# Mechanical - Electrical - Plumbing Design Drawings for

# Harmony Center

# 1537 NE 24th Street Oklahoma City, OK, 73111

### GENERAL MEP SPECIFICATIONS

- 1. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW AND UNDERSTAND ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENTS. EACH CONTRACTOR IS RESPONSIBLE FOR ALL WORK ASSOCIATED WITH HIS TRADE REGARDLESS OF WHERE THE WORK IS DEPICTED IN THE DRAWINGS OR SPECIFICATIONS.
- 2. THE LAYOUT OF SYSTEMS SHOWN ON PLANS ARE APPROXIMATE AND WILL NEED TO BE COORDINATED IN FIELD. THE CONTRACTOR SHALL INCLUDE THIS COORDINATION IN HIS SCOPE AND INCLUDE ALL COSTS OF MODIFYING THE LAYOUT AS REQUIRED IN HIS BID.

  3. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY PARTS AND LAROR TO
- 3. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY PARTS AND LABOR TO PRODUCE A COMPLETE AND FULLY OPERATIONAL SYSTEM UNLESS STATED OTHERWISE ON PLANS.
- 4. ALL MATERIALS TO BE NEW, FIRST CLASS, AND INSTALLED PER MANUFACTURE'S PUBLISHED INSTRUCTIONS.
- 5. ALL WORK SHALL BE PERFORMED IN COMPLIANCE WITH LOCALLY ADOPTED CODES AND
- ORDINANCES.

  6. CONTRACTOR IS RESPONSIBLE FOR TO COORDINATE EQUIPMENT LOCATIONS AND SYSTEM
- ROUTING WITH OTHER TRADES PRIOR TO INSTALLATION.
  7. CONTRACTOR TO GUARANTEE ALL MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR
- FROM THE DATE THE PROJECT IS TURN OVER TO THE OWNER, UNLESS NOTED OTHERWISE.

  8. CONTRACTOR IS TO INCLUDE IN HIS SCOPE THE COST OF ALL PERMITS, INSPECTIONS, METERING,
- 8. CONTRACTOR IS TO INCLUDE IN HIS SCOPE THE COST OF ALL PERMITS, INSPECTIONS, METERING, AND TAPS ASSOCIATED WITH HIS WORK.
- 9. CONTRACTOR IS RESPONSIBLE FOR ALL EXCAVATION, CUTTING, CORING, PATCHING, AND BACKFILL REQUIRED TO COMPLETE HIS WORK, UNLESS NOTED OTHERWISE.
- 10. THESE PLANS ARE NOT TO BE SCALED. SEE ARCHITECTURAL PLANS FOR DIMENSIONS. WHERE THERE IS A CONFLICT BETWEEN ARCHITECTURAL DIMENSIONS AND MEP DIMENSION,
- ARCHITECTURAL SHALL GOVERN.

  11. SEE DISCIPLINE SHEETS FOR ADDITIONAL DISCIPLINE SPECIFIC SPECIFICATIONS.

### DEFERRED SUBMITTAL NOTES

- 1. FIRE ALARM CONTRACTOR TO PROVIDE DEFERRED SUBMITTAL FOR FIRE ALARM SYSTEM. SUBMITTAL TO INCLUDE BATTERY CALCULATION, VOLTAGE DROP CALCULATIONS, AND DEVICE CUT SHEETS FOR DEVICES AND PANELS.
- 2. FIRE SPRINKLER CONTRACTOR TO PROVIDE DEFERRED SUBMITTAL FOR FIRE SPRINKLER SYSTEM. SUBMITTAL TO INCLUDE HYDRAULIC CALCULATIONS AND SPRINKLER DRAWINGS SEALED BY A QUALIFIED DESIGN PROFESSIONAL LICENSED BY THE STATE.

### FIRE RATED PENETRATION NOTES

- THIS BUILDING CONTAINS FIRE RATED ASSEMBLIES. SEE ARCHITECTURAL PLANS FOR LOCATIONS.
- A UL LISTED FIRESTOP SYSTEM SHALL BE INSTALLED AT EACH PENETRATION OF A HORIZONTAL
- OR VERTICAL RATED ASSEMBLY IN ACCORDANCE WITH ASTM E814 OR UL 1479.

   EACH CONTRACTOR IS RESPONSIBLE FOR PROVIDING PROTECTION FOR HIS PENETRATIONS THRU
- RATED ASSEMBLIES.
- THE GENERAL CONTRACTOR IS RESPONSIBLE FOR PROVIDING AND MAINTAINING A CATALOG OF ALL UL LISTED FIRESTOP ASSEMBLIES

### REFERENCED CODES IN EFFECT

2015 INTERNATIONAL MECHANICAL CODE

2015 INTERNATIONAL PLUMBING CODE

2015 INTERNATIONAL FUEL GAS CODE

2015 INTERNATIONAL FIRE CODE

2017 NATIONAL ELECTRIC CODE

2009 INTERNATIONAL ENERGY CONSERVATION CODE

2015 INTERNATIONAL RESIDENTIAL CODE

### SHEET INDEX

### Sheet Number Sheet T

MEP1 MECHANICAL ELECTRICAL PLUMBING COVER SHEET

MEP2 ROOF PLAN

M101 HVAC PLANS

M501 HVAC DETAILS & SCHEDULES

EP101 POWER PLANS
EL101 LIGHTING PLANS

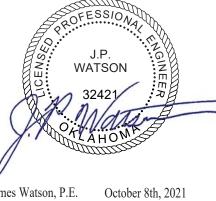
E501 ELECTRICAL DETAILS & SCHEDULES

ELECTRICAL SCHEDULES

PS101 SANITARY SEWER PLANS

PW101 WATER & GAS PLANS

PLUMBING DETAILS & SCHEDULES



James Watson, P.E. October 8th, PE-32421
OK Certificate of Authority # 8654



2401 Bernadette Drive, Suite 201 Columbia, Missouri 65203 573 - 234 - 4492 phone

| J2 PROJECT No: | J20395     |
|----------------|------------|
| J2 DESIGN:     | KEL        |
|                |            |
| ISSUE TITLE    | DATE       |
| PERMIT SET     | 10-08-2021 |
|                |            |
|                |            |



SHEET TITLE

MECHANICAL
ELECTRICAL
PLUMBING COVER
SHEET

SHEET NUMBER

MEP1

### ROOF PLAN SYMBOL LEGEND

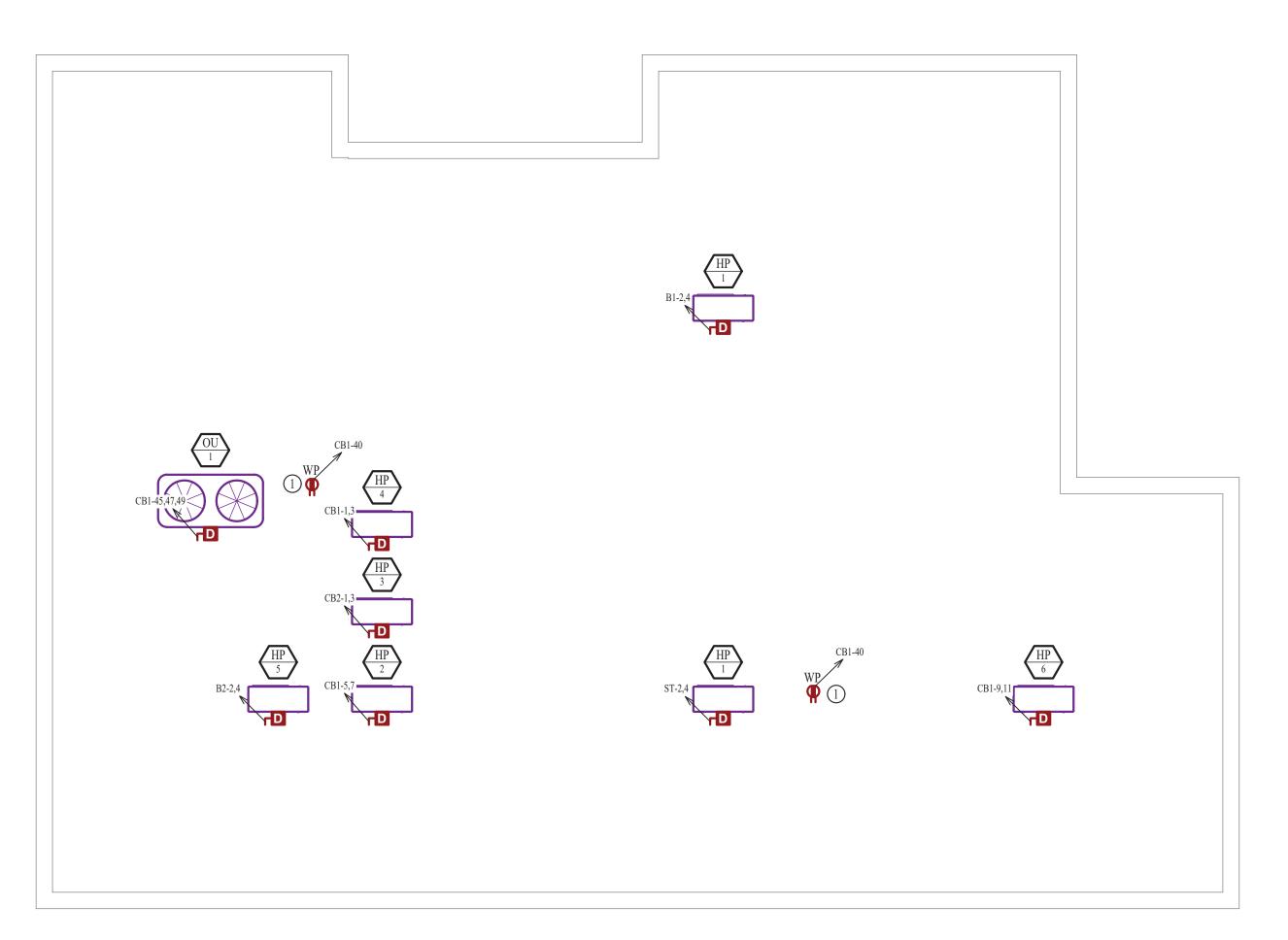
OVERHEAD ELECTRIC **UNDER GROUND ELECTRIC** DISCONNECT

### **ROOF PLAN GENERAL NOTES:**

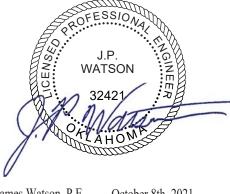
- 1. SEE SHEET E501 AND M501 FOR MORE ELECTRICAL AND HVAC NOTES, SCHEDULES, AND DETAILS. 2. ALL ROOFTOP EQUIPMENT TO BE LOCATED AT MINIMUM OF 10 FT AWAY FROM ROOF EDGE.
- 3. TAG ALL HEAP PUMPS WITH APARTMENT NUMBER SERVED.

### **ROOF PLAN KEY NOTES:**

1) PEDESTAL MOUNTED WEATHER PROOF RECEPTACLE.







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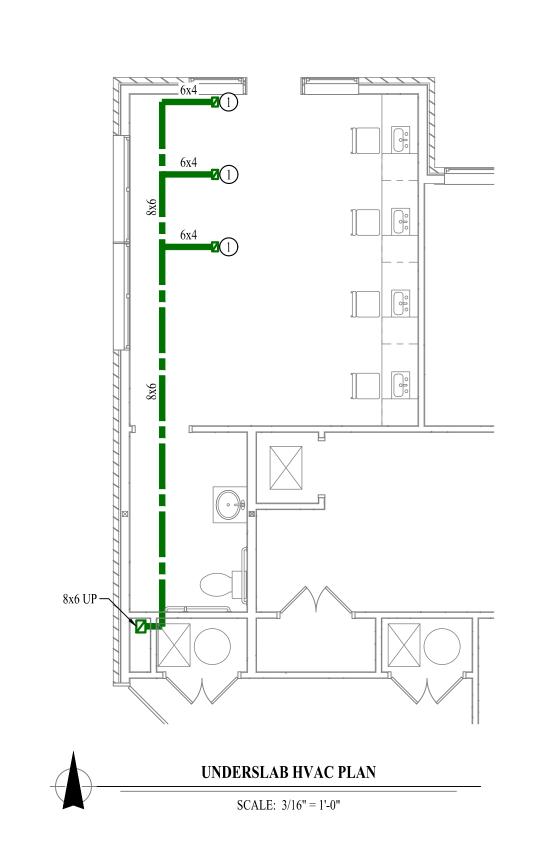
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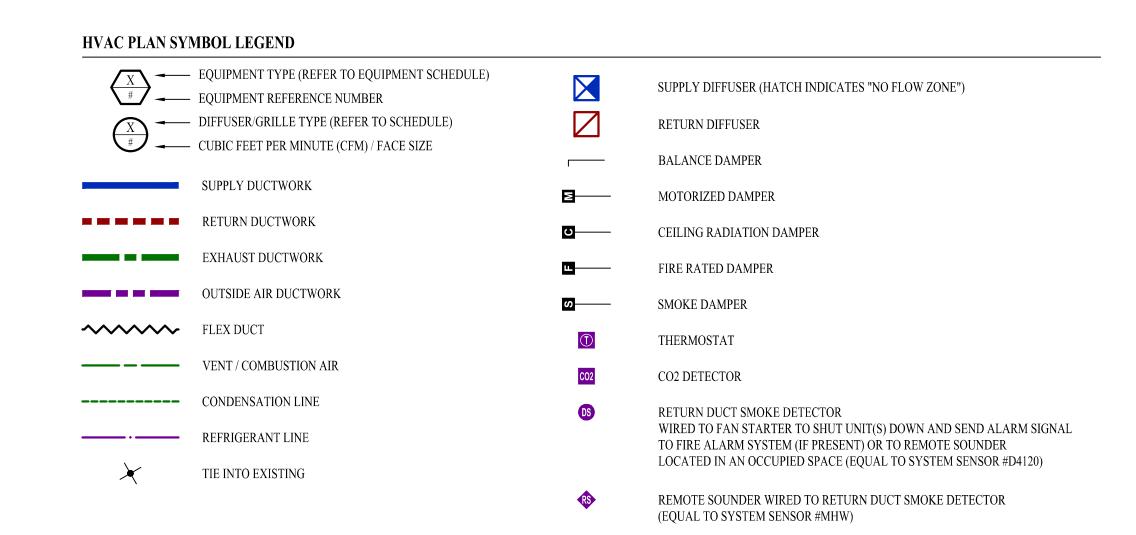
J2 PROJECT No: J2 DESIGN: KEL ISSUE TITLE DATE PERMIT SET 10-08-2021

Mechanical - Electrical - Plumbing Design Drawings for Harmony Center

**ROOF PLAN** 

MEP2



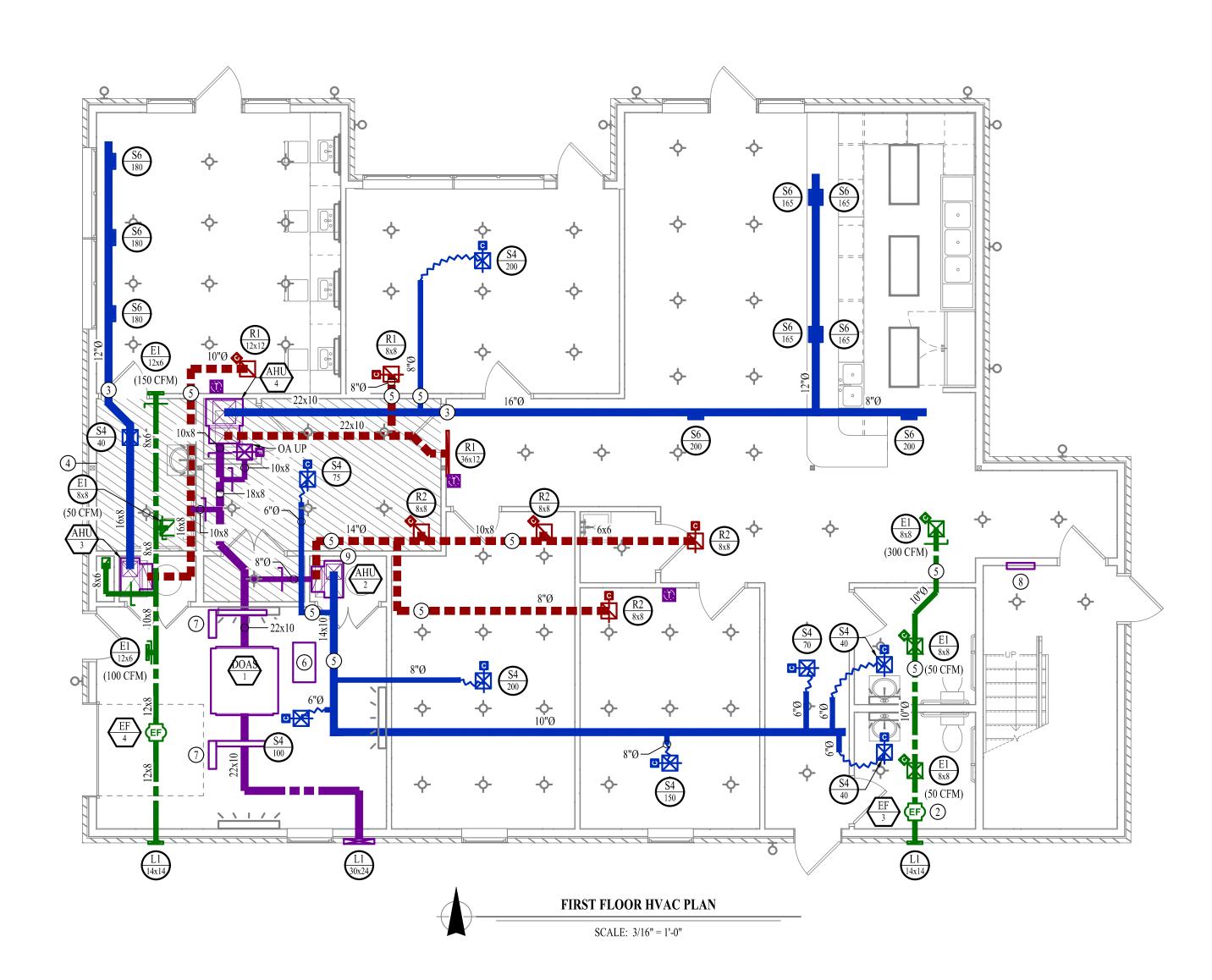


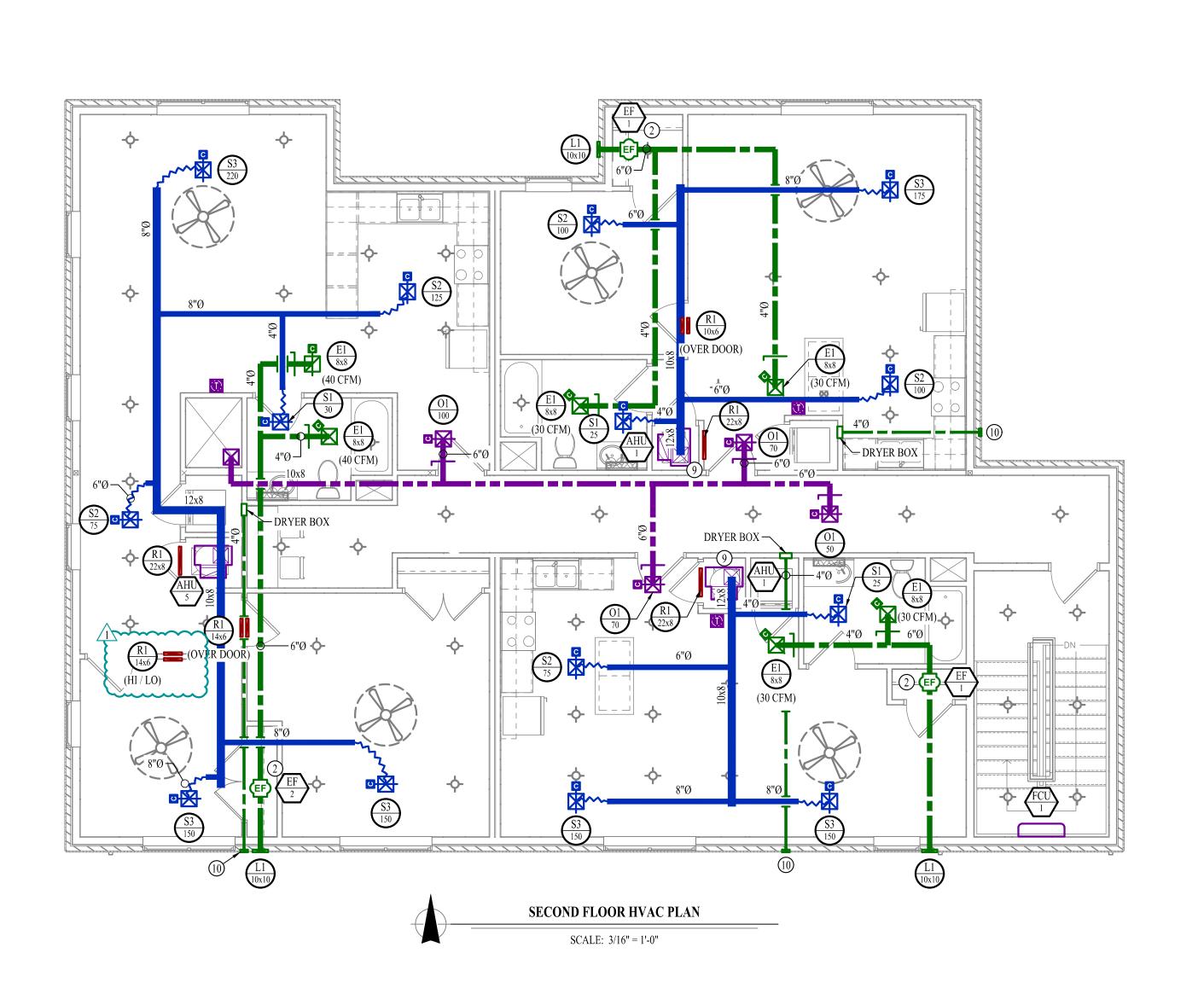


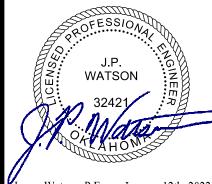
- 1. SEE SHEET M501 FOR ADDITIONAL HVAC NOTES, DETAIL, AND SCHEDULES.
- 2. DUCTWORK ON SECOND FLOOR TO BE RUN IN ROOF JOIST SPACE UNLESS NOTED OTHERWISE. COORDINATE EXACT DUCT ROUTING AND SIZES WITH STRUCTURE PRIOR TO INSTALL.

### **HVAC PLAN KEY NOTES:**

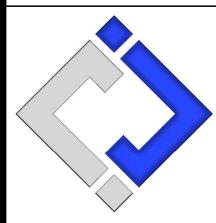
- OORDINATE FINAL DUCT LOCATION WITH NAIL STATION TO SOURCE CAPTURE PER IMC 502.20 (50 CFM)
- (2) INSTALL FIRE RATED ACCESS PANEL FOR HVAC EQUIPMENT PER MANUFACTURE REQUIREMENTS.
- (3) TRANSITION TO EXPOSED SPIRAL DUCT AT THIS LOCATION.
- 4 SOFFIT AREA INDICATED AS SHADED AREA. SEE ARCHITECTURAL PLANS. DUCT TO BE RUN BELOW TRUSS ASSEMBLY IN SOFFIT.
- (5) DUCT TO BE RUN UP IN TRUSS ASSEMBLY AT THIS LOCATION.
- (6) DOAS BRANCH CONTROLLER.
- 7) 10kW DUCT HEATER.
- 8 3kW WALL HEATER. EQUAL TO MARKEL J3423T.
- COORDINATE AHU LOCATION AND DUCTWORK INTO JOIST SPACE WITH STRUCTURE PRIOR TO INSTALL.
- (10) DRYER VENT WALL CAP. EQUAL TO DRYERWALLVENT DWV4B. COORDINATE COLOR WITH OWNER PRIOR TO INSTALLATION.







James Watson, P.E. January 12th, 2022 PE-32421 OK Certificate of Authority # 8654



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| J2 PROJECT No: | J20395       |
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| J2 DESIGN:     | KEL          |
|                |              |
| ISSUF TITLF    | $D\Delta TF$ |

| ISSUE TITLE | DATE       |
|-------------|------------|
| PERMIT SET  | 10-08-2021 |
| ADDENDUM #1 | 01-12-2022 |
|             |            |
|             |            |

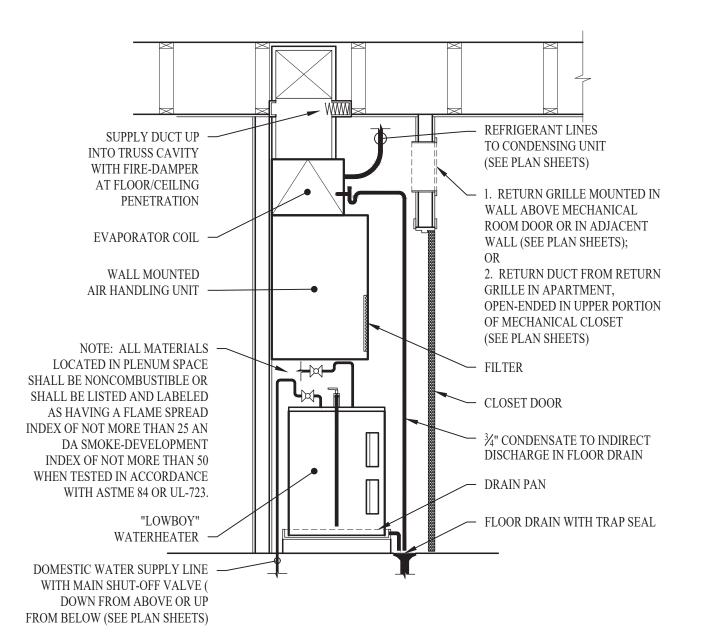
nony Center

Harmony

**HVAC PLANS** 

SHEET NUMBER

M101



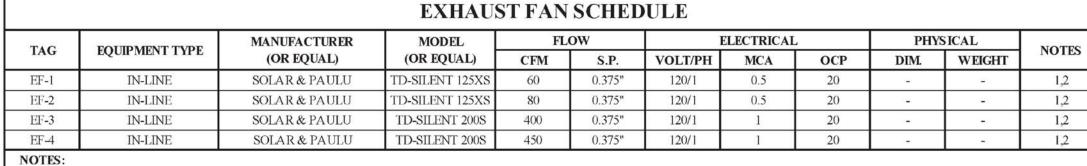
|       | AHU & HP SCHEDULE |        |               |                   |              |                                |                    |                        |                    |          |            |      |       |
|-------|-------------------|--------|---------------|-------------------|--------------|--------------------------------|--------------------|------------------------|--------------------|----------|------------|------|-------|
| TAG   | EQUIPMENT         | SIZE   | ODJENITA TION | TOTAL             |              | HEATING<br>(IA: 70DB, OA: 5DB) | (IA: 80 D          | COOLING<br>B/67 WB, OA | a: 95 DB)          | ]        | ELECTRICAI | L    | NOTES |
| TAG   | DESCRIPTION       | (TONS) | ORIENTATION   | AIRFLOW<br>(CFM)  | (CFM)        | TOTAL<br>(KBTU)                | SENSIBLE<br>(KBTU) | TOTAL<br>(KBTU)        | MIN EFF.<br>(SEER) | VOLTS/PH | MCA        | ОСР  | NOTES |
| AHU-1 | AIR HANDLING UNIT | 1.0    | VERTICAL      | 400               | 0            | 15.0                           | 11.0               | 12.0                   | 19                 | POW      | ERED THRU  | HP-1 | 1,3   |
| HP-1  | HEAT PUMP         | 1.0    | -             | (5                | -            | 15.0                           | 11.0               | 12.0                   | 19                 | 208/1    | 14         | 30   | 2,3   |
| AHU-2 | AIR HANDLING UNIT | 1.5    | VERTICAL      | 675               | 200          | 21.6                           | 16.7               | 18.0                   | 18.4               | POW      | ERED THRU  | HP-2 | 1,4   |
| HP-2  | HEAT PUMP         | 1.5    | 12            | 12                | 726          | 21.6                           | 16.7               | 18.0                   | 18.4               | 208/1    | 17         | 35   | 2,4   |
| AHU-3 | AIR HANDLING UNIT | 1.5    | VERTICAL      | 675               | 350          | 21.6                           | 16.7               | 18.0                   | 18.4               | POW      | ERED THRU  | HP-3 | 1,4   |
| HP-3  | HEAT PUMP         | 1.5    | -             | (le               | -            | 21.6                           | 16.7               | 18.0                   | 18.4               | 208/1    | 17         | 35   | 2,4   |
| AHU-4 | AIR HANDLING UNIT | 3.5    | VERTICAL      | 1250              | 300          | 48.0                           | 36.1               | 42.0                   | 15.4               | POW      | ERED THRU  | HP-4 | 1,5   |
| HP-4  | HEAT PUMP         | 3.5    | :=            | ne:               | -            | 48.0                           | 36.1               | 42.0                   | 15.4               | 208/1    | 36         | 45   | 2,5   |
| AHU-5 | AIR HANDLING UNIT | 1.5    | VERTICAL      | 675               | 0            | 21.6                           | 16.7               | 18.0                   | 18.4               | POW      | ERED THRU  | HP-5 | 1,4   |
| HP-5  | HEAT PUMP         | 1.5    | æ             | (c <del>e</del> ) | 5 <b>5</b> 8 | 21.6                           | 16.7               | 18.0                   | 18.4               | 208/1    | 17         | 35   | 2,4   |
| FCU-1 | WALLMOUNT         | 1.0    | WALL MOUNT    | 300               | 0            | 14.6                           | 9.9                | 12.0                   | 30                 | POW      | ERED THRU  | HP-6 | 1,6   |
| HP-6  | HEAT PUMP         | 1.0    | - 2           | 72                | 2            | 14 6                           | 99                 | 12.0                   | 30                 | 208/1    | 10         | 20   | 2.6   |

- TURNING VANES (TYP.)

- 1. INSTALL MANUFACTURER PROVIDED THERMOSTAT CAPABLE OF 7-DAY PROGRAMING. COORDINATE EXACT MOUNTING LOCATION WITH OWNER.
- 2. WITH FACTORY HAIL GUARD.
- 3. EQUAL TO TRANE MITSUBISHI NTXAMT12A112AA & NTXSKH12A112AA.
- 4. EQUAL TO TRANE MITSUBISHI NTXAMT18A112AA & NTXSKH18A112AA. 5. EQUAL TO TRANE MITSUBISHI TPVA0A0421AA70A & TRUZH0421KA10NA.
- 6. EQUAL TO TRANE MITSUBISHI NTXWPH09B112AA & NTXSPH09B112AA

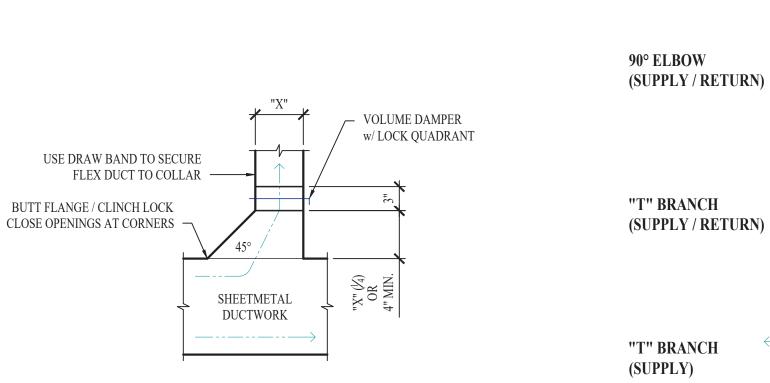
| STACKED WATER HEATER / AHU DETAIL |
|-----------------------------------|
|-----------------------------------|

PROPORTIONAL FITTING



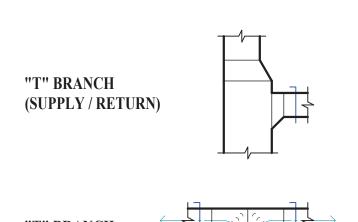
WITH BACKDRAFT DAMPER

2. WITH SPEED CONTROLLER



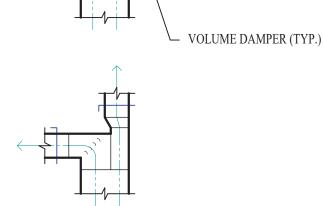
TYPICAL 45° TAKEOFF DETAIL

DUCT "B" / CFM "B" -



"T" BRANCH

(SUPPLY)



TYPICAL DUCTWORK FITTINGS DETAIL

|     | AIR DEVICE SCHEDULE |                            |                     |           |                   |       |  |  |  |
|-----|---------------------|----------------------------|---------------------|-----------|-------------------|-------|--|--|--|
| TAG | SERVICE             | MANUFACTURER<br>(OR EQUAL) | MODEL<br>(OR EQUAL) | SIZE      | COLOR /<br>FINISH | NOTES |  |  |  |
| E1  | EXHAUST             | PRICE                      | 530                 | SEE PLANS | WHITE             | 1,2,3 |  |  |  |
| L1  | EXHA UST            | POTTORFF                   | EFD                 | SEE PLANS | EXTERIOR          | 1     |  |  |  |
| O1  | SUPPLY              | HART & COOLEY              | A 504               | 6x6       | WHITE             | 1,2   |  |  |  |
| R1  | RETURN              | PRICE                      | 530                 | SEE PLANS | WHITE             | 1     |  |  |  |
| R2  | RETURN              | PRICE                      | 80                  | SEE PLANS | WHITE             | 1     |  |  |  |
| S1  | SUPPLY              | HART & COOLEY              | A504                | 8x8       | WHITE             | 1,2   |  |  |  |
| S2  | SUPPLY              | HART & COOLEY              | A 504               | 10x10     | WHITE             | 1,2   |  |  |  |
| S3  | SUPPLY              | HART & COOLEY              | A 504               | 12x12     | WHITE             | 1,2   |  |  |  |
| S4  | SUPPLY              | PRICE                      | SPD                 | 12x12     | WHITE             | 1,2,3 |  |  |  |
| S5  | SUPPLY              | PRICE                      | SPD                 | 20x20     | WHITE             | 1,2,3 |  |  |  |
| S6  | SUPPLY              | PRICE                      | 520                 | 12x4      | WHITE             | 1,2   |  |  |  |

1. VERIFY AIR DEVICE FINISHES WITH OWNER/ARCHITECT PRIOR TO INSTALLATION

2. SEE PLANS FOR AIR FLOW

3. WITH DRYWALL MOUNTING KIT

### VOLUME DAMPER (SEE DETAIL) - DUCT "A" / CFM "A" DUCT "A" x (CFM "B" / CFM "A") = "B" DUCT "A" x (CFM "C" / CFM "A") = "C" FIRE RATED DAMPER — DUCT "C" / CFM "C" LOCATE ACCESS DOOR NEAR DAMPER AS INDICATED SUPPLY DUCT — ALL TEES, ELBOWS, AND TURNED UP CHANGES IN DIRECTION TO HAVE TURNING VANES 45° TAKEOFF (SEE DETAIL) FIRE RATED WALL ASSEMBLY ► ECCENTRIC TRANSITION (30° MAX.) SUPPORT STRAPS (1" WIDE MIN.) MUST NOT DAMAGE OR DEFORM DUCT

TYPICAL DUCTWORK DETAIL

SUPPLY DIFFUSER (SEE DETAIL)

FLEXIBLE DUCTWORK

8ft MAX. LENGTH

• 1/2" PER FOOT OF SUPPORT SPACING

• MIN. INSIDE BEN RADIUS = DUCT Ø

|        | DOAS SCHEDULE            |                |             |                  |                          |  |           |                                 |                       |          |            |     |       |
|--------|--------------------------|----------------|-------------|------------------|--------------------------|--|-----------|---------------------------------|-----------------------|----------|------------|-----|-------|
| TAG    | EQUIPMENT<br>DESCRIPTION | SIZE<br>(TONS) | ORIENTATION | TOTAL<br>AIRFLOW | OA<br>AIRFLOW<br>MAX/MIN | HEATING<br>(IA: 70DB, OA: 5DB)<br>SENSIBLE | (IA: 55 D | COOLING<br>B/56 WB, OA<br>TOTAL | A: 95 DB)<br>MIN EFF. |          | ELECTRICAI |     | NOTES |
|        | DESCRIPTION              | (TONS)         |             | (CFM)            | (CFM)                    | (KBTU)                                     | (KBTU)    | (KBTU)                          | (EER)                 | VOLTS/PH | MCA        | OCP |       |
| DOA-1  | FAN COIL UNIT            | 10.0           | HORIZONTAL  | 1200             | 1200                     | 41.4                                       | 45.5      | 117                             | 11.7                  | 208/1    | 4          | 15  | 1,2   |
| OA-1   | HEAT PUMP                | 10.0           | -           | -                | -                        | 41.4                                       | 45.5      | 117                             | 11.7                  | 208/3    | 45         | 50  | 2     |
| NOTES: |                          |                |             |                  |                          |  |           |                                 |                       |          |            |     |       |

1. INSTALL MANUFACTURER PROVIDED CONTROLLER. COORDINATE EXACT MOUNTING LOCATION WITH OWNER.

2. EQUAL TO TRANE MITSUBISHI TPEFYP120AR140A & TURYP1203AN40AN WITH BRANCH CONTROLLER TCMBG0106SJ11N4.

# TYPICAL BUILDING INTERIOR DUCT INSULATION DIAGRAM

### **HVAC SPECIFICATIONS**

- EQUIPMENT 1.1. ALL EQUIPMENT MUST PROVIDE THE PERFORMANCE SPECIFIED ON PLANS. WHERE SPECIFIC MAKES AND MODELS ARE INDICATED ON PLAN, CONTRACTOR TO PROVIDE MODEL
- INDICATED OR APPROVED EQUAL. 1.2. CONTRACTOR TO SUPPLY SUBMITTALS FOR ALL EQUIPMENT FOR REVIEW BY ARCHITECT
- AND ENGINEER PRIOR TO PURCHASE, 1.3. ALL HORIZONTAL FURNACES WITH AC COILS TO BE EQUIPPED WITH CORROSION RESISTANT DRAIN PAIN. DRAIN PAN TO DISCHARGE TO SANITARY WASTE VIA INDIRECT CONNECTION

WITH AIR GAP. DRAIN PAN TO PROVIDE SECONDARY OVERFLOW OR FLOAT SWITCH

- INTERLOCKED WITH UNIT TO SHUT DOWN UNIT ON HIGH WATER SIGNAL. 1.4. ALL EXTERIOR REFRIGERANT COILS TO BE PROTECTED BY FACTORY EQUIPPED HAIL
- 1.5. REFRIGERANT PIPING TO BE ACR COPPER OR TYPE L COPPER.
- DUCTWORK 2.1. DUCTWORK TO BE GALVANIZED STEEL, SEAL CLASS B, CONSTRUCTED PER SMACNA
- STANDARDS. 2.2. 26 GA. MINIMUM UP TO 16" DUCT, 24 GA. UP TO 20", 22 GA. UP TO 24", 20 GA. UP TO 28", AND 18
- GA. UP TO 36". TURNING VANES TO BE PROVIDED AND INSTALLED AT ALL 90° BENDS AND TEES.
- DUCT DIMENSIONS LISTED ARE TO INTERIOR OF DUCT LINER. BALANCE DAMPERS MUST BE PROVIDED TO ALLOW ADJUSTMENT AT EACH AIR TERMINAL.
- WHERE BRANCH TAKEOFF IS ACCESSIBLE (ABOVE LAY-IN CEILING OR EXPOSED DUCT), THE BALANCE DAMPER IS TO BE INSTALLED AT TAKEOFF.
- WHERE TAKEOFF IS INACCESSIBLE (IN ATTIC OR SOFFIT), THE BALANCE DAMPER IS TO BE LOCATED SO IT IS ACCESSIBLE FROM FACE OF AIR DEVICE.

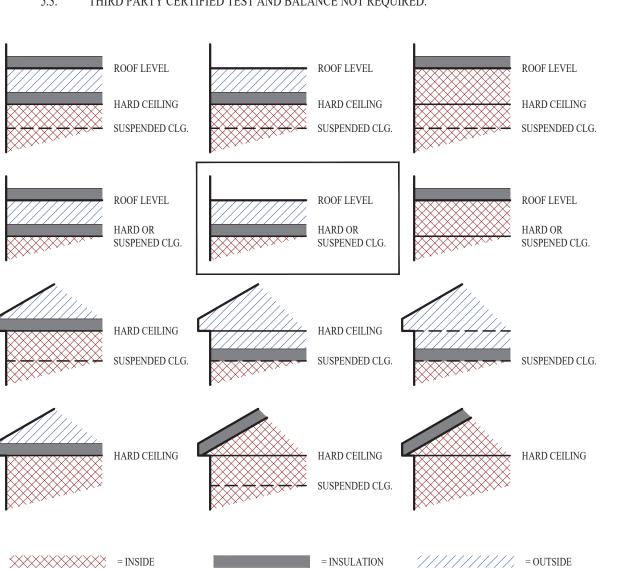
INTERNAL DUCT LINER TO BE EQUAL TO 'JOHNS MANVILLE LINACOUSTIC R-300'.

SPLIT SYSTEM (SUCTION LINE ONLY) - 1" CLOSED CELL ELASTOMERIC FOAM (EQUAL

- 2.6. HVAC CONTRACTOR RESPONSIBLE FOR ALL DUCTWORK TRANSITIONS AND FITTINGS AS
- REQUIRED FOR FINAL CONNECTIONS TO HVAC EQUIPMENT.

### 3. INSULATION 3.1. DUCTWORK

- 3.1.1. SEE "TYPICAL DUCT INSULATION DIAGRAM" FOR INSTALLATION SPECIFIC
- REQUIREMENTS.
- EXTERNAL DUCT WRAP TO INCLUDE VAPOR BARRIER. EQUAL TO 'JOHNS MANVILLE MICROLITE' WITH FSK JACKET.
- 3.2. REFRIGERANT PIPING REFRIGERANT PIPING SHALL BE TYPE ACR OR TYPE L COPPER.
- TO 'ARMAFLEX AP'). 3.3. VRV/VRF SYSTEMS (BOTH SUCTION AND HOT GAS LINES) 1 ½" EPDM (EQUAL TO 'AEROFLEX AEROCEL AC') WITHIN CONDITIONED SPACES & 2" EDPM (EQUAL TO 'AEROFLEX AEROCEL AC') IN UNCONDITIONED SPACES, AND WITH BANDED ALUMINUM SHIELDING IN EXTERIOR
- 3.4. CONDENSATE PIPING 3.4.1. SPLIT SYSTEMS - WHERE CONDENSATE PIPING IS LOCATED IN UNCONDITIONED SPACE, INSULATE WITH ½" ELASTOMERIC. NO INSULATION REQUIRED IN CONDITIONED
- SPACES. 3.4.2.  $VRV/VRF - INSULATE WITH \frac{1}{2}$ " ELASTOMERIC.
- 4. WORKMANSHIP 4.1. COORDINATE WITH OTHER TRADES SO THAT HVAC EQUIPMENT AND DUCT WORK DOES NOT
- BLOCK REQUIRED ACCESS OR CLEARANCE TO EQUIPMENT. 4.2. ALL HVAC EQUIPMENT IS TO BE INSTALLED PER MANUFACTURER'S PUBLISHED
- RECOMMENDATIONS.
- ALL EQUIPMENT TO BE INSTALLED LEVEL AND PLUMB. ROOFTOP MOUNTED RTUS TO BE INSTALLED ON CURBS PER MANUFACTURES INSTRUCTIONS.
- GRADE MOUNTED RTUS, CONDENSING UNITS, AND HEAT PUMPS TO BE INSTALLED ON 4" REINFORCED CONCRETE PAD EXTENDING 4" BEYOND EACH EDGE OF THE EQUIPMENT, OR A MANUFACTURER APPROVED PRE-MANUFACTURED BASE.
- 5. TESTING AND BALANCING
- 5.1. ALL SYSTEMS MUST BE BALANCED TO WITHIN 10% OF VALUES INDICATED ON PLAN. HVAC CONTRACTOR TO PROVIDE WRITTEN BALANCE REPORT INCLUDING FLOW VALUES
- INDICATED ON PLAN AND ACTUAL MEASURED VALUES. 5.3. THIRD PARTY CERTIFIED TEST AND BALANCE NOT REQUIRED.



| DUCT <b>INSIDE</b> THERMAL ENVELOPE |  |
|-------------------------------------|--|
| INSULATION REQUIREMENTS             |  |

### DUCT OUTSIDE THERMAL ENVELOPE INSULATION REQUIREMENTS

| INSULA | HON KEQUIE                            | CEIVIEN IS                              | INSULATION REQUIREMENTS |  |  |  |  |  |
|--------|---------------------------------------|---|-------------------------|--|--|--|--|--|
|        | LY =                                  | 1" LINER<br>1" LINER<br>NONE<br>2" WRAP | REC                     | TANGULAR SUPPLY = RETURN = EXHAUST = OUTSIDE AIR = | 1" LINER & 1½" WRAP<br>1" LINER @ 1½" WRAP<br>1½" WRAP<br>NONE |  |  |  |
|        |                                       | 1½" WRAP<br>NONE<br>NONE<br>2" WRAP     | ROU •                   | JND SUPPLY = RETURN = EXHAUST = OUTSIDE AIR =      | 2" WRAP<br>2" WRAP<br>1½" WRAP<br>NONE                         |  |  |  |
| EXHA   | LY =<br>TRN =<br>AUST =<br>SIDE AIR = | NONE<br>NONE<br>NONE<br>2" WRAP         | SPIF                    | RAL SUPPLY = RETURN = EXHAUST = OUTSIDE AIR =      | 2" WRAP<br>2" WRAP<br>1½" WRAP<br>NONE                         |  |  |  |

James Watson, P.E. October 8th, 2021 PE-32421 OK Certificate of Authority # 8654



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Columbia, Missouri 65203 573 - 234 - 4492 phone www.j-squaredeng.com J2 PROJECT No:

J2 DESIGN: KEL ISSUE TITLE DATE PERMIT SET 10-08-2021

> Center rmony

SHEET TITLE

**HVAC DETAILS &** 

**SCHEDULES** 

# FIRE ALARM PLAN SYMBOL LEGEND MANUAL PULL STATION SMOKE DETECTOR HORN STROBE - WALL MOUNT TAMPER SWITCH WATER FLOW SWITCH FIRE ALARM CONTROL PANEL FIRE ALARM ANNUNCIATOR

### POWER PLAN SYMBOL LEGEND CIRCUIT WIRING DATA / PHONE JACK BOX WITH 1" CONDUIT & PULL STRING) UP TO CEILING SPACE → PX-XX CIRCUIT TAG (STANDARD @ 18" AFF UNLESS NOTED OTHERWISE) JUNCTION BOX WIRELESS ACCESS POINT, CEILING MOUNTED RECEPTACLE FLOOR RECEPTACLE - INDICATES MOUNTING HEIGHT TO BOTTOM OF BOX (STANDARD @ 18" AFF UNLESS NOTED OTHERWISE) FLOOR DATA — "WP" = WEATHERPROOF OUTDOOR RECEPTACLE "AW" = ABOVE WINDOW RECEPTACLE DISCONNECT "AC" = ABOVE CEILING RECEPTACLE "EX" = EXISTING RECEPTACLE TO REMAIN SMOKE DETECTOR - 120V GFCI DUPLEX CONVENIENCE RECEPTACLE COMBINATION SMOKE / CO DETECTOR - 120V 208V RECEPTACLE

QUADPLEX CONVENIENCE RECEPTACLE

USB OUTLET

### POWER PLAN GENERAL NOTES:

- 1. SEE SHEET E501 FOR ADDITIONAL ELECTRICAL NOTES, DETAILS, & SCHEDULES.
- 2. VERIFY ALL RECEPTACLE HEIGHTS AND LOCATIONS WITH ARCHITECT AND OWNER PRIOR TO INSTALLATION.

### **POWER PLAN KEY NOTES:**

- 1) POWERED THROUGH ASSOCIATED HEAT PUMP.
- (2) DOAS BRANCH CONTROLLER.
- (3) 10kW DUCT HEATER PROVIDED BY HVAC CONTRACTOR.
- (4) 3kW WALL HEATER PROVIDED BY HVAC CONTRACTOR.
- (5) CT CABINET, METER & AUTOMATIC TRANSFER SWITCH. SEE POWER RISER FOR DETAILS.
- (6) (2) 1" PVC CONDUITS UNDER SLAB TO FLOOR BOXES. (DATA & POWER RUN SEPARATELY)
- (7) MEDIA PANEL LOCATION. EQUAL TO LEGRAND ENP205AV1.
- 8 DOOR BELL SPEAKER. PROVIDE LOW VOLTAGE WIRING TO PUSH BUTTON AT FRONT DOOR. EQUAL TO NICOR #PRCP-2.

| 573 - 234 - 4492 phone www.j-squaredeng.com |       |
|---|-------|
| J2 PROJECT No:                              | J2039 |
| J2 DESIGN:                                  | KE    |

|   | ISSUE TITLE | DATE       |
|---|-------------|------------|
| ı | PERMIT SET  | 10-08-2021 |
| 7 | ADDENDUM #1 | 01-12-2022 |
|   |             |            |
|   |             |            |

2401 Bernadette Drive, Suite 201 Columbia, Missouri 65203

James Watson, P.E. January 12th, 2022

OK Certificate of Authority # 8654

# Harmony

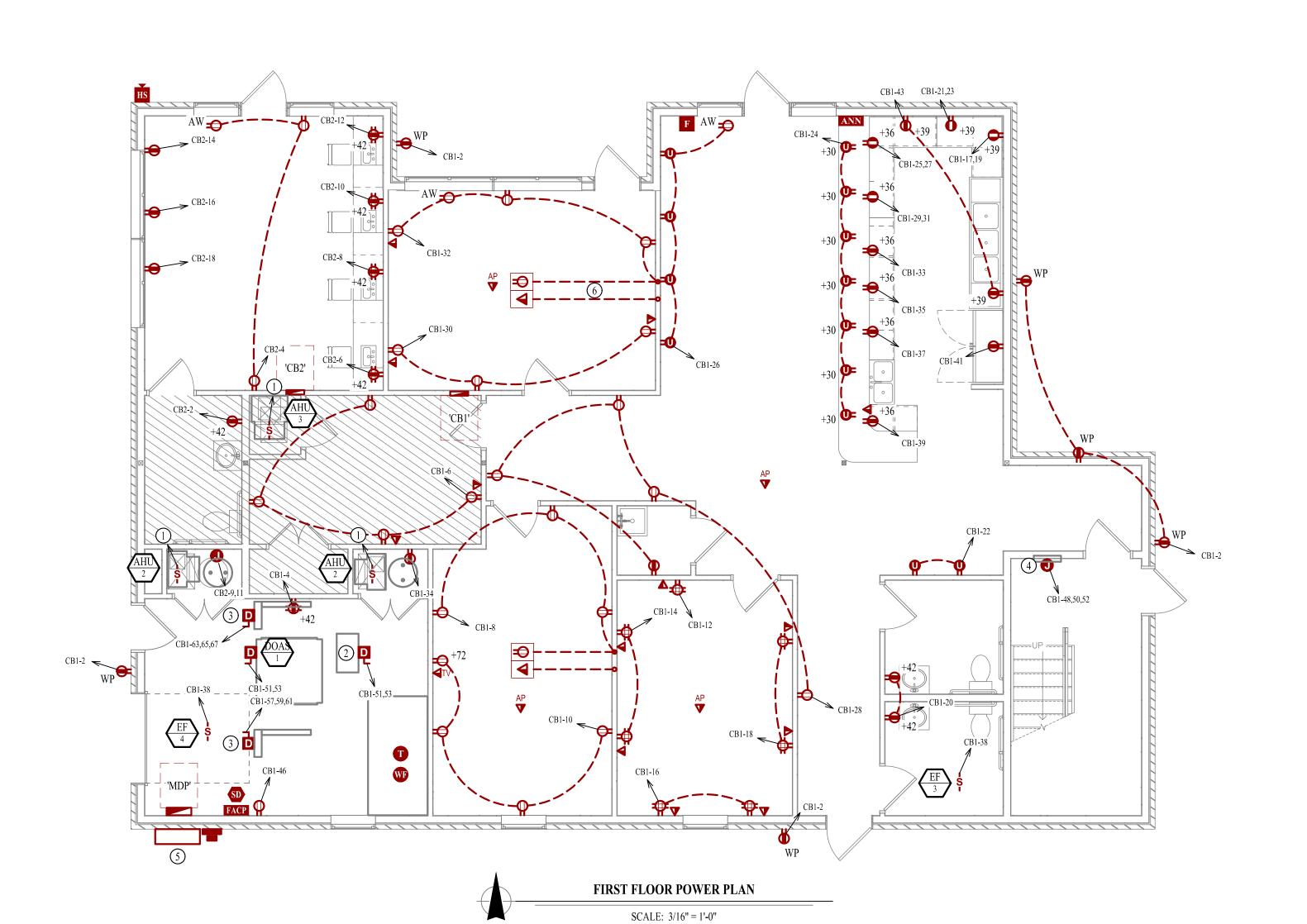


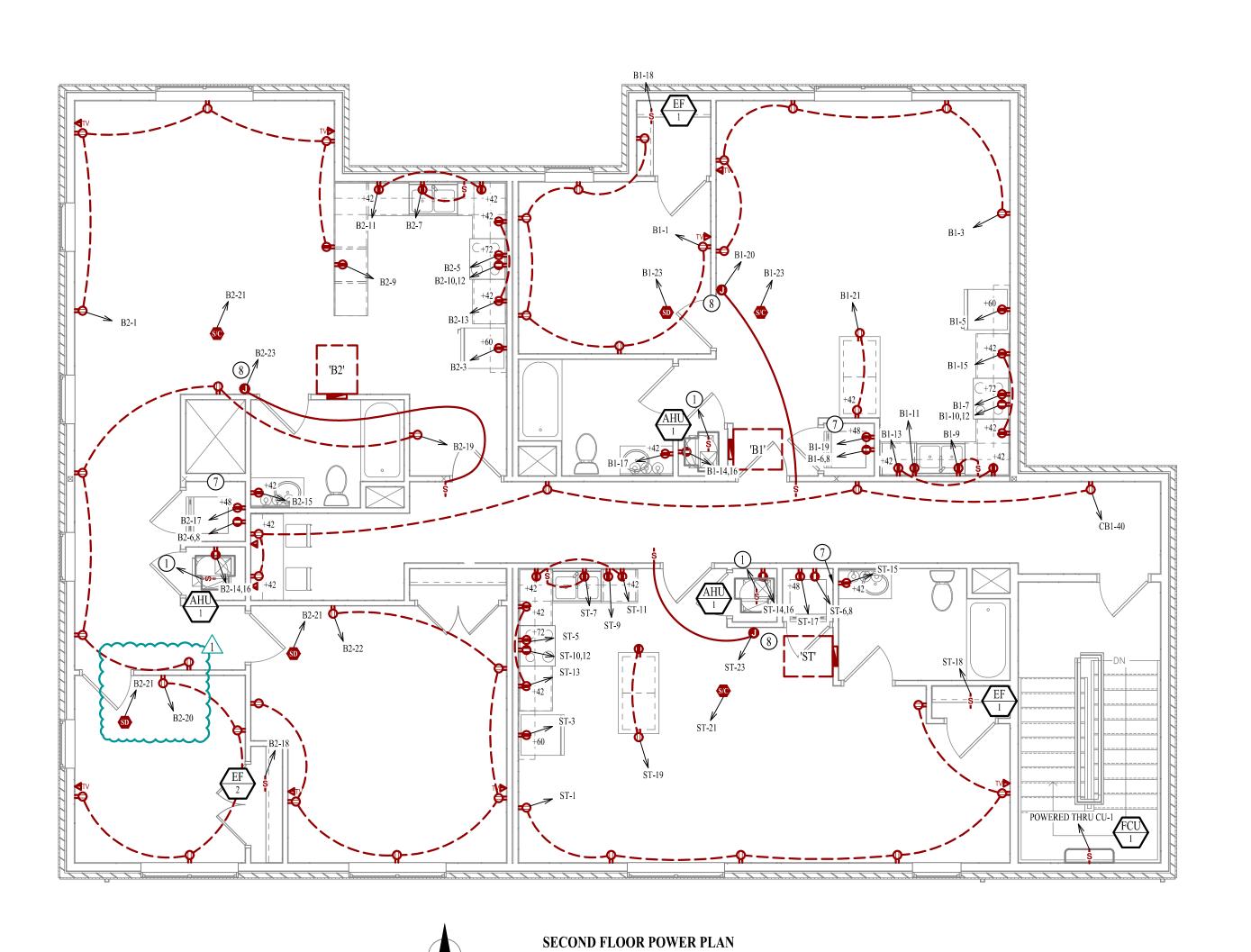
SHEET TITLE

**POWER PLANS** 

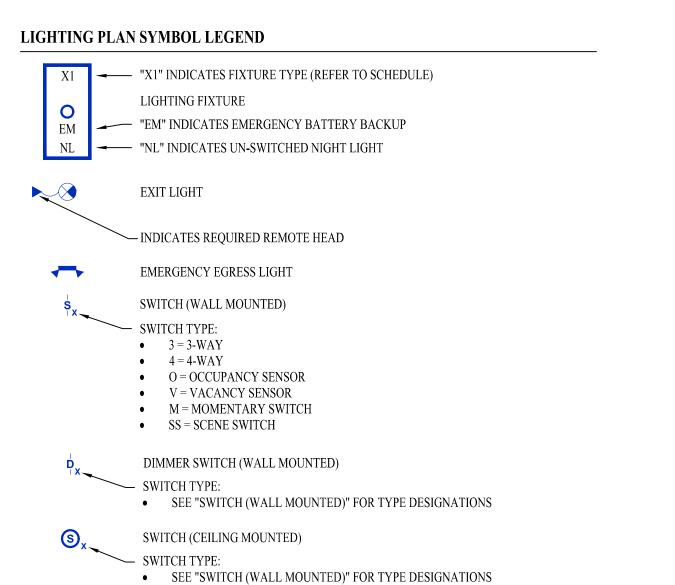
SHEET NUMBER

**EP101** 





SCALE: 3/16" = 1'-0"



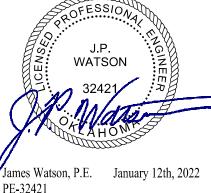
POWER PACK

### LIGHTING PLAN GENERAL NOTES:

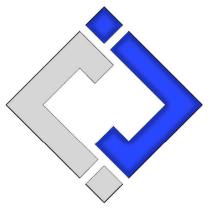
1. SEE SHEET E501 FOR ADDITIONAL ELECTRICAL NOTES, DETAILS, & SCHEDULES.

### LIGHTING PLAN KEY NOTES:

- (1) ASTRONOMICAL TIMER CONTROLLING OUTDOOR POLE LIGHTS. EQUAL TO INTERMATIC DT104D89. LIGHT FIXTURE TO BE ON AT DUSK AND OFF AT DAWN.
- (2) ASTRONOMICAL TIME SWITCH CONTROLLING OUTDOOR BUILDING MOUNTED LIGHTS. EQUAL TO LEGAND RT-200. LIGHT FIXTURE TO BE ON AT DUSK AND OFF AT DAWN.
- (3) WIRE THROUGH ASTRONOMICAL TIME SWITCH. SEE KEY NOTE 2.



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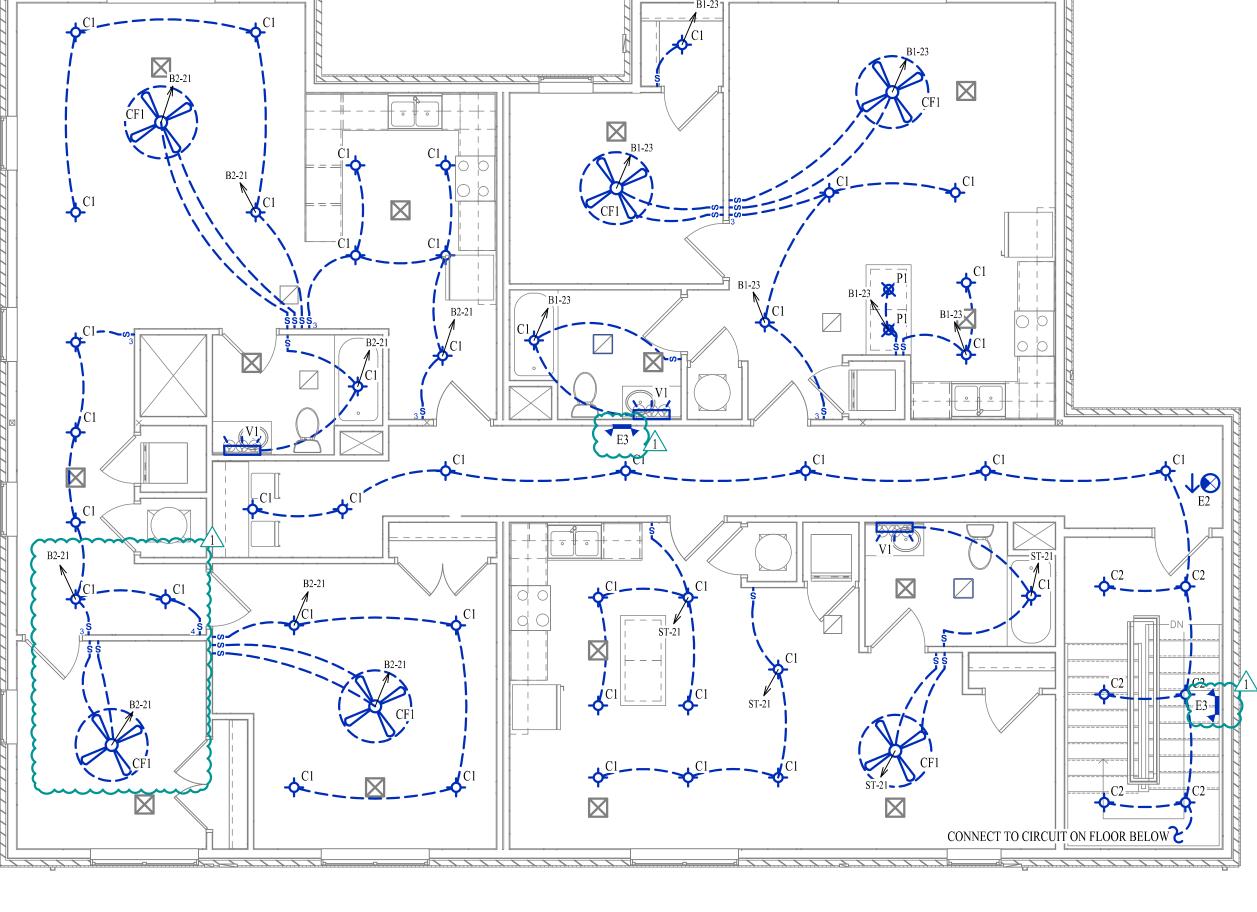


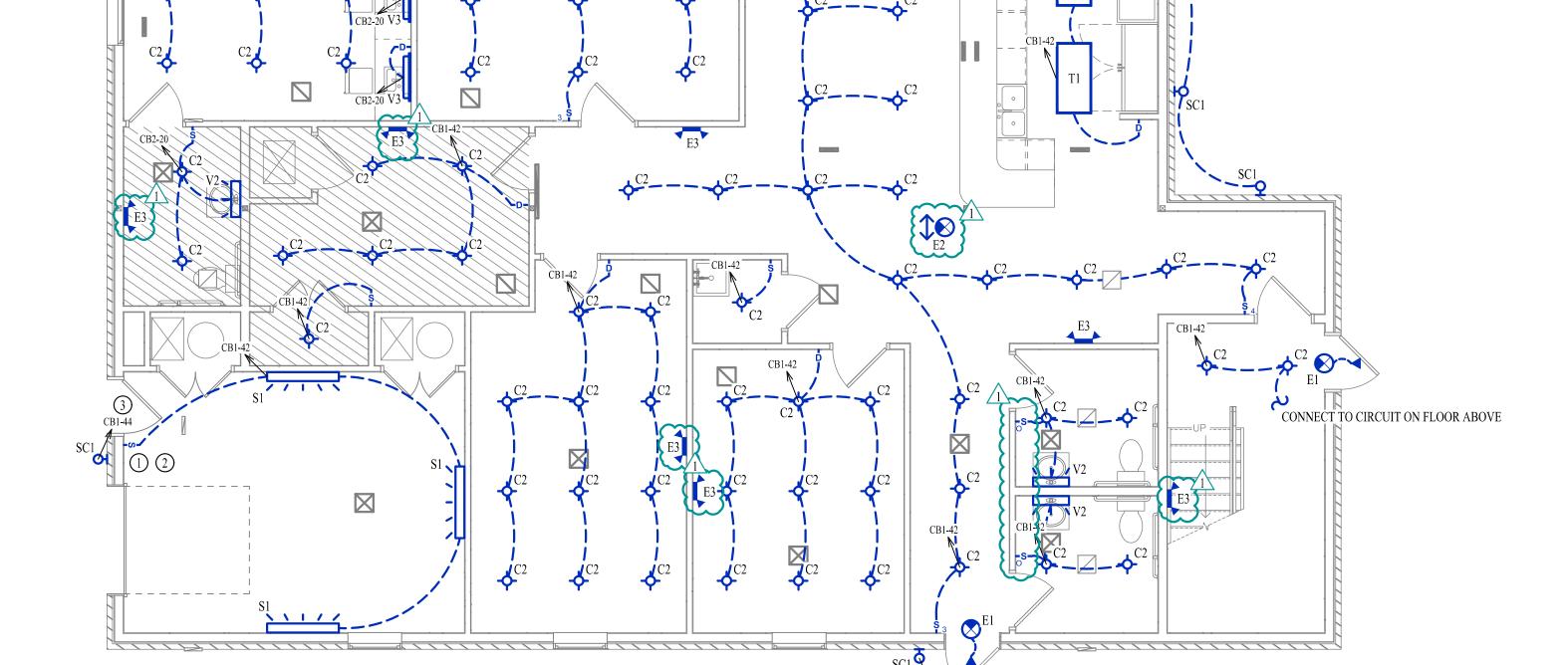
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| J2 PROJECT No: | J20395 |
|----------------|--------|
| J2 DESIGN:     | KEL    |
|                |        |
| ISSUE TITLE    | DATE   |

PERMIT SET 10-08-2021 ADDENDUM #1 01-12-2022







FIRST FLOOR LIGHTING PLAN

SCALE: 3/16" = 1'-0"

SECOND FLOOR LIGHTING PLAN

SCALE: 3/16" = 1'-0"

SHEET TITLE

LIGHTING PLANS

|        |                            |   | LIGHT  | FIXTURE SCHEDULE | <b>S</b>        |          |     |       |       |                                 |
|--------|----------------------------|---|--|------------------|-----------------|----------|-----|-------|-------|---------------------------------|
| TAG    | MANUFACTURER<br>(OR EQUAL) | MODEL NUMBER<br>(OR EQUAL)              | DESCRIPTION                                      | MOUNTING         | LUMEN<br>OUTPUT | CCT (°K) | CRI | VOLTS | WATTS | NOTES                           |
| C1     | HALO                       | HLC6-09-930-1E-WH                       | 6" ROUND LED CAN                                 | SURFACE          | 925             | 3000     | 80  | 120   | 16    |                                 |
| C2     | HALO                       | SMD6R-12-9S-WH                          | 6" ROUND LED CAN                                 | SURFACE          | 1150            | 3500     | 80  | 120   | 15    |                                 |
| CF1    | HUNTER                     | 59269                                   | 46" CEILING FAN WITH LIGHTS                      | SURFACE          | 1600            | 3000     | 80  | 120   | 40    | (2) A 19 TYPE SCREW IN LED BULB |
| E1     | SURE LITES                 | APCH7R WITH APWR2                       | INTERIOR EXIT LIGHT WITH<br>EXTERIOR REMOTE HEAD | CEILING          |                 |          |     | UNV   | 1     | WITH RED LETTERS                |
| E2     | SURE LITES                 | APCH7R                                  | INTERIOR EXIT LIGHT WITH HEADS                   | WALL / CEILING   |                 |          |     | UNV   | 1     | WITH RED LETTERS                |
| E3     | SURE LITES                 | APLEL                                   | EMERGENCY EGRESS LIGHT                           | WALL             |                 |          |     | UNV   | 1     | MOUNT A 7.5' A.F.F.             |
| P1     | RP LIGHTING                | 4605-BN                                 | MINI PENDANT LIGHT                               | PENDANT          | 800             | 3000     | 80  | 120   | 9     | (1) A 19 TYPE SCREW IN LED BULB |
| S1     | METALUX                    | 4BCLED-LD4-40SL-F-UNV-L835-CD1-U        | 4' LINEAR  | WALL BRACKET     | 4000            | 3500     | 80  | 120   | 42    |                                 |
| SC1    | LUMIERE                    | 303-W2-LEDB2-4000K-UNV-T2-DIM10-BZ-EDGE | SCONCE   | WALL             | 1100            | 4000     | 80  | 120   | 16    |                                 |
| T1     | METALUX                    | 24FPSL2SCT3                             | 2x4 LED TROFFER                                  | SURFACE          | 6200            | 3500     | 80  | 120   | 56    | WITH SURFACE MOUNT KIT          |
| Vl     | RP LIGHTING                | 4904-BN-3                               | LED VANITY                                       | WALL             | 1750            | 3000     | 80  | 120   | 24    |                                 |
| V2     | METALUX                    | 2BCLED-LD4-20SL-F-UNV-L835-CD1-U        | LED VANITY                                       | WALL             | 2000            | 3500     | 80  | 120   | 23    |                                 |
| V3     | AFX                        | ALNV280520LAJD2SN                       | LED VANITY                                       | WALL             | 2000            | 3500     | 90  | 120   | 26    |                                 |
| NOTES: |                            |   |  |                  |                 |          |     |       |       |                                 |

| MAIN DISTRIBUTION PANEL SCHEDULE |                 |          |       |          |                 |                       |        |                |       |  |
|----------------------------------|-----------------|----------|-------|----------|-----------------|-----------------------|--------|----------------|-------|--|
| VOLTAGE                          | PANEI           | SIZE     | MOUN  | NTING    | AIC RATING      |                       |        |                |       |  |
| 120/208                          |                 |          |       |          |                 | PHASE "A" LOAD        | 584.5  |                |       |  |
| 120/208                          | 600A            | 600A MLO |       | 600A MLO |                 | FACE                  | 25,000 | PHASE "B" LOAD | 532.8 |  |
| NEMA RATING: 1                   | 1               |          |       |          |                 | PHASE "C" LOAD        | 530.0  |                |       |  |
| DESCRIPTION                      | BREAKER<br>SIZE | AMPS     | PHASE | AMPS     | BREAKER<br>SIZE | DESCRIPTION           |        |                |       |  |
| COMMUNITY BUILDING PANEL (CB1)   | 400-3           | 284.5    | А     | 127.5    | 150-2           | STUDIO APARTMENT (ST) |        |                |       |  |
| ~                                | -               | 265.3    | В     | 102.5    |                 | -                     |        |                |       |  |
| 121                              | -               | 275.5    | С     | 111.0    | 150-2           | 1 BEDROOM UNIT (B1)   |        |                |       |  |
| COMMUNITY BUILDING PANEL (CB2)   | 150-3           | 46       | Α     | 126.5    |                 | -                     |        |                |       |  |
| -                                | -               | 26       | В     | 139.0    | 200-2           | 2 BEDROOM UNIT (B2)   |        |                |       |  |
|                                  | -               | 27.5     | С     | 116.0    | S#1             | -                     |        |                |       |  |
| SPARE                            |                 |          | A     |          |                 | SPARE                 |        |                |       |  |
| SPARE                            |                 |          | В     |          |                 | SPARE                 |        |                |       |  |
| SPARE                            |                 |          | С     |          |                 | SPARE                 |        |                |       |  |

A: PANEL SHALL BE EQUAL TO SQUARE D "I-LINE" SERIES FOR 208V / "NF" SERIES FOR 480V

- B: ELECTRICIAN SHALL VERIFY BREAKER WITH EQUIPMENT PRIOR TO PURCHASE & INSTALL.
- C: AFTER COMPLETION OF WORK, ELECTRICAN SHALL PROVIDE A TYPE WRITTEN PANEL DIRECTORY IN NEW PANEL.

## **ELECTRICAL SPECIFICATIONS**

### METAL WATER PIPE A MIN. OF 10ft BELOW GRADE ——— CONCRETE-ENCASED ELECTRODE (REQUIRED) **BUILDING STEEL** (REQUIRED) **GROUND ROD** (REQUIRED) GROUNDING RING %"Ø GROUND ROD (IF AVAILABLE) 2. MATERIALS MIN. 8'-0" LONG — 2.1.1. GROUNDING ELECTRODE CONDUCTOR SYSTEM BONDING $\overline{\phantom{a}}$ (GEC) SIZED PER RISER -TELEPHONE / DATA TERMINAL BOARD(S) SERVICE ENTRANCE EQUIPMENT OTHER SYSTEMS 94 BONDING JUMPER PER NEC 250-92(b) SIZE PER RISER — BOND OTHER PIPING SYSTEMS & STRUCTURAL

STEEL PER NEC 250.104

WATER PIPE (REQUIRED)

WITHIN 5'-0" OF ENTRANCE INTO BUILDING -

ALL CONNECTIONS SHALL BE 2-HOLE

LONG BARREL CONNECTION LUGS —

WALL MOUNTED GROUNDING BAR

w/ INSULATORS & MOUNTING BRACKETS

COPPER BUS BAR (1/4" x 4" x 16")

BURNDY# BBB14416H GROUND BAR —

TYPICAL GROUNDING & BONDING DETAIL

**POWER RISER** 

- 1.1. THE ENTIRE ELECTRICAL SYSTEM SHALL BE CONTINUOUSLY GROUNDED. EVERY BRANCH CONDUIT SHALL INCLUDE A GREEN GROUND CONDUCTOR SIZED PER NEC.
- ARC-FAULT CIRCUITS SHALL BE RUN WITH A DEDICATED NEUTRAL AS REQUIRED BY
- 1.3. PROVIDE PERMANENT ARC-FLASH LABEL AFFIXED TO EVERY DISCONNECT AND PANEL.
- 1.4. PROVIDE TYPE WRITTEN PANEL SCHEDULE FOR EACH PANEL.

### 2.1. CONDUIT & CONDUCTORS

- ALL CONDUCTORS SIZES INDICATED ON PLANS ARE COPPER UNLESS NOTED
- ABOVE GRADE CONDUCTORS SHALL BE THHN COPPER. BELOW GRADE CONDUCTORS SHALL BE XHHW-2.
- MINIMUM CONDUCTOR SIZE SHALL BE #12 UNLESS NOTED OTHERWISE. 120V, 20 AMP CIRCUITS WITH CONDUCTOR LENGTH GREATER THAN 100' SHALL BE MINIMUM #10. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR MEASURING ACTUAL CONDUCTOR LENGTH AND INCREASING CONDUCTOR SIZE TO COMPENSATE FOR VOLTAGE DROP AS REQUIRED BY NEC.
- RIGID GALVANIZED OR SCHEDULE 40 PVC CONDUIT SHALL BE USED FOR SERVICE WIRING, BELOW GRADE INSTALLATIONS, OR WHERE EXPOSED TO WEATHER.
- IN APPLICATIONS OTHER THAN THOSE LISTED IN 2.1.4, EMT OR MC CABLE IS
- ACCEPTABLE. WHERE CONDUCTORS ARE PROTECTED FROM DAMAGE. ENCLOSED IN BUILDING MATERIALS, AND CONSTRUCTION IS OF A PERMITTED TYPE, NM CABLE MAY

OF ANY LOCAL SWITCHES.

120/208V, 3Ø,

- CONTRACTOR TO PROVIDE J-BOXES, COVER PLATES, AND ANY ACCESSORIES REQUIRED TO PROVIDE A COMPLETE SYSTEM. SEE ARCHITECTURAL PLANS FOR DEVICE COLORS. DUPLEX RECEPTACLES SHALL BE TAMPER RESISTANT, 20 AMP, EQUAL TO LEVITON
- TOGGLE WALL SWITCHES SHALL BE EQUAL TO LEVITON CS120-2

### DIMMER SWITCHES SHALL BE TESTED WITH FIXTURES AND LAMPS FOR

### COMPATIBILITY. 3. EMERGENCY LIGHTING

### 3.1. THE BRANCH CIRCUIT FEEDING THE EMERGENCY FIXTURE SHALL BE THE SAME BRANCH CIRCUIT AS THAT SERVING THE NORMAL LIGHTING IN THE AREA AND CONNECTED AHEAD

120/208V, 1Ø

120/208V, 1Ø,

James Watson, P.E. October 8th, 2021 PE-32421 OK Certificate of Authority # 8654



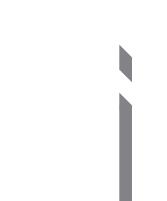
2401 Bernadette Drive, Suite 201 Columbia, Missouri 65203

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| J2 PROJECT No: | J20395 |
|----------------|--------|
| J2 DESIGN:     | KEL    |
|                |        |

| ISSUE TITLE | DATE       |
|-------------|------------|
| PERMIT SET  | 10-08-2021 |
|             |            |
|             |            |
|             |            |



rmony

SHEET TITLE

**ELECTRICAL DETAILS & SCHEDULES** 

SHEET NUMBER

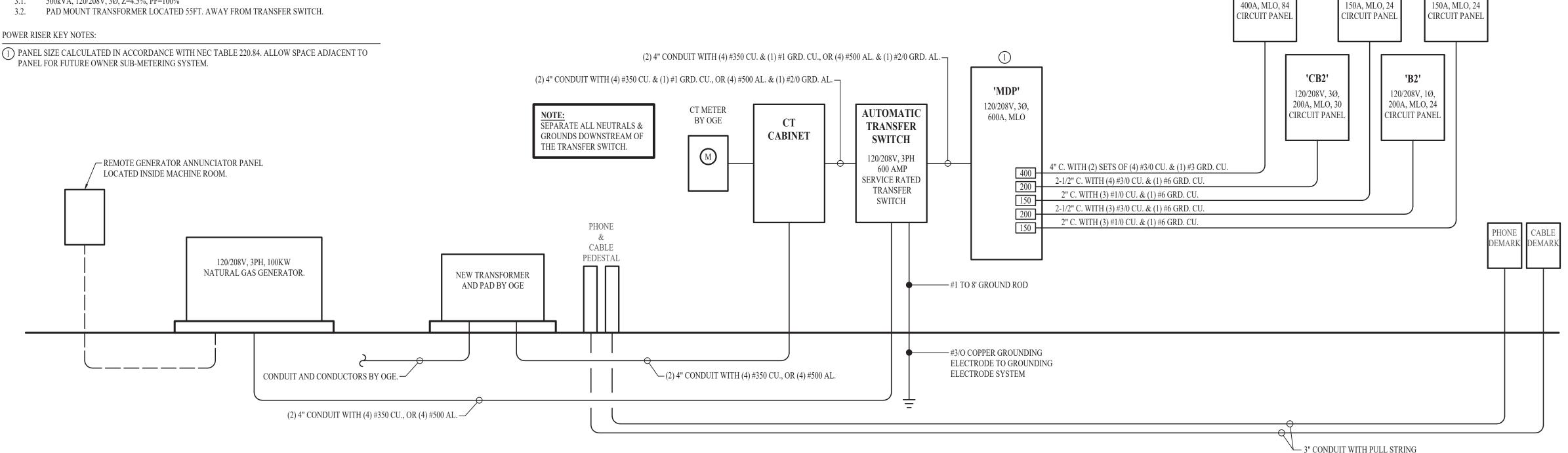
### POWER RISER GENERAL NOTES:

NOTES:

1. VERIFY LIGHT FIXTURE FINISHES WITH OWNER / ARCHITECT PRIOR TO INSTALLATION

- 1. REFER TO SHEET EP101 FOR ELECTRICAL SERVICE LOCATION.
- 2. CONTRACTOR TO FIELD VERIFY FINAL EQUIPMENT LOCATIONS AND PERFORM AIC RATING CALCULATIONS FOR ALL PANELS AND SWITCH GEAR.
- 3. CURRENT AIC RATINGS SHOWN ASSUME THE LISTED INFORMATION BELOW:
- 3.1. 500kVA, 120/208V, 3Ø, Z=4.5%, PF=100%

### POWER RISER KEY NOTES:



|                   |                                | 1               | PANEL    | 'ST' SCI | HEDUL | E               |  |                   |
|-------------------|--------------------------------|-----------------|----------|----------|-------|-----------------|--|-------------------|
|                   | VOLTAGE                        | PANEI           | L SIZE   | MOU      | NTING | AIC RATING      |  |                   |
|                   | 120/208<br>NEMA RATING: 1      |                 |          |          |       |                 | PHA SE "A" LOA D                         | 127.5             |
|                   |                                |                 | 150A MLO |          | ESSED | 12,000          | PHASE "B" LOAD                           | 102.5             |
|                   |                                |                 |          |          |       |                 |  |                   |
| CIRCUIT<br>NUMBER | DESCRIPTION                    | BREAKER<br>SIZE | AMPS     | PHASE    | AMPS  | BREAKER<br>SIZE | DESCRIPTION                              | CIRCUIT<br>NUMBER |
| 1                 | LIVING/RECEPTS.                | 20-1            | 9        | А        | 14    | 30-2            | FAN COIL UNIT & HEAT PUMP (FCU-1 & HP-1) | 2                 |
| 3                 | KITCHEN/REF.                   | 20-1            | 5        | В        | 14    | -               | *  | 4                 |
| 5                 | KITCHEN/MICROWAVE              | 20-1            | 10       | A        | 20    | 30-2            | CLOTHES DRYER                            | 6                 |
| 7                 | KITCHEN/DISP.                  | 20-1            | 5        | В        | 20    |                 | •  | 8                 |
| 9                 | KITCHEN/DISHWASHER             | 20-1            | 8        | А        | 30    | 50-2            | OVEN / RANGE                             | 10                |
| 11                | KITCHEN/GFCI                   | 20-1            | 3        | В        | 30    | .=:             | -  | 12                |
| 13                | KITCHEN/GFCI                   | 20-1            | 3        | A        | 20    | 30-2            | WATER HEATER                             | 14                |
| 15                | BATHROOM / GFCI                | 20-1            | 1.5      | В        | 20    | 170             |  | 16                |
| 17                | CLOTHES WASHER                 | 20-1            | 10       | A        | 0.5   | 20-1            | EXHAUST FAN (EF-1)                       | 18                |
| 19                | ISLAND / RECEPTS.              | 20-1            | 3        | В        |       | 20-1            | SPARE                                    | 20                |
| 21                | UNIT LIGHTING / SMOKE DETECTOR | 20-1            | 3        | Α        |       | 20-1            | SPARE                                    | 22                |
| 23                | DOOR BELL POWER                | 20-1            | 1        | В        |       | 20-1            | SPARE                                    | 24                |

A: PANEL SHALL BE EQUAL TO SQUARE D MODEL "HOME-LINE"

B: ELECTRICIAN SHALL VERIFY BREAKER WITH EQUIPMENT PRIOR TO PURCHASE & INSTALL.

C: AFTER COMPLETION OF WORK, ELECTRICAN SHALL PROVIDE A TYPE WRITTEN PANEL DIRECTORY IN NEW PANEL.

D: CIRCUIT'S SHOWN ABOVE IN BOLD ITALICS TEXT SHALL BE AFCI PROTECTED.

|                   |                                | 1               | PANEL    | 'B1' SCI | HEDUL    | E               |  |                   |
|-------------------|--------------------------------|-----------------|----------|----------|----------|-----------------|--|-------------------|
|                   | VOLTAGE                        | PANEI           | L SIZE   | MOU      | NTING    | AIC RATING      |  |                   |
|                   | 120/208<br>NEMA RATING: 1      |                 | 150A MLO |          | RECESSED |                 | PHASE "A" LOAD<br>PHASE "B" LOAD         | 111<br>126.5      |
|                   |                                |                 |          |          |          |                 | THIRD D DOLLD                            | 120.0             |
| CIRCUIT<br>NUMBER | DESCRIPTION                    | BREAKER<br>SIZE | AMPS     | PHASE    | AMPS     | BREAKER<br>SIZE | DESCRIPTION                              | CIRCUIT<br>NUMBER |
| 1                 | BEDROOM / RECEPTS.             | 20-1            | 9        | A        | 14       | 30-2            | FAN COIL UNIT & HEAT PUMP (FCU-1 & HP-1) | 2                 |
| 3                 | LIVING/RECEPTS.                | 20-1            | 7.5      | В        | 14       | 1=11            | ¥.                                       | 4                 |
| 5                 | KITCHEN/REF.                   | 20-1            | 5        | А        | 20       | 30-2            | CLOTHES DRYER                            | 6                 |
| 7                 | KITCHEN/MICROWAVE              | 20-1            | 10       | В        | 20       | -00             | -  | 8                 |
| 9                 | KITCHEN / DISP.                | 20-1            | 5        | Α        | 30       | 50-2            | OVEN / RANGE                             | 10                |
| 11                | KITCHEN/DISHWASHER             | 20-1            | 8        | В        | 30       | 3-33            |  | 12                |
| 13                | KITCHEN/GFCI                   | 20-1            | 3        | А        | 20       | 30-2            | WATERHEATER                              | 14                |
| 15                | KITCHEN/GFCI                   | 20-1            | 3        | В        | 20       | -               |  | 16                |
| 17                | BATHROOM / GFCI                | 20-1            | 1.5      | А        | 0.5      | 20-1            | EXHAUST FAN (EF-1)                       | 18                |
| 19                | CLOTHES WASHER                 | 20-1            | 10       | В        | 1        | 20-1            | DOOR BELL POWER                          | 20                |
| 21                | COUNTER / RECEPTS.             | 20-1            | 3        | A        |          | 20-1            | SPARE                                    | 22                |
| 23                | UNIT LIGHTING / SMOKE DETECTOR | 20-1            | 3        | В        |          | 20-1            | SPARE                                    | 24                |

A: PANEL SHALL BE EQUAL TO SQUARE D MODEL "HOME-LINE"

B: ELECTRICIAN SHALL VERIFY BREAKER WITH EQUIPMENT PRIOR TO PURCHASE & INSTALL. C: AFTER COMPLETION OF WORK, ELECTRICAN SHALL PROVIDE A TYPE WRITTEN PANEL DIRECTORY IN NEW PANEL.

D: CIRCUIT'S SHOWN ABOVE IN BOLD ITALICS TEXT SHALL BE AFCI PROTECTED.

|                   |                                | ]               | PANEL  | 'B2' SCI | HEDUL | E               |  |                   |
|-------------------|--------------------------------|-----------------|--------|----------|-------|-----------------|--|-------------------|
|                   | VOLTAGE                        | PANEI           | L SIZE | MOU      | NTING | AIC RATING      |  |                   |
|                   | 120/200                        |                 |        |          |       |                 | PHASE "A" LOAD                           | 139               |
|                   | 120/208                        | 200A            | MLO    | RECE     | ESSED | 16,000          | PHA SE "B" LOAD                          | 116               |
|                   | NEMA RATING: 1                 | Ï.              |        |          |       |                 |  |                   |
| CIRCUIT<br>NUMBER | DESCRIPTION                    | BREAKER<br>SIZE | AMPS   | PHASE    | AMPS  | BREAKER<br>SIZE | DESCRIPTION                              | CIRCUIT<br>NUMBER |
| 1                 | LIVING/RECEPTS.                | 20-1            | 7.5    | А        | 17    | 35-2            | FAN COIL UNIT & HEAT PUMP (FCU-5 & HP-5) | 2                 |
| 3                 | KITCHEN/REF.                   | 20-1            | 5      | В        | 17    | -               | 2  | 4                 |
| 5                 | KITCHEN/MICROWAVE              | 20-1            | 10     | Α        | 20    | 30-2            | CLOTHES DRYER                            | 6                 |
| 7                 | KITCHEN / DISP.                | 20-1            | 5      | В        | 20    | 198             | -  | 8                 |
| 9                 | KITCHEN / DISHWASHER           | 20-1            | 8      | A        | 30    | 50-2            | OVEN / RANGE                             | 10                |
| 11                | KITCHEN/GFCI                   | 20-1            | 3      | В        | 30    | y. <b></b>      | -  | 12                |
| 13                | KITCHEN/GFCI                   | 20-1            | 3      | A        | 20    | 30-2            | WATER HEATER                             | 14                |
| 15                | BATHROOM / GFCI                | 20-1            | 1.5    | В        | 20    | ,               | -  | 16                |
| 17                | CLOTHES WASHER                 | 20-1            | 10     | А        | 0.5   | 20-1            | EXHAUST FAN (EF-2)                       | 18                |
| 19                | ENTRY/RECEPTS.                 | 20-1            | 7.5    | В        | 6     | 20-1            | BEDROOM / RECEPTS                        | 20                |
| 21                | UNIT LIGHTING / SMOKE DETECTOR | 20-1            | 4      | Α        | 9     | 20-1            | BEDROOM / RECEPTS                        | 22                |
| 23                | DOOR BELL POWER                | 20-1            | 1      | В        |       | 20-1            | SPARE                                    | 24                |

A: PANEL SHALL BE EQUAL TO SQUARE D MODEL "HOME-LINE"

B: ELECTRICIAN SHALL VERIFY BREAKER WITH EQUIPMENT PRIOR TO PURCHASE & INSTALL.

C: AFTER COMPLETION OF WORK, ELECTRICAN SHALL PROVIDE A TYPE WRITTEN PANEL DIRECTORY IN NEW PANEL.

D: CIRCUIT'S SHOWN ABOVE IN BOLD ITALICS TEXT SHALL BE AFCI PROTECTED.

|                   | VOLTAGE  | PANEL SIZE      |  | MOUNTING |      | AIC RATING   |                                   |               |
|-------------------|--|-----------------|--|----------|------|--|-----------------------------------|---------------|
|                   |  |                 | TO CONTRACTOR OF THE STATE OF T |          |      | and the second state of th | PHASE "A" LOAD                    | 284.5         |
| 120/208           |  | 400A            | MLO  | SURI     | FACE | 22,000   | PHA SE "B" LOAD                   | 265.3         |
|                   | NEMA RATING: 1                                 |                 |  |          |      |  | PHA SE "C" LOA D                  | 275.:         |
| CIRCUIT<br>NUMBER | DESCRIPTION                                    | BREAKER<br>SIZE | AMPS   | PHASE    | AMPS | BREAKER<br>SIZE  | DESCRIPTION                       | CIRCU<br>NUMB |
| 1                 | AIR HANDLING UNIT & HEAT PUMP (AHU-4 & HP-4)   | 50-2            | 36   | A        | 9    | 20-1   | OUTDOOR / RECEPTS.                | 2             |
| 3                 |  | -               | 36   | В        | 3    | 20-1   | MECH / RECEPTS                    | 4             |
| 5                 | AIR HANDLING UNIT & HEAT PUMP (AHU-2 & HP-2)   | 30-2            | 17   | С        | 6    | 20-1   | OFFICE / RECEPTS.                 | 6             |
| 7                 | pai  | -               | 17   | Α        | 6    | 20-1   | CONF. / RECEPTS.                  | 8             |
| 9                 | FAN COIL UNIT & CONDENSING UNIT (FCU-1 & HP-6) | 20-2            | 10   | В        | 6    | 20-1   | CONF. / RECEPTS.                  | 10            |
| 11                | 112  | 12              | 10   | С        | 3    | 20-1   | PODCAST / QUAD                    | 12            |
| 13                | SITE LIGHTING                                  | 20-2            | 4.5  | А        | 6    | 20-1   | PODCAST / QUADS                   | 14            |
| 15                | S=   | -               | 4.5  | В        | 6    | 20-1   | PODCAST / QUADS                   | 16            |
| 17                | COFFEE BAR / COFFEE BREWER                     | 40-2            | 29.2   | С        | 6    | 20-1   | PODCAST / QUADS                   | 18            |
| 19                | -  | -               | 29.2   | А        | 3    | 20-1   | RESTROOM / GFCI                   | 20            |
| 21                | COFFEE BAR / COFFEE BREWER                     | 40-2            | 29.2   | В        | 3    | 20-1   | COFFEE BAR / USB RECEPTS.         | 22            |
| 23                | 3 <del>.</del>                                 | -               | 29.2   | С        | 10.5 | 20-1   | COFFEE BAR / USB RECEPTS.         | 24            |
| 25                | COFFEE BAR / ESPRESSO MACHINE                  | 30-2            | 19.2   | А        | 7.5  | 20-1   | COFFEE BAR / USB RECEPTS.         | 26            |
| 27                | u <del>z</del>                                 | -               | 19.2   | В        | 6    | 20-1   | GENERAL RECEPTS.                  | 28            |
| 29                | COFFEE BAR / ESPRESSO MACHINE                  | 30-2            | 19.2   | С        | 4.5  | 20-1   | OPEN OFFICE / RECEPTS.            | 30            |
| 31                | (6   | -               | 19.2   | Α        | 7.5  | 20-1   | OPEN OFFICE / RECEPTS.            | 32            |
| 33                | COFFEE BAR / HOT PLATE                         | 20-1            | 5  | В        | 12.5 | 20-1   | WATER HEATER (WH2)                | 34            |
| 35                | COFFEE BAR / HOT PLATE                         | 20-1            | 5  | С        | 5    | 20-1   | GENERATOR JACKET & BATTERY HEATER | 36            |
| 37                | COFFEE BAR / HOT PLATE                         | 20-1            | 5  | A        | 2    | 20-1   | EXHAUST FANS (EF-3 & EF-4)        | 38            |
| 39                | COFFEE BAR / POS                               | 20-1            | 1.5  | В        | 7.5  | 20-1   | HALL/RECEPTS                      | 40            |
| 41                | COFFEE BAR / REFIG                             | 20-1            | 5  | С        | 12   | 20-1   | INTERIOR LIGHTING                 | 42            |
| 43                | COFFEE BAR / RECEPTS.                          | 20-1            | 3  | Α        | 1.5  | 20-1   | BUILDING LIGHTING                 | 44            |
| 45                | DOAS OUTDOOR UNIT (OU-1)                       | 50-3            | 45   | В        | 2    | 20-1   | FACP POWER                        | 46            |
| 47                | 1187   | . 5.            | 45   | С        | 8.3  | 20-3   | 3kW STAIR HEATER                  | 48            |
| 49                | (8)  | -               | 45   | А        | 8.3  | =  |                                   | 50            |
| 51                | DOA'S INDOOR UNIT (DOA'S-1)                    | 20-2            | 5  | В        | 8.3  | -  | <u>u</u>                          | 52            |
| 53                | -  | -               | 5  | С        |      | 20-1   | SPARE                             | 54            |
| 55                | SPARE  | 20-1            |  | А        |      | 20-1   | SPARE                             | 56            |
| 57                | 10kW DUCT HEATER                               | 40-3            | 27.8   | В        |      | 20-1   | SPARE                             | 58            |
| 59                | 0=   | -               | 27.8   | С        |      | 20-1   | SPARE                             | 60            |
| 61                |  | +               | 27.8   | А        |      | 20-1   | SPARE                             | 62            |
| 63                | 10kW DUCT HEATER                               | 40-3            | 27.8   | В        |      | 20-1   | SPARE                             | 64            |
| 65                | ė.   | -               | 27.8   | С        |      | 20-1   | SPARE                             | 66            |
| 67                | £  | . E             | 27.8   | Α        |      | 20-1   | SPARE                             | 68            |
| 69                | SPARE  | 20-1            |  | В        |      | 20-1   | SPARE                             | 70            |
| 71                | SPARE  | 20-1            |  | С        |      | 20-1   | SPARE                             | 72            |
| 73                | SPARE  | 20-1            |  | А        |      | 20-1   | SPARE                             | 74            |
| 75                | SPARE  | 20-1            |  | В        |      | 20-1   | SPARE                             | 76            |
| 77                | SPARE  | 20-1            |  | С        |      | 20-1   | SPARE                             | 78            |
| 79                | SPARE  | 20-1            |  | A        |      | 20-1   | SPARE                             | 80            |
| 81                | SPARE  | 20-1            |  | В        |      | 20-1   | SPARE                             | 82            |
| 83                | SPARE  | 20-1            |  | С        |      | 20-1   | SPARE                             | 84            |

NO TES:

A: PANEL SHALL BE EQUAL TO SQUARE D MODEL "QO"

B: ELECTRICIAN SHALL VERIFY BREAKER WITH EQUIPMENT PRIOR TO PURCHASE & INSTALL.

C: AFTER COMPLETION OF WORK, ELECTRICAN SHALL PROVIDE A TYPE WRITTEN PANEL DIRECTORY IN NEW PANEL. D: **BOLD** TEXT INDICATES GFCI PROTECTED CIRCUIT.

|                   |  | P               | ANEL' | CB2' SC  | HEDUI | LE              |                          |                   |
|-------------------|--|-----------------|-------|----------|-------|-----------------|--------------------------|-------------------|
|                   | VOLTAGE                                      | PANEI           | SIZE  | MOUN     | NTING | AIC RATING      |                          |                   |
|                   | 120/209                                      |                 |       |          |       |                 | PHASE "A" LOAD           | 46                |
|                   | 120/208                                      | 200A            | MLO   | RECESSED |       | 22,000          | PHASE "B" LOAD           | 26                |
|                   | NEMA RATING: 1                               | 1               |       |          |       |                 | PHASE "C" LOAD           | 27.5              |
| CIRCUIT<br>NUMBER | DESCRIPTION                                  | BREAKER<br>SIZE | AMPS  | PHASE    | AMPS  | BREAKER<br>SIZE | DESCRIPTION              | CIRCUIT<br>NUMBER |
| 1                 | AIR HANDLING UNIT & HEAT PUMP (FCU-3 & HP-3) | 30-2            | 17    | A        | 1.5   | 20-1            | RESTOOM / GFCI           | 2                 |
| 3                 | Ŧ.   | ä               | 17    | В        | 4.5   | 20-1            | SALON / RECEPTS.         | 4                 |
| 5                 | WATER HEATER (WHI)                           | 30-2            | 20    | С        | 3     | 20-1            | HAIR STATION / GFCI QUAD | 6                 |
| 7                 | e e  | -               | 20    | А        | 3     | 20-1            | HAIR STATION / GFCI QUAD | 8                 |
| 9                 | SPARE  | 20-1            |       | В        | 3     | 20-1            | HAIR STATION / GFCI QUAD | 10                |
| 11                | SPARE  | 20-1            |       | С        | 3     | 20-1            | HAIR STATION / GFCI QUAD | 12                |
| 13                | SPARE  | 20-1            |       | A        | 1.5   | 20-1            | NAIL STATION / GFCI      | 14                |
| 15                | SPARE  | 20-1            |       | В        | 1.5   | 20-1            | NAIL STATION / GFCI      | 16                |
| 17                | SPARE  | 20-1            |       | С        | 1.5   | 20-1            | NAIL STATION / GFCI      | 18                |
| 19                | SPARE  | 20-1            |       | Α        | 3     | 20-1            | LIGHTING                 | 20                |
| 21                | SPARE  | 20-1            |       | В        |       | 20-1            | SPARE                    | 22                |
| 23                | SPARE  | 20-1            |       | С        |       | 20-1            | SPARE                    | 24                |
| 25                | SPARE  | 20-1            |       | А        |       | 20-1            | SPARE                    | 26                |
| 27                | SPARE  | 20-1            |       | В        |       | 20-1            | SPARE                    | 28                |
| 29                | SPARE  | 20-1            |       | С        |       | 20-1            | SPARE                    | 30                |

A: PANEL SHALL BE EQUAL TO SQUARE D MODEL "HOME-LINE"

B: ELECTRICIAN SHALL VERIFY BREAKER WITH EQUIPMENT PRIOR TO PURCHASE & INSTALL.

C: AFTER COMPLETION OF WORK, ELECTRICAN SHALL PROVIDE A TYPE WRITTEN PANEL DIRECTORY IN NEW PANEL. D: CIRCUIT'S SHOWN ABOVE IN BOLD ITALICS TEXT SHALL BE AFCI PROTECTED.

James Watson, P.E. October 8th, 2021 PE-32421 OK Certificate of Authority # 8654



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| J2 PROJECT No: | J20395     |
|----------------|------------|
| J2 DESIGN:     | KEL        |
|                |            |
| ISSUE TITLE    | DATE       |
| PERMIT SET     | 10-08-2021 |
|                |            |
|                |            |
|                |            |

**ELECTRICAL SCHEDULES** 

— — SANITARY SEWER PIPING

**————** VENT PIPING

PIPING TURNED DOWN / TURNED UP

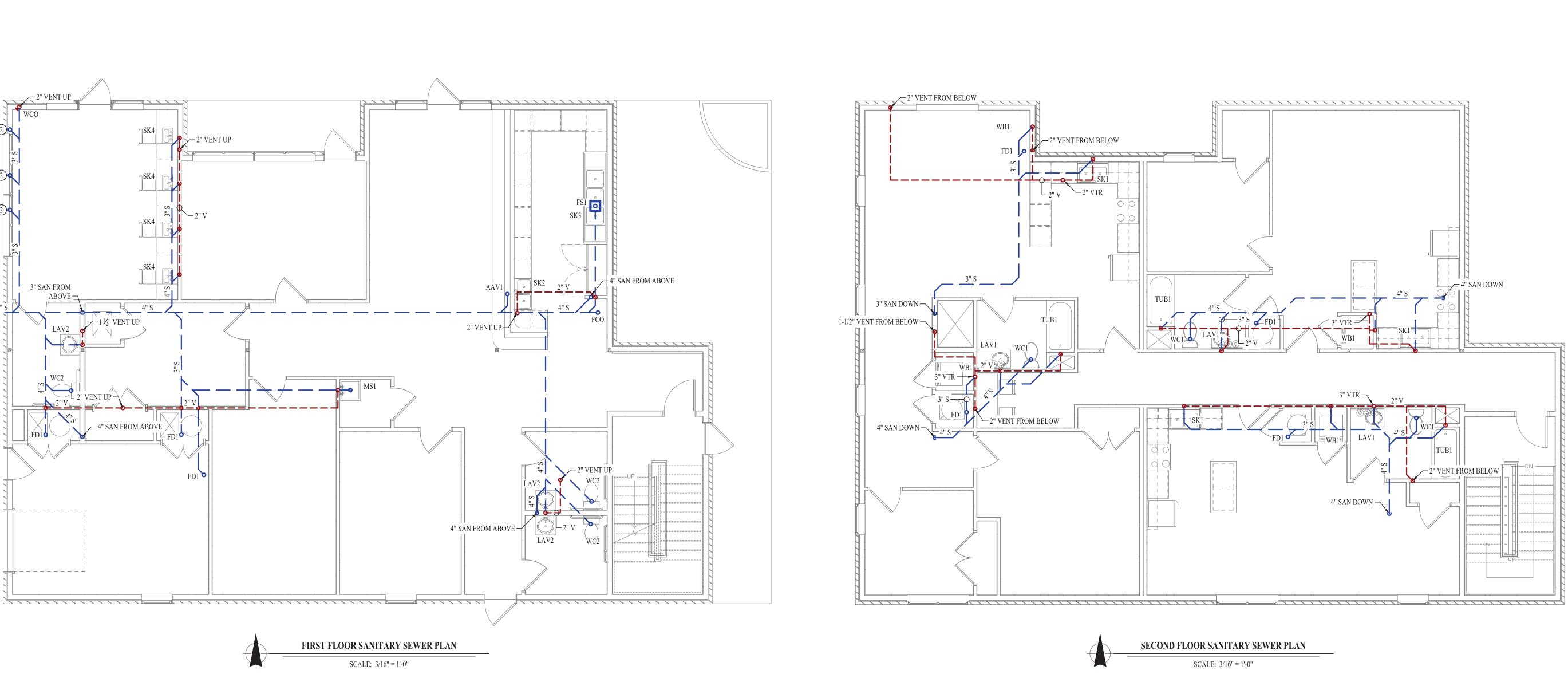
TIE INTO EXISTING

### SANITARY SEWER PLAN GENERAL NOTES:

- 1. SEE SHEET P501 FOR ADDITIONAL PLUMBING NOTES, DETAILS, & SCHEDULES.
- 2. FOR FIXTURE CONNECTION SIZES SEE CONNECTION SCHEDULE ON SHEET P501.

### **SANITARY SEWER PLAN KEY NOTES:**

- 1) SEE SITE PLAN FOR CONTINUATION.
- 2 HUB DRAIN FOR FUTURE PEDICURE STATION. COORDINATE EXACT REQUIREMENTS WITH EQUIPMENT SUPPLIER PRIOR TO INSTALLATION.



3" SAN FROM

4" SAN FROM ABOVE



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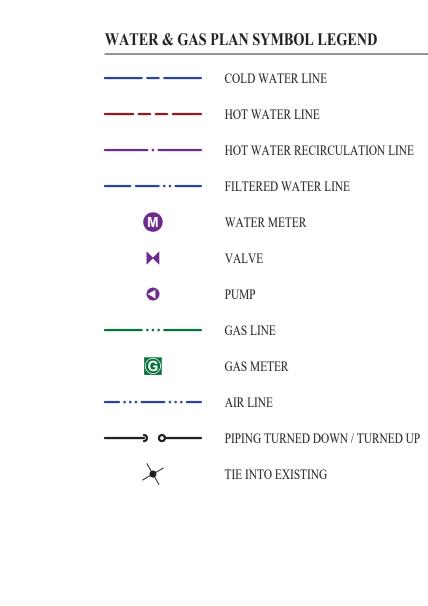
J2 PROJECT No:

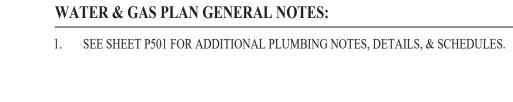
J2 DESIGN: KEL ISSUE TITLE DATE

PERMIT SET 10-08-2021

SHEET TITLE

**SANITARY SEWER PLANS** 





### WATER & GAS PLAN KEY NOTES:

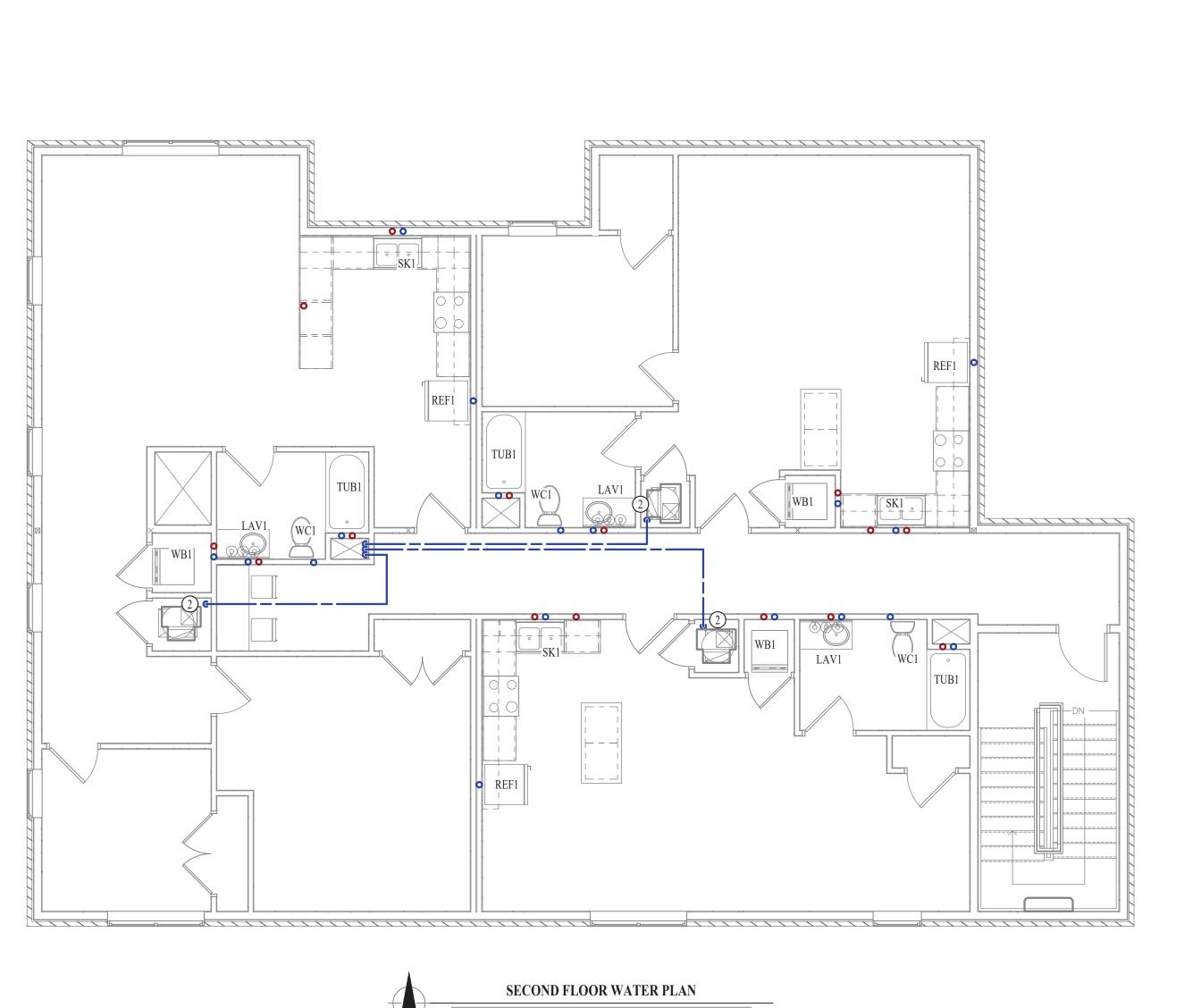
 $\bigcirc$  (3)  $\frac{3}{4}$ " CW UP TO EACH APARTMENT.

(2) UPONOR PEX MANIFOLD LOCATION. SEE DETAIL FOR MORE INFORMATION.

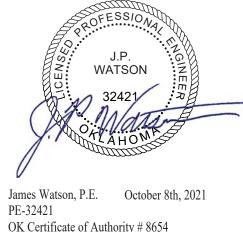
(3) FIRE SPRINKLER LINE. COORDINATE FINAL SIZE WITH FIRE SPRINKLER CONTRACTOR.

(4) FIRE SPRINKLER RISER AREA. COORDINATE FINAL SIZE AND CLEARANCES WITH FIRE SPRINKLER CONTRACTOR.

(5) HW & CW FOR FUTURE PEDICURE STATION. COORDINATE EXACT REQUIREMENTS WITH EQUIPMENT SUPPLIER PRIOR TO INSTALLATION.



SCALE: 3/16" = 1'-0"



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|                |            |
| ISSUE TITLE    | DATE       |
| PERMIT SET     | 10-08-2021 |
|                |            |

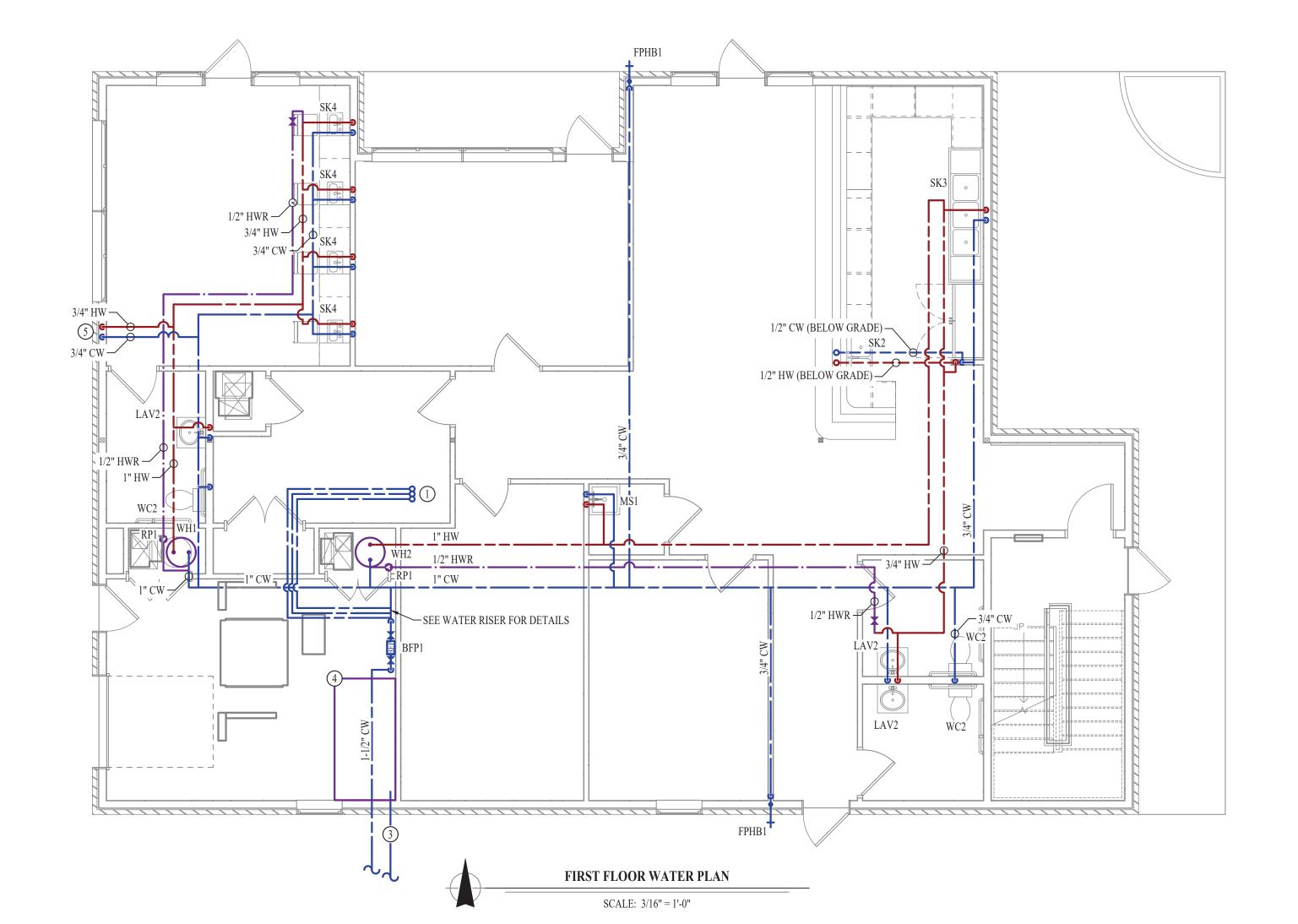
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Harmony

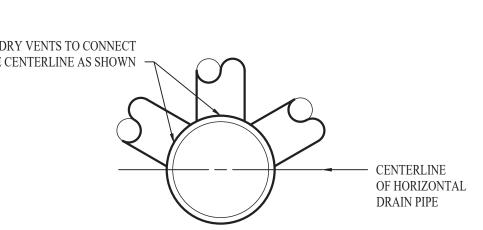
SHEET TITLE

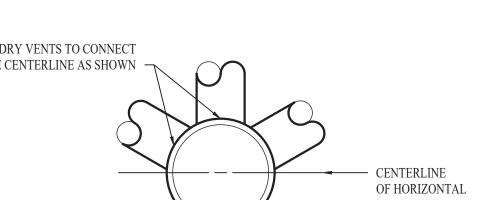
WATER & GAS PLANS

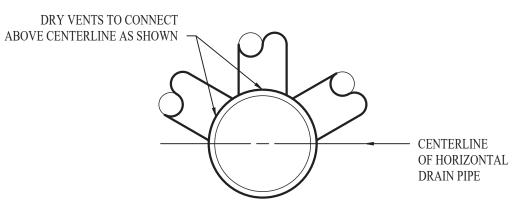


| FIXTURE                   |                      | SANITAR          | RY PIPING          | SUPPLY                   | PIPING                  |
|---------------------------|----------------------|------------------|--------------------|--------------------------|-------------------------|
| ТҰРЕ                      | TYPICAL ABBREVIATION | WASTE CONNECTION | VENT<br>CONNECTION | COLD WATER<br>CONNECTION | HOT WATER<br>CONNECTION |
| FLOOR DRAIN               | FD                   | 3"               | 2"                 | -                        | -                       |
| HAND/HAIR SINK            | HS / SK              | 2"               | 1-1/4"             | 1/2"                     | 1/2"                    |
| HOSE BIBB                 | HB                   |                  | _                  | 3/4"                     | -                       |
| LAVATORY                  | LAV                  | 1-1/2"           | 1-1/4"             | 1/2"                     | 1/2"                    |
| MOP SINK                  | MS                   | 3"               | 1-1/2"             | 1/2"                     | 1/2"                    |
| ICE MAKER OUTLET BOX      | REF                  |                  | -                  | 1/2"                     | =                       |
| SHOWER                    | SH                   | 3"               | 1-1/2"             | 1/2"                     | 1/2"                    |
| URINAL                    | UR                   | 2"               | 1-1/4"             | 3/4"                     | 346                     |
| WATER CLOSET (FLUSH TANK) | WC                   | 3"               | 2"                 | 1/2"                     | 2                       |

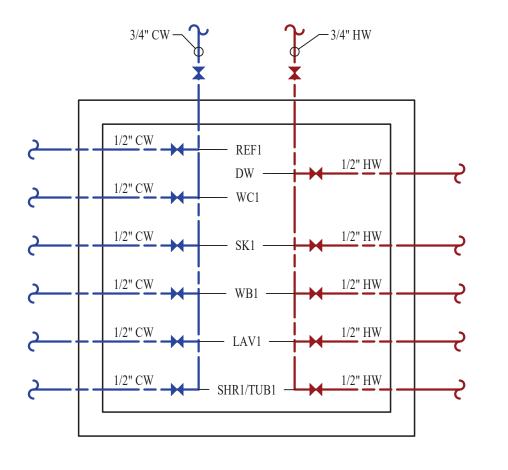
1. SIZES SHOWN ABOVE ARE TYPICAL UNLESS NOTED OTHERWISE ON PLANS



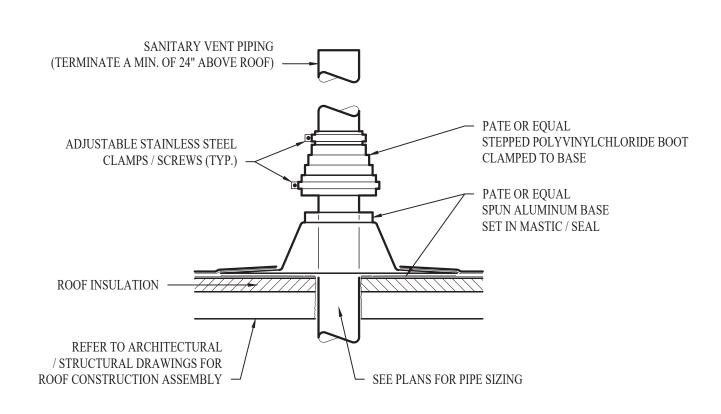




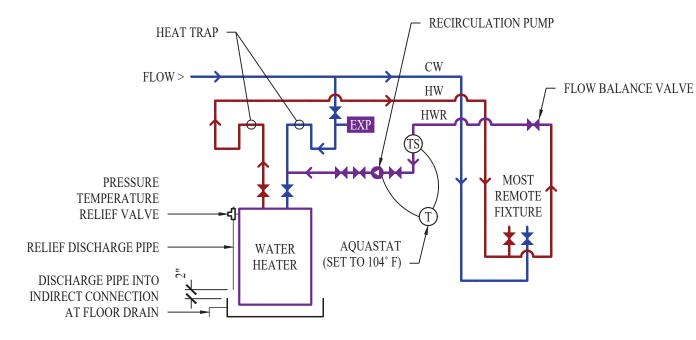
DRY VENT DETAIL



UNIT UPONOR PEX MANIFOLD



SANITARY VENT THRU ROOF DETAIL



NOTES

1.5" - 2" - 20 DFU MAX

WITH GD102 TRAP GUARD

VITH PEERLESS P136LF FAUCET, 1/4 TURN STOPS, AND BRAIDED STAINLESS STEF

VITH ZURN Z81104-XL FAUCET, 1/4 TURN STOPS, AND BRAIDED STAINLESS STEEI

WITH ZURN Z843M1 FAUCET WITH WALL HOOK

WITH PEERLESS P115LF FAUCET WITH SPRAYER AND INSINKERATOR FWD-1

DISPOSAL WITH POWER CORD

WITH TWO HANDLED ZURN Z871C4-XL FAUCET

WITH JOHN BOOS PB-PRW-1LF-X WALL MOUNT PRE-RINSE FAUCET,PB-SMMK-90

SPLASH MOUNT FAUCET KIT, FISHER 64769 SPLASH MOUNT FAUCET, AND

PB-LWR-1-X TWIST HANDLE LEVER WASTE

COORDINATE WITH OWNER ON EXACT EQUIPMENT SELECTION

WITH PEERLESS PTT188773 TRIM KIT (1.5GPM), PEERLESS R10000-PFT-MFWS

SHOWER VALVE, & P8227 PVC UNI-LIFT

WITH BEMIS 1500EC SEAT AND COVER, STAINLESS BRAIDED SUPPLY, AND 1/4

TURN SHUT-OFF.

WITH CHURCH 9500SSCT SELF SUSTAINING SEAT, STAINLESS BRAIDED SUPPLY,

AND 1/4 TURN SHUT-OFF. 38 GALLON, 208V 1-PH, 4500W

20 GALLON, 120V, 2500W

PLUMBING FIXTURE SCHEDULE

(OR EQUAL)

39017

975SXL2

TS-5

863-435NRT

MODEL 67

FD2370-PV3-DS-F

0475.028

MSB2424

696-G1010MF

UP10-15BUA/TLC

K23321-4

LR2219

RNSF8354LR4

2603SG

696-G2303WF

ALTO 137-160

215AA.004

ENL-40D

EJCS-20

MANUFACTURER

(OR EQUAL)

OATEY

WILKINS

**AO SMITH** 

SIOUX CHIEF

WOODFORD

ZURN

MANSFIELD

AMERICAN STANDARD

SOUIX CHIEF

GRUNDFOS

DA YTON

**ELKAY** 

**ELKAY** 

AQUATIC

SIOUX CHIEF

MANSFIELD

AMERICAN STANDARD

**AO SMITH** 

**AO SMITH** 

1. VERIFY NECESSARY FIXTURES MEET ADA REQUIREMENTS WITH ARCHITECT PRIOR TO INSTALLATION

DESCRIPTION

AIR ADMITTANCE VALVE

BACKFLOW PREVENTER

**EXPANSION TANK** 

FLOOR DRIAN

FROST PROOF HOSE BIB

FLOOR SINK WITH FULL GRATE

**HUB DRAIN** 

LA VATORY (DROP-IN W/ MANUAL FAUCET)

LAVATORY (DROP-IN W/ MANUAL FAUCET)

MOP SINK

REFRIGERA TOR BOX

RECIRCULATION PUMP

DOUBLE COMPARTMENT SINK W/DISPOSAL

(33x22x7)

SINGLE COMPARTMENT SINK

THREE COMPARTMENT SINK

HAIR SINK

TUB & SHOWER

WASHER BOX

WATER CLOSET - ADA HEIGHT - TANK

WATER CLOSET - ADA HEIGHT - TANK

UNIT WATER HEATER

WATER HEATER

AA VI

BFP1

EXP1

FD1

FPHB1

HD1

LA V2

REF1

RP1

SK2

SK3

SK4

TUB1

WC1

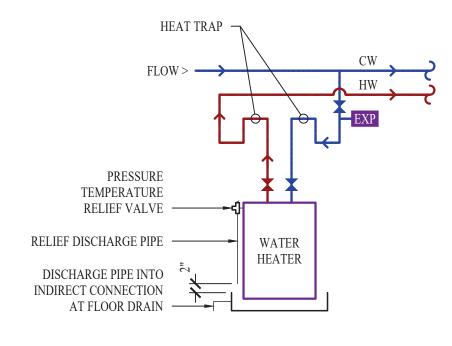
WC2

WH1

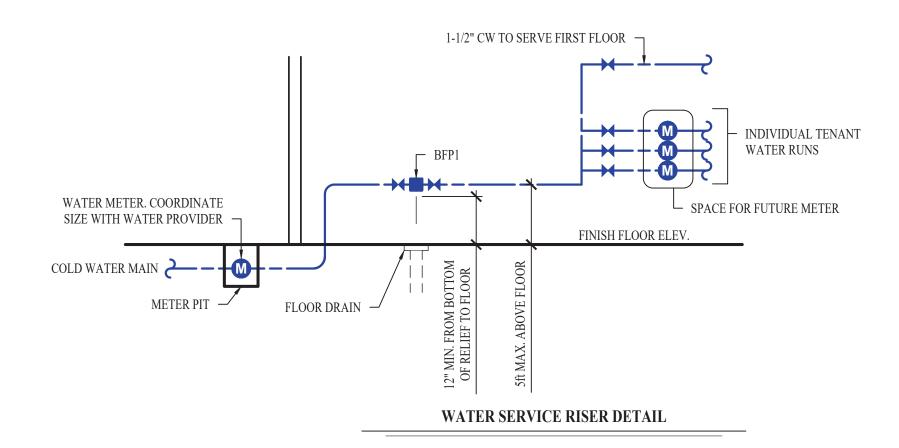
WH2

NOTES:

HOT WATER RECIRCULATION DETAIL



WATER HEATER DETAIL



### PLUMBING SPECIFICATIONS

- 1.1. PLUMBING CONTRACTOR IS RESPONSIBLE TO PROVIDE ALL ESCUTCHEONS, ¼ TURN STOPS, P-TRAPS, AND SUPPLY LINES TO PROVIDE A COMPLETE SYSTEM AT EACH FIXTURE INDICATED ON PLANS UNLESS NOTED OTHERWISE.
- 2.1. BELOW AND ABOVE GRADE WASTE AND VENT PIPING IN BUILDING TO BE SOLID CORE SCH.
- 40 PVC DWV.
- NO PIPE SMALLER THAN 2" BELOW GRADE. WASTE AND VENT PIPING IN PLENUMS TO BE CAST IRON, OR PVC WITH AN INSULATION
- WRAP LISTED FOR USE AS SUCH AN ASSEMBLY. 2.4. ALL VENT PIPE TERMINATIONS ARE TO BE LOCATED EITHER 10' HORIZONTALLY OR 3' ABOVE
- MECHANICAL AIR INTAKE LOCATIONS.

### 3. DOMESTIC WATER

- 3.1. DOMESTIC WATER PIPING TO BE EITHER COPPER OR PEX. WHERE PEX PIPING IS USED, IT SHALL BE INCREASED ONE PIPE SIZE FROM WHAT IS INDICATED ON PLANS FOR ALL PORTIONS OF THE SYSTEM.
- PEX-A MAY BE INSTALLED AT SIZES INDICATED ON PLANS IF AN ENGINEERED PLAN IS SUBMITTED SHOWING ACCEPTABLE PRESSURE DROPS AND FLUID VELOCITIES, APPROVAL
- COPPER WATER PIPING BELOW GRADE SHALL BE TYPE "K". BELOW GRADE JOINTS SHALL BE SILVER SOLDERED. THERE SHALL BE NO JOINTS IN WATER PIPING LOCATED BENEATH
- BUILDING SLAB.
- COPPER WATER PIPING ABOVE GRADE SHALL BE TYPE "L".

MUST BE GRANTED PRIOR TO PURCHASE AND INSTALLATION.

- PROVIDE WATER HAMMER ARRESTORS AT ALL QUICK-CLOSE VALVES. FIXTURES REQUIRING WATER HAMMER ARRESTORS INCLUDE BUT ARE NOT LIMITED TO FLUSH VALVES, SENSOR FAUCETS, AND WASHING MACHINE BOXES. AIR CHAMBERS ARE NOT
- ACCEPTABLE. 3.6. DOMESTIC WATER PIPING INSULATION
- ALL HW PIPING, WHETHER COPPER OR PEX, SHALL BE INSULATED WITH PLENUM RATED CLOSED CELL ELASTOMERIC INSULATION. FOR PIPING LESS THAN 1½", INSULATION THICKNESS TO BE 1". FOR PIPING 1½" OR GREATER, INSULATION
- THICKNESS SHALL BE 1½". CW COPPER PIPING TO INSULATED WITH 1/2" PLENUM RATED CLOSED CELL ELASTOMERIC INSULATION. CW PEX NEED NOT BE INSULATED UNLESS NOTED

### OTHERWISE.

INSTRUCTION.

- 4.1. ABOVE GRADE NATURAL GAS AND LP PIPING TO BE SCH. 40 BLACK STEEL WITH CLASS 150 THREADED FITTINGS.
- WHERE PIPING IS EXPOSED ON EXTERIOR FACE OF BUILDING, PAINT TO MATCH BUILDING.
- PAINT YELLOW IN ALL OTHER LOCATIONS. ON ROOFTOPS, INSTALL GAS PIPE WITH "ROOFTOP BLOX" PER MANUFACTURE'S

PERMIT SET 10-08-2021

James Watson, P.E. October 8th, 2021

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Columbia, Missouri 65203

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**PLUMBING DETAILS & SCHEDULES**