2"	3/8"
3/4"	3/8"
3/4"	3/8"
1 1/4"	3/8"
1 1/2"	3/8"
2"	3/8"
2 1/2"	3/8"
3"	3/8"
4"	1/2"
5"	1/2"
6"	1/2"

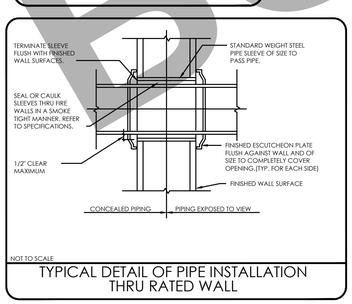
HANGER DETAIL



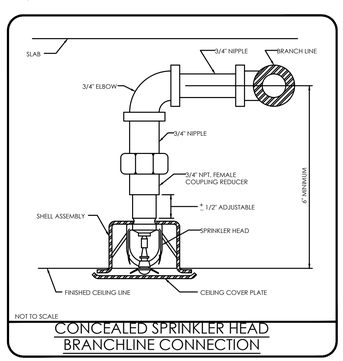
SPRINKLER HEAD DETAIL (UPRIGHT)



TYPICAL INSPECTOR TEST LINE



TYPICAL DETAIL OF PIPE INSTALLATION THRU RATED WALL



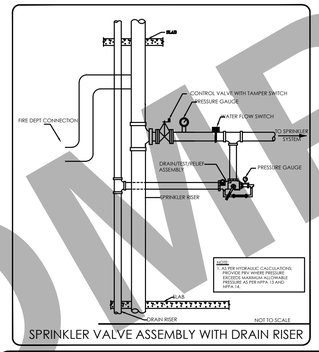
CONCEALED SPRINKLER HEAD BRANCHLINE CONNECTION

CPVC PIPING NOTES

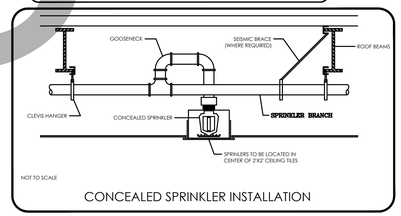
1. SYSTEM DESIGN AND INSTALLATION TO MEET THE REQUIREMENTS OF NFPA 13D (2019 ED.) AND CITY OF VCFD FIRE DEPARTMENT
2. THIS SYSTEM HAS BEEN HYDRAULICALLY CALCULATED TO PROVIDE 13 GPM @ TWO (2) REMOTE SPRINKLERS UTILIZING 16x6 COVERAGE OF THE TYCO CONC PENDENT (LFII) FIRE SPRINKLER OR (1) SPRNK AT 20 GPM USING 20X20 COVERAGE PER SPRINKLER
3. OBTAIN STRUCTURAL ENGINEERS APPROVAL BEFORE DRILLING ANY BEAMS.
4. ALL DIMENSIONS ARE +/- AND ARE A GUIDE FOR INSTALLATION ONLY.
5. CEILING HEIGHTS VARY AND ARE NOTED ON PLAN.
6. ALL PIPING SIZES IS 3/4" CPVC. SEE PLAN FOR ANY SIZING VARIATIONS.
   PROTECTION AGAINST FREEZING OF ALL PIPES, SPRINKLERS, AND VALVES IS THE RESPONSIBILITY OF THE OWNERS.
7. CPVC MAY BE RUN IN JOIST SPACES BETWEEN GYP. BOARD AND FLOOR PLY WITHOUT ADDED PROTECTION.
8. CPVC RUN IN UNSPRINKLERED AREAS SHALL BE COVERED OVER WITH COMMON INSULATION.
9. BRANCH LINES SHALL BE BRACED AT A DISTANCE OF SIX INCHES OR LESS FROM THE TEE OR ELBOW DROP TO THE SPRINKLER HEAD.
10. HANGER SPACING FOR 3/4" CPVC PIPE IS 6'-0" ON CENTER.
11. THE PIPE HANGER MUST HAVE A LOAD BEARING SURFACE AT LEAST 1/2 INCH WIDE OR PROVIDE SUPPORT IN TWO PLACES, SUCH AS A WRAP AROUND U-HANGER.
12. THE SYSTEM IS TO MEET THE REQUIREMENTS OF NFPA 13D AND CRC

SPACING REQUIREMENTS OF SPRINKLERS IN HEAT ZONES

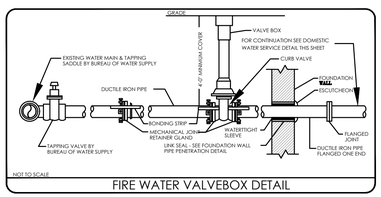
MINIMUM DISTANCE	OBJECT
0-6	WATER HEATER
1-0	UNINSULATED PIPE
1-6	OVEN AND STOVE
2-0	CEILING DIFFUSER
5-0	FIREPLACE FRONT
3-0	FIREPLACE SIDES
1-6	UNINSULATED HEATING DUCT
1-6	WATER HEATER OR FURNACE FLUE
3-0	CEILING FAN



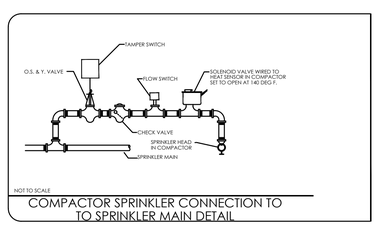
SPRINKLER VALVE ASSEMBLY WITH DRAIN RISER



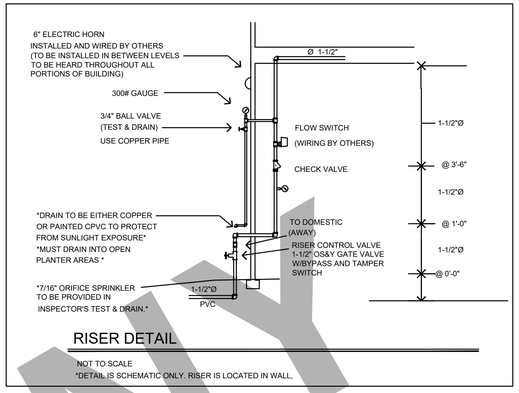
CONCEALED SPRINKLER INSTALLATION



FIRE WATER VALVEBOX DETAIL

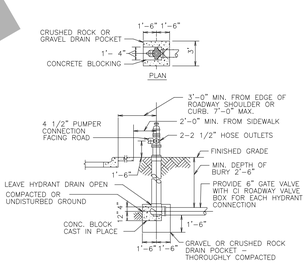


COMPACTOR SPRINKLER CONNECTION TO TO SPRINKLER MAIN DETAIL



RISER DETAIL

NOT TO SCALE
*DETAIL IS SCHEMATIC ONLY. RISER IS LOCATED IN WALL.



FIRE HYDRANT – WET TYPE

N.T.S.

CLIENT:

ADDRESS:

-

CONFIDENTIALITY STATEMENT:

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

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

DAPHNE CO

TITLE:

FIRE GENERAL DETAILS.

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

DRAWING NO.	REV.
F 4 . 0 1	