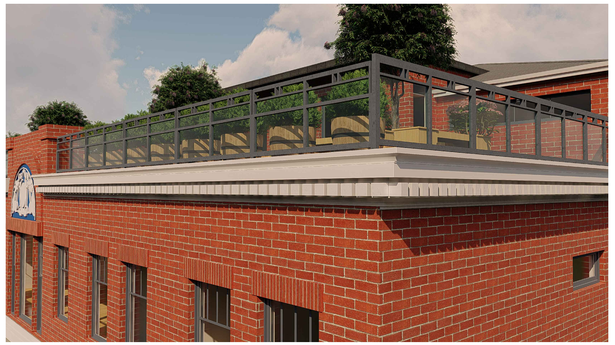


ARCHITECTURAL DRAWINGS INDEX

STRUCTURAL DRAWINGS INDEX

ELEVATOR SUBMITTAL PACKAGE

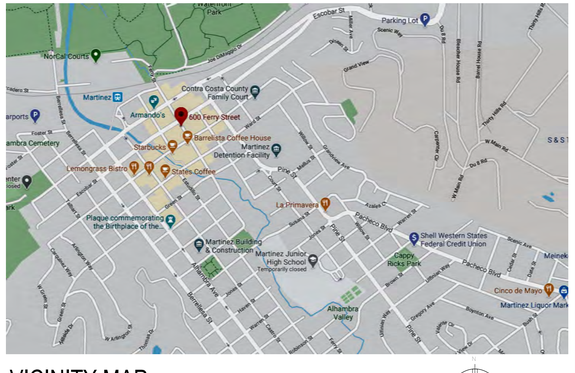
MEP DRAWINGS INDEX

DEFERRED SUBMITTALS:

FIRE SPRINKLER - HVAC
ELECTRICAL - PLUMBING

BUILDING CODE REQUIREMENTS

THE GENERAL CONTRACTOR SHALL FULLY COMPLY WITH THE FOLLOWING INTERNATIONAL CODES, 2019
CALIFORNIA BUILDING STANDARDS CODE (CAL. CODE REGS., TITLE 24)
COMPLIANCE WITH CITY OF SAN JOSE MUNICIPAL CODES (TITLE 20).
CALGREEN CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGREEN), PART 11 OF TITLE 24
CBC CALIFORNIA BUILDING CODE (PART 2 OF TITLE 24)
CCR CALIFORNIA CODE OF REGULATIONS
CEBC CALIFORNIA EXISTING BUILDING CODE (PART 10 OF TITLE 24)
CEC CALIFORNIA ELECTRICAL CODE (PART 3 OF TITLE 24)
CEC CALIFORNIA ENERGY CODE (PART 6 OF TITLE 24)
CEC CALIFORNIA ENERGY COMMISSION
CMC CALIFORNIA MECHANICAL CODE (PART 4 OF TITLE 24)
CPC CALIFORNIA PLUMBING CODE (PART 5 OF TITLE 24)
CRSC CALIFORNIA REFERENCED STANDARDS CODE (PART 12 OF TITLE 24)
DPH IDENTIFIES CODE PROVISIONS BY THE DEPARTMENT OF PUBLIC HEALTH
IBC INTERNATIONAL BUILDING CODE
IFC INTERNATIONAL FIRE CODE
IEBC INTERNATIONAL EXISTING BUILDING CODE
IRC INTERNATIONAL RESIDENTIAL CODE
NEC NATIONAL ELECTRICAL CODE
NFPA NATIONAL FIRE PROTECTION ASSOCIATION



VICINITY MAP

PROJECT TEAM

Owner:	Brandon Varise / Portside Lofts is the vision of Flexsquare, LLC
Architect:	PixelArch, LTD., Architecture and Civil, Structural & Mechanical Engineering
PE on board:	Barrett Crook PE barrettcrook@kittyhawkengineering.com
Interior Designs:	Truitt Design/Scott Truitt
Law Office:	Law Office of Daniel P. Doporto, Land Use & Permitting

Energy Consult LLC
(424) 247-7658
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PROJECT DESCRIPTION

The proposed project is the redevelopment of the existing historic structure as a three (3) level mixed-use structure to house residential, office and retail/commercial uses. Total square footage of the project at build-out is expected to be approximately 19,050 square feet including the new third floor space, rooftop terrace, and the finished basement/fitness center.

Location	600-610 Ferry Street
Site Acreage	0.21 Acres (9,200 sq. ft. +/-)
Product Type	Mixed-Use
Uses	Residential, Office & Retail
Total Square Footage	19050 SF
# of Residential Units	13 (12 one-bedroom, 1 studio)
Total Residential Square Footage	9510 SF
Retail Square Footage	1,803 (up to 4 separate units)
Office Square Footage	1537.8 (up to seven separate offices)

PREVIOUS USE

FIRST FLOOR: RETAIL. 6435 SF

SECOND FLOOR: RETAIL IN THE LARGE ATRIUM AREA. OFFICES WHERE THE EXISTING OFFICES ARE LOCATED. 6337 SF

COMPLIANCE WITH LAND USE AND ZONING REQUIREMENTS & DEVELOPMENT STANDARDS

The proposed Project is consistent with all applicable land use designations and complies with all applicable zoning requirements and development standards with the application of the density bonus and incentives and concessions available under Government Code section 65915 and Chapter 22.57 of the Martinez Municipal Code.

NOTE:

EACH UNIT SHALL BE PROVIDED WITH ONE OR MORE SHUT-OFF VALVES TO TERMINATE WATER SUPPLY TO EACH UNIT W/O AFFECTING OTHER DWELLING UNITS IN THE BUILDING. WATER SUPPLY TO COMMON AREAS SHALL BE CAPABLE OF BEING TERMINATED WITHOUT AFFECTING THE DWELLING UNITS.
ALL SHUT-OFF VALVES NEED TO BE ACCESSIBLE TO THE DWELLING UNIT OCCUPANT AT ALL TIMES AND WITHOUT THE REMOVAL OF ANY PERMANENT CONSTRUCTION.

BIDDER DESIGN ELECTRICAL CRITERIA

1. ELECTRICAL DESIGN CONTRACTOR WILL COORDINATE POWER, SIGNAL AND LIGHTING DESIGN AND PROVIDE CALCULATIONS IN CONFORMANCE WITH STATE ELECTRICAL CODE, ENERGY CODE AND BUILDING CODE.
2. ELECTRICAL DESIGN CONTRACTOR WILL REVIEW THE PROGRAM DRAWING AND WILL MEET WITH THE TENANT TO FINALIZE THE EXACT POWER LOCATIONS AND REQUIREMENTS FOR EQUIPMENT. DESIGN WILL PROVIDE FOR CODE REQUIRED AND MAINTENANCE RECEPTACLES. DESIGN WILL INCLUDE FIRE ALARM SYSTEM IF REQUIRED, COORDINATED AND EXTENDED FROM BUILDING FIRE ALARM SYSTEM. OUTLETS, PHONE AND DATA JACKS SHOWN ON ARCHITECTURAL PLANS (IF ANY) ARE MINIMUM REQUIRED AND MAY NOT INCLUDE ADDITIONAL OUTLETS REQUIRED BY CODE OR FOR MANTENANCE.
3. ELECTRICAL DESIGN CONTRACTOR WILL COORDINATE HIS WORK WITH THE ARCHITECT AND WITH THE HVAC AND FIRE SPRINKLER DESIGN/BUILD
4. ELECTRICAL DESIGN CONTRACTOR WILL MEET WITH THE TENANT TO DETERMINE AND/OR CONFIRM THE LOCATION OF ALL DATA AND COMMUNICATION CONNECTIONS REQUIRED AND INCLUDE CONDUIT, BOX AND PULL STRING IN THE REQUIRED LOCATIONS UNDER THE T.I. CONTRACT.
5. CONFIRM LIGHTING SWITCHING REQUIREMENTS WITH OWNER
6. CONSTRUCTION AND AS-BUILT DRAWINGS TO BE PROVIDED ON ELECTRONIC MEDIA, AUTOCAD RELEASE 14 OR LATER, TO THE ARCHITECT FOR THE OWNER'S RECORDS.
7. ELECTRICAL DESIGN/BUILD CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY ALL DEVICES, INCLUDING BUT NOT LIMITED TO: STROBES, ANNUNCIATERS AND EGRESS LIGHTING, REQUIRED BY ALL APPLICABLE CODES. POWER AND LIGHTING DRAWINGS INCLUDED IN THIS DOCUMENT ARE FOR DESIGN PURPOSES ONLY. ANY DEVICE REQUIRED BY CODE OR BY BUILDING OFFICIAL AND NOT INCLUDED IN ELECTRICAL DESIGN/BUILDERS BASE BID SHALL BE INSTALLED AT THE ELECTRICAL DESIGN CONTRACTOR'S EXPENSE.

MECHANICAL, ELECTRICAL, PLUMBING DESIGN BUILD NOTES

1. ALL MECHANICAL, ELECTRICAL, PLUMBING WORK SHALL BE PROVIDED UNDER A SEPARATE CONTRACT AND PERMIT.

2. IT IS THE DESIGN/ BUILD CONTRACTOR'S RESPONSIBILITY TO CONFORM TO ALL APPLICABLE BUILDING CODES AND TO PROVIDE ALL DOCUMENTATION REQUIRED TO OBTAIN PERMITS FOR WORK UNDER THEIR CONTRACT.

3. THE OWNER AND ARCHITECT ARE NOT RESPONSIBLE FOR ADDITIONAL COSTS INCURRED DUE TO DESIGN/BUILD CONTRACTOR'S ERROR AND OMISSIONS.

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REGISTERED PROFESSIONAL ENGINEER
BARRETT CROOK
C 057 1199
Exp. 12-31-2021
7-12-2021
CIVIL
STATE OF CALIFORNIA

Project Name and Address:

PORTSIDE LOFTS
600 FERRY STREET, MARTINEZ, CA 94513

Date: Sep. 21, 2021
Scale:

DRAWING TITLE: COVER SHEET

Sheet :

Page No. : C1.0

No.	Revision/Issue	Date
1	Issued for client approval	Nov. 05, 2019
2	Issued for city submittal	Nov. 20, 2020

SECTION 260500 - GENERAL PROVISIONS - ELECTRICAL GENERAL

A. MAKE THE INSTALLATION IN ACCORDANCE WITH RECOGNIZED GOOD PRACTICES FOR THIS TYPE OF WORK. USE THE PROPER MATERIALS AND THE PROPER METHODS, WHETHER OR NOT THESE ARE DESCRIBED IN DETAIL HEREIN. PROVIDE ALL LABOR AND MATERIALS NECESSARY FOR A COMPLETE, OPERABLE INSTALLATION. CODES, PERMITS AND DRAWINGS

B. CONFORM TO APPLICABLE CALIFORNIA ELECTRICAL CODE, APPLICABLE NATIONAL ELECTRIC SAFETY CODE, AND TO APPLICABLE LOCAL CODES. WHERE THE DRAWINGS AND SPECIFICATIONS EXCEED THE REQUIREMENT OF THE CODE, COMPLY WITH THE DRAWINGS AND SPECIFICATIONS.

C. GENERAL CONTRACTOR WILL OBTAIN AND PAY ALL COSTS FOR REQUIRED PERMITS AND INSPECTIONS FOR ALL WORK INCLUDED HEREIN.

D. THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO COMPLY WITH LISTED CODES, ORDINANCES, REGULATIONS AND STANDARDS. WHERE DISCREPANCIES OCCUR BETWEEN DRAWINGS, SPECIFICATIONS, CODE REQUIREMENTS AND ACTUAL FIELD CONDITIONS, NOTIFY THE ARCHITECT IMMEDIATELY AND ASK FOR AN INTERPRETATION. SHOULD INSTALLED MATERIALS OR WORKMANSHIP FAIL TO COMPLY, THE CONTRACTOR IS RESPONSIBLE FOR CORRECTING THE IMPROPER INSTALLATION AT NO ADDITIONAL COST TO THE OWNER. MATERIALS

E. WHERE THE UNDERWRITERS' LABORATORIES (UL) HAVE ESTABLISHED STANDARDS AND HAVE ISSUED LABELS FOR A PARTICULAR GROUP, CLASS OR TYPE OF MATERIAL, APPARATUS, APPLIANCE OR DEVICE, THE UL LABEL SHALL BE REQUIRED ON ALL SUCH ITEMS IN THAT CATEGORY INCORPORATED INTO THE WORK. SUBMITTALS

F. SUBMIT FOR APPROVAL SHOP DRAWINGS ON THE FOLLOWING:

F.1. WIRES AND CABLES

F.2. RACEWAYS & BOXES

F.3. WIRING DEVICES

F.4. PANELBOARDS

F.5. LIGHT FIXTURES TESTS

G. ALL DEFECTIVE MATERIAL AND WORKMANSHIP DISCLOSED AS THE RESULT OF TESTS REQUIRED IN OTHER PORTIONS OF THESE SPECIFICATIONS SHALL BE CORRECTED AT CONTRACTOR'S EXPENSE. IT SHALL BE SHOWN, BY DEMONSTRATION IN SERVICE, THAT ALL CIRCUITS AND DEVICES ARE IN GOOD OPERATING CONDITION. EQUIPMENT CONNECTIONS

H. POWER WIRING: MAKE WIRING CONNECTIONS TO ALL DEVICES AND EQUIPMENT BEING INSTALLED AS PART OF THE CONTRACT. RECORD DRAWINGS A. ON ONE (1) SET OF CONTRACT DRAWINGS, KEPT AT THE SITE DURING CONSTRUCTION, MARK ALL WORK THAT IS INSTALLED DIFFERENTLY FROM THAT SHOWN ON PLANS, INCLUDING REVISED CIRCUITRY, MATERIAL OR EQUIPMENT. SUFFICIENT DIMENSIONS SHALL BE PROVIDED TO LOCATE ALL MATERIALS INSTALLED BENEATH AND OUTSIDE THE BUILDING INCLUDING, BUT NOT LIMITED TO, UNDERGROUND CONDUITS, CABLING, GROUND RODS AND STUBOUTS.

I. ALL CHANGES OR REVISIONS TO THE CONTRACT DRAWINGS INCLUDING, BUT NOT LIMITED TO, THOSE INDICATED BY AMENDMENT, CHANGE ORDER, FIELD ORDER, WRITTEN RESPONSE TO RFI OR OTHER CONTRACTUAL MEANS SHALL BE KEPT CURRENT AS THE WORK PROGRESSES AND SHALL BE INCORPORATED ONTO THE FINAL RECORD DRAWINGS.

J. ACCURATELY LOCATE AND DIMENSION ALL UNDERGROUND AND EMBEDDED CONDUIT RUNS ON THE RECORD DRAWINGS.

K. THE MARKED DRAWINGS SHALL BE KEPT CURRENT AS THE WORK PROGRESSES AND SHALL BE AVAILABLE FOR INSPECTION UPON REQUEST. AT THE CLOSE OF CONSTRUCTION, PREPARE A SET OF ACCURATE REPRODUCIBLE RECORD DRAWINGS AND TURN THEM OVER TO THE ARCHITECT. THE CORRECT AND COMPLETED RECORD DRAWINGS ARE A PREREQUISITE TO FINAL CONSTRUCTION PAYMENT.

K.1. AS PART OF THE REPRODUCIBLE RECORD DRAWINGS, THE CONTRACTOR SHALL PRODUCE FULL SIZE REPRODUCIBLE DRAWINGS WITH THE FINAL PANELBOARD SCHEDULES AS MODIFIED DURING CONSTRUCTION AND FINAL LIGHT FIXTURE SCHEDULE AS MODIFIED DURING CONSTRUCTION.

K.2. THESE DRAWINGS SHALL BE ON ARCHITECTURAL BASE SHEETS AND NUMERICALLY SEQUENCED FOLLOW THE LAST "E" SHEET. SECTION 260533 - RACEWAYS GENERAL

L MINIMUM SIZES: MINIMUM SIZE FOR ABOVE GROUND RACEWAYS SHALL BE 3/4" USE 1" CONDUIT FOR BELOW GRADE INSTALLATIONS. PRODUCTS

M. RACEWAYS.

M.1. ELECTRIC METALLIC TUBING (EMT) SHALL BE ZINC-COATED STEEL AS MANUFACTURED BY TRIANGLE OR AN APPROVED EQUAL.

N. FITTINGS.

N.1. INDOORS ON EMT: COMPRESSION TYPE

O. PROVIDE ALL CONNECTORS, TEES, ELBOWS, ETC. REQUIRED TO ENSURE A RIGID COMPLETE INSTALLATION. INSTALLATION

O.1. INSIDE BUILDING UNDER CANOPY.

P. RGC RIGID CONDUIT WITH COMPRESSION FITTINGS.

Q. EXPOSED CONDUIT SHALL BE RUN STRAIGHT LINES PARALLEL TO BUILDING CONSTRUCTION.

Q.1. EXTERIOR LOCATIONS BELOW CHEETAH BUILDING CANOPY UP TO 8 FT ABOVE FINISHED FLOOR

R. INSTALL RGC RIGID CONDUIT WITH COMPRESSION FITTINGS.

S. UNDERGROUND LOCATIONS.
INSTALL PVC SCHEDULE 40 CONDUIT WITH SCHEDULE 80 ELBOWS.

1. G. SUPPORT:

1.1. FURNISH AND INSTALL COMPLETE, ADEQUATE AND STURDY SUPPORTS FOR ALL PARTS OF THE RACEWAY SYSTEM.

1.2. ALL CONDUITS MUST BE SUPPORTED WITH MATERIALS SPECIFICALLY MADE FOR THIS PURPOSE. DO NOT USE WIRE HANGERS. USE MALLEABLE IRON CONDUIT CLAMPS, TRAPEZE SUPPORTS OR CADDY FASTENERS. MULTIPLE RUNS SHALL BE SUPPORTED BY "UNISTRUT" OR EQUIVALENT MULTIPLE HANGERS. EACH CONDUIT SHALL BE CLAMPED AT EACH "UNISTRUT" SUPPORT.

2. CONTINUITY: MAKE ALL JOINTS AND CONNECTIONS IN A MANNER, WHICH WILL ENSURE MECHANICAL STRENGTH AND ELECTRICAL CONTINUITY.

3. OPENINGS: KEEP ALL RACEWAY OPENINGS CLOSED IN A MANNER TO PREVENT ENTRY OF MOISTURE AND FOREIGN MATERIALS UNTIL CONDUCTORS ARE INSTALLED. BLOW AND SWAB OUT ALL RACEWAYS BEFORE PULLING IN CONDUCTORS. IN EACH RACEWAY PULL ALL CONDUCTORS SIMULTANEOUSLY. SECTION 260519 - WIRES AND CABLES GENERAL

4. PROVIDE A COMPLETE SYSTEM OF INSULATED CONDUCTORS FOR ALL POWER REQUIREMENTS AND FOR ALL OTHER SYSTEMS WHERE THE CONDUCTORS ARE NOT INCLUDED UNDER THAT SYSTEM'S SECTION, TESTED AND CONNECTED AT BOTH ENDS. MATERIALS

5. CONDUCTOR MATERIALS - 600 VOLT:

6. SOFT DRAWN ANNEALED COPPER, NINETY-EIGHT (98%) PERCENT CONDUCTIVITY, CONTINUOUS FROM DEVICE TO DEVICE, WITHOUT WELDS, SPLICES OR JOINTS. MINIMUM WIRE SIZE NO. 12. CONDUCTOR SIZES SHOWN ON THE DRAWINGS ARE THE MINIMUM COPPER AWG CONDUCTOR SIZES REQUIRED.

7. CONDUCTOR INSULATION - 600 VOLT:

7.1. ALL WIRE SHALL BE INSULATED FOR 600 VOLTS.

7.2. CONTROL WIRING: THW, THWN OR THHN, STRANDED.

7.3. POWER WIRING: THHN/THWN STRANDED.

7.4. ALL INSULATION IN AWG SIZES TEN (10) AND BELOW SHALL BE IMPREGNATED WITH COLOR ACCORDING TO THE FOLLOWING: 120/208 VOLTS PHASE "A" BLACK PHASE "B" RED PHASE "C" BLUE NEUTRAL WHITE (STRIPED TO INDICATE PHASE) GROUND GREEN COLOR (OTHER THAN BLACK) IS NOT AN INTEGRAL PART OF INSULATION, USE 3M NO. 35 TAPES IN THE SAME COLOR CODE TO IDENTIFY BOTH ENDS OF CONDUCTORS. GROUND CONDUCTOR MUST HAVE GREEN INSULATION; GREEN TAPES ON OTHER COLORS OF INSULATION ARE NOT ACCEPTABLE.

7.5. MANUFACTURERS: ANACONDA, COLLYER, GENERAL ELECTRIC OKONITE, PHELPS DODGE, ROME, TRIANGLE, OR APPROVED EQUAL. INSTALLATION

8. WIRE - 600 VOLT:

8.1. DO NOT PULL ANY CONDUCTORS INTO CONDUITS UNTIL ALL WORK OF A NATURE WHICH MAY CAUSE INJURY TO CONDUCTORS IS COMPLETED. NO WIRE OR CABLE SHALL BE PULLED INTO CONDUIT THAT TERMINATES IN MAJOR EQUIPMENT, UNTIL SUCH EQUIPMENT HAS BEEN INSTALLED AND PERMANENTLY ANCHORED IN PLACE.

8.2. BLOW OUT AND SWAB CONDUITS BEFORE INSTALLING CONDUCTORS.

8.3. FEEDERS SHALL BE RUN THEIR ENTIRE LENGTH AS CONTINUOUS CONDUCTORS WITHOUT JOINTS OR SPLICES; HOWEVER, JOINTS AND SPLICES IN BRANCH CIRCUITS SHALL BE PERMITTED WHERE CIRCUITS DIVIDE (IN JUNCTION BOXES ONLY).

8.4. CARE SHALL BE EXERCISED WHEN INSTALLING WIRE IN CONDUIT SO AS NOT TO DAMAGE THE CONDUCTOR INSTALLATION. MECHANICAL MEANS OF PULLING SHALL NOT BE USED UNLESS APPROVED. OILS, GREASE OR ANY OTHER INJURIOUS TYPE OF PULLING COMPOUND SHALL NOT BE USED WHEN PULLING IN CONDUCTORS. "Y-ER-EASE" COMPOUND OR APPROVED EQUAL WILL BE ACCEPTABLE.IN EQUIPMENT AND PANELS, BUNCH, FORM AND SECURE WIRE WITH BURNDY TYRAP'S OR APPROVED EQUAL, AT INTERVALS APPROPRIATE TO THE BUNDLE SIZE.

8.5. THE USE OF JUNCTION BOXES TO GATHER SEVERAL HOMERUNS INTO A LARGER CONDUIT TO A PANELBOARD WILL NOT BE PERMITTED.

8.6. LEAVE ADEQUATE SPACE IN PANELBOARDS AND CABINETS FOR FUTURE CIRCUITS AND FOR WIRING INSTALLED BY OTHERS.

8.7. ALL RACEWAYS SHALL INCLUDE A CODE SIZED INSULATED GROUNDING CONDUCTOR.

8.8. ALL BRANCH CIRCUITS SHALL BE PROVIDED WITH SEPARATE INDIVIDUAL NEUTRAL CONDUCTORS.

9. SPLICES:

9.1. SPLICES IN 600 VOLT-FEEDER WIRES WILL NOT BE PERMITTED.

10. TESTS:

10.1. WIRING SYSTEMS SHALL BE TESTED FOR INSULATION RESISTANCE AFTER AL WIRING IS COMPLETED AND CONNECTED READY FOR THE ATTACHMENT OF EQUIPMENT AND AGAIN WHEN EQUIPMENT IS CONNECTED READY FOR USE.

10.2. TESTS SHALL BE MADE WITH AN INSTRUMENT (MEGGER) CAPABLE OF MEASURING THE CORRECT INSULATION RESISTANCE AND HAVING A MINIMUM VOLTAGE RATING OF 500 VOLTS. READINGS TAKEN AFTER THE VOLTAGE HAS BEEN APPLIED SHALL VERIFY THAT THE INSULATION RESISTANCE BETWEEN CONDUCTORS AND ALSO BETWEEN EACH CONDUCTOR AND GROUND IS IN EXCESS OF 10M-OHMS.

10.3. IN CASE OF FAILURE DURING THE MEGGER TEST, LOCATE AND REPLACE THE FAULTY TERMINATION OR CABLE SECTION AS NECESSARY, AND REPEAT THE INSULATION TEST AT NO ADDITIONAL COSTS TO THE OWNER.

10.4. ADEQUATE MEANS SHALL BE TAKEN TO ENSURE SAFETY DURING THE TESTS AND ALL SAFETY INSTRUCTIONS OF THE TEST OPERATOR SHALL BE OBSERVED.

ELECTRICAL / GENERAL NOTES

PROVIDE A 125 VOLT 15 OR 20 AMP RECEPTACLE WITHIN 25" OF HEATING OR AIR CONDITIONING EQUIPMENT.
210.63 CEC/2019
TWO SMALL APPLIANCE BRANCH CIRCUITS ARE REQUIRED FOR THE KITCHEN AND LIMITED TO SUPPLYING WALL AND COUNTER SPACE OUTLETS FOR THE KITCHEN, PANTRY, BREAKFAST ROOM, DINING ROOM, OR SIMILAR AREAS. NOTE: THESE CIRCUITS CANNOT SERVE OUTSIDE PLUGS, RANGE HOOD, DISPOSALS, DISHWASHERS OR MICROWAVES - ONLY THE REQUIRED COUNTERTOP/WALL OUTLETS INCLUDING THE REFRIGERATOR. CEC 210.11(C)(1) & 210.52(B)
A DEDICATED MINIMUM 20-AMP CIRCUIT IS REQUIRED TO SERVE THE REQUIRED BATHROOM OUTLETS. THIS
CIRCUIT CANNOT SUPPLY ANY OTHER RECEPTACLES, LIGHTS, FANS, ETC. (EXCEPTION-WHERE THE CIRCUIT SUPPLIES A SINGLE BATHROOM, OUTLETS FOR OTHER EQUIPMENT WITHIN THE SAME BATHROOM SHALL BE PERMITTED TO BE SUPPLIED.) CEC 210.11(C)(3) AND 210.52(D)
A MINIMUM 20 AMP SMALL APPLIANCE BRANCH CIRCUITS SHALL BE PROVIDED FOR ALL RECEPTACLE OUTLETS IN THE KITCHEN, DINING AREA, PANTRY, OR OTHER SIMILAR AREAS (CEC 210.11 (C) (1))
AT LEAST ONE 20 AMP BRANCH CIRCUIT SHALL BE PROVIDED TO SUPPLY LAUNDRY RECEPTACLE OUTLETS. SUCH CIRCUITS SHALL HAVE NO OTHER OUTLETS. (CEC 210.11(C) (2))
IN EVERY DWELLING UNITE, FIXED APPLIANCES SUCH AS FOOD WASTE GRINDERS, DISHWASHERS, WASHING MACHINES, DRYERS, LAUNDRY TRAY LOCATIONS BUILT-IN REFRIGERATORS OR FREEZERS, FURNACES, AC UNITS, BUILT-IN HEATERS OR ANY OTHER FIXED APPLIANCE WITH A MOTOR OF M- < H.P. OR LARGER SHALL BE ON A SEPARATE 20 AMP. BRANCH CIRCUIT.
125- AND 250-VOLT RECEPTACLES INSTALLED OUTDOORS IN A WET LOCATION SHALL HAVE AN ENCLOSURE THAT IS WEATHERPROOF WHETHER OR NOT THE ATTACHMENT PLUG CAP IS INSERTED. (CEC 406.8 (B) (1)).
TAMPER RESISTANT RECEPTACLES AT ALL 124 VOLT, 15 AND 20 AMP RECEPTACLES. CEC 406.11
AFCI PROTECTED RECEPTACLES IN FAMILY ROOM, DINING ROOM. LIVING ROOM. PARLORS, LIBRARIES, DENS, BEDROOMS, SUNROOMS, RECREATING ROOMS, CLOSETS, HALLWAYS, OR SIMILAR ROOMS OR AREAS PER CEC 210.12(B)
SMOKE ALARMS SHALL RECEIVE THEIR PRIMARY POWER FROM THE BUILDING WIRING, INTERCONNECTED, AND WIRED ON A LIGHTING CIRCUIT WITH BATTERY BACKUP. EXISTING AREAS MAY BE SOLELY BATTERY OPERATED. SMOKE ALARMS SHALL NOT BE INSTALLED WITHIN A 36" HORIZONTAL PATH FROM THE SUPPLY OR RETURN REGISTERS OF A HEATING OR COOLING SYSTEM. R314 CRC/2019 CARBON MONOXIDE ALARMS: SAME REQUIREMENTS AS SMOKE ALARMS EXCEPT NOT REQUIRED IN BEDROOMS. R315 CRC/2019
APPLIANCES DESIGNED TO BE FIXED IN POSITION SHALL BE SECURELY FASTENED IN PLACE. SUPPORTS FOR APPLIANCES SHALL BE DESIGNED AND CONSTRUCTED TO SUSTAIN VERTICAL AND HORIZONTAL LOADS WITHIN THE STRESS LIMITATIONS SPECIFIED IN THE BUILDING CODE. 303.4 CMC / 2019 (SEISMIC BRACING FOR GAS APPLIANCES.)
APPLIANCES INSTALLED IN GARAGES OR OTHER AREAS SUBJECT TO MECHANICAL DAMAGE SHALL BE GUARDED AGAINST BY BEING INSTALLED BEHIND PROTECTIVE BARRIERS OR ELEVATED OR OUT OF THE NORMAL PATH OF VEHICLES. INSTALL A 4" DIAMETER BOLLARD (FILLED W/ CONCRETE) EMBEDDED 36" INTO 12" DIAMETER FOOTING IN FRONT OF APPLIANCE OR PROVIDE A DETAIL AND OR CALCULATION FROM AN ENGINEER FOR REVIEW
604.1 CMC / 2019

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

NOTE SWITCHES, CONTROLLER, THERMOSTAT,..ETC MOUNTING HEIGHT @ MINIMUM 15" TO MAXIMUM 48"

CITY BUILDING CODE

This project shall comply with the:
2019 California Building Code
2019 California Residential Code
2019 California Fire Code
2019 California Electrical Code
2019 California Mechanical Code
2019 California Plumbing Code
2019 California Green Building Standards Code
2019 California Historical Building Code
2019 California Referenced Standards Code
2019 California Administrative Code
2019 California Energy Code
ACI 318-14 (Structural Concrete)
TMS 402/602-16 (Structural Masonry)
ASCE 7-16 (Design Loads for Structures)

LIGHTING / POWER LEGEND

- Outlet - Duplex
- WP Outlet - Duplex Waterproof
- GFI Outlet - Duplex GFI
- @44" Outlet - Duplex @ Height/Location
- Outlet - Quad
- EV Electric Vehicle Plugin/Charger
- 1x4" Ceiling LED Lighting Fixture High Efficiency
- Recessed Can Light High Efficiency
- A Ceiling Mounted Pendant High Efficiency
- Wall Mounted Fixture High Efficiency
- L Semi-Flush Ceiling Mounted Fixture High Efficiency
- Spot Light
- Wall Mounted Bath Bar High Efficiency
- Ceiling Mounted Strip Light High Efficiency
- Under-Cabinet Strip Light High Efficiency
- Exhaust Fan w/ Light; Energy Star/Humidistat controlled capable of 50CFM vented directly to exterior Area of dropped soffit
- S Smoke Detector
- SC Carbon Monoxide + Smoke Detector
- -ELECTRICAL PANEL BOARD
- -OUTDOOR LIGHT
- -CEILING FAN WITH VANITY LIGHT
- -CAMERA
- -EMERGENCY LIGHT
- -Wall mounted Emergency EXIT SIGN

NOTE:
OUTDOOR LIGHTING SHALL BE EQUIPPED WITH MANUAL CONTROL SWITCH, PHOTOCELL AND MOTION SENSOR WITH NO OVERRIDE TO ON, AND BY EITHER PHOTOCONTROL AND AUTOMATIC TIME SWITCH, ASTRONOMICAL TIME CLOCK WITH NO OVERRIDE TO ON, OR ENERGY MANAGEMENT CONTROL SYSTEM PER CENC 150.0(K)3.

- -DOUBLE POLE DISCONNECT SWITCH WITH OCCUPANCY SENSOR
- $ -PADDLE LIGHTING CONTROL SWITCH WITH OCCUPANCY SENSOR
- $3 -THREE WAY PADDLE LIGHTING CONTROL SWITCH WITH OCCUPANCY SENSOR
- $m -INTERMEDIATE PADDLE LIGHTING CONTROL SWITCH WITH OCCUPANCY SENSOR
- OS -OCCUPANCY SENSOR

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600 FERRY STREET, MARTINEZ, CA 94513

REGISTERED PROFESSIONAL ENGINEER
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C 057196
Exp. 12-31-2021
7-12-2021
CIVIL
STATE OF CALIFORNIA

Date: 1-17-2021
Scale:

DRAWING TITLE: ELECTRICAL PLAN

Sheet :

Page No. : E1.0

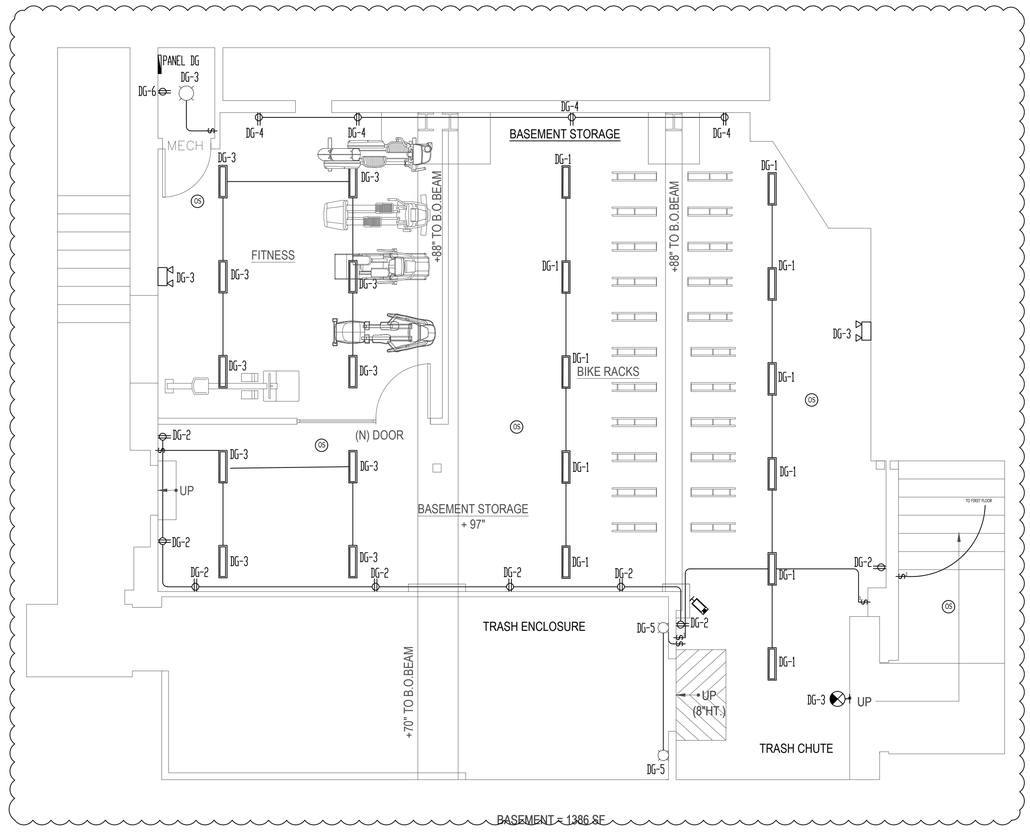
No.	Revision/Issue	Date
1	Issued for client approval	1-17-2021

PLAN DESIGN NOTES
All installed luminaires shall be high-efficacy in accordance with ES TABLE 150.0-A.
In bathrooms, garages, laundry rooms, and utility rooms at least one luminaire shall be controlled by a vacancy sensor.
Dimmers or vacancy sensors shall control all LED style luminaires. Two exceptions: Fixtures installed in hallways or (closets under 70 square feet).
Recessed Can Light High Efficiency fixtures shall be IC listed, air-tight labeled, and not be equipped with a standard medium base screw shell lamp holder. ES 150.0(k)
Light sources that are not marked "JA8-2016-E" shall not be installed in enclosed luminaires. ES 150.0(k)
SFD outdoor lighting fixtures that are attached to a building are required to be high efficacy, be manually on/off switch controlled and have both motion sensor and photocell control. See ES 150.0(k) 3 for additional control options.
Electric Vehicle Charging: Note on the plans that electrical vehicle supply equipment (EVSE) rough-in only is required in one- and two-family dwellings and
townhomes with attached garages. The EVSE rough-in consists of a minimum 1" conduit extending from the main panel to a junction box where the EVSE receptacle box will be provided. The main service panel must be sized to accommodate a future 208/240 Volt 40 ampere dedicated branch circuit. California Green Code 4.106.4. Currently there is no PNL schedule and or load calculation provide to confirm compliance.

MANDATORY (CBEES 150.0(k):
- Provide on utility plans a complete lighting fixture schedule.
- All luminaires shall be high-efficacy in accordance with CBEES Table 150.0-A
- All LED luminaires and lamps shall be marked JA8-2016 and listed in the California Energy Commission database at https://cacertappliances.energy.ca.gov/Pages/ApplianceSearch.aspx
- All recessed downlight and enclosed luminaires shall be marked JA8-2016-E and listed in the California Energy Commission database at https://cacertappliances.energy.ca.gov/Pages/AppliancesSearch.aspx
- Recessed downlight luminaires in ceilings shall not be screw-based.
- Bathrooms, garages, laundry rooms, and utility rooms: At least one luminaire in each space shall be controlled by a vacancy sensor.
- All luminaires requiring JA8-2016 or JA8-2016-E marking shall be controlled by a dimmer or vacancy sensor.
  Exception: Closets less than 70 s.f.
  Exception: Hallways
- Outdoor lighting permanently mounted to building shall be controlled by one of the following:
  - Photocontrol **and** motion sensor
  - Photocontrol **and** automatic time-switch control
  - Astronomical time clock

Provide Tamper Resistant Receptacles for all locations in dwelling as described in CEC 210.52

Arc-Fault Protection for all outlets (not just receptacles) located in rooms described in NEC 210.12(A): Kitchens, Laundry areas, Family, Living, Bedrooms, Dining, Halls, etc.



ELECTRICAL POWER AND LIGHTING FOR BASEMENT FLOOR
SCALE: 1/4" = 1'-0"

PixelArch ltd.
US Office:
4525 Carpinteria Ave # 636, Carpinteria CA 93014
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Project Name and Address:

PORTSIDE LOFTS
600 FERRY STREET, MARTINEZ, CA 94513

REGISTERED PROFESSIONAL ENGINEER
BARRETT CROOK
C 057198
Exp. 12.31.2021
7-12-2021
CIVIL
STATE OF CALIFORNIA

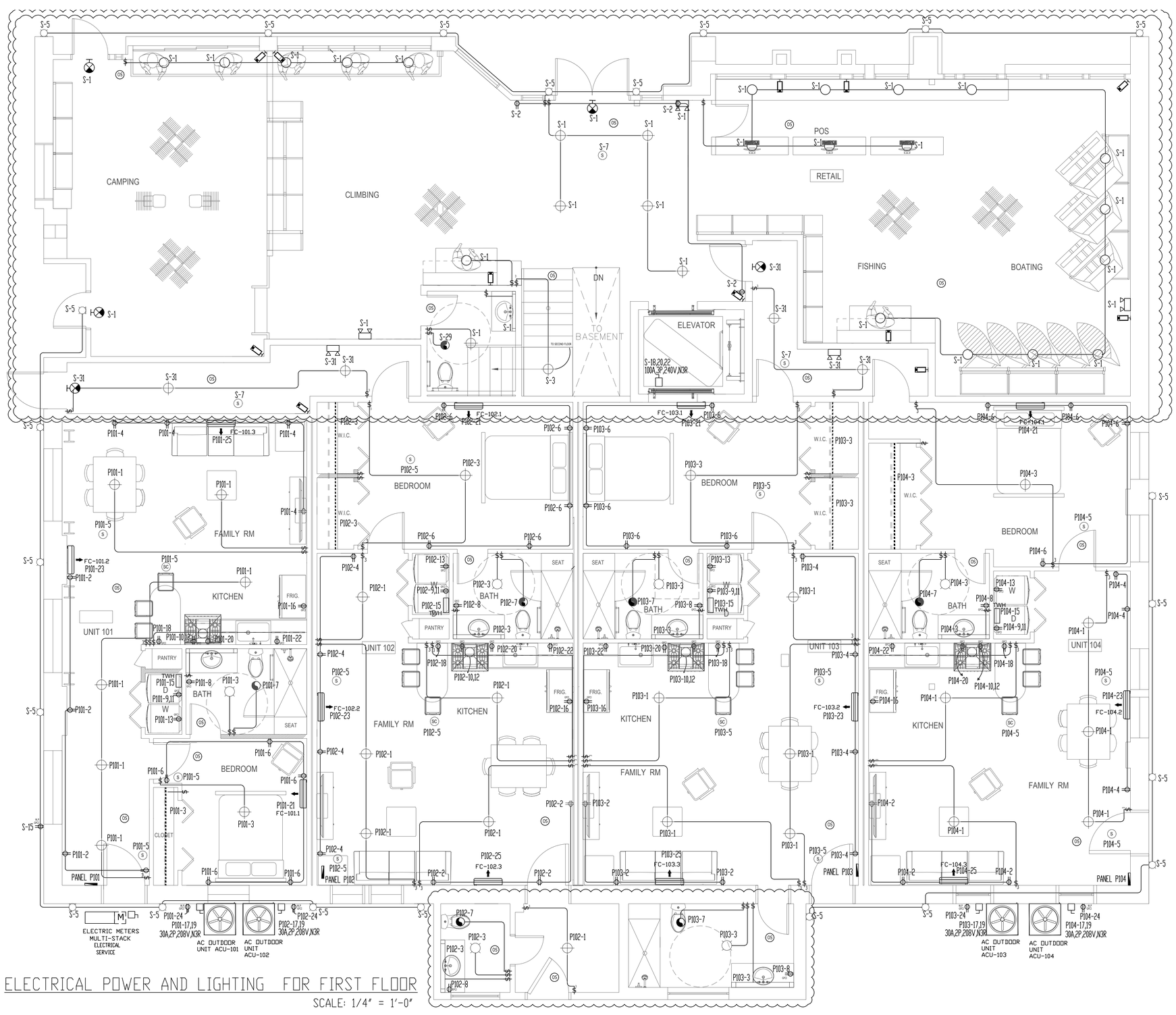
Date: 1-17-2021
Scale:

DRAWING TITLE:
ELECTRICAL POWER AND LIGHTING FOR BASEMENT FLOOR

Sheet :

Page No. :
E2. 0

No.	Revision/Issue	Date
1	Issued for client approval	1-17-2021



ELECTRICAL POWER AND LIGHTING FOR FIRST FLOOR

SCALE: 1/4" = 1'-0"

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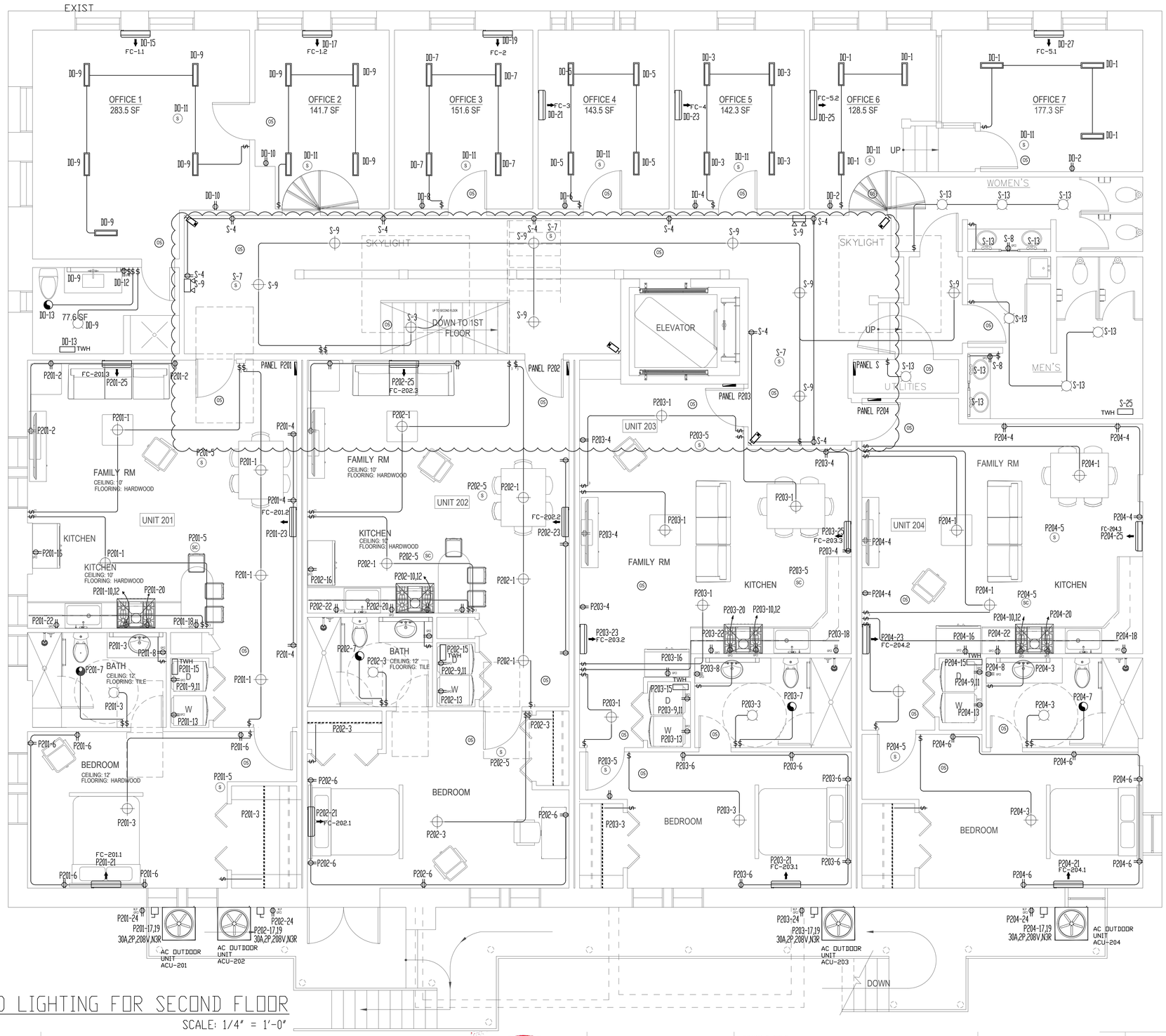
Page No. : E3. 0

No.	Revision/Issue	Date
1	Issued for client approval	1-17-2021



ELECTRICAL POWER AND LIGHTING FOR SECOND FLOOR

SCALE: 1/4" = 1'-0"

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PORTSIDE LOFTS

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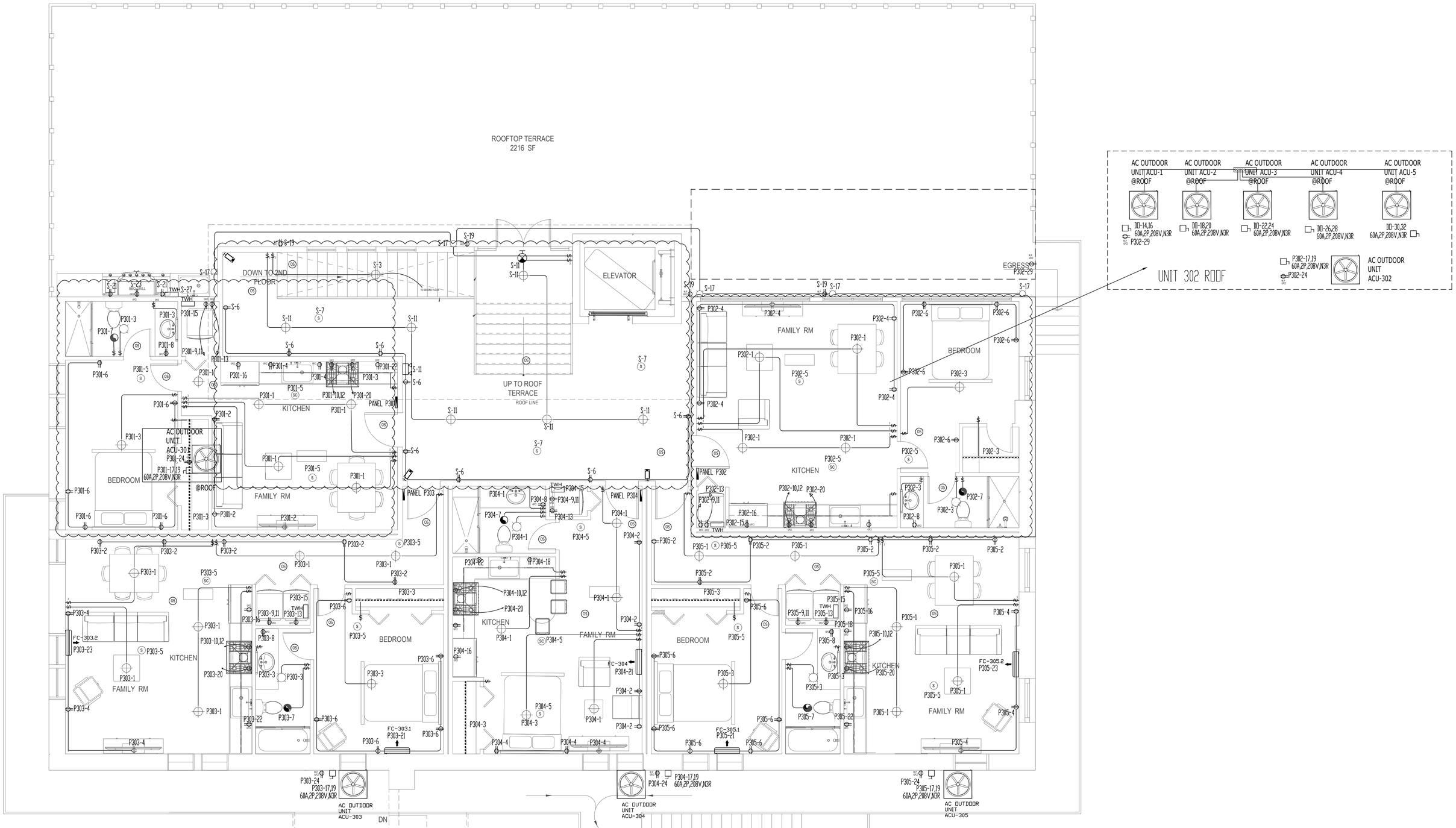
Sheet :

Page No. : E4.0

No.	Revision/Issue	Date
1	Issued for client approval	1-17-2021



ELECTRICAL POWER AND LIGHTING FOR THIRD FLOOR

SCALE: 1/4" = 1'-0"

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Project Name and Address:

PORTSIDE LOFTS

600 FERRY STREET, MARTINEZ, CA 94513

REGISTERED PROFESSIONAL ENGINEER
GARRETT CROOK
C 057198
Exp. 12-31-2021
7-12-2021
CIVIL
STATE OF CALIFORNIA

Date: 1-17-2021

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DRAWING TITLE: ELECTRICAL PLAN

Sheet :

Page No. : E5. 0

No.	Revision/Issue	Date
1	Issued for client approval	1-17-2021

TYPICAL TO PANEL P201,P202,P203,P204
PANEL P301,P302,P303,P304,P305

*	LOAD SUMMARY	CL	DF	CONNECTED LOAD A	CONNECTED LOAD B	DEMAND TOTAL
L	Lighting	0.33	1.25	0.18	0.15	0.41
R	Convenience Recept	11.10		6.42	4.68	10.55
H	Heating (Space)	0.90	1.25		0.90	1.13
C	Cooling	5.82	1.00	2.72	3.11	5.82
A	HVAC		1.00			
P	Process		1.00			
O	Other Continuous		1.25			
K	Kitchen	9.50	0.65	4.60	4.90	9.50
N	Noncontinuous	0.60	1.00	0.60		0.60
			1.00			
	Total	**28.25**		14.51	13.74	28.01

Total Demand Load (KVA)	28.01
Total Demand Current (A)	116.69
Min. Feeder Ampacity (A)	145.86

PANEL P101,P102,P103,P104	
SYSTEM VOLTAGE	240/120V, 1Φ, 3W
BUS SIZE	200A
SYSTEM TYPE	NORMAL
FEEDER PROT	200A - 3P C/B BUSPLUG
CONDUCTOR SIZE	4/0 AWG - #6G CU
CONDUCTOR/PHASE	1
MAINS	200A MCB
SCCR	SERIES RATED
MCB RATING	80%
GROUND FAULT	NO
FEEDER LENGTH (FT)	50
FEEDER V. DROP (%)	0.508
FAULT CURRENT	
KAIC RATING	22
ENCLOSURE	TYPE 3R

	DESCRIPTION	*	CB	KVA	A	B	KVA	CB	DESCRIPTION	*	
1	LIGHT AT DINING , LIVING	L	20A-1P	0.18	1.26		1.08	20A-1P	OUTLET AT LIVING ROOM	R	2
3	LIGHT AT BEDROOM 1	L	20A-1P	0.15		1.41	1.26	20A-1P	OUTLET AT DINING	R	4
5	SMOKE DETECTOR	N	20A-1P	0.60	1.68		1.08	20A-1P	OUTLET AT BEDROOM 1	R	6
7	EXH. FANS/VENT HOOD 110V	C	20A-1P	0.60		0.78	0.18	20A-1P	GFCI OUTLET AT BATH	R	8
9	DRAYER	R	30A-2P	2.88	5.38		2.50	30A-2P	RANGE/OVEN	K	10
11		R		2.88		5.38	2.50			K	12
13	WASHER	R	20A-1P	1.20	2.40		1.20	20A-1P	DISHWASHER	K	14
15	WATER HEATER	H	20A-1P	0.90		1.80	0.90	20A-1P	FRIGERATOR	K	16
17	ACU	C	25A-2P	2.30	3.02		0.72	20A-1P	GENERAL OUTLET AT KITCHEN	K	18
19		C		2.30		3.80	1.50	20A-1P	HOOD	K	20
21	FC	C	15A-1P	0.21	0.39		0.18	20A-1P	DISPOSAL	K	22
23	FC	C	15A-1P	0.21		0.57	0.36	20A-1P	OUTSIDE OUTLET W.P.110V	R	24
25	FC	C	15A-1P	0.21	0.39		0.18	20A-1P	OUTLET W.P.110V AT ROOF	R	26
27	SPARE		20A-1P					20A-1P	SPARE		28
29	SPARE		20A-1P					20A-1P	SPARE		30
31	SPARE		20A-1P					20A-1P	SPARE		32
33	SPARE		20A-1P					20A-1P	SPARE		34
35	SPARE		20A-1P					20A-1P	SPARE	R	36
			(KVA)								
			Total Connected Load		14.51	13.74					

Available Fault Current Calculation

Utility Fault Current 42,000 amperes kVA = 28.01

E = 240

I = kVA x 1000 = trans. FLA / **E** trans. FLA = 117

I_{sca} = **trans. FLA x 100 x PF** / **transformer Z** = PF = 95%, Z = 4.00%

I_{sca} = ampere short-circuit current RMS symmetrical. I_{sca} = 3,071 amperes

Point to Point Method — Single Phase 240/120

'f ' factor = **2 x L x I / N x C x E L-N** — Length (distance) (ASC) FEET, L = 50, I_{sca} = 42,000 — Copper in Metal Raceway

conductors per phase N = 1

Phase conductor constant C = 15,082 **Phase Conductor** 4/0

Volt Line to Line E L - L = **240** Volt

f = 1.160

Neutral conductor constant C = 15,082 **Neutral Conductor** 4/0

Volt Line to Neutral E L - N = **120** Volt

Multiplier f = 3.481

M = 1 / 1 + f

Line to Line M = 0.463

Line to Neutral M = 0.223

I_{sca} x M = fault current at terminals of main disconnect **L- L =** → **19,442 amperes**

I_{sca} x M = fault current at terminals of main disconnect **L- N =** → **14,060 amperes**

Fault Current from Service Equipment to Panel P101,102,103,104 — Copper in Metal Raceway, Single Phase

'f ' factor = **2 x L x I / N x C x E L-N** — Length (distance) (ASC) L = 50, I_{sca} = 19,442 Phase 14,060 Neutral

conductors per phase N = 1

Phase conductor constant C = 15,082 **Phase Conductor** 4/0

Volt Line to Line E L - L = **240** Volt

f = 0.537

Neutral conductor constant C = 15,082 **Neutral Conductor** 4/0

Volt Line to Neutral E L - N = **120** Volt

Multiplier f = 0.777

M = 1 / 1 + f

Line to Line M = 0.651

Line to Neutral M = 0.563

Isca x M = fault current at terminal of the panel L- L **12,648 amperes**

Isca x M = fault current at terminal of the panel L- N **7,913 amperes**

Calculation does not include motor contribution

Location: ELEC

*	LOAD SUMMARY	CL	DF	CONNECTED LOAD A	CONNECTED LOAD B	CONNECTED LOAD C	DEMAND TOTAL
L	Lighting	0.73	1.25	0.33	0.30	0.10	0.91
R	Convenience Recept	2.52		1.08	1.08	0.36	2.52
H	Heating (Space)	0.90	1.25		0.90		1.13
C	Cooling	10.22	1.00	5.01	5.01	0.21	10.22
A	HVAC		1.00				
P	Process		1.00				
O	Other Continuous		1.25				
K	Kitchen		0.65				
N	Noncontinuous	0.60	1.00	0.60			0.60
M	Motor		1.00				
	Total	**14.97**		7.02	7.29	0.67	15.38

Total Demand Load (KVA)	15.38
Total Demand Current (A)	37.00
Min. Feeder Ampacity (A)	46.25

PANEL DG	
PANELBOARD DESIGNATION	
SYSTEM VOLTAGE	240V , 3Φ, 3W
BUS SIZE	200
SYSTEM TYPE	NORMAL
FEEDER PROT	200A-3P C/B Bus Plug
CONDUCTOR SIZE	4/0 AWG - #6G CU
CONDUCTOR/PHASE	1
MAINS	200A MCB
SCCR	SERIES RATED
MCB RATING	80%
GROUND FAULT	NO
FEEDER LENGTH (FT)	50
FEEDER V. DROP (%)	0.440
FAULT CURRENT	
KAIC RATING	22
ENCLOSURE	TYPE 3R

	DESCRIPTION	*	WIRE	GRD	CB	KVA	A	B	C	KVA	CB	WIRE	GRD	DESCRIPTION	*	
1	LIGHT	L	2x 12 AWG - #12G		20A-1P	0.33	1.41			1.08	20A-1P	2x 12 AWG - #12G		OUTLET	R	2
3	LIGHT	L	2x 12 AWG - #12G		20A-1P	0.30		1.38		1.08	20A-1P	2x 12 AWG - #12G		OUTLET	R	4
5	OUTDOOR LIGHT	L	2x 12 AWG - #12G		20A-1P	0.10			0.28	0.18	20A-1P	2x 12 AWG - #12G		OUTLET	R	6
7	SMOKE DETECTOR	N	2x 12 AWG - #12G		20A-1P	0.60				4.80						
9	WATER HEATER	H	2x 6 AWG - #6G		30A-2P	0.90		5.70		4.80	50A-2P	2x 6 AWG - #6G		ACU	C	8
11	FC	C	2x 6 AWG - #6G		20A-1P	0.21			0.39	0.18	20A-1P	2x 12 AWG - #12G		GFCI OUTLET	R	10
13	FC	C	2x 6 AWG - #6G		20A-1P	0.21	0.21				20A-2P	2x 12 AWG - #12G		SPARE		12
15	FC	C	2x 6 AWG - #6G		20A-1P	0.21		0.21			20A-2P	2x 12 AWG - #12G		SPARE		14
17	SPARE		2x 12 AWG - #12G		20A-1P						20A-2P	2x 12 AWG - #12G		SPARE		16
19	SPARE		2x 12 AWG - #12G		20A-1P						20A-2P	2x 12 AWG - #12G		SPARE		18
21	SPARE		2x 12 AWG - #12G		20A-1P						20A-2P	2x 12 AWG - #12G		SPARE		20
23	SPARE		2x 12 AWG - #12G		20A-1P						20A-2P	2x 12 AWG - #12G		SPARE		22
			(KVA)													24
			Total Connected Load				1.62	7.29	0.67							

Location: ELEC

*	LOAD SUMMARY	CL	DF	CONNECTED LOAD A	CONNECTED LOAD B	CONNECTED LOAD C	DEMAND TOTAL
L	Lighting	1.96	1.25	1.19	0.30	0.50	2.40
R	Convenience Recept	6.76		1.44	2.52	2.80	6.76
H	Heating (Space)	1.80	1.25	0.90	0.90		2.25
C	Cooling		1.00				
A	HVAC		1.00				
P	Process		1.00				
O	Other Continuous	0.72	1.25		0.72		0.90
K	Kitchen		0.65				
N	Noncontinuous	2.40	1.00	1.08	0.72	0.60	2.40
M	Motor	18.60	1.00				
	Total	**32.24**		4.58	5.16	3.90	14.76

Total Demand Load (KVA)	14.76
Total Demand Current (A)	35.51
Min. Feeder Ampacity (A)	44.38

PANEL S	
PANELBOARD DESIGNATION	
SYSTEM VOLTAGE	240V, 3Φ, 3W
BUS SIZE	200
SYSTEM TYPE	NORMAL
FEEDER PROT	200A-3P C/B Bus Plug
CONDUCTOR SIZE	4/0 AWG - #6G CU
CONDUCTOR/PHASE	1
MAINS	200A MCB
SCCR	SERIES RATED
MCB RATING	80%
GROUND FAULT	NO
FEEDER LENGTH (FT)	50
FEEDER V. DROP (%)	0.440
FAULT CURRENT	
KAIC RATING	22
ENCLOSURE	TYPE 3R

	DESCRIPTION	*	WIRE	GRD	CB	KVA	A	B	C	KVA	CB	WIRE	GRD	DESCRIPTION	*	
1	LIGHTING AT CLIMBING ,RETAIL	L	2x 12 AWG - #12G		20A-1P	0.66	1.56			0.72	20A-1P	2x 12 AWG - #12G		OUTLET AT LOBBY	R	2
3	LIGHT AT STAIRS	L	2x 12 AWG - #12G		20A-1P	0.10		1.90		1.80	20A-2P	2x 12 AWG - #12G		OUTLET AT CORRIDOR AT 2ND FLOOR	R	4
5	OUTDOOR LIGHT	L	2x 12 AWG - #12G		20A-1P	0.20			2.00	1.80	20A-1P	2x 12 AWG - #12G		OUTLET AT CORRIDOR AT 3RD FLOOR	R	6
7	SMOKE DETECTOR	N	2x 12 AWG - #12G		20A-1P	0.60				0.36	20A-1P	2x 12 AWG - #12G		GFCI OUTLET AT BATH	R	8
9	LIGHT AT CORRIDOR AT 2ND FLOOR	L	2x 12 AWG - #12G		20A-1P	0.20		0.92		0.72	20A-1P	2x 12 AWG - #12G		ELEV. CAB LIGHTS	N	10
11	LIGHT AT CORRIDOR AT 3RD FLOOR	L	2x 12 AWG - #12G		20A-1P	0.20			0.80	0.60	20A-1P	2x 12 AWG - #12G		ELEV. PIT SUMP PUMP	M	12
13	LIGHT AT BATH AT 2ND FLOOR	L	2x 12 AWG - #12G		20A-1P	0.10	0.58			0.48	20A-1P	2x 8 AWG 10 AWG		ELEV. PIT RECPT. LIGHT	N	14
15	W.P OUTLET AT OUTDOOR	R	2x 12 AWG - #12G		20A-1P	0.36		1.08		0.72	20A-1P	2x 12 AWG - #12G		ELEV. CONTROLLER	O	16
17	LIGHT AT ROOF	L	2x 12 AWG - #12G		20A-1P	0.10			6.10	6.00					M	18
19	W.P OUTLET AT ROOF	R	2x 12 AWG - #12G		20A-1P	0.36	6.36			6.00	100A-3P	2x 8 AWG	10 AWG	ELEVATOR DISCONNECT	M	20
21	GFCI GENERAL OUTLET FOR BBQ	R	2x 12 AWG - #12G		20A-1P	0.36		0.35		6.00					M	22
23	GRILL	R	2x 12 AWG - #12G		20A-1P	1.00			1.00		20A-1P	2x 12 AWG - #12G		SPARE		24
25	WATER HEATER	H	2x 12 AWG - #12G		20A-1P	0.90	0.90				20A-1P	2x 12 AWG - #12G		SPARE		26
27	WATER HEATER	H	2x 12 AWG - #12G		20A-1P	0.90		0.90			20A-1P	2x 12 AWG - #12G		SPARE		28
29	EXHAUST FAN	N	2x 12 AWG - #12G		20A-1P	0.60			0.60		20A-1P	2x 12 AWG - #12G		SPARE		30
31	LIGHT AT CORRIDOR AT 1ST FLOOR	L	2x 12 AWG - #12G		20A-1P	0.20	0.20				20A-1P	2x 12 AWG - #12G		SPARE		32
33	SPARE		2x 12 AWG - #12G		20A-1P						20A-1P	2x 12 AWG - #12G		SPARE		34
35	SPARE		2x 12 AWG - #12G		20A-1P						20A-1P	2x 12 AWG - #12G		SPARE		36
			(KVA)													
			Total Connected Load				9.62	11.16	10.60							

Available Fault Current Calculation

Utility Fault Current 42,000 amperes kVA = 11.62

E = 240

I = kVA x 1000 = trans. FLA / **E x 1.732** trans. FLA = 28

I_{sca} = **trans. FLA x 100 x PF** / **transformer Z** = PF = 95%, Z = 4.00%

I_{sca} = ampere short-circuit current RMS symmetrical. I_{sca} = 736 amperes

Point to Point Method — Three Phase 240/120

'f ' factor = **1.732 x L x I / N x C x E L-N** — Length (distance) (ASC) FEET, L = 50, I_{sca} = 42,000 — Copper in Metal Raceway

conductors per phase N = 1

Phase conductor constant C = 15,082 **Phase Conductor** 4/0

Volt Line to Line E L - L = **220** Volt

f = 1.096

Neutral conductor constant C = 15,082 **Neutral Conductor** 4/0

Volt Line to Neutral E L - N = **127** Volt

Multiplier f = 2.848

M = 1 / 1 + f

Line to Line M = 0.477

Line to Neutral M = 0.260

I_{sca} x M = fault current at terminals of main disconnect **L- L =** → **20,037 amperes**

I_{sca} x M = fault current at terminals of main disconnect **L- N =** → **10,914 amperes**

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

'f ' factor = **1.732 x L x I / N x C x E L-N** — Length (distance) (ASC) L = 50, I_{sca} = 20,037 Phase 10,914 Neutral

conductors per phase N = 1

Phase conductor constant C = 15,082 **Phase Conductor** 4/0

Volt Line to Line E L - L = **220** Volt

f = 0.523

Neutral conductor constant C = 15,082 **Neutral Conductor** 4/0

Volt Line to Neutral E L - N = **127** Volt

Multiplier f = 0.493

M = 1 / 1 + f

Line to Line M = 0.657

Line to Neutral M = 0.670

Isca x M = fault current at terminal of the panel L- L **13,157 amperes**

Isca x M = fault current at terminal of the panel L- N **7,308 amperes**

Calculation does not include motor contribution

Location: ELEC

*	LOAD SUMMARY	CL	DF	CONNECTED LOAD A	CONNECTED LOAD B	CONNECTED LOAD C	DEMAND TOTAL
L	Lighting	1.56	1.25	0.63	0.60	0.33	1.95
R	Convenience Recept	3.78		1.26	1.26	1.26	3.78
H	Heating (Space)	0.90	1.25	0.90			1.13
C	Cooling	18.86	1.00	8.22	5.42	5.22	18.86
A	HVAC		1.00				
P	Process		1.00				
O	Other Continuous		1.25				
K	Kitchen		0.65				
N	Noncontinuous	0.60	1.00			0.60	0.60
M	Motor		1.00				
	Total	**25.70**		11.01	7.28	7.41	26.31

Total Demand Load (KVA)	26.31
Total Demand Current (A)	63.29
Min. Feeder Ampacity (A)	79.12

PANEL DO	
PANELBOARD DESIGNATION	
SYSTEM VOLTAGE	240V , 3Φ, 3W
BUS SIZE	200
SYSTEM TYPE	NORMAL
FEEDER PROT	200A-3P C/B Bus Plug
CONDUCTOR SIZE	4/0 AWG - #6G CU
CONDUCTOR/PHASE	1
MAINS	200A MCB
SCCR	SERIES RATED
MCB RATING	80%
GROUND FAULT	NO
FEEDER LENGTH (FT)	50
FEEDER V. DROP (%)	0.440
FAULT CURRENT	
KAIC RATING	22
ENCLOSURE	TYPE 3R

	DESCRIPTION	*	WIRE	GRD	CB	KVA	A	B	C	KVA	CB	WIRE	GRD	DESCRIPTION	*	
1	LIGHT	L	2x 12 AWG - #12G		20A-1P	0.33	1.41			1.08	20A-1P	2x 12 AWG - #12G		OUTLET	R	2
3	LIGHT	L	2x 12 AWG - #12G		20A-1P	0.30		1.38		1.08	20A-1P	2x 12 AWG - #12G		OUTLET	R	4
5	LIGHT	L	2x 12 AWG - #12G		20A-1P	0.33			0.51	0.18	20A-1P	2x 12 AWG - #12G		OUTLET	R	6
7	LIGHT	L	2x 12 AWG - #12G		20A-1P	0.30				0.18	20A-1P	2x 12 AWG - #12G		OUTLET	R	8
9	LIGHT	L	2x 12 AWG - #12G		20A-1P	0.30		0.45		0.18	20A-1P	2x 12 AWG - #12G		OUTLET	R	10
11	SMOKE DETECTOR	N	2x 12 AWG - #12G		20A-1P	0.60			0.78	0.18	20A-1P	2x 12 AWG - #12G		OUTLET	R	12
13	WATER HEATER	H	2x 6 AWG - #6G		30A-2P	0.90	3.90			3.00	50A-2P	2x 6 AWG - #6G		ACU	C	14
15	FC	C	2x 6 AWG - #6G		20A-1P	0.21		3.21		3.00					C	16
17	FC	C	2x 6 AWG - #6G		20A-1P	0.21			1.11	0.90					C	18
19	FC	C	2x 6 AWG - #6G		20A-1P	0.21	1.11			0.90	50A-2P	2x 6 AWG - #6G		ACU	C	20
21	FC	C	2x 6 AWG - #6G		20A-1P	0.21		1.11		0.90					C	22
23	FC	C	2x 6 AWG - #6G		20A-1P	0.21			1.11	0.90	50A-2P	2x 6 AWG - #6G		ACU	C	24
25	FC	C	2x 6 AWG - #6G		20A-1P	0.21	1.11			0.90					C	26
27	FC	C	2x 6 AWG - #6G		20A-1P	0.21		1.11		0.90					C	28
29	W.P OUTLET AT ROOF	R	2x 12 AWG - #12G		20A-1P	0.90			3.90	3.00	50A-2P	2x 6 AWG - #6G		ACU	C	30
31	SPARE		2x 12 AWG - #12G		20A-1P		3.00			3.00					C	32
33	SPARE		2x 12 AWG - #12G		20A-1P						20A-1P	2x 12 AWG - #12G		SPARE		34
35	SPARE		2x 12 AWG - #12G		20A-1P						20A-1P	2x 12 AWG - #12G		SPARE		36
			(KVA)													
			Total Connected Load				10.53	7.28	7.41							

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Project Name and Address:

PORTSIDE LOFTS

600 FERRY STREET, MARTINEZ, CA 94513

REGISTERED PROFESSIONAL ENGINEER — GARRETT CROOK — C 057106 Ex. 12-31-2021 — 7-12-2021 — CIVIL — STATE OF CALIFORNIA

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DRAWING TITLE: PANEL BOARD SCHEDULE

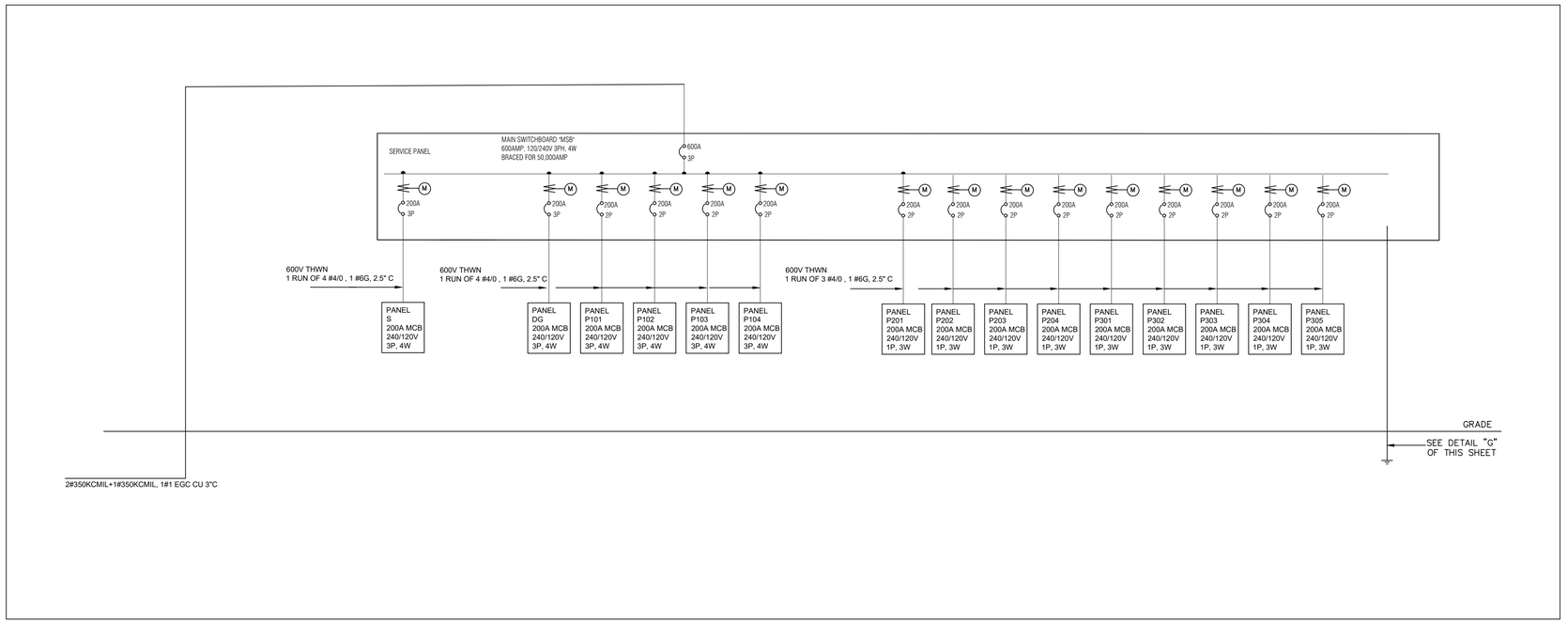
Sheet :

Page No. : E6. 0

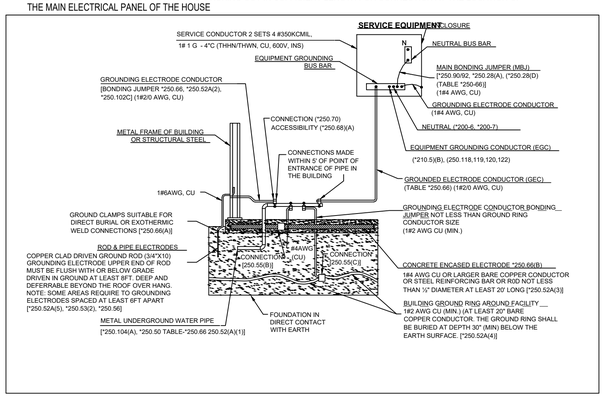
No.	Revision/Issue	Date
1	Issued for client approval	1-17-2021

MAIN SWITCHGEAR LOAD ANALYSIS

		PANEL NAME																	
*	LOAD SUMMARY	S	DG	P101	P102	P103	P104	P201	P202	P203	P204	P301	P302	P303	P304	P305	CL	DF	DEMAND TOTAL
L	Lighting	1.96	0.73	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	3.28	1.25	4.10
R	Convenience Recept	6.76	2.52	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	51.16	1.00	51.16
H	Heating (Space)	1.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	5.40	1.25	6.75
C	Cooling	0	10.22	5.82	5.82	5.82	5.82	5.82	5.82	5.82	5.82	5.82	5.82	5.82	5.82	5.82	23.28	1.00	23.28
A	HVAC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	1.00	0.00
P	Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	1.00	0.00
O	Other Continuous	0.72	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.72	1.25	0.90
K	Kitchen	0	0	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	38.00	0.65	24.70
N	Noncontinuous	2.4	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	4.80	1.00	4.80
M	Motor	18.6																	
	T0TAL	**13.64**	**14.97**	**28.25**	**28.25**	**28.25**	**28.25**	**28.25**	**28.25**	**28.25**	**28.25**	**28.25**	**28.25**	**28.25**	**28.25**	**28.25**	**126.64**		**115.69**
	Total Demand Load (KVA)																		**115.69**
	Total Demand Current (A)																		**321.50**



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



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

SCALE: NTS

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PORTSIDE LOFTS

600 FERRY STREET, MARTINEZ, CA 94513

REGISTERED PROFESSIONAL ENGINEER BARRETT GROOM C 057196 Ex. 12-31-2021 7-12-2021 CIVIL STATE OF CALIFORNIA

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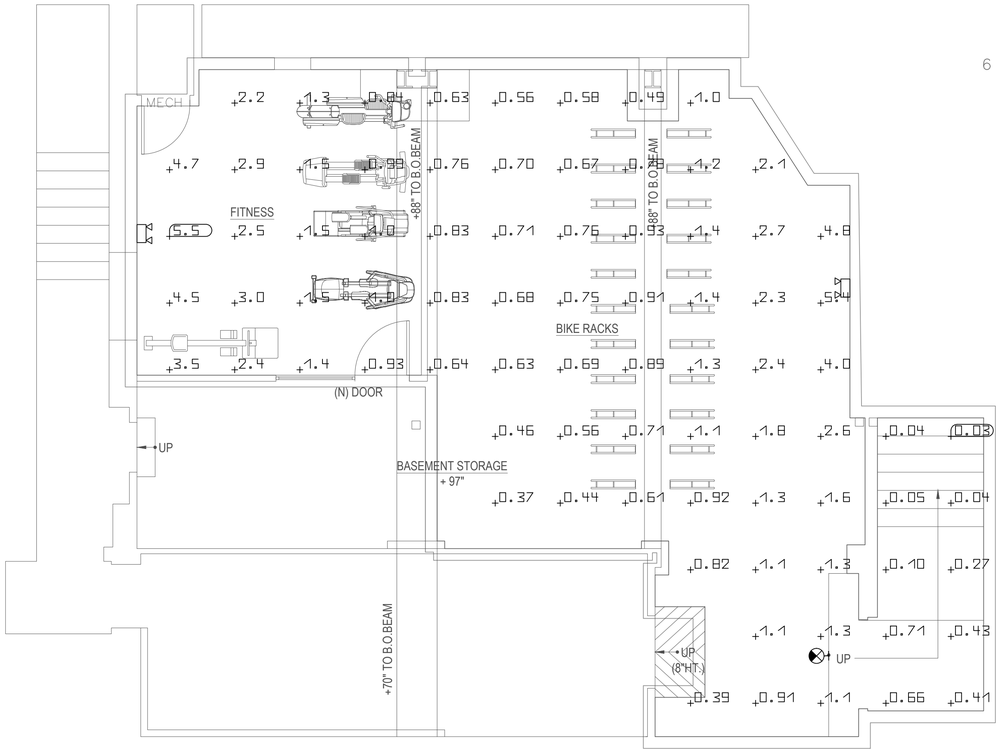
Sheet :

Page No. : E7. 0

No.	Revision/Issue	Date
1	Issued for client approval	1-17-2021

Luminaire list (Building 1, Storey 1)								
Index	Manufacturer	Article name	Item number	Fitting	Luminous flux	Light loss factor	Connected load	Quantity
1	Lithonia Lighting	EXIT–UNIT COMBO WITH INTEGRATED LIGHT BAR (LIGHT BAR ON ONLY)	ECBRM	1x	184 lm	0.80	2.3 W	7
2	Lithonia Lighting	OLF 2RH 40K 120 PE BZ /Description of Test: test with both heads lighted /With or w/out accessory: without shield TYPE OF TEST: TYPE B photometry	OLF 2RH 40K 120 MO BZ M6	1x LED	2250 lm	0.80	24.5 W	10

#	Name	Parameter	Min	Max	Average	Min/average	Min/max
1	CLIMBING, FISHING, CAMPING	Perpendicular illuminance (Adaptive)	0.12 fc	6.98 fc	1.31 fc	0.091	0.017
2	CORRRIDOR 2	Perpendicular illuminance (Adaptive)	1.12 fc	7.85 fc	3.93 fc	0.286	0.143
3	CORRRIDOR 1	Perpendicular illuminance (Adaptive)	0.72 fc	7.71 fc	3.08 fc	0.236	0.094
4	CORRRIDOR 3	Perpendicular illuminance (Adaptive)	0.20 fc	7.62 fc	1.80 fc	0.111	0.026
5	CORRIDOR 4	Perpendicular illuminance (Adaptive)	0.012 fc	6.53 fc	1.24 fc	0.010	0.002
6	FITNESS , PIKE RACE	Perpendicular illuminance (Adaptive)	0.026 fc	7.07 fc	1.4 fc	0.018	0.004



BASEMENT = 1386 SF

EMERGENCY PHOTOMETRIC FOR BASEMENT FLOOR

SCALE: 1/4" = 1'-0"

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Sheet :

Page No. :

E8. 0

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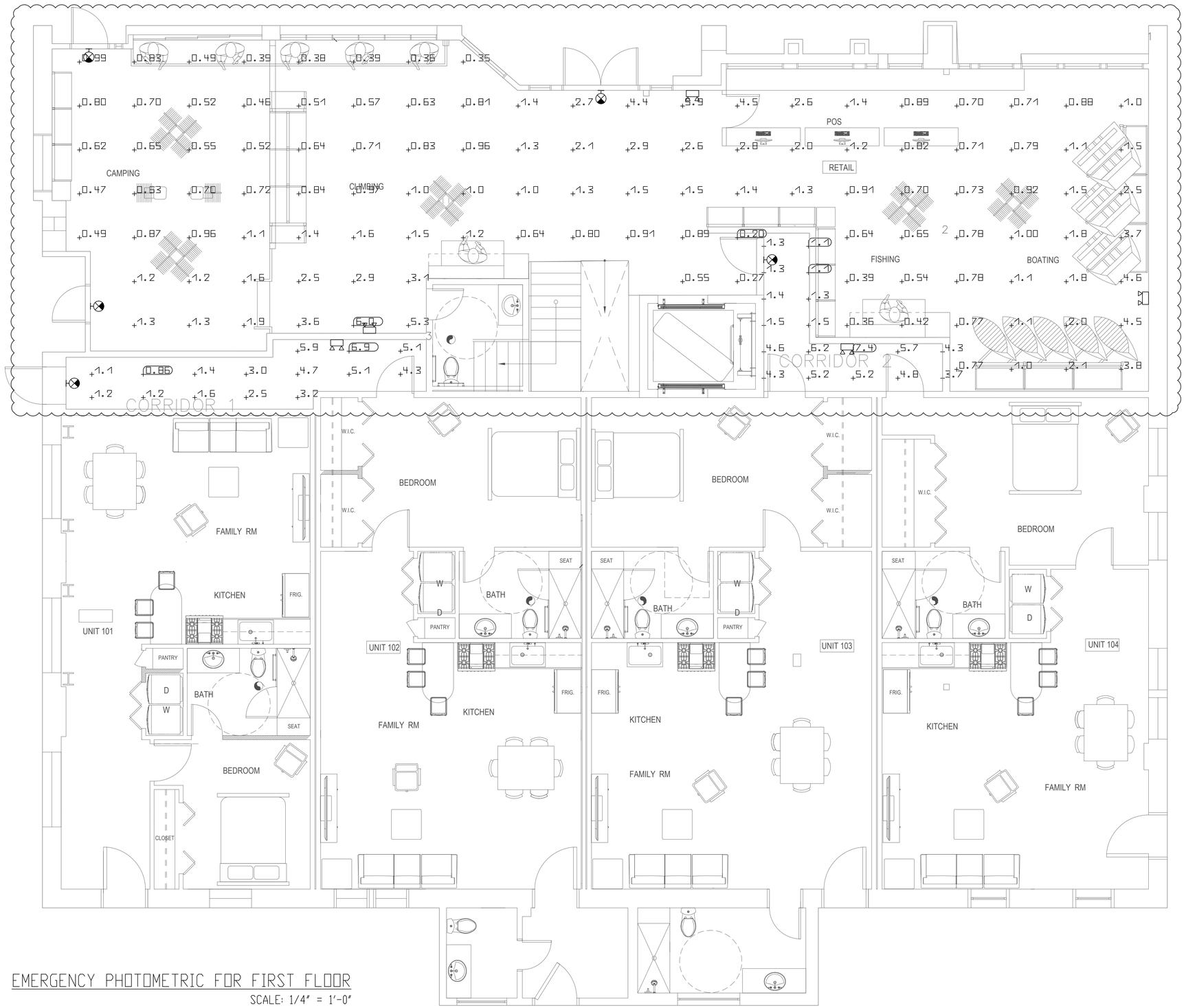

EMERGENCY PHOTOMETRIC FOR FIRST FLOOR

SCALE: 1/4" = 1'-0"

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Sheet :

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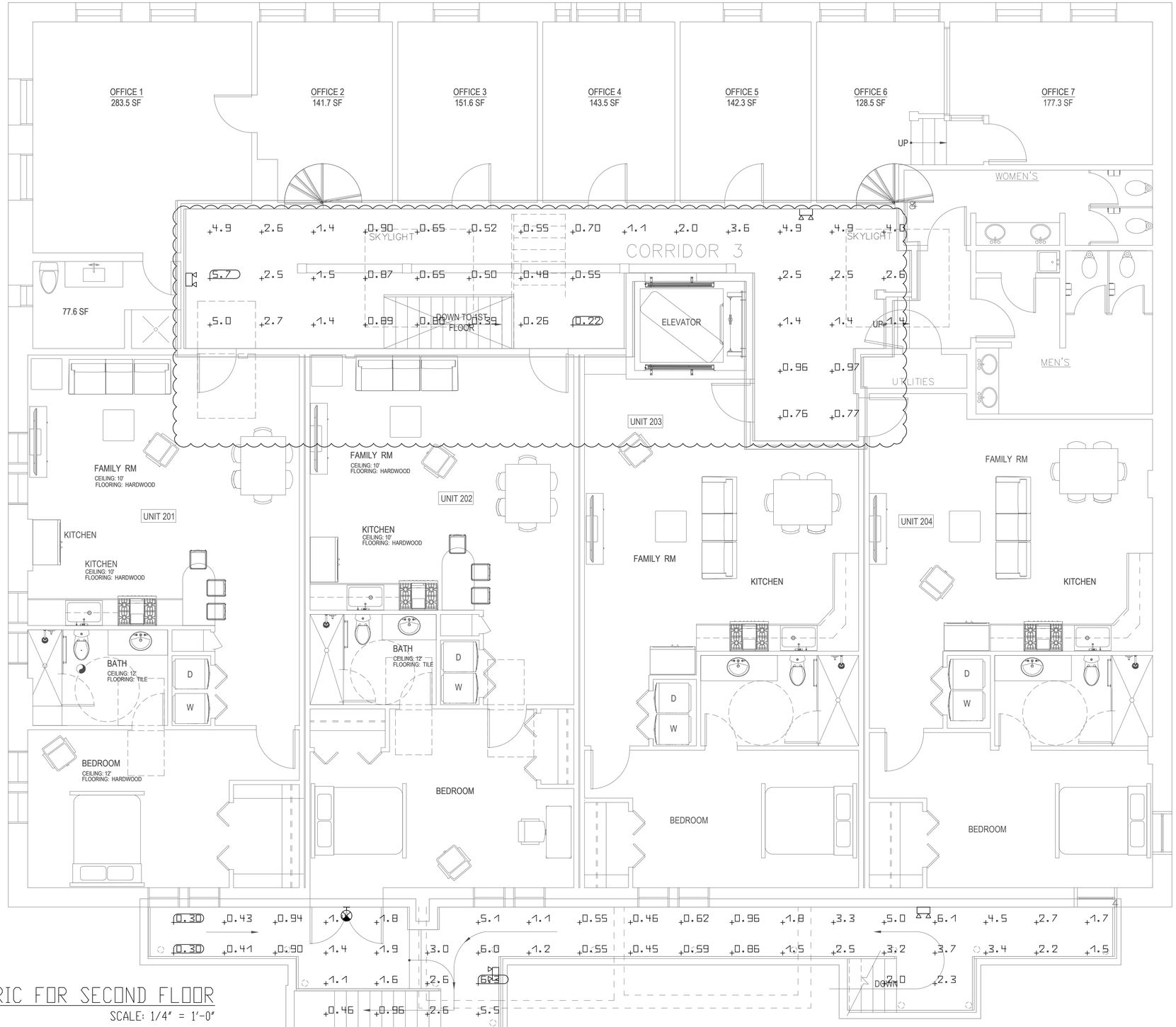

EMERGENCY PHOTOMETRIC FOR SECOND FLOOR

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EMERGENCY PHOTOMETRIC PLAN

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E10.0

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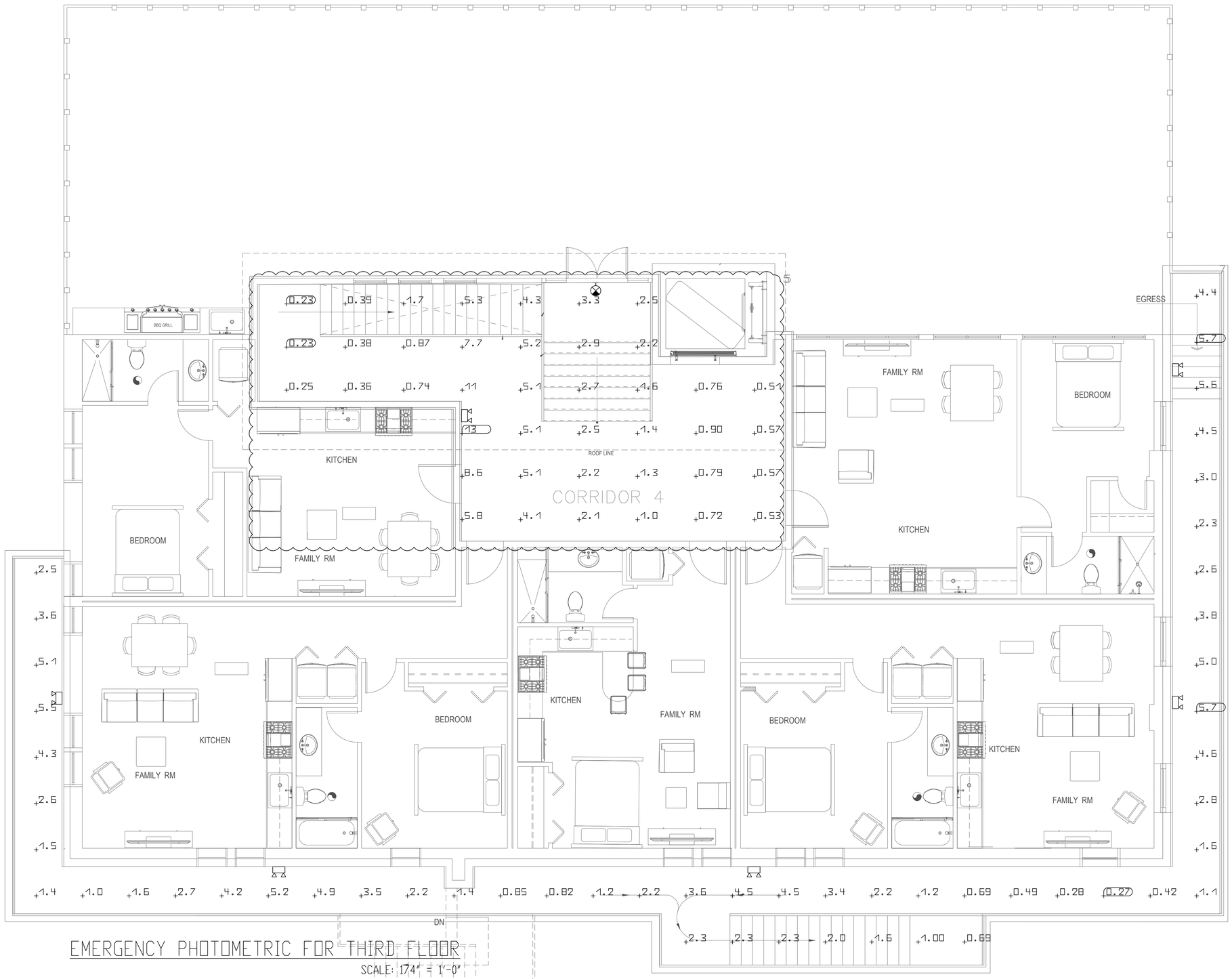

EMERGENCY PHOTOMETRIC FOR THIRD FLOOR

SCALE: 1/4" = 1'-0"

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Page No. :

E11.0

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

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

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

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

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

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

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

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

RECTANGULAR VOLUME DAMPERS: PROVIDE MINIMUM 16 GAUGE GALVANIZED STEEL CHANNEL FRAME, 16 GAUGE GALVANIZED STEEL BLADES, MINIMUM ⅜" 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 INTERNATIONAL 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 2012 INTERNATIONAL MECHANICAL CODE.

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

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

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

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

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

15. PROVIDE OWNER WITH THREE COPIES OF A CERTIFIED AIR BALANCE REPORT PREPARED IN BY A THIRD PARTY CERTIFIED BY THE AABC OR NEBB. TEST, ADJUST AND BALANCE THE HVAC SYSTEM IN ACCORDANCE WITH AABC OR NEBB PROCEDURES. PROVIDE START-UP/TEST REPORTS FOR ALL AIR HANDLING EQUIPMENT, FANS, AND REFRIGERATION EQUIPMENT. TEST AND VERIFY PROPER OPERATION OF ALL MAKE-UP AIR/EXHAUST AIR INTERLOCK SYSTEMS AND THIER SEQUENCES OF OPERATION. BALANCE ALL AIR FLOWS WITHIN 5% OF DESIGN VALUES. PERMANENTLY MARK BALANCE POSITION OF ALL REGULATING DEVICES.
16. PROVIDE OWNER WITH THREE SETS OF AS-BUILT PLANS AND OPERATIONS AND MAINTENANCE MANUALS. CLEARLY IDENTIFY ALL EQUIPMENT WITH PERMANENT PLASTIC OR METAL LABELS/TAGS (PEN MARKING NOT ACCEPTABLE).

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

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

19.0

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

b.) DUCTS FOR KITCHEN COOKTOPS OR RANGES SHALL BE SHOWN OF METAL WITH A SMOOTH INTERIOR. (CMC 504.3.3).

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

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

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

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

LEGEND

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

SPECIAL NOTICE TO CONTRACTORS

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

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

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

CITY CODES

2019 California Building Code
2019 California Residential Code
2019 California Fire Code
2019 California Electrical Code
2019 California Mechanical Code
2019 California Plumbing Code
2019 California Green Building Standards Code
2019 California Historical Building Code
2019 California Referenced Standards Code
2019 California Administrative Code
2019 California Energy Code
ACI 318-14 (Structural Concrete)
TMS 402/602-16 (Structural Masonry)
ASCE 7-16 (Design Loads for Structures)

MECHANICAL SPECS
SCALE :NTS

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REGISTERED PROFESSIONAL ENGINEER
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C 057196
Exp. 6.30.2021
7-12-2021
CIVIL
STATE OF CALIFORNIA

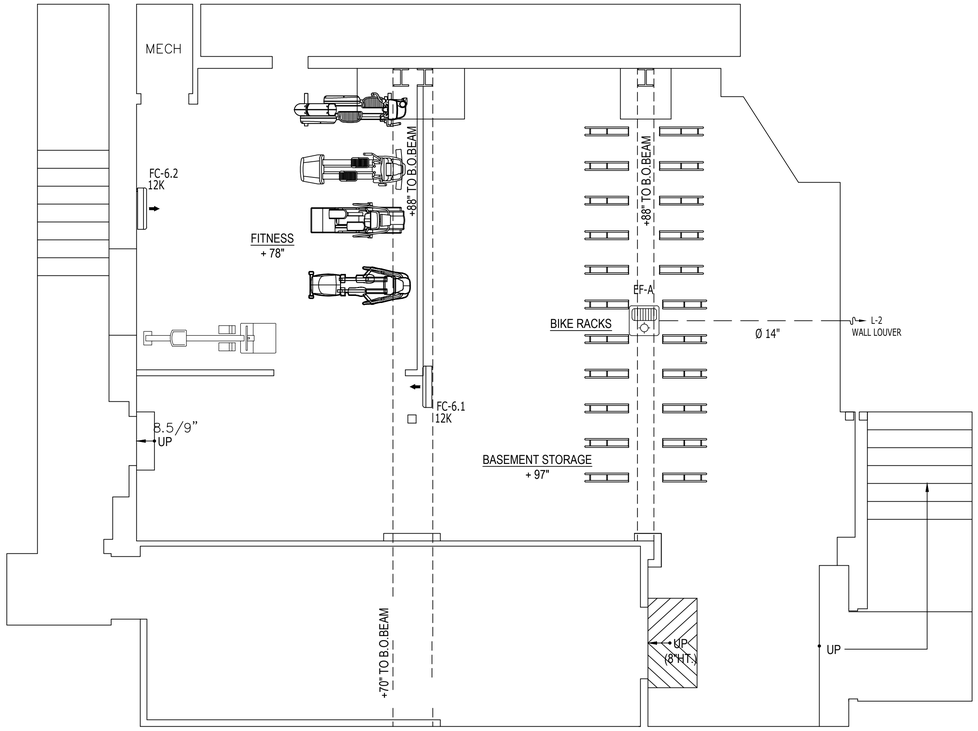
Date: March 15, 2021
Scale:

DRAWING TITLE: MECHANICAL SPECS

Sheet :

Page No. : M1.0

No.	Revision/Issue	Date
1	Issued for client approval	1-17-2021



BASEMENT = 1386 SF

EF-A AREA OF GARAGE =970 SQ.FT

PER CMC 2016,TABLE 403.7 MIN AUTO PARKING GARAGE =.75 CFM /SF

TOTAL EXHAUST AIR = 970 X.75=728 CFM FOR (EF-A)

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7-12-2021
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Date: March 15, 2021

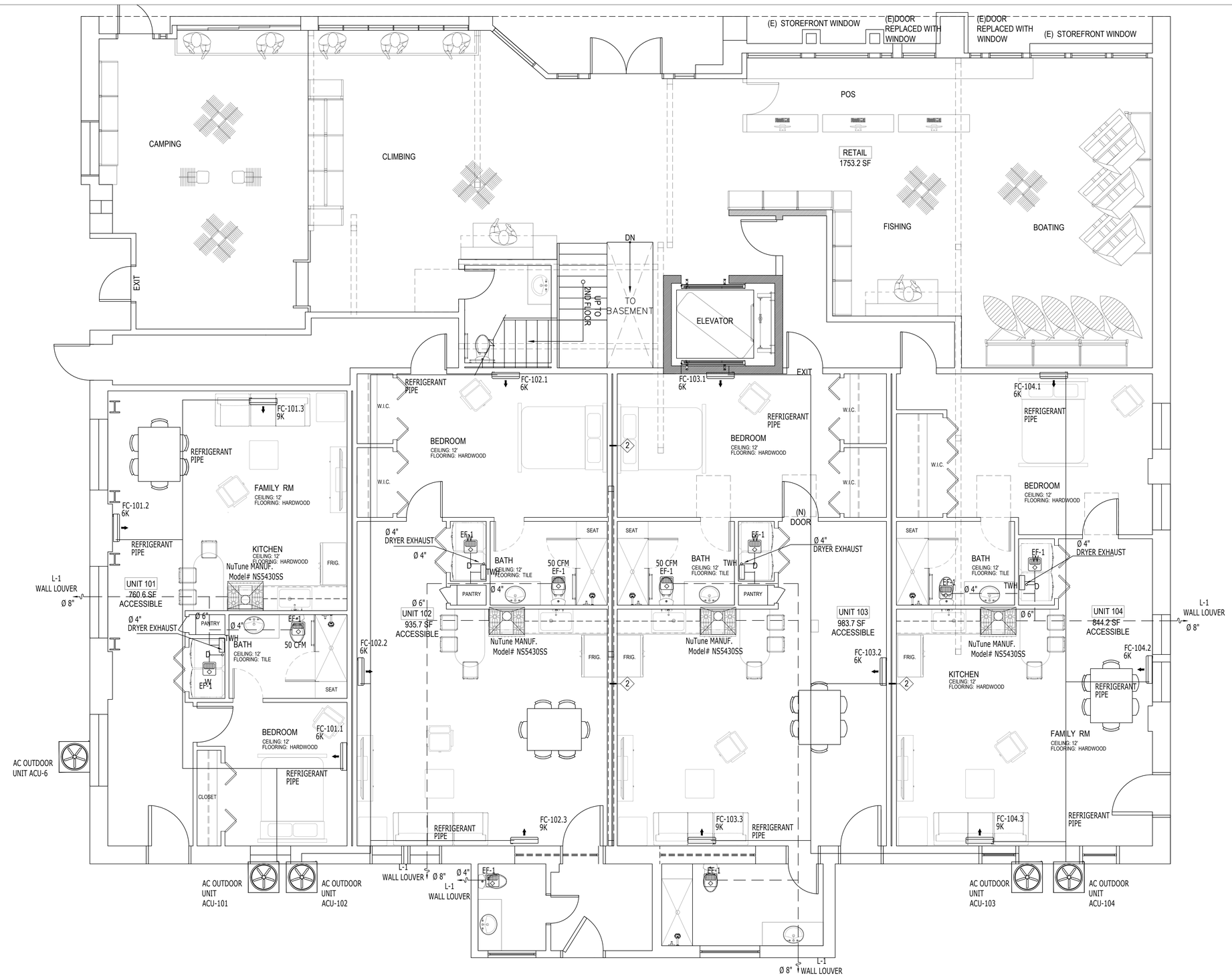
Scale:

DRAWING TITLE: BASEMENT FLOOR HVAC PLAN

Sheet :

Page No. : M2. 0

No.	Revision/Issue	Date
1	Issued for client approval	1-17-2021



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Scale:

DRAWING TITLE: 1ST FLOOR HVAC PLAN

Sheet :

Page No. : M3. 0

No.	Revision/Issue	Date
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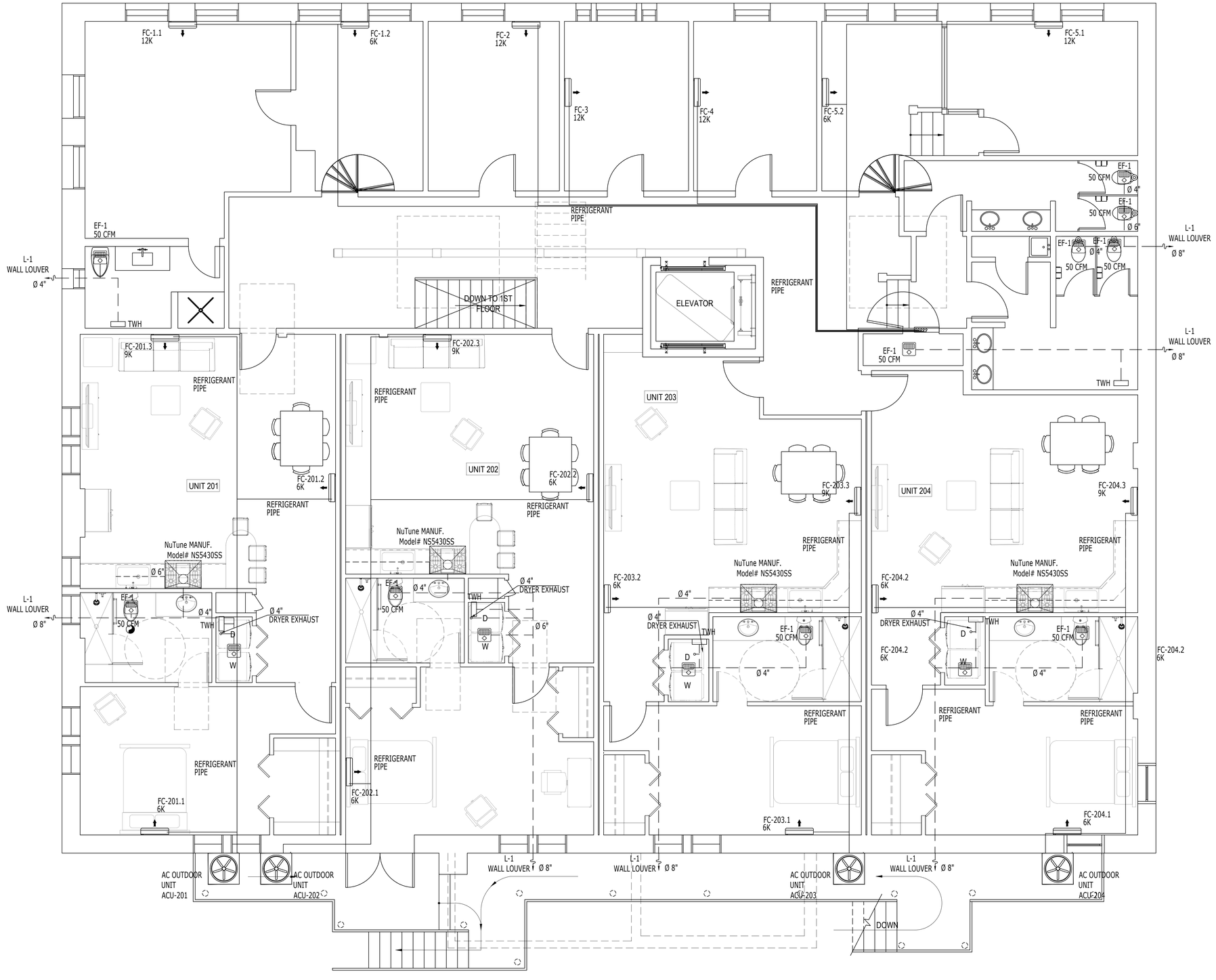

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Scale:

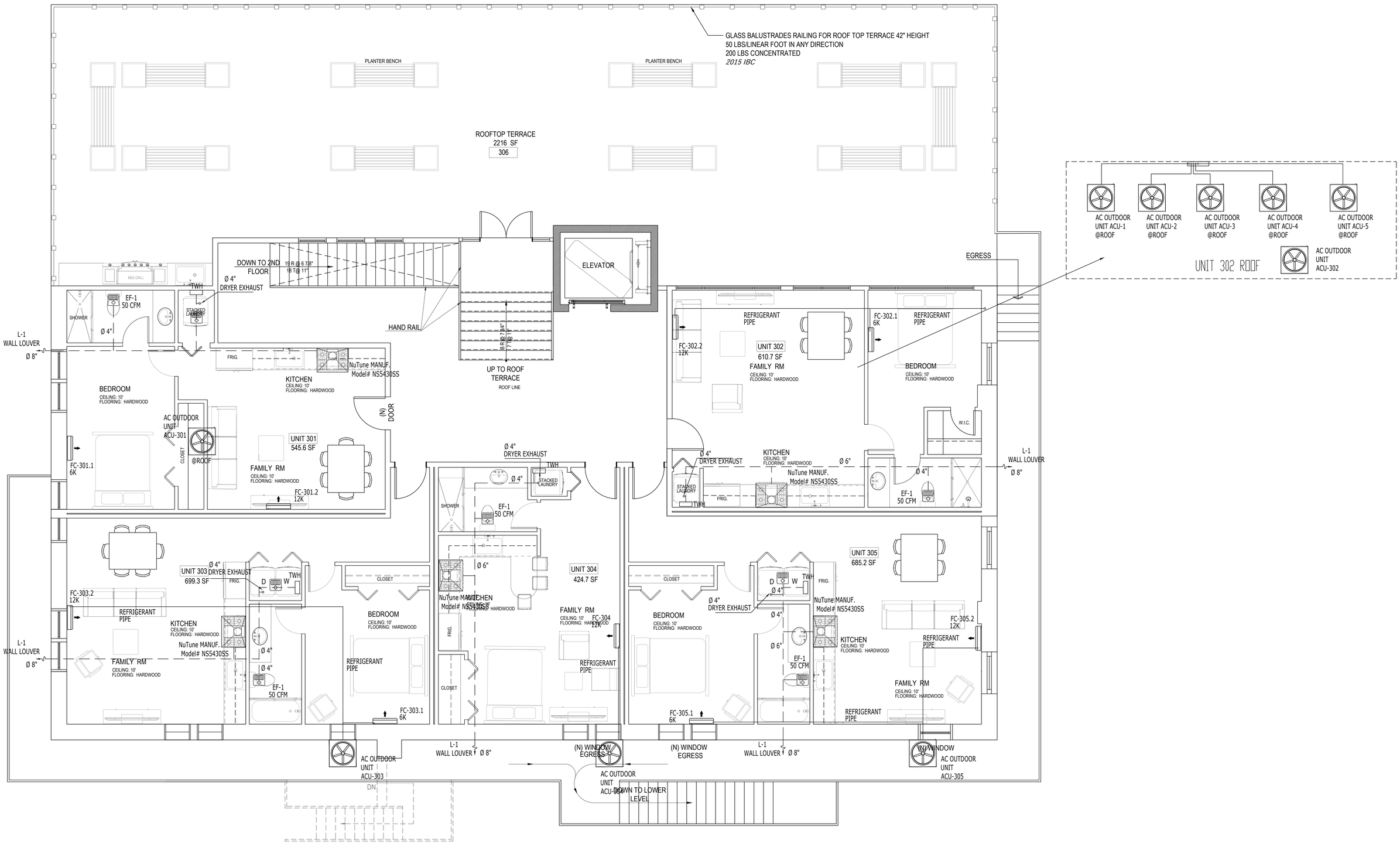
DRAWING TITLE:
2ND FLOOR HVAC PLAN

Sheet :

Page No. :

M4. 0

No.	Revision/Issue	Date
1	Issued for client approval	1-17-2021



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Scale:

DRAWING TITLE: 3RD FLOOR HVAC PLAN

Sheet :

Page No. : M5. 0

No.	Revision/Issue	Date
1	Issued for client approval	1-17-2021

OUTDOOR DUCTLESS UNIT SCHEDULE

NAME MARK	MANUFACTURER/ MODEL	RATED COOLING(BTU/H)	RATED HEATING (BTU/H)	SEER	MCA(A)	BREAKER SIZE	VOLT/ PHASE / HZ	WEIGHT
CONDENSING UNIT ACU-101	MXZ-3C30NA	28,400	28,600	19	22.1	25	208/230 , 1-PH , 60	135
CONDENSING UNIT ACU-102	MXZ-3C30NA	28,400	28,600	19	22.1	25	208/230 , 1-PH , 60	135
CONDENSING UNIT ACU-103	MXZ-3C30NA	28,400	28,600	19	22.1	25	208/230 , 1-PH , 60	135
CONDENSING UNIT ACU-104	MXZ-3C30NA	28,400	28,600	19	22.1	25	208/230 , 1-PH , 60	135
CONDENSING UNIT ACU-201	MXZ-3C30NA	28,400	28,600	19	22.1	25	208/230 , 1-PH , 60	135
CONDENSING UNIT ACU-202	MXZ-3C30NA	28,400	28,600	19	22.1	25	208/230 , 1-PH , 60	135
CONDENSING UNIT ACU-203	MXZ-3C30NA	28,400	28,600	19	22.1	25	208/230 , 1-PH , 60	135
CONDENSING UNIT ACU-204	MXZ-3C30NA	28,400	28,600	19	22.1	25	208/230 , 1-PH , 60	135
CONDENSING UNIT ACU-301	MXZ-2C20NA	18,000	22,000	20	28.9	40	208/230 , 1-PH , 60	187
CONDENSING UNIT ACU-302	MXZ-2C20NA	18,000	22,000	20	28.9	40	208/230 , 1-PH , 60	187
CONDENSING UNIT ACU-303	MXZ-2C20NA	18,000	22,000	20	28.9	40	208/230 , 1-PH , 60	187
CONDENSING UNIT ACU-304	MUZ-GL12NA	12,000	14,400	23.1	9	_	208/230 , 1-PH , 60	81
CONDENSING UNIT ACU-305	MXZ-2C20NA	18,000	22,000	20	28.9	40	208/230 , 1-PH , 60	187
CONDENSING UNIT ACU-1	MXZ-2C20NA	18,000	22,000	20	28.9	40	208/230 , 1-PH , 60	187
CONDENSING UNIT ACU-2	MUZ-GL12NA	12,000	14,400	23.1	9	_	208/230 , 1-PH , 60	81
CONDENSING UNIT ACU-3	MUZ-GL12NA	12,000	14,400	23.1	9	_	208/230 , 1-PH , 60	81
CONDENSING UNIT ACU-4	MUZ-GL12NA	12,000	14,400	23.1	9	_	208/230 , 1-PH , 60	81
CONDENSING UNIT ACU-5	MXZ-2C20NA	18,000	22,000	20	28.9	40	208/230 , 1-PH , 60	187
CONDENSING UNIT ACU-6	MXZ-3C24NA	22,000	25,000	18	29.9	40	208/230 , 1-PH , 60	189

INDOOR DUCTLESS UNIT SCHEDULE

NAME MARK	OUTDOOR UNIT	MANUFACTURER/ MODEL	COOLING (BTU)	HEATING (BTU)	REFRIGERANT TYPE
FC-301.1	ACU-301	MSZGL06NA	6,000	7,500	R-410A
FC-301.2	ACU-301	MSZGL12NA	12,000	14,500	R-410A
FC-302.1	ACU-302	MSZGL06NA	6,000	7,500	R-410A
FC-302.2	ACU-302	MSZGL12NA	12,000	14,500	R-410A
FC-303.1	ACU-303	MSZGL06NA	6,000	7,500	R-410A
FC-303.2	ACU-303	MSZGL12NA	12,000	14,500	R-410A
FC-304	ACU-304	MSZGL12NA	12,000	14,500	R-410A
FC-305.1	ACU-305	MSZGL06NA	6,000	7,500	R-410A
FC-305.2	ACU-305	MSZGL12NA	12,000	14,500	R-410A
FC-1.1	ACU-1	MSZGL06NA	6,000	7,500	R-410A
FC-1.2	ACU-1	MSZGL12NA	12,000	14,500	R-410A
FC-2	ACU-2	MSZGL12NA	12,000	14,500	R-410A
FC-3	ACU-3	MSZGL12NA	12,000	14,500	R-410A
FC-4	ACU-4	MSZGL12NA	12,000	14,500	R-410A
FC-5.1	ACU-5	MSZGL06NA	6,000	7,500	R-410A
FC-5.2	ACU-5	MSZGL12NA	12,000	14,500	R-410A
FC-6.1	ACU-6	MSZGL12NA	10,900	11,000	R-410A
FC-6.2	ACU-6	MSZGL12NA	10,900	11,000	R-410A

INDOOR DUCTLESS UNIT SCHEDULE

NAME MARK	OUTDOOR UNIT	MANUFACTURER/ MODEL	COOLING (BTU)	HEATING (BTU)	REFRIGERANT TYPE
FC-101.1	ACU-101	MSZGL06NA	6,000	7,400	R-410A
FC-101.2	ACU-101	MSZGL06NA	6,000	7,400	R-410A
FC-101.3	ACU-101	MSZGL09NA	9,000	11,000	R-410A
FC-102.1	ACU-102	MSZGL06NA	6,000	7,400	R-410A
FC-102.2	ACU-102	MSZGL06NA	6,000	7,400	R-410A
FC-102.3	ACU-102	MSZGL09NA	9,000	11,000	R-410A
FC-103.1	ACU-103	MSZGL06NA	6,000	7,400	R-410A
FC-103.2	ACU-103	MSZGL06NA	6,000	7,400	R-410A
FC-103.3	ACU-103	MSZGL09NA	9,000	11,000	R-410A
FC-104.1	ACU-104	MSZGL06NA	6,000	7,400	R-410A
FC-104.2	ACU-104	MSZGL06NA	6,000	7,400	R-410A
FC-104.3	ACU-104	MSZGL09NA	9,000	11,000	R-410A

INDOOR DUCTLESS UNIT SCHEDULE

NAME MARK	OUTDOOR UNIT	MANUFACTURER/ MODEL	COOLING (BTU)	HEATING (BTU)	REFRIGERANT TYPE
FC-201.1	ACU-201	MSZGL06NA	6,000	7,400	R-410A
FC-201.2	ACU-201	MSZGL06NA	6,000	7,400	R-410A
FC-201.3	ACU-201	MSZGL09NA	9,000	11,000	R-410A
FC-202.1	ACU-202	MSZGL06NA	6,000	7,400	R-410A
FC-202.2	ACU-202	MSZGL06NA	6,000	7,400	R-410A
FC-202.3	ACU-202	MSZGL09NA	9,000	11,000	R-410A
FC-203.1	ACU-203	MSZGL06NA	6,000	7,400	R-410A
FC-203.2	ACU-203	MSZGL06NA	6,000	7,400	R-410A
FC-203.3	ACU-203	MSZGL09NA	9,000	11,000	R-410A
FC-204.1	ACU-204	MSZGL06NA	6,000	7,400	R-410A
FC-204.2	ACU-204	MSZGL06NA	6,000	7,400	R-410A
FC-204.3	ACU-204	MSZGL09NA	9,000	11,000	R-410A

EXHAUST FAN SCHEDULE

TAG NUMBER	AREA SERVED	MODEL	TYPE	CFM	WATTS	RPM	amps	VOLT
EF-1	SEE PLAN	BROAN-NUTONE / QTXE110S	CEILING	110	120	87	_	760
EF-A	SEE PLAN	GREENHECH/ SP-A780	CEILING	471	348	1600	3.3	_

REMARKS:
1. DISCONNECT SWITCH/STARTER
2. PROVIDE MANUFACTURER VIBRATION ISOLATION KIT
3. BACKDRAFT DAMPER
4. INTERLOCK W/ LIGHTS
5. EQUIVALENT MODEL OR EQUAL

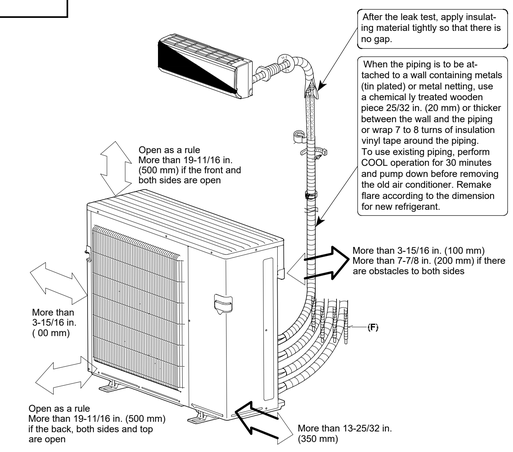
LOUVER SCHEDULE

TAG	TYPE	MATERIAL	WIDTH (IN)	HEIGHT (IN)	FACE AREA (SQ.FT)	FREA AREA VEL (FPM)	MANUFACTURER MODEL
L-1	INTAKE AIR	ALUM.	12	48	4	57	RUSKIN ELM6375DX
L-2	INTAKE AIR	ALUM.	12	48	4	377	RUSKIN ELM6375DX

MANDATORY (CBEES 150.0(o), ASHRAE Standard 62.2):
A mechanical exhaust ventilation system, supply ventilation system, or combination thereof shall be installed for each dwelling unit to provide whole-building ventilation with outdoor air in compliance with ASHRAE Standard 62.2 as adopted by the California Energy Commission.
HERS verification required to confirm whole-building ventilation airflow.
An intermittently or continuously operating local mechanical exhaust ventilation system shall be installed in each bathroom with a bathtub, shower, or similar moisture source and in each kitchen in compliance with ASHRAE Standard 62.2 as adopted by the California Energy Commission. Intermittent local exhaust ventilation airflow rates shall be 50 cfm in bathrooms and 100 cfm in kitchens. Continuous local exhaust ventilation airflow rates shall be 20 cfm in bathrooms and 5 air changes per hour in kitchens based on kitchen volume.

BASIC MECHANICAL REQUIREMENTS:

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE REQUIREMENTS OF THE FOLLOWING:
   A. LATEST EDITION AND AMENDMENTS OF THE APPLICABLE STATE AND LOCAL CODES.
   B. LATEST (OR APPLICABLE) EDITION OF INTERNATIONAL MECHANICAL CODE.
   C. LATEST (OR APPLICABLE) EDITION OF NFPA CODE 90A.
2. FURNISH AND INSTALL ALL LABOR, MATERIAL, AND EQUIPMENT AND SERVICES NECESSARY FOR COMPLETE AND SAFE INSTALLATION OF THE MECHANICAL SYSTEM INDICATED ON THE DRAWINGS AND NOTED IN THE SPECIFICATIONS HEREINAFTER. MECHANICAL DRAWINGS ARE CONSIDERED DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF WORK AND SYSTEMS. REFER TO ARCHITECTURAL DRAWINGS TO VERIFY LOCATION OF DEVICES, EQUIPMENT, ETC. CHECK DRAWINGS OF OTHER TRADES TO VERIFY EXACT SPACE CONDITIONS OF DUCTWORK AND EQUIPMENT. MATERIALS SHALL BE NEW, FREE FROM DEFECTS AND LISTED BY ARI OR UL WHERE APPLICABLE. CONTRACTOR SHALL COORDINATE ALL NEW WORK WITH EXISTING CONDITIONS. CONTRACTOR SHALL VISIT SITE AND EXAMINE EXISTING CONDITIONS PRIOR TO BID.
3. SUBMIT SIX (6) COPIES OF SHOP DRAWINGS TO OWNER OR ARCHITECT FOR EACH PIECE OF EQUIPMENT TO INCLUDE RTU'S, ASSOCIATED PIPING, HEATERS, EQUIPMENT, DIFFUSERS, INSULATION, FANS, CONTROLS AND DUCTW OBTAIN APPROVAL BEFORE EQUIPMENT IS ORDERED, BUILT, OR INSTALLED.



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7-12-2021
CIVIL
STATE OF CALIFORNIA

Date: March 15, 2021
Scale:

DRAWING TITLE: HVAC SCHEDULE

Sheet :

Page No. : M6. 0

No.	Revision/Issue	Date
1	Issued for client approval	1-17-2021

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 2006 UNIFORM PLUMBING CODE, 2006 INTERNATIONAL BUILDING CODE, 2006 INTERNATIONAL ENERGY CONSERVATION CODE AND ALL OTHER APPLICABLE CODES AND REGULATIONS REQUIRED BY AUTHORITIES HAVING JURISDICTION. IN THE EVENT OF CONFLICT BETWEEN SPECIFICATIONS, CODES, AND REGULATIONS, THE MORE RESTRICTIVE SHALL APPLY.

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

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

5 PROVIDE ONE YEAR WARRANTY ON ALL PARTS AND LABOR.

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

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

8. ALL HOT WATER PIPING AND RECIRCULATION PIPING (EXCEPT RUNOUTS 12 FT. OR SHORTER TO INDIVIDUAL FIXTURES) SHALL BE INSULATED TO MEET THE REQUIREMENTS OF THE 2006 INTERNATIONAL 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 UNIFORM 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 FIXTURE FLOW RATE

FIXTURE TYPE	MAXIMUM FLOW RATE
Waterclosets	1.28 gallons flush
Showerheads	2 gpm@ 80psi
Lavatory faucets	1.2gpm@ 60psi
Kitchenfaucets	1.8gpm@ 60psi

PIPE MATERIAL SCHEDULE

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

NOTES:

PLUMBING LEGEND

SYMBOL	ABBREV	DESCRIPTION
	SS or W	NEW SEWER OR WASTE
	V	NEW VENT
	CW	NEW COLD WATER
	HW	NEW HOT WATER
	G	NEW GAS
	CD	NEW CONDENSATE DRAIN
CA	CA	COMPRESSED AIR
	FCO	FLOOR CLEANOUT
	WCO	WALL CLEANOUT
	FD	FLOOR DRAIN
	FS	FLOOR SINK
	TP	TRAP PRIMER & TRAP PRIMER PIPING
	SOV	SHUT-OFF VALVE
	CV	CHECK VALVE
	PRV	BACKFLOW PREVENTER W SOV'S
	T & P	
	DN	PIPE DOWN
	UP	PIPE UP
	POC	POINT OF CONNECTION
(2)	–	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
1/4"		SLOPE AT A PERCENTAGE
	SHT	SHEET
	TYP	TYPICAL
	VTR	VENT THRU ROOF

PLUMBING / GENERAL NOTES

BATHTUBS AND WHIRLPOOL BATHTUBS. THE MAX. HOT WATER TEMPERATURE DISCHARGING SHALL BE LIMITED TO 120 DEGREES. CPC 414/2019
BATHTUBS WASTE OPENING IN FLOOR OVER CRAWL SPACES SHALL BE PROTECTED BY A METAL SCREEN NOT EXCEEDING 12" OR SOLID COVER. CPC 313.12.4 2019
SHOWERS AND TUB-SHOWERS COMBINATIONS IN ALL BUILDINGS SHALL BE PROVIDED WITH INDIVIDUAL CONTROL VALVES OF THE PRESSURE BALANCE, THERMOSTATIC, OR COMBINATION OF BOTH THAT PROVIDE SCALD AND THERMAL SHOCK PROTECTION. VALVES SHALL BE ADJUSTED TO DELIVER A MAXIMUM MIXED WATER SETTING OF 120 DEGREES FAHRENHEIT. THE WATER HEATER THERMOSTAT SHALL NOT BE CONSIDERED A SUITABLE CONTROL FOR MEETING THIS PROVISION. 418.0 CPC/2019
VERIFY AND WHERE WATER PRESSURE EXCEEDS 80 PSI AN APPROVED PRESSURE REGULATOR PRECEDED BY AN ADEQUATE STRAINER SHALL BE INSTALLED 608.2 C[C / 2019
1-INSTALL TEMPERATURE AND PRESSURE RELIEF VALVE WITH MINIMUM 34" DRAIN PIPE AND TERMINATE TO THE EXTERIOR OF THE BUILDING OVER WINDOW, DOOR OR VISIBLE LOCATION. DISCHARGE FROM A RELIEF VALVE INTO A WATER HEATER PAN SHALL BE PROHIBITED CPC 608.5, 510.8.
2-PROVIDE (ON THE PLANS) A GAS PIPING DIAGRAM OF THE GAS PIPING SYSTEM THAT INCLUDES ALL PIPE SIZES, PIPE LENGTHS AND BTU RATINGS.
SUBMIT GAS LOAD CALCULATIONS IN ACCORDANCE WITH CPC TABLE 12-B TO VERIFY THE PIPE SIZES ARE ADEQUATE FOR THE MAXIMUM DELIVERY CAPACITY OF CUBIC FEET OF GAS PER HOUR.
4- A WHOLE HOUSE HAS TEST IS REQUIRED UPON COMPLETION OF THE INSTALLATION, ALTERATION, OR REPAIR OF ANY GAS PIPING.
THE CITY SHALL BE NOTIFIED WHEN GAS PIPING IS READY FOR INSPECTION.
5- 2 GPM SHOWER FIXTURE, MAX.1.5 GPM BATHROOM FAUCET, MAX. 2 GPM KITCHEN FAUCET, AND MAX 1.28 WATER CLOSET TO CONFORM TO CITY GREEN REQUIREMENTS.

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

6-NOTE THAT ALL PLUMBING VENTS SHALL TERMINATE NOT LESS THAN 6" ABOVE ROOF NOR LESS THAN 1' FROM ANY VERTICAL SURFACE. VENTS SHALL TERMINATE NOT LESS THAN 10" FROM OR 3' ABOVE ANY WINDOW, DOOR OPENING AIR INTAKE, OR VENT SHAFT NOR 3' FROM LOT LINE. (2019 CPC 906) IF WATER PRESSURE EXCEEDS 80 PSI, AND EXPANSION TANK AND AN APPROVED PRESSURE REGULATOR SHALL BE INSTALLED. (2019 CPC608.2)
NON-REMOVABLE BACK FLOW PRE-VENTER OR BIBB-TYPE VACUUM BREAKER WILL BE INSTALLED ON ALL EXTERIOR HOSE BIBS. (2019 CPC603.4.7)
HOT WATER RE-CIRCULATING SYSTEM IS INSTALLED, THE ENTIRE LENGTH OF HOT WATER PIPES SHALL BE INSULATED. (2008 CALIFORNIA ENERGY REGULATIONS 150 (J)) HOT WATER PIPE FROM THE WATER HEATER TO THE KITCHEN WILL BE INSULATED. (2008 CALIFORNIA ENERGY REGULATIONS 151(F)8 D)

CITY CODES

2019 California Building Code
2019 California Residential Code
2019 California Fire Code
2019 California Electrical Code
2019 California Mechanical Code
2019 California Plumbing Code
2019 California Green Building Standards Code
2019 California Historical Building Code
2019 California Referenced Standards Code
2019 California Administrative Code
2019 California Energy Code
ACI 318-14 (Structural Concrete)
TMS 402/602-16 (Structural Masonry)
ASCE 7-16 (Design Loads for Structures)

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 minimun 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 SPECS
SCALE :NTS

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Project Name and Address:

PORTSIDE LOFTS
600 FERRY STREET, MARTINEZ, CA 94513

REGISTERED PROFESSIONAL ENGINEER
BARRETT CROOK
C 057186
Exp. 12-31-2021
7-12-2021
CIVIL
STATE OF CALIFORNIA

Date: March 15, 2021
Scale: NTS
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Sheet :
Page No. : P1.0

No.	Revision/Issue	Date
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ABBREVIATIONS :

ABBREV.	DESCRIPTION
CO.	CLEAN OUT
DN.	DOWN
FD	FLOOR DRAIN
FCO	FLOOR CLEAN OUT
F.F.L	FINISH FLOOR LEVEL
UG	UNDER GROUND
GP	GAS PIPE
DP	WASTE PIPE
VP	VENT PIPE
VS	VENT STACK
VTR	VENT TO ROOF
FU	FIXTURE UNIT
CW	COLD WATER
HW	HOT WATER
TWH	TANKLESS WATER HEATER
HB	HOSE PIPE

NOTE:
PROVIDE ANTI-SIPHON VALVES ON ALL HOSE BIBS (CPC) .
INSULATE THE FIRST 5' OF HOT/COLD WATER LINES FROM THE WATER HEATER.
A WATER-TIGHT PAN OF CORROSION RESISTANT MATERIALS SHALL BE INSTALLED . BENEATH THE WATER HEATER WITH NOT LESS THAN THREE-QUARTERS ¾ OF AN INCH DIAMETER DRAIN TO AN APPROVED LOCATION.
BATHROOM EXHAUST FANS SHALL BE ENERGY STAR COMPLIANT AND BE DUCTED TO THE OUTSIDE OF THE BUILDING. THE BATHROOM EXHAUST FAN SHALL HAVE A HUMIDITY SWITCH .

W — COLD WATER ELECTRONIC SUBMETER , CONTROLLED BY CENTRAL MANAGER CENTER

G — GAS ELECTRONIC SUBMETER , CONTROLLED BY CENTRAL MANAGER CENTER

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PORTSIDE LOFTS
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Date: Sept. 10 2020
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DRAWING TITLE: 1ST FLOOR WATER SUPPLY PLAN

Sheet : P2. 0

Page No. :

No.	Revision/Issue	Date
1	Issued for client approval	Sept. 10 2020

ABBREVIATIONS :

ABBREV.	DESCRIPTION
CO.	CLEAN OUT
DN.	DOWN
FD	FLOOR DRAIN
FCO	FLOOR CLEAN OUT
F.F.L	FINISH FLOOR LEVEL
UG	UNDER GROUND
GP	GAS PIPE
DP	WASTE PIPE
VP	VENT PIPE
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VTR	VENT TO ROOF
FU	FIXTURE UNIT
CW	COLD WATER
HW	HOT WATER
TWH	TANKLESS WATER HEATER
HB	HOSE PIPE

NOTE:
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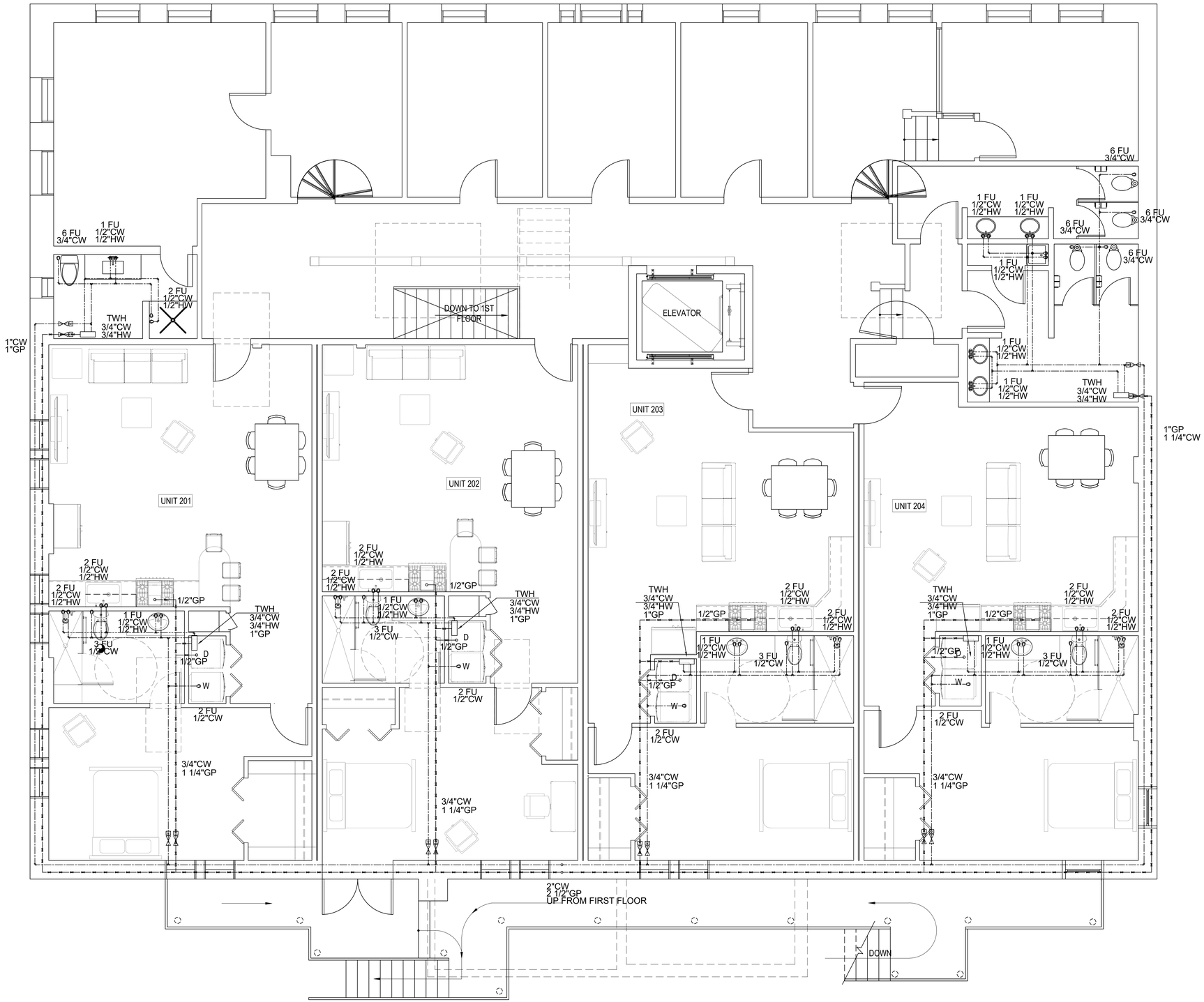
W — COLD WATER ELECTRONIC SUBMETER , CONTROLLED BY CENTRAL MANAGER CENTER

G — GAS ELECTRONIC SUBMETER , CONTROLLED BY CENTRAL MANAGER CENTER



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REGISTERED PROFESSIONAL ENGINEER — BARRETT CROOK — C 057199 Exp. 12-31-2021 — 7-12-2021 — CIVIL — STATE OF CALIFORNIA

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DRAWING TITLE: 2ND FLOOR WATER SUPPLY PLAN

Sheet :
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P3. 0

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1	Issued for client approval	1-17-2021

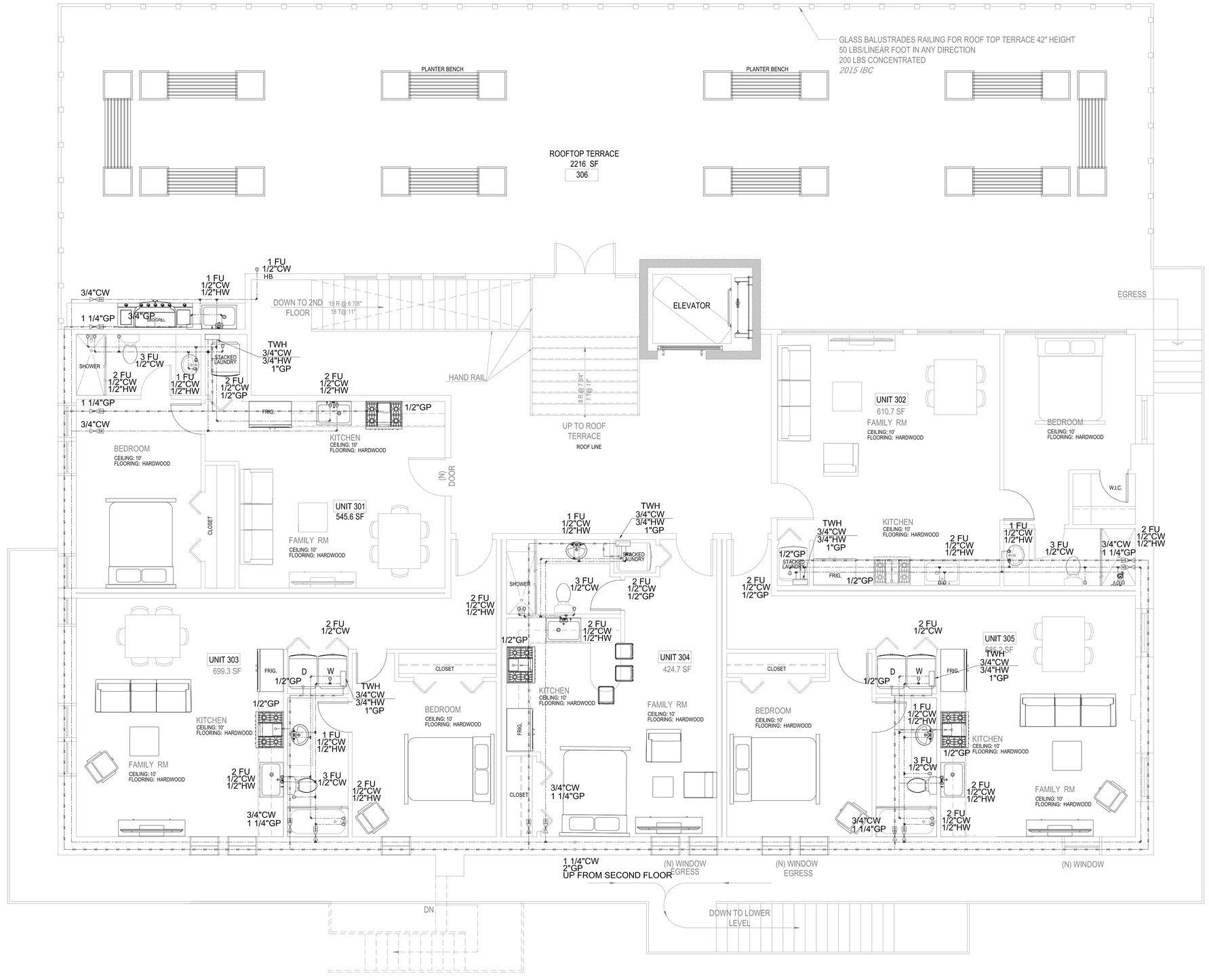
ABBREVIATIONS :

ABBREV.	DESCRIPTION
CO.	CLEAN OUT
DN.	DOWN
FD	FLOOR DRAIN
FCO	FLOOR CLEAN OUT
F.F.L	FINISH FLOOR LEVEL
UG	UNDER GROUND
GP	GAS PIPE
DP	WASTE PIPE
VP	VENT PIPE
VS	VENT STACK
VTR	VENT TO ROOF
FU	FIXTURE UNIT
CW	COLD WATER
HW	HOT WATER
TWH	TANKLESS WATER HEATER
HB	HOSE PIPE

NOTE:
PROVIDE ANTI-SIPHON VALVES ON ALL HOSE BIBS (CPC) .
INSULATE THE FIRST 5' OF HOT/COLD WATER LINES FROM THE WATER HEATER.
A WATER-TIGHT PAN OF CORROSION RESISTANT MATERIALS SHALL BE INSTALLED .
BENEATH THE WATER HEATER WITH NOT LESS THAN THREE-QUARTERS ¾ OF AN INCH DIAMETER DRAIN TO AN APPROVED LOCATION.
BATHROOM EXHAUST FANS SHALL BE ENERGY STAR COMPLIANT AND BE DUCTED TO THE OUTSIDE OF THE BUILDING. THE BATHROOM EXHAUST FAN SHALL HAVE A HUMIDITY SWITCH .

W — COLD WATER ELECTRONIC SUBMETER , CONTROLLED BY CENTRAL MANAGER CENTER

G — GAS ELECTRONIC SUBMETER , CONTROLLED BY CENTRAL MANAGER CENTER



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DRAWING TITLE: 3RD FLOOR WATER SUPPLY PLAN

Sheet :
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No.	Revision/Issue	Date
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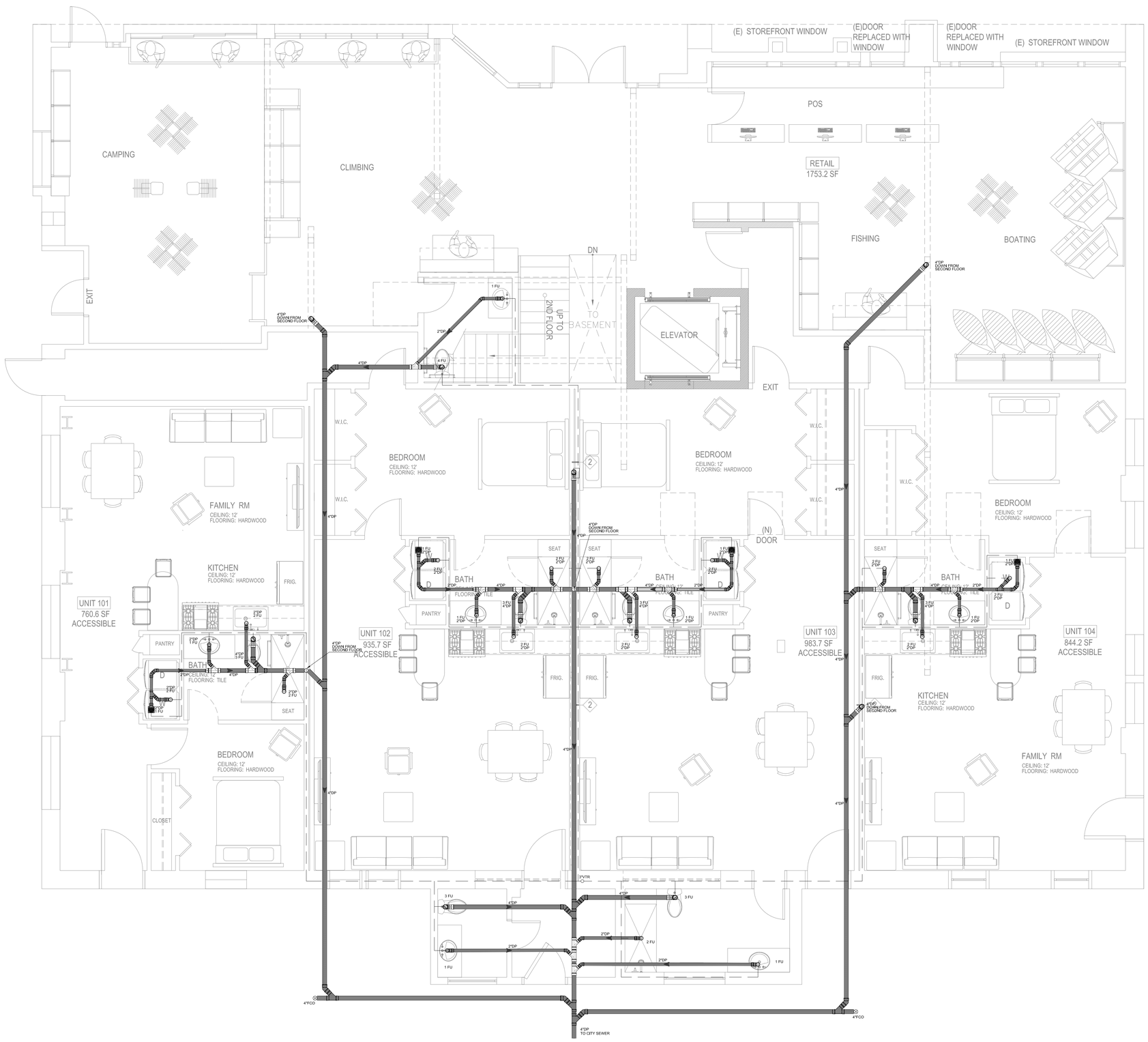

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DRAWING TITLE: 1ST FLOOR DRAINAGE PLAN

Sheet :

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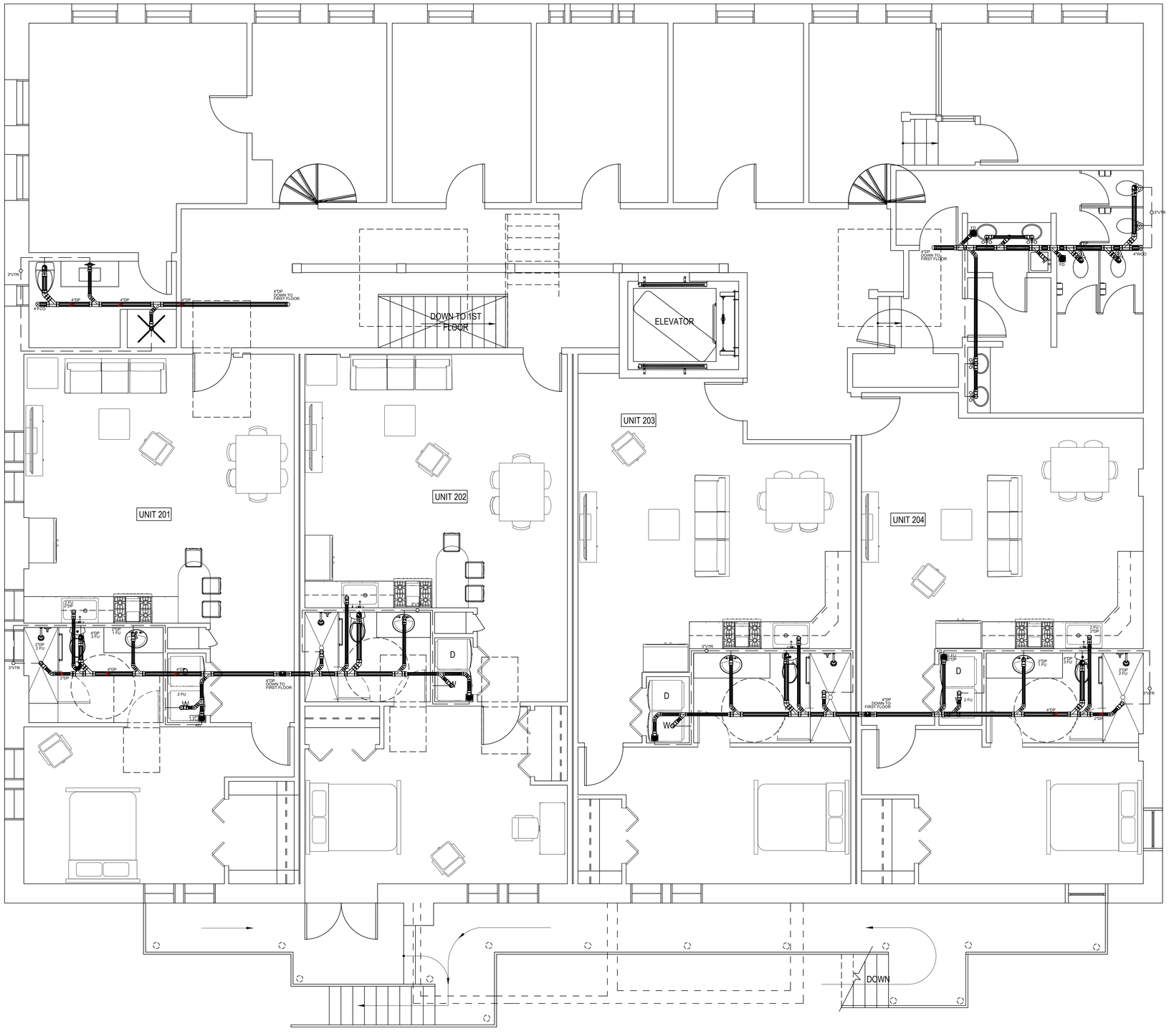

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DRAWING TITLE: 2ND FLOOR DRAINAGE PLAN

Sheet :

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No.	Revision/Issue	Date
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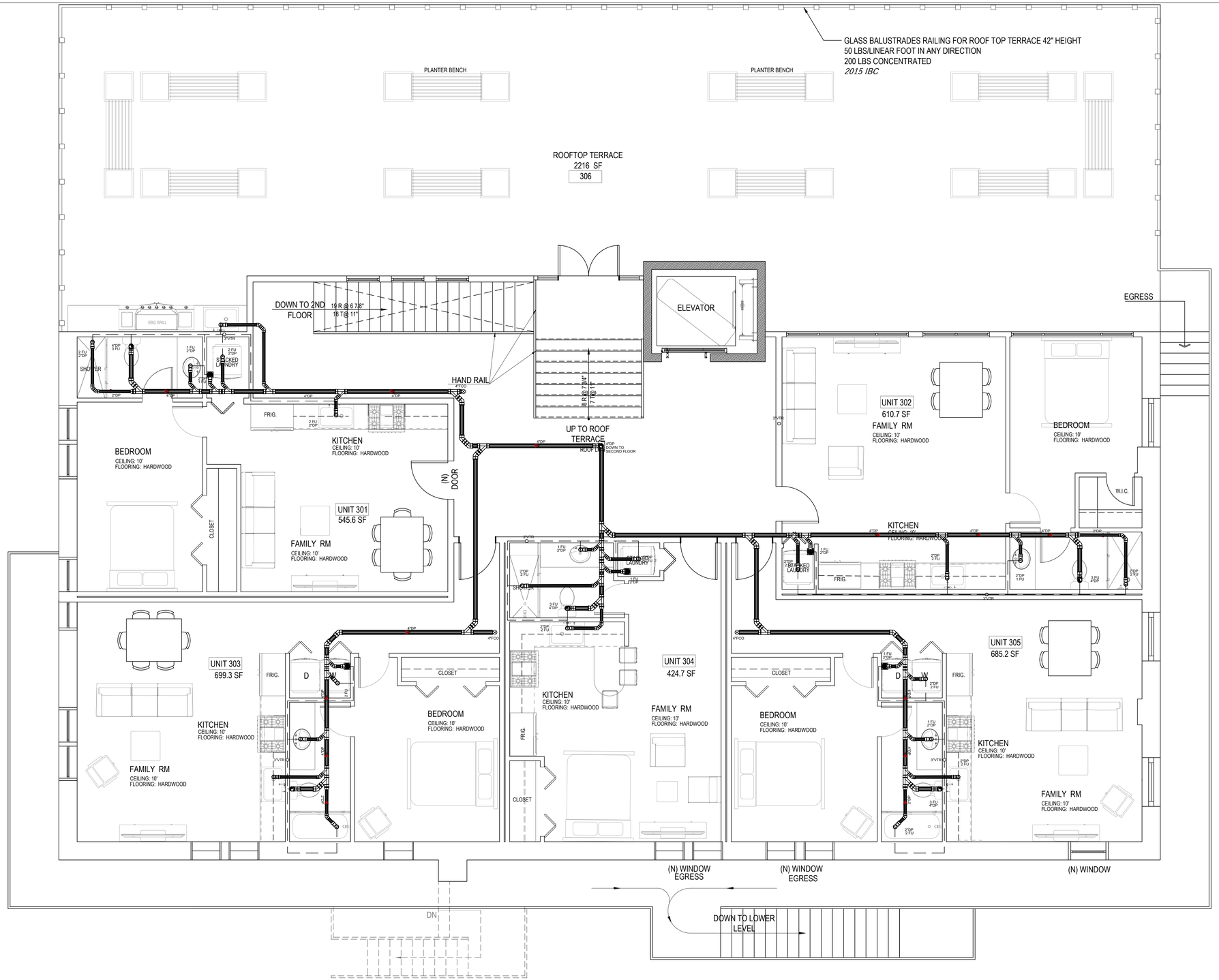

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DRAWING TITLE: 3RD FLOOR DRAINAGE PLAN

Sheet :

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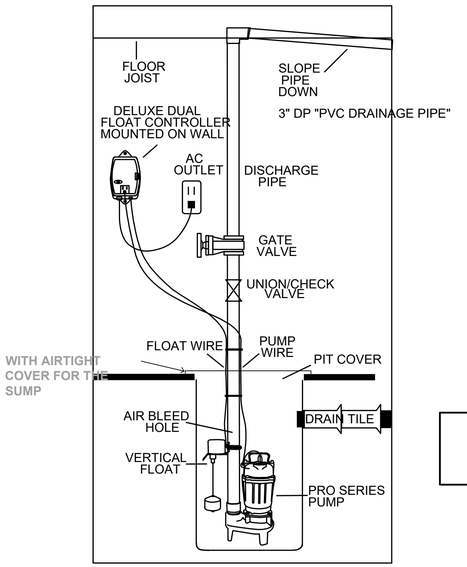
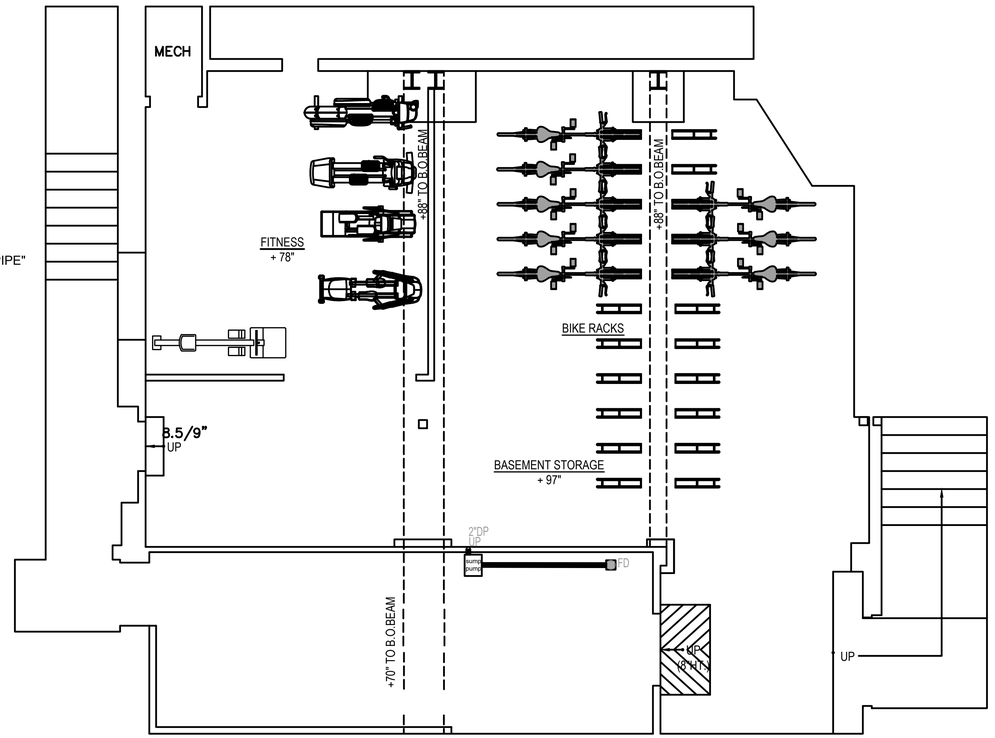




NOTES

1. Sump(s) shall be made of concrete, metal or other approved materials. Fiberglass sumps shall be approved by the Los Angeles City Mechanical Testing Laboratory, or other City of Los Angeles recognized agency (LAPC 710.8, LAPC 301.1).

2. When discharging to the public street the pressure line shall connect to a gravity pipe within the property (Department of Public Works requirement).

3. When discharging under the curb, *ne drain line shall not be smaller than three inch diameter nor greater than four inch diameter (Department of Public Works requirement).

4. When the gravity line from rain water exceeds four Inch in diameter either use rectangular fitting having height between three and four inches and a cross section equal or greater the cross section of the pipe, or manifold multiple pipes having aggregate cross sectional area equal or greater the cross sectional area of the gravity pipe (Department of Public Works requirement)

5. The discharge line shall connect to the horizontal gravity line from the top through a wye branch fitting (LAPC 710.4).

6. The discharge line from the ejector or sump pump shali be provided with an accessible check valve and gate valve (LAPC 710.4).

8. The gate valve shall be located on the discharge side of the check valve (LAPC 710.4)

9. Sump(s) shall be provided with a vent pipe which shall extend through the roof (LAPC 710.7).

10. High water level. It shall be at least inches below the lowest inlet (LAPC 710.9).

1. Calculate the equivalent pipe length:

Use the following equivalent length for the fittings:

Diameter of fitting inches	45o bend feet	90o bend feet	Gate Valve feet	Backwater valve feet
2"	4'	7'	1.3'	11'
3"	6'	10'	2'	16'
4"	8'	14'	2.7'	22'
6"	12'	20'	4'	31'

(4) 45o bend	24 ft
(1) 90o bend	10 ft
(1) Gate Valve	1.3 ft
(1) Backwater valve	11 ft
Developed pipe length	90 ft
TOTAL EQUIVALENT LENGTH	125.3 ft

2. Calculate the System Curve:

$$h_n = \frac{10.5Q^{1.85}}{C^{1.85}d^{4.87}}l \quad \text{(feet of water)}$$

Q = Flow in g.p.m.
d = Pipe diameter in inches
l = Total Equivalent Length in feet
C = Hazen-Williams Coefficient

Use:	C=100 for cast iron pipes C=120 for black iron pipes	C=140 for cement lined and copper pipes C=150 for plastic pipes

h= difference in elevation between the bottom of the sump basin and the gravity sewer line

$h_{tot} = h_n + h$ (feet of water) System Curve

Assuming plastic pipes:

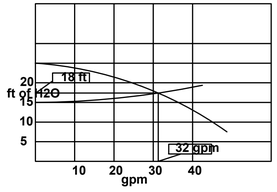
Q (g.p.m.)	10	20	30	40
hn (ft)	0.3	1.2	2.5	4.2
h (ft)	15	15	15	15
htot	15.3	16.2	17.5	19.2

3. Find the system operating point

Jot down the system curve on top of the pump performance curve. The point of operation of the pump system is where the two curves intersect; that is:

Q= 32 gpm, htot=18 ft

Pump:
Best Pump Co. Model SE 300 Explosion proof
18 ft @32 gpm
¼ hp 1725 rpm
2 phase 60Hz 240V



4. Acceptance of the pump:

The flow coming out of the pump must be equal or greater than the flow coming into the sump:
(fixture units coming in)x(2 fixture units/gpm)<gpm pumped out

5. Determine the number of fixture units discharging from the pump:

32 gpm x 2 fixture units/gpm=64 fixture units.

6. Conclusions

Add the fixture units discharging from the pump to the fixture units in the horizontal drain and continue checking sizing the system.

SIZING OF SUMP BASIN

The code does no regulate the size of the sump basin in a sewer system however, the basin needs to be large enough to accommodate the pump or pumps installed inside it.

Some designers select a usable volume of the sump basin to be at least twice the volume that is ejected in one minute by the pump. (In our example 32x2=64 gal.).

Other designers chose pump and basin to have a minimum cycling time of 6 minutes (10 start-ups per hour).

The cycling time is the time between two consecutive pump start-ups:

Cycling time = Time to empty the basin + Time to fill the basin

Rate of discharge = 32 gpm (Pump discharge) – 5.5 gpm (Water incoming into the sump) = 26.5 gpm

If the sump usable volume is 90 gal, then the time it takes to empty the basin is:

$$\frac{64}{26.5} = 3.9$$

and the time it takes to fill the basin is:

$$\frac{64 \text{ gal}}{5.5 \text{ gpm}} = 11.6 \text{ min}$$

Thus, the cycling time is:

(3.9 + 11.6) min = 15.5 min

Therefore, since the cycling time is more than 6 minutes, the useable sump volume of 64 gallons is adequate.

SUMP PUMP CALCULATION

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Barrett C Cook
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Date: Sept. 10 2020
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DRAWING TITLE: BASEMENT DRAINAGE PLAN

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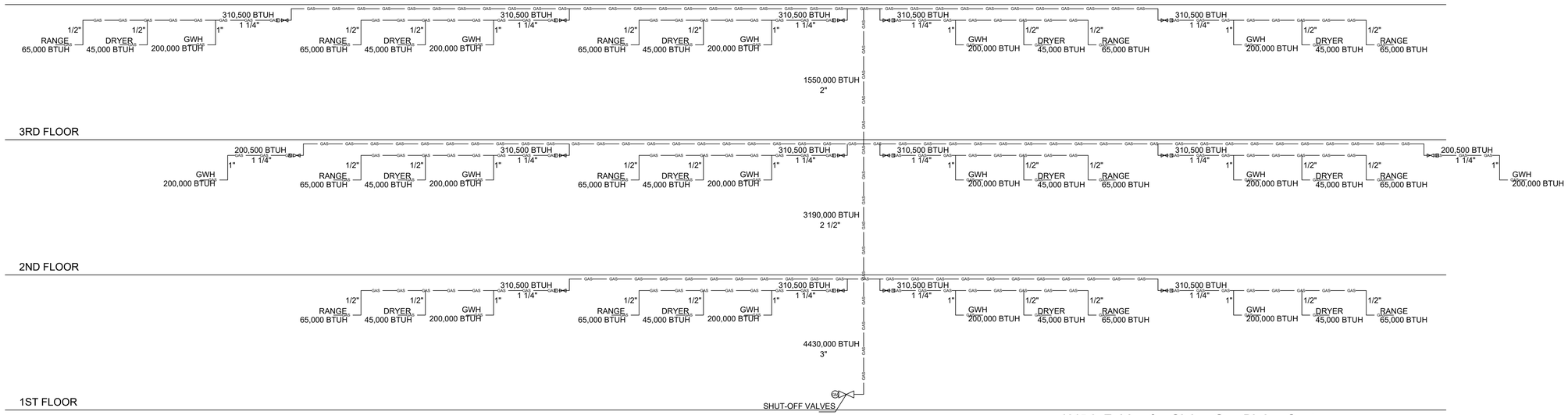


GPR GAS PRESSURE REGULATOR .
COVERNOR 30152 , 1"
OUTLET PRESSURE SET POINT : 8"WC
OPERATING INLET PRESSURE : 1 PSI G
@2,437 CFH

GAS GAS GAS ELECTRONIC SUBMETER , CONTROLLED BY CENTRAL MANAGER CENTER

*Maintain downward slope, including installations in which the drain is not directly below the heater.
**A 2" (50 mm) minimum distance must be maintained between the condensate line and drain to allow full flow of the condensation.

1 NOT TO SCALE
TANKLESS WATER HEATER DETAIL

TANKLESS GAS WATER HEATER					
MARK	MANUF / MODEL	GAS CONSUMPTION INPUT (BTU/HR)	MAX. FLOW (GPM)	APPROX SHIPPING WEIGHT (LBS)	INSTALLATION LOCATION
GWH	AO SMITH ATI-510U 200+	200,000	10	40	INDOOR

AO Smith | COMMERCIAL-GRADE
RESIDENTIAL/COMMERCIAL GAS WATER HEATERS

ULTRA LOW-NOx NON-CONDENSING TANKLESS WATER HEATERS

Fully modulating, gas fired, tankless water heater with sealed combustion and power vented flue. Indoor and outdoor models available for residential and commercial applications. Supplies hot water to domestic hot water systems and can be used with water storage tanks, recirculation systems, and/or combined domestic & heating applications.

FEATURES:

FIELD CONVERTIBLE FROM NATURAL GAS TO PROPANE

COMPLIES WITH SCAQMD RULE 1146.2 AND OTHER AIR QUALITY MANAGEMENT DISTRICTS WITH SIMILAR NOx EMISSION REQUIREMENTS OF 14 ng/J OR 20 PPM

MAXIMUM FLOW RATES UP TO 10.0 GPM

COPPER HEAT EXCHANGER
- 25x better heat transfer than stainless steel thus stabilizing outgoing water temperature quicker and reducing pressure drop across the heat exchanger

INDOOR AND OUTDOOR MODELS AVAILABLE

OUTDOOR MODELS INCLUDE REMOTE CONTROL AS A STANDARD FEATURE

INDOOR MODELS INCLUDE A BUILT-IN TEMPERATURE CONTROLLER AND A FACTORY-INSTALLED POWER CORD AS STANDARD FEATURES

ATI-510U AND ATO-510U CAN BE USED IN BOTH RESIDENTIAL AND COMMERCIAL APPLICATIONS
- Easy-Link up to 4 units (no additional parts or accessories needed)
- Multi-link up to 20 units

COMPLIES WITH LEAD FREE STANDARDS

SAFETY FEATURES:
- Built-in Freeze Protection
- Manual Reset Hi Limit (Up to 194°F)
- Overheat Cutoff Fuse
- Inlet and Outlet Thermistors for Constant Temperature Monitoring
- Air Fuel Ratio Rod
- Flame Sensor

VENTING AND COMBUSTION
- 4" Category III Stainless Steel
- 1" Combustion Air Intake
- 60' Max Length, 6 Elbows max (90° elbows = 5' equivalent length)
- Power Vent or Power Direct Vent
- Vertical or Horizontal Installation
- Electronic Ignition - No Pilot Light

OPTIONAL ACCESSORIES
- Complete Line of Stainless Steel Venting
- Recess Box (Outdoor models)
- Pipe Cover
- Isolation Valve Kit
- Backflow Preventer
- Concentric Termination Kits

WARRANTY
- 15-year limited warranty on heat exchanger in residential applications
- 5-year limited warranty on heat exchanger in commercial applications
- 5-year limited warranty on all parts

INDOOR MODELS
ATI-110U, ATI-310U, ATI-510U

OUTDOOR MODELS
ATO-110U, ATO-310U, ATO-510U

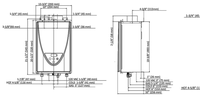
Complies with SCAQMD Rule 1146.2
LOW-LEAD
CERTIFIED
(ENSO models only)
AHRI CERTIFIED
ANSI Z21.10.3

AO Smith | COMMERCIAL-GRADE
RESIDENTIAL/COMMERCIAL GAS WATER HEATERS

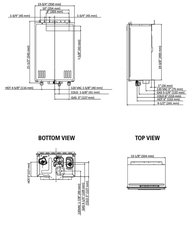
Model Number	Type*	Gas Consumption Input		Inlet Gas Pressure**			Maximum GPM***	Hot/Cold Connections	Gas Connection	Dimensions in Inches			Approx Shipping Weight (lbs)
		Minimum BTU/H	Maximum BTU/H	Minimum in. W.C.	Maximum in. W.C.	SGF				Height	Width	Depth	
Indoor Models													
ATI-110U 200	Natural	15,000	140,000	4.0	10.5	0.61	6.6	3/4" NPT	3/4" NPT	20-1/2	13-3/4	10	39
ATI-310U 200	Natural	15,000	190,000	4.0	10.5	0.61	8	3/4" NPT	3/4" NPT	20-1/2	13-3/4	10	39
ATI-510U 200+	Natural	15,000	199,000	4.0	10.5	0.61	10	3/4" NPT	3/4" NPT	20-1/2	13-3/4	10	40
Outdoor Models													
ATO-110U 200	Natural	15,000	140,000	4.0	10.5	0.61	6.6	3/4" NPT	3/4" NPT	20-1/2	13-3/4	9-1/2	39
ATO-310U 200	Natural	15,000	190,000	4.0	10.5	0.61	8	3/4" NPT	3/4" NPT	20-1/2	13-3/4	9-1/2	39
ATO-510U 200+	Natural	15,000	199,000	4.0	10.5	0.61	10	3/4" NPT	3/4" NPT	20-1/2	13-3/4	9-1/2	40

*1-10 to 70 water pressure. All 7% or above recommended for maximum flow.
**Field gas convertible from natural gas to propane. Conversion kit is included with the heater.
***For Propane, minimum inlet gas pressure is 8.0 in W.C. and maximum inlet gas pressure is 14.0 in W.C.
****Current numbers based on factory testing. 0.5 GPM required for activation; 0.4 GPM required for continuous fire after initial ignition.
+Suitable for commercial applications.
Indoor models are certified from sea level to 10,100 ft. elevations. Outdoor models are certified from sea level to 6,000 ft. elevation.

INDOOR MODEL DIMENSIONS
CLEARANCES: TOP 12", BOTTOM 12", FRONT 4", BACK 1", SIDES 3"



OUTDOOR MODEL DIMENSIONS
CLEARANCES: TOP 36", BOTTOM 12", FRONT 24", BACK 1", SIDES 3"



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
250	30	63	119	244	366	704	1120	1980	4050	7320	11 900	24 300	44200	70 000
300	27	57	108	221	331	638	1020	1800	3670	6630	10 700	22 100	40 100	63 400
350	25	53	99	203	305	587	935	1650	3370	6100	9880	20 300	36 900	58 400
400	23	49	92	189	283	546	870	1540	3140	5680	9190	18 900	34 300	54 300
450	22	46	86	177	266	512	816	1440	2940	5330	8620	17 700	32 200	50 900
500	21	43	82	168	251	484	771	1360	2780	5030	8150	16 700	30 400	48 100
550	20	41	78	159	239	459	732	1290	2640	4780	7740	15 900	28 900	45 700
600	19	39	74	152	228	438	699	1240	2520	4560	7380	15 200	27 500	43 600
650	18	38	71	145	218	420	669	1180	2410	4360	7070	14 500	26 400	41 800
700	17	36	68	140	209	403	643	1140	2320	4190	6790	14 000	25 300	40 100
750	17	35	66	135	202	389	619	1090	2230	4040	6540	13 400	24400	38 600
800	16	34	63	130	195	375	598	1060	2160	3900	6320	13 000	23 600	37 300
850	16	33	61	126	189	363	579	1020	2090	3780	6110	12 600	22 800	36 100
900	15	32	59	122	183	352	561	992	2020	3660	5930	12 200	22 100	35 000
950	15	31	58	118	178	342	545	963	1960	3550	5760	11 800	21 500	34 000
1000	14	30	56	115	173	333	530	937	1910	3460	5600	11 500	20 900	33 100

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STATE OF CALIFORNIA

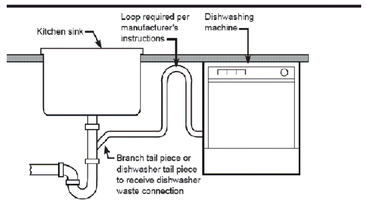
Date: March 15, 2021
Scale: NTS

DRAWING TITLE: GAS RISER DIAGRAM

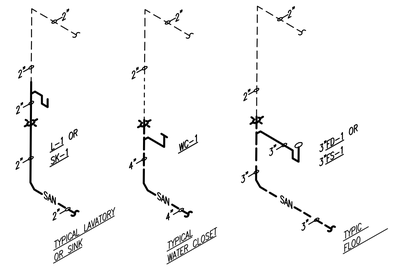
Sheet :

Page No. : P9. 0

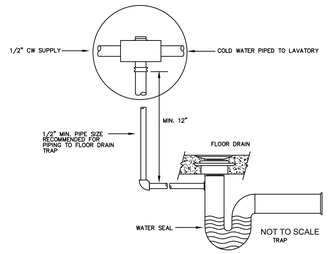
No.	Revision/Issue	Date
1	Issued for client approval	Sept. 10, 2020



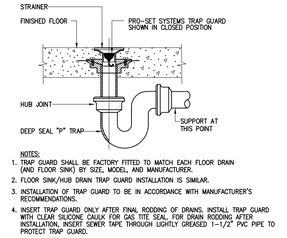
13 DISHWASHER INSTALLATION DETAIL



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

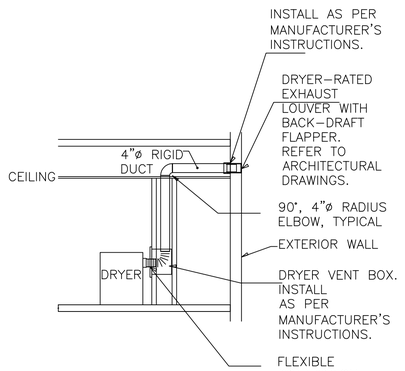


5 TRAP PRIMER



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.

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



NOTES:

1. THE MALE END OF THE OVERLAPPED DUCT JOINTS SHALL EXTEND IN THE DIRECTION OF AIRFLOW.

2. NO SCREWS SHALL BE ALLOWED IN THE DRYER EXHAUST DUCT AND ALL JOINTS SHALL BE SEALED WITH FOIL FACED TAPE.

3. DRYER EXHAUST SYSTEM IS DESIGNED BASED ON A WASHER/DRYER AS MANUFACTURED BY GE MODEL GFDN120ED. CONTRACTOR SHALL USE SHEET METAL ROUND DUCTWORK AND MINIMIZE THE USE OF FLEXIBLE DUCTWORK.

MAXIMUM LENGTH OF 4 INCH DIAMETER RIGID METAL DUCT:

No. OF ELBOW	FEET
0	90
1	60
2	45
3	35
4	25

DRYER EXHAUST DETAIL "A"
NOT TO SCALE

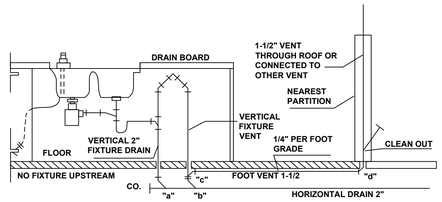
12 DRYER VENT
SCALE: NONE

TRAPS FOR ISLAND SINKS AND SIMILAR EQUIPMENT SHALL BE TOUGHED IN ABOVE THE FLOOR AND MAY BE VENTED BY EXTENDING THE VENT AS HIGH AS POSSIBLE, BUT NOT LESS THAN THE DRAINBOARD EIGHT . THE VENT IS THEN RETURNED DOWNWARD AND CONNECTED TO THE HORIZONTAL SINK DRAIN IMMEDIATELY DOWNSTREAM FROM THE VERTICAL FIXTURE DRAIN.

THE RETURNED 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 FITTING IMMEDIATELY BELOW THE FLOOR . THIS FOOT VENT EXTENDS TO THE NEAREST PARTITION AND THENCE THROUGH THE ROOF TO THE OPEN AIR , OR MAY BE CONNECTED TO OTHER VENTS AT A POINT NOT LESS THAN SIX(6) INCHES ABOVE THE FLOOD LEVEL RIM TO OF THE FIXTURE SERVED.

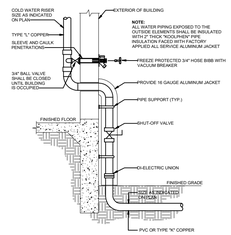
DRAINAGE FITTINGS SHALL BE USED ON ALL PARTS OF THE VENT BELOW THE FLOOR LINE THIS INCLUDES FITTINGS NOTED AS A,B,C AND D . THE FOOT VENT SHALL MAINTAIN A MINIMUM SLOPE OF ONE – QUARTER (1/4) INCH PER FOOT BACK TO DRAIN . THE RETURN BEND USED UNDER THE DRAIN BOARD SHALL BE A ONE PIECE FITTING , OR AN ASSEMBLY OF A 45 DEGREE , A 90 DEGREE AND A 45 DEGREE ELBOW IN THE ORDER NAMED . PIPE SIZING SHALL BE REQUIRED IN THE CODE

SPECIAL VENTING FOR ISLAND FIXTURE IS A METHOD FOR VENTING A FIXTURE IN AN ISOLATED LOCATION WHERE VENT PIPES INSTALLED AS NORMALLY REQUIRED IN UPC WOULD NOT BE PRACTICAL.



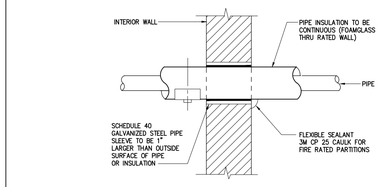
a,b AND c ARE Y-BRANCH FITTINGS

10 ISLAND SINK VENT

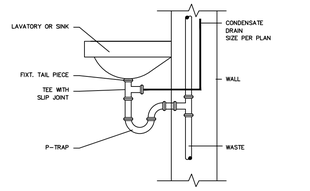


NOTE:
VERIFY REQUIREMENTS FOR METERING AND PIPING WITH WATER COMPANY. INSTALL OTHER UTILITIES A MINIMUM OF 10'-0" FROM WATER LINE. PLUMBING CONTRACTOR SHALL PAY ALL WATER COMPANY FEES FOR INSTALLATION. USE WELDED OR SCREWED PIPE AND FITTINGS PER PLUMBING SPECS. WATER COMPANY SHALL EXCAVATE, BACKFILL AND REPAIR ANY PAVING OR SOD FOR WATER SERVICE LINE INSTALLATION FROM MAIN TO BUILDING.

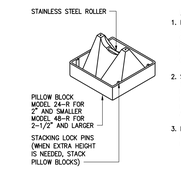
9 WATER ENTRY DETAIL
SCALE: NONE



6 **INTERIOR WALL PENETRATION**
SCALE: NONE

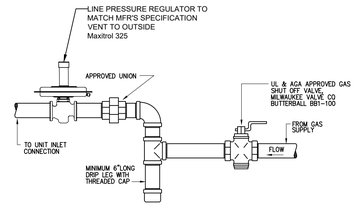


3 CONDENSATE TERMINATION
SCALE: NONE



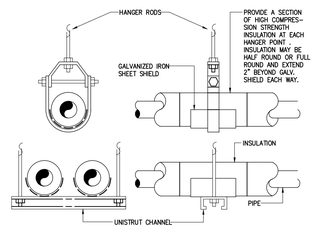
NOTE:
1. BUILT–UP ROOF SET PIPE STAND IN MASTIC BASE COMPATIBLE WITH ROOFING MATERIAL. COORDINATE MATERIAL WITH ROOFING CONTRACTOR.
2. SINGLE PLY ROOF–SET ON 12"X12" MIN. SHEET OF SINGLE PLY MATERIAL COMPATIBLE WITH ROOF IN ACCORDANCE WITH MANUFACTURER'S RECOMMEND–ATIONS.
3. FOR PILLOW BLOCK PIPE STAND INFORMATION, CONTACT MIRO INDUSTRIES (800)788–6978

7 **PIPE SUPPORT ON ROOF**
SCALE: NONE

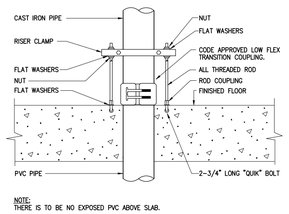


2 **GAS CONNECTION TO EQUIPMENT**
SCALE: NONE

MINIMUM DIMENSIONS OF GALVANIZED SHEETMETAL PROTECTION SHIELDS AT PIPE HANGERS		
NOMINAL SIZE PIPE	SHIELD LENGTH MIN. (IN.)	GAUGE THICKNESS
1/2" & 3/4"	12	18
1" – 2–1/2"	12	18
3" – 4"	12	18
6"	12	16



8 **HANGER FOR WATER PIPING**
SCALE: NONE



NOTE:
THERE IS TO BE NO EXPOSED PVC ABOVE SLAB.

1 **CAST IRON TO PVC PIPE TRANSITION**
SCALE: NONE

PLUMBING INSTALLATION DETAILS
SCALE :NTS

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Date: March 15, 2021
Scale: NTS
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