

SYSTEM 1 EQUIPMENT SCHEDULE

TYPICAL OF HITACHI OR ACCEPTABLE EQUAL

| Outdoor Unit | Name | Unit Type | Unit | Cooling Dry Bulb Temp (F) | Cooling Wet Bulb Temp (F) | Heating Dry Bulb Temp (F) | Total Cooling Capacity (MBH) | Sensible Cooling Capacity (MBH) | Total Heating Capacity (MBH) | Air Flow (CFM) |
|------------------------------|------|----------------|-------------|---------------------------|---------------------------|---------------------------|------------------------------|---------------------------------|------------------------------|----------------|
| HP-1 HVAHP144B32S | IU-1 | 4-Way Cassette | HIC4036B21S | 80.0 | 67.0 | 70.0 | 34.6 | 34.6 | 39.8 | 1307 |
| | IU-2 | 4-Way Cassette | HIC4036B21S | 80.0 | 67.0 | 70.0 | 34.6 | 34.6 | 39.8 | 1307 |
| | IU-3 | 4-Way Cassette | HIC4036B21S | 80.0 | 67.0 | 70.0 | 34.6 | 34.6 | 39.8 | 1307 |
| | IU-4 | 4-Way Cassette | HIC4036B21S | 80.0 | 67.0 | 70.0 | 34.6 | 34.6 | 39.8 | 1307 |
| Additional refrigerant (lb): | | 12.1 | | | | Total (MBH): | 138.5 | 138.5 | 159.1 | |

| Indoor unit type | | | Duct 2 pipe | Non-duct 2 pipe | Mixed 2 pipe |
|-------------------|--------------|----------|----------------|--------------------|-----------------|
| HP-1 | HVAHP144B32S | | 10206777 | 10206693 | 10207527 |
| Cooling | Capacity | [Btu/h] | 138000.00 | 138000.00 | 138000.00 |
| | EER | [Btu/Wh] | 11.20 | 10.90 | 11.05 |
| | IEER | [Btu/Wh] | 21.20 | 23.90 | 22.55 |
| Heating | Capacity 47F | [Btu/h] | 154000.00 | 154000.00 | 154000.00 |
| | COP47F | [W/W] | 3.40 | 3.42 | 3.41 |
| | Capacity 17F | [Btu/h] | 110000.00 | 110000.00 | 150000.00 |
| | COP17F | [W/W] | 2.15 | 2.12 | 2.14 |
| Cooling & Heating | SCHE | [Btu/Wh] | | | |

| | |
|----------------------|--------------|
| HP-1 | HVAHP144B32S |
| Cooling DB (°F) | 65.0 |
| Heating DB (°F) | 65.0 |
| Heating WB (°F) | 59.0 |
| Connection % | 100% |
| Total Cooling MBH | 138.5 |
| Sensible Cooling MBH | 138.5 |
| Heating MBH | 159.1 |

SYSTEM 2 EQUIPMENT SCHEDULE

TYPICAL OF HITACHI OR ACCEPTABLE EQUAL

| Outdoor Unit | Name | Unit Type | Unit | Cooling Dry Bulb Temp (F) | Cooling Wet Bulb Temp (F) | Heating Dry Bulb Temp (F) | Total Cooling Capacity (MBH) | Sensible Cooling Capacity (MBH) | Total Heating Capacity (MBH) | Air Flow (CFM) |
|------------------------------|-------|----------------|-------------|---------------------------|---------------------------|---------------------------|------------------------------|---------------------------------|------------------------------|----------------|
| HP-2 HVAHP192B32S | IU-5 | Wall | TIWM030B22S | 80.0 | 67.0 | 70.0 | 26.9 | 26.9 | 33.9 | 812 |
| | IU-6 | Wall | TIWM030B22S | 80.0 | 67.0 | 70.0 | 26.9 | 26.9 | 33.9 | 812 |
| | IU-7 | Wall | TIWM024B22S | 80.0 | 67.0 | 70.0 | 21.5 | 21.5 | 27.1 | 759 |
| | IU-8 | Wall | TIWM012B22S | 80.0 | 67.0 | 70.0 | 10.8 | 10.8 | 13.6 | 494 |
| | IU-9 | Wall | TIWM030B22S | 80.0 | 67.0 | 70.0 | 26.9 | 26.9 | 33.9 | 812 |
| | IU-10 | Wall | TIWM030B22S | 80.0 | 67.0 | 70.0 | 26.9 | 26.9 | 33.9 | 812 |
| | IU-11 | Wall | TIWM018B22S | 80.0 | 67.0 | 70.0 | 16.2 | 16.2 | 20.3 | 653 |
| | IU-12 | Wall | TIWM018B22S | 80.0 | 67.0 | 70.0 | 16.2 | 16.2 | 20.3 | 653 |
| | IU-13 | Wall | TIWM018B22S | 80.0 | 67.0 | 70.0 | 16.2 | 16.2 | 20.3 | 653 |
| | IU-22 | 4-Way Cassette | HIC4015B21S | 80.0 | 67.0 | 70.0 | 13.5 | 13.5 | 17.0 | 777 |
| Additional refrigerant (lb): | | 23.1 | | | | Total (MBH): | 202.0 | 202.0 | 254.3 | |

| Indoor unit type | | | Duct 2 pipe | Non-duct 2 pipe | Mixed 2 pipe |
|-------------------|--------------|----------|----------------|--------------------|-----------------|
| HP-2 | HVAHP192B32S | | 10206779 | 10206695 | 10207529 |
| Cooling | Capacity | [Btu/h] | 184000.00 | 184000.00 | 184000.00 |
| | EER | [Btu/Wh] | 11.10 | 10.60 | 10.85 |
| | IEER | [Btu/Wh] | 20.80 | 21.40 | 21.10 |
| Heating | Capacity 47F | [Btu/h] | 206000.00 | 206000.00 | 206000.00 |
| | COP47F | [W/W] | 3.38 | 3.32 | 3.35 |
| | Capacity 17F | [Btu/h] | 140000.00 | 140000.00 | 140000.00 |
| | COP17F | [W/W] | 2.15 | 2.05 | 2.10 |
| Cooling & Heating | SCHE | [Btu/Wh] | | | |

| | |
|----------------------|--------------|
| HP-2 | HVAHP192B32S |
| Cooling DB (°F) | 65.0 |
| Heating DB (°F) | 47.0 |
| Heating WB (°F) | 46.0 |
| Connection % | 117% |
| Total Cooling MBH | 202.0 |
| Sensible Cooling MBH | 202.0 |
| Heating MBH | 254.3 |

SYSTEM 3 EQUIPMENT SCHEDULE

TYPICAL OF HITACHI OR ACCEPTABLE EQUAL

| Outdoor Unit | Name | Unit Type | Unit | Cooling Dry Bulb Temp (F) | Cooling Wet Bulb Temp (F) | Heating Dry Bulb Temp (F) | Total Cooling Capacity (MBH) | Sensible Cooling Capacity (MBH) | Total Heating Capacity (MBH) | Air Flow (CFM) |
|------------------------------|-------|----------------|-------------|---------------------------|---------------------------|---------------------------|------------------------------|---------------------------------|------------------------------|----------------|
| HP-3 HVAHP168B32S | IU-14 | Wall | TIWM024B22S | 80.0 | 67.0 | 70.0 | 24.4 | 24.4 | 14.7 | 759 |
| | IU-15 | Wall | TIWM024B22S | 80.0 | 67.0 | 70.0 | 24.4 | 24.4 | 14.7 | 759 |
| | IU-16 | Wall | TIWM024B22S | 80.0 | 67.0 | 70.0 | 24.4 | 24.4 | 14.7 | 759 |
| | IU-17 | 4-Way Cassette | HIC4015B21S | 80.0 | 67.0 | 70.0 | 15.2 | 15.2 | 9.2 | 777 |
| | IU-18 | Wall | TIWM024B22S | 80.0 | 67.0 | 70.0 | 24.4 | 24.4 | 14.7 | 759 |
| | IU-19 | Wall | TIWM018B22S | 80.0 | 67.0 | 70.0 | 18.3 | 18.3 | 11.0 | 653 |
| | IU-20 | Wall | TIWM015B22S | 80.0 | 67.0 | 70.0 | 15.2 | 15.2 | 9.2 | 512 |
| | IU-21 | Wall | TIWM015B22S | 80.0 | 67.0 | 70.0 | 15.2 | 15.2 | 9.2 | 512 |
| Additional refrigerant (lb): | | 17.6 | | | | Total (MBH): | 161.6 | 161.6 | 97.5 | |

| Indoor unit type | | | Duct 2 pipe | Non-duct 2 pipe | Mixed 2 pipe |
|-------------------|--------------|----------|----------------|--------------------|-----------------|
| HP-3 | HVAHP168B32S | | 10206778 | 10206694 | 10207528 |
| Cooling | Capacity | [Btu/h] | 160000.00 | 160000.00 | 160000.00 |
| | EER | [Btu/Wh] | 11.80 | 11.60 | 11.70 |
| | IEER | [Btu/Wh] | 21.40 | 23.40 | 22.40 |
| Heating | Capacity 47F | [Btu/h] | 180000.00 | 180000.00 | 180000.00 |
| | COP47F | [W/W] | 3.58 | 3.65 | 3.61 |
| | Capacity 17F | [Btu/h] | 124000.00 | 124000.00 | 125000.00 |
| | COP17F | [W/W] | 2.40 | 2.16 | 2.28 |
| Cooling & Heating | SCHE | [Btu/Wh] | | | |

| | |
|----------------------|--------------|
| HP-3 | HVAHP168B32S |
| Cooling DB (°F) | 65.0 |
| Heating DB (°F) | 0.0 |
| Heating WB (°F) | -1.0 |
| Connection % | 95% |
| Total Cooling MBH | 161.6 |
| Sensible Cooling MBH | 161.6 |
| Heating MBH | 97.5 |

SYSTEM 4 EQUIPMENT SCHEDULE

TYPICAL OF HITACHI OR ACCEPTABLE EQUAL

| Outdoor Unit | Name | Unit Type | Unit | Cooling Dry Bulb Temp (F) | Cooling Wet Bulb Temp (F) | Heating Dry Bulb Temp (F) | Total Cooling Capacity (MBH) | Sensible Cooling Capacity (MBH) | Total Heating Capacity (MBH) | Air Flow (CFM) |
|------------------------------|-------|----------------|-------------|---------------------------|---------------------------|---------------------------|------------------------------|---------------------------------|------------------------------|----------------|
| HP-4 HVAHP192B32S | IU-23 | Wall | TIWM030B22S | 80.0 | 67.0 | 70.0 | 28.0 | 28.0 | 14.5 | 812 |
| | IU-24 | 4-Way Cassette | HIC4012B21S | 80.0 | 67.0 | 70.0 | 11.2 | 11.2 | 5.8 | 742 |
| | IU-25 | Wall | TIWM030B22S | 80.0 | 67.0 | 70.0 | 28.0 | 28.0 | 14.5 | 812 |
| | IU-26 | Wall | TIWM024B22S | 80.0 | 67.0 | 70.0 | 22.4 | 22.4 | 11.6 | 759 |
| | IU-27 | Wall | TIWM024B22S | 80.0 | 67.0 | 70.0 | 22.4 | 22.4 | 11.6 | 759 |
| | IU-28 | Wall | TIWM012B22S | 80.0 | 67.0 | 70.0 | 11.2 | 11.2 | 5.8 | 494 |
| | IU-30 | Wall | TIWM030B22S | 80.0 | 67.0 | 70.0 | 28.0 | 28.0 | 14.5 | 812 |
| | IU-31 | Wall | TIWM030B22S | 80.0 | 67.0 | 70.0 | 28.0 | 28.0 | 14.5 | 812 |
| | IU-32 | Wall | TIWM015B22S | 80.0 | 67.0 | 70.0 | 14.0 | 14.0 | 7.3 | 512 |
| Additional refrigerant (lb): | | 22.0 | | | | Total (MBH): | 193.4 | 193.4 | 100.2 | |

| Indoor unit type | | | Duct 2 pipe | Non-duct 2 pipe | Mixed 2 pipe |
|-------------------|--------------|----------|----------------|--------------------|-----------------|
| HP-4 | HVAHP192B32S | | 10206779 | 10206695 | 10207529 |
| Cooling | Capacity | [Btu/h] | 184000.00 | 184000.00 | 184000.00 |
| | EER | [Btu/Wh] | 11.10 | 10.60 | 10.85 |
| | IEER | [Btu/Wh] | 20.80 | 21.40 | 21.10 |
| Heating | Capacity 47F | [Btu/h] | 206000.00 | 206000.00 | 206000.00 |
| | COP47F | [W/W] | 3.38 | 3.32 | 3.35 |
| | Capacity 17F | [Btu/h] | 140000.00 | 140000.00 | 140000.00 |
| | COP17F | [W/W] | 2.15 | 2.05 | 2.10 |
| Cooling & Heating | SCHE | [Btu/Wh] | | | |

| | |
|----------------------|--------------|
| HP-4 | HVAHP192B32S |
| Cooling DB (°F) | 65.0 |
| Heating DB (°F) | 0.0 |
| Heating WB (°F) | -1.0 |
| Connection % | 108% |
| Total Cooling MBH | 193.4 |
| Sensible Cooling MBH | 193.4 |
| Heating MBH | 100.2 |

Mechanical Notes:

- ALL MATERIALS AND EQUIPMENT ARE TO BE NEW, UNUSED, AND FREE FROM DEFECTS OF ANY KIND. THE BASIS OF QUALITY SHALL BE THE LATEST REVISION OF ASTM, ANSI, OR OTHER ACCEPTABLE STANDARDS.
- THESE DRAWINGS ARE DIAGRAMMATIC, AND INDICATE GENERAL ARRANGEMENT OF WORK. THE CONTRACTOR SHALL BE RESPONSIBLE TO HAVE REVIEWED THE SITE FOR HIS WORK PRIOR TO HAVING SUBMITTED HIS PROPOSAL. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR CONDITIONS FOUND DURING THE COURSE OF THE CONTRACT.
- THE CONTRACTOR SHALL COORDINATE HIS WORK WITH THAT OF ALL OTHER TRADES.
- ALL WORK INCLUDING LABOR AND MATERIALS SHALL BE FULLY GUARANTEED FOR ONE (1) YEAR FROM THE DATE OF PAYMENT AND FINAL ACCEPTANCE BY THE OWNER AND ENGINEER.
- ALL CUTTING, PATCHING, FIRE-STOPPING, AND SURFACE RESTORATION IN CONNECTION WITH THIS TRADE SHALL BE COMPLETED BY THIS CONTRACTOR.
- A MINIMUM OF FOUR (4) COPIES OF SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO ORDERING AND INSTALLATION OF THE EQUIPMENT AND/OR MATERIALS. BY SUBMITTING SHOP DRAWINGS, THE CONTRACTOR REPRESENTS THAT ACTUAL FIELD CONDITIONS ARE VERIFIED BY HIM AND ARE REFLECTED ON HIS SUBMITTALS.
- THIS CONTRACTOR SHALL PAY ALL FEES, GIVE ALL NOTICES, FILE ALL NECESSARY DRAWINGS, AND OBTAIN ALL PERMITS, INSPECTIONS AND CERTIFICATES OF APPROVAL REQUIRED IN CONNECTION WITH WORK UNDER THIS CONTRACT.
- ALL WORK IN ASSOCIATION WITH THIS CONTRACT SHALL BE COMPLETED IN STRICT COMPLIANCE WITH THE 2020 BUILDING CODE OF NEW YORK STATE, 2020 MECHANICAL CODE OF NEW YORK STATE, AS WELL AS THE 2020 ENERGY CONSERVATION CONSTRUCTION CODE OF NEW YORK STATE.
- ALL DUCTWORK IS TO BE CONSTRUCTED OF GALVANIZED SHEET STEEL (EXCEPT WHERE OTHERWISE SPECIFIED) WITH GAUGES, BRACING AND CONSTRUCTION IN ACCORDANCE WITH THE LATEST SMACNA DUCT MANUAL STANDARDS AND ALL OTHER AUTHORITIES HAVING JURISDICTION.
- PROVIDE MANUAL DAMPERS AT EACH SPLIT OR TAP CONNECTION TO TRUNK DUCTS FOR BALANCING PURPOSES WHETHER OR NOT SPECIFICALLY SHOWN ON DRAWINGS. EACH DAMPER SHALL BE OF THE OPPOSED BLADE DAMPER TYPE INSTALLED WITH AN OPERATOR AND LOCKING DEVICE. ALL DAMPERS LOCATED ABOVE HARD OR INACCESSIBLE CEILINGS SHALL BE INSTALLED WITH REMOTE GEAR OPERATORS.
- FURNISH & INSTALL FUSIBLE LINK FIRE DAMPERS AT ALL LOCATIONS WHERE DUCT PENETRATES FIRE-RATED FLOOR OR CEILING ASSEMBLY WHETHER OR NOT SPECIFICALLY SHOWN. INSTALL DUCTWORK CASING ACCESS DOORS AND FRAMES AHEAD OF EACH FIRE DAMPER FOR INSPECTION AND MAINTENANCE. DOORS SHALL BE A MINIMUM OF 20 GA. DOUBLE PANEL INSULATED TYPE.
- INSTALL TURNING VANES ON ALL RECTANGULAR TURNS. TURNING VANES SHALL BE DOUBLE THICKNESS TYPE CONSTRUCTED IN ACCORDANCE WITH SMACNA MANUAL.
- ROUND SHEET STEEL ELBOWS ARE TO BE INSTALLED AT THE DUCT CONNECTION TO ALL SUPPLY AIR DIFFUSERS. SHEET STEEL PLENUM BOXES ARE TO BE INSTALLED AT THE DUCT CONNECTION TO ALL RETURN AND EXHAUST AIR GRILLES. THE CONTRACTOR IS TO PAINT THE INSIDE OF THE SHEET STEEL PLENUM BOXES FLAT BLACK.
- ALL SUPPLY AND RETURN DUCTWORK LOCATED IN UNCONDITIONED SPACES OR ABOVE CEILINGS SHALL BE INSULATED WITH A MINIMUM OF R-5 INSULATION. ALL DUCTWORK LOCATED OUTSIDE THE BUILDING ENVELOPE SHALL BE INSULATED WITH A MINIMUM OF R-8 INSULATION. INSULATION SHALL BE FIBERGLASS DUCT WRAP WITH VAPOR SEAL SECURELY TAPED AROUND DUCT. IF DUCT LINING IS TO BE USED, ALL DUCT SIZES SHOWN SHALL BE CONSIDERED TO BE INSIDE CLEAR DIMENSIONS.
- INSTALL ALL DUCTWORK AS HIGH AS POSSIBLE PROVIDING RISERS, DROPS AND OFFSETS TO CLEAR STRUCTURAL MEMBERS, LIGHT FIXTURES, OTHER PIPING, AND OTHER OBSTRUCTIONS. WHERE CONFLICTS ARISE, IT SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION PRIOR TO PROCEEDING.
- THE ENTIRE AIR DISTRIBUTION SYSTEM IS TO BE BALANCED TO WITHIN 10% OF THE SPECIFIED AIRFLOW REQUIREMENTS.
- THE CONTRACTOR IS RESPONSIBLE TO TEST ALL EQUIPMENT, PIPING, FIXTURES, AND SYSTEMS INSTALLED UNDER THIS CONTRACT TO ENSURE PROPER OPERATION PRIOR TO FINAL ACCEPTANCE BY THE OWNER AND ENGINEER.
- THE CONTRACTOR IS RESPONSIBLE TO DETERMINE WHETHER SPECIAL LICENSING IS REQUIRED IN ORDER TO PERFORM THE REQUIRED WORK IN THE MUNICIPALITY WHERE THE PROJECT IS LOCATED. IF THE CONTRACTOR CANNOT OBTAIN THE REQUIRED LICENSING TO COMPLETE THE WORK WITHIN THE PROJECT SCHEDULE, THEN THE CONTRACTOR SHALL NOT BE PERMITTED TO BID ON THIS PROJECT.
- CONTRACTOR IS RESPONSIBLE TO CREATE AND SUBMIT RED-LINE "AS-BUILT" PLANS TO THE ENGINEER AT THE END OF THE PROJECT. AS-BUILT PLANS SHALL ACCURATELY REPRESENT THE SYSTEMS AS THEY WERE INSTALLED.

Mechanical Equipment:

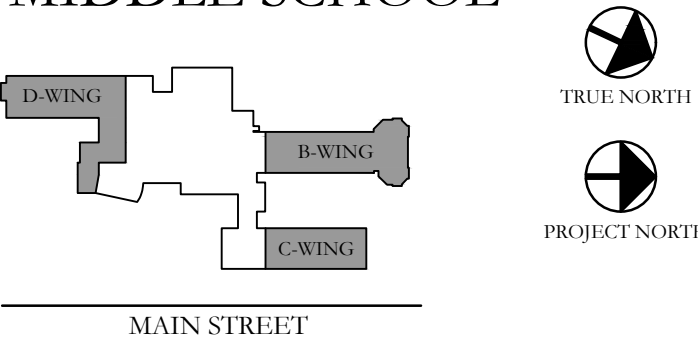
- WC** VRF PROGRAMMABLE WIRED CONTROLLER TYPICAL OF HITACHI #CIW01 OR ACCEPTABLE EQUAL; LARGE BACKLIT LCD; MOUNT 5"-6" A.F.F. IN LOCATIONS SHOWN ON PLANS
- BN** HITACHI VRF TO BACNET IP/MSTP INTERFACE; FURNISH W/ BACNET MASTER SOFTWARE LICENSE; MOUNT AND WIRE CONTROLLER TO ALL UNITS AND REMOTE CONTROLLERS; CONNECTION TO EXISTING BUILDING MANAGEMENT SYSTEM AND INTEGRATION WITH EXISTING SEQUENCE OF OPERATIONS BY OWNER
- CC** HITACHI LARGE CENTRAL CONTROLLER CCL01; MOUNT AND WIRE CONTROLLER TO ALL UNITS AND REMOTE CONTROLLERS

VRF System Notes:

- VRF PROGRAMMABLE WIRED CONTROLLERS SHALL BE FURNISHED BY MECHANICAL CONTRACTOR FOR EACH INDOOR UNIT. CONTROLLERS SHIP LOOSE FOR FIELD INSTALLATION AND WIRING BY THE MECHANICAL CONTRACTOR.
- MECHANICAL CONTRACTOR TO PROVIDE CENTRAL CONTROLLER FOR LOCAL SET POINT CONTROL AND SYSTEM VIEWING. CONTROLLER TO BE INSTALLED AND WIRING BY MECHANICAL CONTRACTOR. 24V POWER BY ELECTRICAL CONTRACTOR.
- DISCONNECT SWITCH FOR HEAT PUMP UNITS AND INDOOR UNITS SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR.
- EXTERNAL SUPPORTS FOR INDOOR AND HEAT PUMP UNITS SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR.
- FILTER RACK AND 2" PLEATED MERV-8 FILTERS FOR DUCTED UNITS SHALL FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR.
- CONDENSATE PUMPS SHIP FOR FIELD INSTALLATION BY MECHANICAL CONTRACTOR FOR WALL MOUNTED UNITS. DUCTED UNITS FURNISHED WITH FACTORY MOUNTED CONDENSATE PUMP. MECHANICAL CONTRACTOR TO PROVIDE CONDENSATE PIPING FROM ALL UNITS TO SANITARY DRAIN. FIELD VERIFY EXACT ROUTING AND TERMINATION POINT IN BUILDING.
- PROVIDE REFRIGERANT ISOLATION VALVES ON LIQUID AND GAS LINES AT EVERY FAN COIL UNIT.

KEY PLAN:

'CORNWALL CENTRAL MIDDLE SCHOOL'

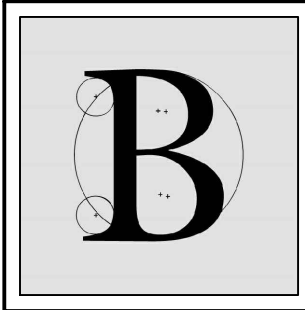


PROJECT:

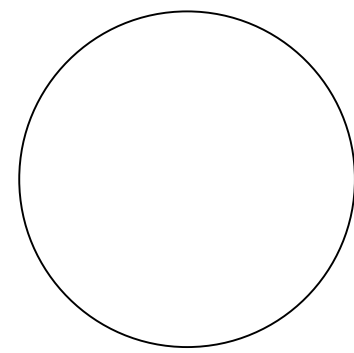
CORNWALL CENTRAL MIDDLE SCHOOL
B, C & D WING AIR-CONDITIONING PROJECT
122 MAIN STREET
CORNWALL, NEW YORK 12518

SUB-CONSULTANT:

ENGINEER:



BLAKE ENGINEERING PLLC
1898 COUNTY ROUTE 1
WESTTOWN, NEW YORK 10998
TEL:845-467-9207 FAX:845-767-5050
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MATTHEW G. BLAKE, P.E., LEED AP
NY - 89039 NJ - GE050037 PA - PE079303
MA - 53197 CT - 32283 FL - 85928

MECHANICAL SCHEDULES & NOTES

| DATE: | | DRN | CHK | DESCRIPTION |
|------------|-------|-----|-----|-------------|
| 11.14.2022 | | MGB | MGB | BID SET |
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| REV. | DATE: | DRN | CHK | DESCRIPTION |
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|-------------|-----------|
| PROJECT NO. | SHEET NO. |
| 1814 | M.101 |

UNAUTHORIZED ALTERATION OR ADDITION TO THIS PLAN IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

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SYSTEM 5 EQUIPMENT SCHEDULE

TYPICAL OF HITACHI OR ACCEPTABLE EQUAL

| Outdoor Unit | Name | Unit Type | Unit | Cooling Dry Bulb Temp (F) | Cooling Wet Bulb Temp (F) | Heating Dry Bulb Temp (F) | Total Cooling Capacity (MBH) | Sensible Cooling Capacity (MBH) | Total Heating Capacity (MBH) | Air Flow (CFM) |
|------------------------------|-------|----------------|-------------|---------------------------|---------------------------|---------------------------|------------------------------|---------------------------------|------------------------------|----------------|
| HP-5 HVAHP240B32S | IU-29 | 4-Way Cassette | HIC4012B21S | 80.0 | 67.0 | 70.0 | 11.9 | 11.9 | 8.9 | 742 |
| | IU-33 | Wall | TIWM030B22S | 80.0 | 67.0 | 70.0 | 29.8 | 29.8 | 22.2 | 812 |
| | IU-34 | Wall | TIWM030B22S | 80.0 | 67.0 | 70.0 | 29.8 | 29.8 | 22.2 | 812 |
| | IU-35 | Wall | TIWM030B22S | 80.0 | 67.0 | 70.0 | 29.8 | 29.8 | 22.2 | 812 |
| | IU-36 | Wall | TIWM018B22S | 80.0 | 67.0 | 70.0 | 17.9 | 17.9 | 13.3 | 653 |
| | IU-37 | Wall | TIWM015B22S | 80.0 | 67.0 | 70.0 | 14.9 | 14.9 | 11.1 | 512 |
| | IU-38 | Wall | TIWM030B22S | 80.0 | 67.0 | 70.0 | 29.8 | 29.8 | 22.2 | 812 |
| | IU-39 | Wall | TIWM024B22S | 80.0 | 67.0 | 70.0 | 23.8 | 23.8 | 17.7 | 759 |
| | IU-40 | Wall | TIWM015B22S | 80.0 | 67.0 | 70.0 | 14.9 | 14.9 | 11.1 | 512 |
| | IU-41 | Wall | TIWM030B22S | 80.0 | 67.0 | 70.0 | 29.8 | 29.8 | 22.2 | 812 |
| Additional refrigerant (lb): | | 24.3 | | | | | Total (MBH): | 232.1 | 232.1 | 172.8 |

| Indoor unit type | | | Duct 2 pipe | Non-duct 2 pipe | Mixed 2 pipe |
|-------------------|--------------|----------|----------------|--------------------|-----------------|
| HP-5 | HVAHP240B32S | | 10206781 | 10206697 | 10207531 |
| Cooling | Capacity | [Btu/h] | 228000.00 | 228000.00 | 228000.00 |
| | EER | [Btu/Wh] | 10.80 | 11.10 | 10.85 |
| | IEER | [Btu/Wh] | 21.00 | 20.80 | 20.90 |
| Heating | Capacity 47F | [Btu/h] | 258000.00 | 258000.00 | 258000.00 |
| | COP47F | [W/W] | 3.51 | 3.67 | 3.59 |
| | Capacity 17F | [Btu/h] | 178000.00 | 178000.00 | 178000.00 |
| | COP17F | [W/W] | 2.27 | 2.35 | 2.31 |
| Cooling & Heating | SCHE | [Btu/Wh] | | | |

| | |
|----------------------|--------------|
| HP-5 | HVAHP240B32S |
| Cooling DB (°F) | 65.0 |
| Heating DB (°F) | 0.0 |
| Heating WB (°F) | -1.0 |
| Connection % | 98% |
| Total Cooling MBH | 232.1 |
| Sensible Cooling MBH | 232.1 |
| Heating MBH | 172.8 |

SYSTEM 7 EQUIPMENT SCHEDULE

TYPICAL OF HITACHI OR ACCEPTABLE EQUAL

| Outdoor Unit | Name | Unit Type | Unit | Cooling Dry Bulb Temp (F) | Cooling Wet Bulb Temp (F) | Heating Dry Bulb Temp (F) | Total Cooling Capacity (MBH) | Sensible Cooling Capacity (MBH) | Total Heating Capacity (MBH) | Air Flow (CFM) |
|------------------------------|-------|----------------|-------------|---------------------------|---------------------------|---------------------------|------------------------------|---------------------------------|------------------------------|----------------|
| HP-7 HVAHP192B32S | IU-42 | Wall | TIWM030B22S | 80.0 | 67.0 | 70.0 | 27.6 | 27.6 | 17.5 | 812 |
| | IU-43 | Wall | TIWM030B22S | 80.0 | 67.0 | 70.0 | 27.6 | 27.6 | 17.5 | 812 |
| | IU-44 | Wall | TIWM030B22S | 80.0 | 67.0 | 70.0 | 27.6 | 27.6 | 17.5 | 812 |
| | IU-45 | Wall | TIWM030B22S | 80.0 | 67.0 | 70.0 | 27.6 | 27.6 | 17.5 | 812 |
| | IU-46 | Wall | TIWM030B22S | 80.0 | 67.0 | 70.0 | 27.6 | 27.6 | 17.5 | 812 |
| | IU-52 | 4-Way Cassette | HIC4015B21S | 80.0 | 67.0 | 70.0 | 13.8 | 13.8 | 8.7 | 777 |
| Additional refrigerant (lb): | | 26.1 | | | | | Total (MBH): | 151.7 | 151.7 | 96.2 |

| Indoor unit type | | | Duct 2 pipe | Non-duct 2 pipe | Mixed 2 pipe |
|-------------------|--------------|----------|----------------|--------------------|-----------------|
| HP-7 | HVAHP192B32S | | 10206779 | 10206695 | 10207529 |
| Cooling | Capacity | [Btu/h] | 184000.00 | 184000.00 | 184000.00 |
| | EER | [Btu/Wh] | 11.10 | 10.80 | 10.85 |
| | IEER | [Btu/Wh] | 20.80 | 21.40 | 21.10 |
| Heating | Capacity 47F | [Btu/h] | 206000.00 | 206000.00 | 206000.00 |
| | COP47F | [W/W] | 3.38 | 3.32 | 3.35 |
| | Capacity 17F | [Btu/h] | 140000.00 | 140000.00 | 140000.00 |
| | COP17F | [W/W] | 2.15 | 2.05 | 2.10 |
| Cooling & Heating | SCHE | [Btu/Wh] | | | |

| | |
|----------------------|--------------|
| HP-7 | HVAHP192B32S |
| Cooling DB (°F) | 65.0 |
| Heating DB (°F) | 0.0 |
| Heating WB (°F) | -1.0 |
| Connection % | 86% |
| Total Cooling MBH | 151.7 |
| Sensible Cooling MBH | 151.7 |
| Heating MBH | 96.2 |

SYSTEM 6 EQUIPMENT SCHEDULE

TYPICAL OF HITACHI OR ACCEPTABLE EQUAL

| Outdoor Unit | Name | Unit Type | Unit | Cooling Dry Bulb Temp (F) | Cooling Wet Bulb Temp (F) | Heating Dry Bulb Temp (F) | Total Cooling Capacity (MBH) | Sensible Cooling Capacity (MBH) | Total Heating Capacity (MBH) | Air Flow (CFM) |
|------------------------------|-------|----------------|-------------|---------------------------|---------------------------|---------------------------|------------------------------|---------------------------------|------------------------------|----------------|
| HP-6 HVAHP192B32S | IU-53 | 4-Way Cassette | HIC4015B21S | 80.0 | 67.0 | 70.0 | 13.0 | 13.0 | 8.8 | 777 |
| | IU-54 | Wall | TIWM024B22S | 80.0 | 67.0 | 70.0 | 20.8 | 20.8 | 10.8 | 759 |
| | IU-55 | Wall | TIWM024B22S | 80.0 | 67.0 | 70.0 | 20.8 | 20.8 | 10.8 | 759 |
| | IU-47 | Wall | TIWM030B22S | 80.0 | 67.0 | 70.0 | 25.9 | 25.9 | 13.5 | 812 |
| | IU-48 | Wall | TIWM030B22S | 80.0 | 67.0 | 70.0 | 25.9 | 25.9 | 13.5 | 812 |
| | IU-49 | Wall | TIWM030B22S | 80.0 | 67.0 | 70.0 | 25.9 | 25.9 | 13.5 | 812 |
| | IU-50 | Wall | TIWM030B22S | 80.0 | 67.0 | 70.0 | 25.9 | 25.9 | 13.5 | 812 |
| | IU-51 | Wall | TIWM030B22S | 80.0 | 67.0 | 70.0 | 25.9 | 25.9 | 13.5 | 812 |
| Additional refrigerant (lb): | | 32.4 | | | | | Total (MBH): | 184.2 | 184.2 | 96.2 |

| Indoor unit type | | | Duct 2 pipe | Non-duct 2 pipe | Mixed 2 pipe |
|-------------------|--------------|----------|----------------|--------------------|-----------------|
| HP-6 | HVAHP192B32S | | 10206779 | 10206695 | 10207529 |
| Cooling | Capacity | [Btu/h] | 184000.00 | 184000.00 | 184000.00 |
| | EER | [Btu/Wh] | 11.10 | 10.80 | 10.85 |
| | IEER | [Btu/Wh] | 20.80 | 21.40 | 21.10 |
| Heating | Capacity 47F | [Btu/h] | 206000.00 | 206000.00 | 206000.00 |
| | COP47F | [W/W] | 3.38 | 3.32 | 3.35 |
| | Capacity 17F | [Btu/h] | 140000.00 | 140000.00 | 140000.00 |
| | COP17F | [W/W] | 2.15 | 2.05 | 2.10 |
| Cooling & Heating | SCHE | [Btu/Wh] | | | |

| | |
|----------------------|--------------|
| HP-6 | HVAHP192B32S |
| Cooling DB (°F) | 65.0 |
| Heating DB (°F) | 0.0 |
| Heating WB (°F) | -1.0 |
| Connection % | 111% |
| Total Cooling MBH | 184.2 |
| Sensible Cooling MBH | 184.2 |
| Heating MBH | 96.2 |

SYSTEM 8 EQUIPMENT SCHEDULE

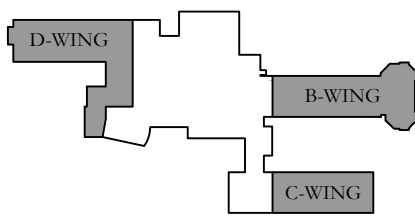
TYPICAL OF HITACHI OR ACCEPTABLE EQUAL

| Outdoor Unit | Name | Unit Type | Unit | Cooling Dry Bulb Temp (F) | Cooling Wet Bulb Temp (F) | Heating Dry Bulb Temp (F) | Total Cooling Capacity (MBH) | Sensible Cooling Capacity (MBH) | Total Heating Capacity (MBH) | Air Flow (CFM) |
|------------------------------|-------|-----------------------------|-------------|---------------------------|---------------------------|---------------------------|------------------------------|---------------------------------|------------------------------|----------------|
| HP-8 HVAHP144B32S | IU-56 | High Static Pressure Ducted | HIDH072B21S | 80.0 | 67.0 | 70.0 | 63.2 | 63.2 | 39.9 | 2047 |
| | IU-57 | Wall | TIWM024B22S | 80.0 | 67.0 | 70.0 | 21.1 | 21.1 | 13.3 | 759 |
| | IU-58 | Wall | TIWM024B22S | 80.0 | 67.0 | 70.0 | 21.1 | 21.1 | 13.3 | 759 |
| | IU-59 | Wall | TIWM024B22S | 80.0 | 67.0 | 70.0 | 21.1 | 21.1 | 13.3 | 759 |
| | IU-60 | Wall | TIWM024B22S | 80.0 | 67.0 | 70.0 | 21.1 | 21.1 | 13.3 | 759 |
| Additional refrigerant (lb): | | 19.2 | | | | | Total (MBH): | 147.6 | 147.6 | 93.1 |

| Indoor unit type | | | Duct 2 pipe | Non-duct 2 pipe | Mixed 2 pipe |
|-------------------|--------------|----------|----------------|--------------------|-----------------|
| HP-8 | HVAHP144B32S | | 10206777 | 10206693 | 10207527 |
| Cooling | Capacity | [Btu/h] | 138000.00 | 138000.00 | 138000.00 |
| | EER | [Btu/Wh] | 11.20 | 10.90 | 11.05 |
| | IEER | [Btu/Wh] | 21.20 | 23.90 | 22.55 |
| Heating | Capacity 47F | [Btu/h] | 154000.00 | 154000.00 | 154000.00 |
| | COP47F | [W/W] | 3.40 | 3.42 | 3.41 |
| | Capacity 17F | [Btu/h] | 110000.00 | 110000.00 | 150000.00 |
| | COP17F | [W/W] | 2.15 | 2.12 | 2.14 |
| Cooling & Heating | SCHE | [Btu/Wh] | | | |

| | |
|----------------------|--------------|
| HP-8 | HVAHP144B32S |
| Cooling DB (°F) | 65.0 |
| Heating DB (°F) | 0.0 |
| Heating WB (°F) | -1.0 |
| Connection % | 117% |
| Total Cooling MBH | 147.6 |
| Sensible Cooling MBH | 147.6 |
| Heating MBH | 93.1 |

KEY PLAN:

'CORNWALL CENTRAL
MIDDLE SCHOOL'

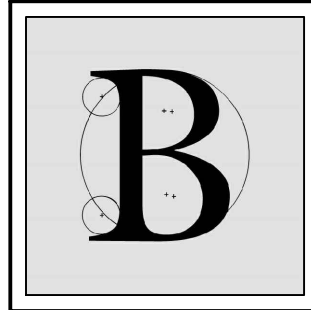
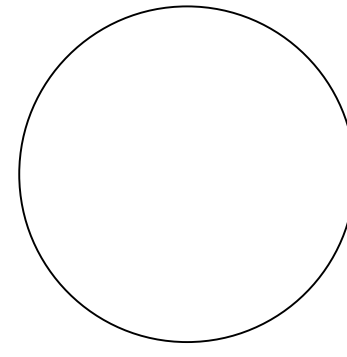
MAIN STREET

PROJECT:

CORNWALL CENTRAL
MIDDLE SCHOOL
B, C & D WING AIR-
CONDITIONING PROJECT
122 MAIN STREET
CORNWALL, NEW YORK 12518

SUB-CONSULTANT:

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NY - 89039 NJ - GE050037 PA - PE079303
MA - 53197 CT - 32283 FL - 85928

MECHANICAL SCHEDULES

| | | | |
|------------|------|-----|-----------------|
| DATE: | DRN | CHK | DESCRIPTION |
| 11.14.2022 | MGB | MGB | BID SET |
| | | | |
| | | | |
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| REV. | DATE | DRN | CHK DESCRIPTION |
| | | | |
| | | | |
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PROJECT NO.

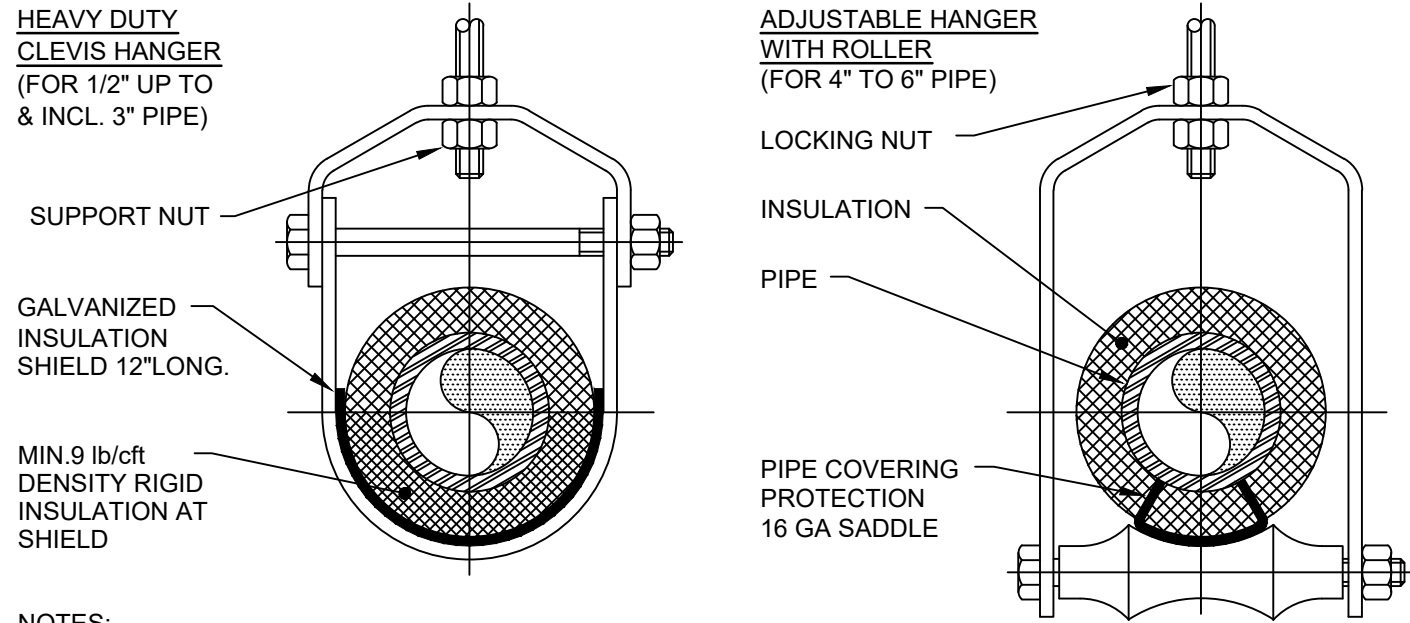
1814

SHEET NO.

M.102

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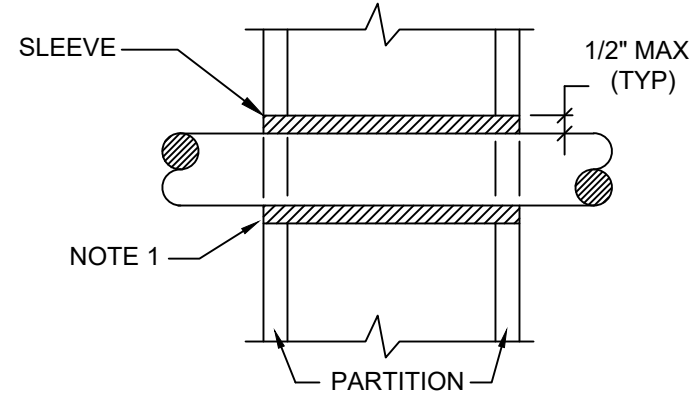
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NOTES:
1. PIPE 8" AND LARGER SHALL HAVE ROLLER SUPPORTED WITH DUAL RODS.
2. FOR CHW SERVICE OVER 3" REPLACE SADDLE WITH 12" LONG 14 GA SHIELD WITH RIGID INSULATION BETWEEN PIPE AND SHIELD.

| PIPE Ø (IN.) | MAX. SPACING BETWEEN HANGERS (FT.) | | | MIN. ROD SIZE (IN.) |
|--------------|------------------------------------|-------------|------|---------------------|
| | STEEL PIPE | COPPER PIPE | CPVC | |
| 1/2 THRU 1 | 7 | 5 | 5 | 3/8 |
| 1-1/2 THRU 2 | 9 | 8 | 6 | 3/8 |
| 2-1/2 | 11 | 9 | 7.5 | 1/2 |
| 3 | 12 | 10 | 7.5 | 1/2 |
| 4 | 14 | 12 | 8.5 | 5/8 |
| 6 | 17 | 14 | 9 | 3/4 |
| 8 | 19 | 16 | 10 | 7/8 |
| 10 | 22 | 18 | 10.5 | 7/8 |

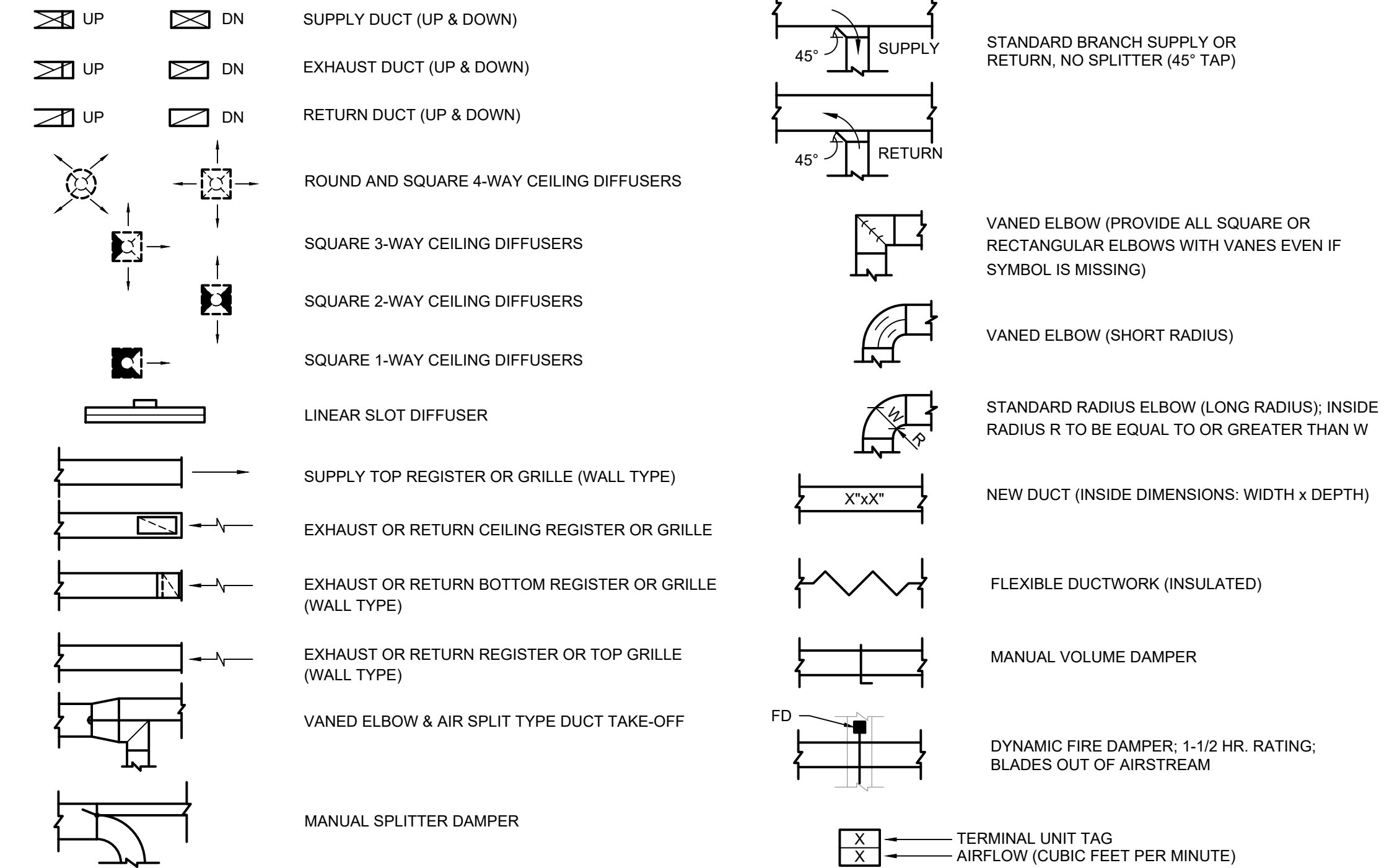
1 Pipe Hanger Support
M.103 N.T.S.



NOTES:
1. AT FIRE RATED PARTITIONS, ADD ADDITIONAL LAYER OF FIRE SAFING INSULATION AROUND PENETRATION SO AS TO FILL CAVITY.
2. DUCT AND PIPE PENETRATIONS THRU CORRIDOR WALLS ABOVE THE CEILING ARE TO BE FIRE STOPPED AROUND THE PENETRATION.

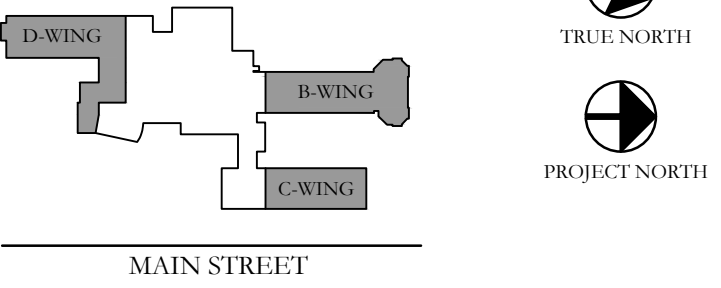
2 Pipe Penetrations Detail
M.103 N.T.S.

Mechanical Legend :



KEY PLAN:

'CORNWALL CENTRAL MIDDLE SCHOOL'

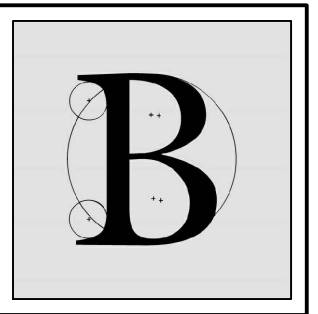


PROJECT:

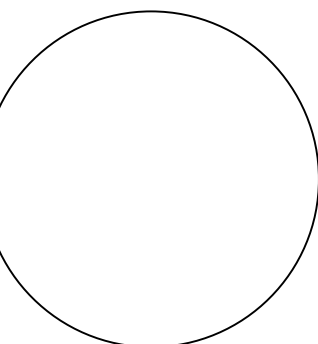
CORNWALL CENTRAL MIDDLE SCHOOL
B, C & D WING AIR-CONDITIONING PROJECT
122 MAIN STREET
CORNWALL, NEW YORK 12518

SUB-CONSULTANT:

ENGINEER:



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MATTHEW G. BLAKE, P.E., LEED AP
NY - 89039 NJ - GE050037 PA - PE079303
MA - 53197 CT - 32283 FL - 85928

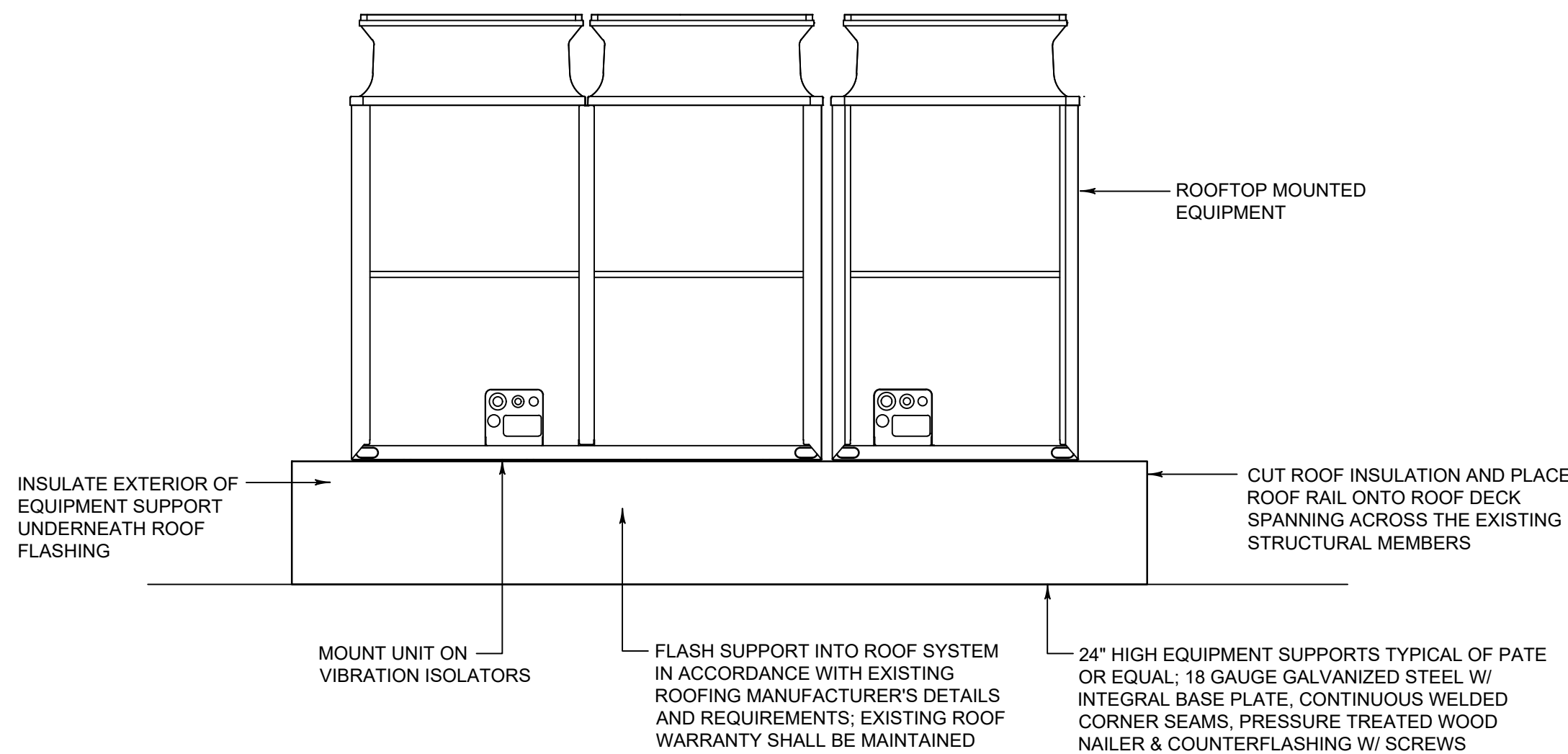
MECHANICAL SCHEDULE, LEGEND & DETAILS

| DATE: | | DRN | CHK | DESCRIPTION |
|------------|-------|-----|-----|-------------|
| 11.14.2022 | | MGB | MGB | BID SET |
| | | | | |
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| REV. | DATE: | DRN | CHK | DESCRIPTION |
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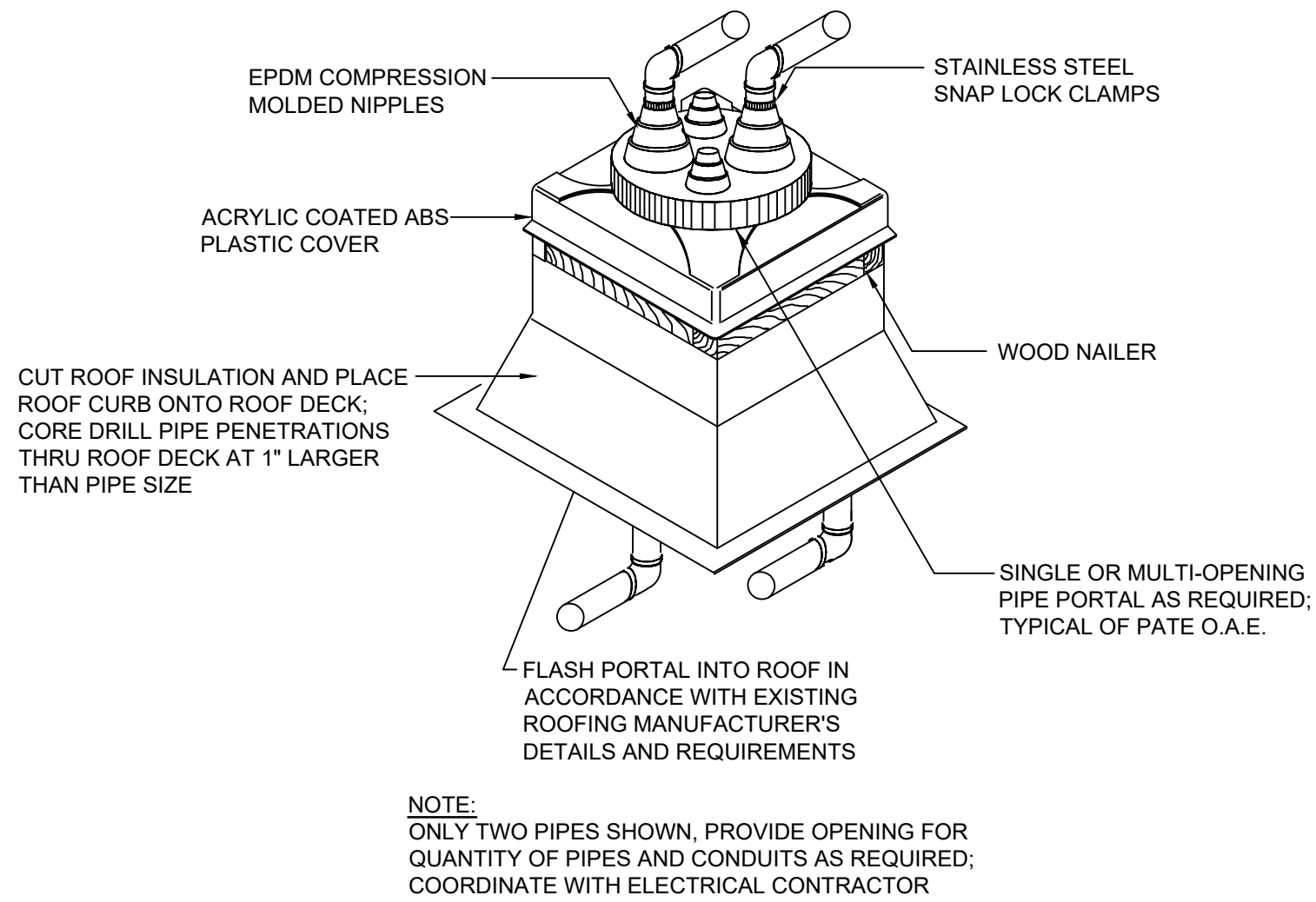
| PROJECT NO. | SHEET NO. |
|-------------|-----------|
| 1814 | M.103 |

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3 Rooftop Equipment Support System
M.103 N.T.S.

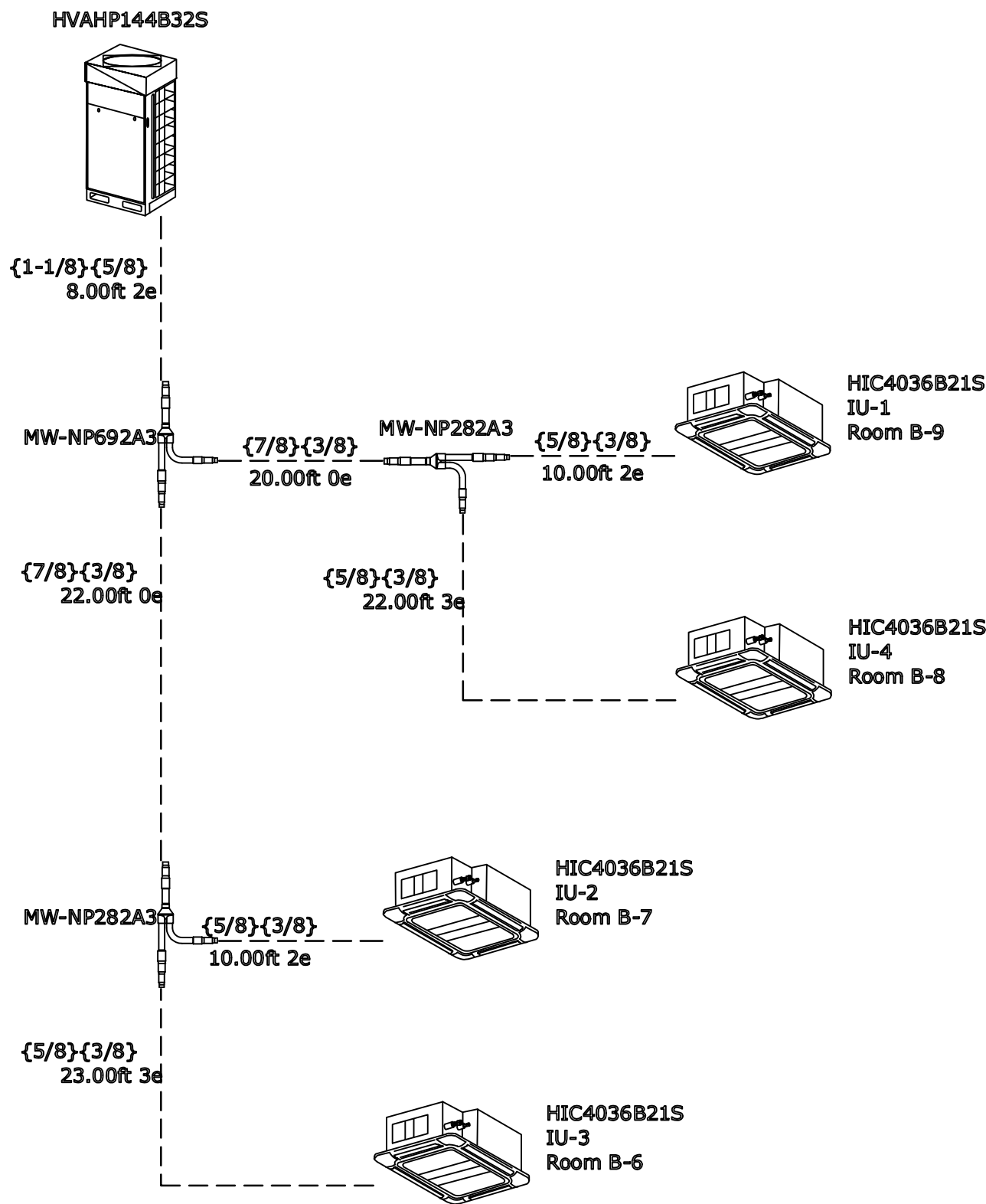
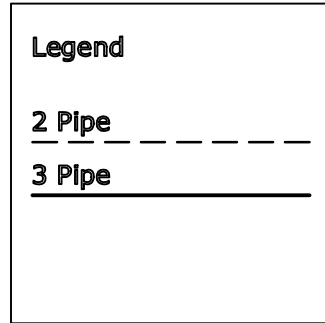


4 Typical Pipe Portal System Detail
M.103 N.T.S.

| AIR GRILLE/DIFFUSER SCHEDULE | | | | | | | | | | | | | NOTES |
|------------------------------|---------------------------------|---------------------------------|---------------------------|---------------|-------|--------------------------------|-----------|------------------|-----------------|--------|--------|--------|--|
| EQUIPMENT TAG | MANUFACTURER (OR ACCEPT. EQUAL) | MODEL | AIR DEVICE TYPE | AIRFLOW (CFM) | | MAX AIR PRESS. DROP (IN. W.C.) | MOUNTING | PANEL SIZE (IN.) | NECK SIZE (IN.) | MAX NC | DAMPER | FINISH | |
| | | | | MIN. | MAX. | | | | | | | | |
| D-1 | KRUEGER | RA2-10-03-0-01 | ADJUSTABLE ROUND DIFFUSER | 0 | 350 | 0.10 | DUCT MTD. | - | 10"Ø | 20 | OBD | MILL | MOUNT ON DUCT; VERIFY HEIGHT & VERTICAL/HORIZONTAL ADJUSTMENT W/ ENGINEER IN FIELD |
| R-1 | KRUEGER | EGC5-25x14-F22-NONE-08-00-04-01 | FILTER RETURN GRILLE | 0 | 1,000 | 0.10 | DUCT MTD. | - | 25"x14" | 20 | NONE | MILL | FURNISH & INSTALL W/ 25"x14" PRE-FILTER; FURNISH OWNER W/ (2) SETS OF ADDITIONAL FILTERS |

| AIR-COOLED HEAT PUMP SCHEDULE | | | | | | | | | | | | | | | | | | | | |
|-------------------------------|---------------------------------|------------------|---------------------|--------------------------|--------------------------|--------------------------|------------------------------------|-----------|-------------------------|------|------|-------------|---|-------------------------------|-------|-----|-------|-------|-------------|--|
| EQUIPMENT TAG | MANUFACTURER (OR ACCEPT. EQUAL) | MODEL | INDOOR UNITS SERVED | COMPRESSOR TYPE | NOM. COOL CAPACITY (MBH) | NOM. HEAT CAPACITY (MBH) | OUTDOOR OPERATING TEMP. RANGE (°F) | | AHRI EFFICIENCY RATINGS | | | REFRIGERANT | SOUND PRESSURE LEVEL COOLING/ HEATING (dBA) | ELECTRICAL POWER REQUIREMENTS | | | | | WEIGHT (LB) | NOTES |
| | | | | | | | COOLING | HEATING | EER | IEER | COP | | | VOLT | PHASE | Hz. | MCA | MOCp | | |
| HP-1 | HITACHI | PUHY-P144TKMU-A | IU-1 THRU 4 | INVERTER SCROLL HERMETIC | 144.0 | 160.0 | 23 TO 115 | -13 TO 60 | 11.8 | 20.2 | 3.72 | R410A | 61 | 208 | 3 | 60 | 53 | 60 | 697 | FURNISH W/ REQUIRED PIPING ACCESSORIES AS SHOWN ON RISER DIAGRAM |
| HP-2 | HITACHI | PUHY-P192TSKMU-A | IU-5 THRU 13 | INVERTER SCROLL HERMETIC | 192.0 | 215.0 | 23 TO 115 | -13 TO 60 | 12.5 | 19.1 | 3.61 | R410A | 62.5 | 208 | 3 | 60 | 45+25 | 50+30 | 1,127 | FURNISH W/ TWINNING KIT #CMY-Y100BK3 & REQUIRED PIPING ACCESSORIES AS SHOWN ON RISER DIAGRAM |
| HP-3 | HITACHI | PUHY-P168TSKMU-A | IU-14 THRU 22 | INVERTER SCROLL HERMETIC | 168.0 | 188.0 | 23 TO 115 | -13 TO 60 | 12.9 | 19.7 | 3.83 | R410A | 61 | 208 | 3 | 60 | 34+25 | 40+30 | 962 | FURNISH W/ TWINNING KIT #CMY-Y100BK3 & REQUIRED PIPING ACCESSORIES AS SHOWN ON RISER DIAGRAM |
| HP-4 | HITACHI | PUHY-P192TSKMU-A | IU-23 THRU 32 | INVERTER SCROLL HERMETIC | 192.0 | 215.0 | 23 TO 115 | -13 TO 60 | 12.5 | 19.1 | 3.61 | R410A | 62.5 | 208 | 3 | 60 | 45+25 | 50+30 | 1,127 | FURNISH W/ TWINNING KIT #CMY-Y100BK3 & REQUIRED PIPING ACCESSORIES AS SHOWN ON RISER DIAGRAM |
| HP-5 | HITACHI | PUHY-P216TSKMU-A | IU-32 THRU 41 | INVERTER SCROLL HERMETIC | 216.0 | 243.0 | 23 TO 115 | -13 TO 60 | 12.3 | 18.6 | 3.56 | R410A | 62.5 | 208 | 3 | 60 | 45+34 | 50+40 | 1,229 | FURNISH W/ TWINNING KIT #CMY-Y100BK3 & REQUIRED PIPING ACCESSORIES AS SHOWN ON RISER DIAGRAM |

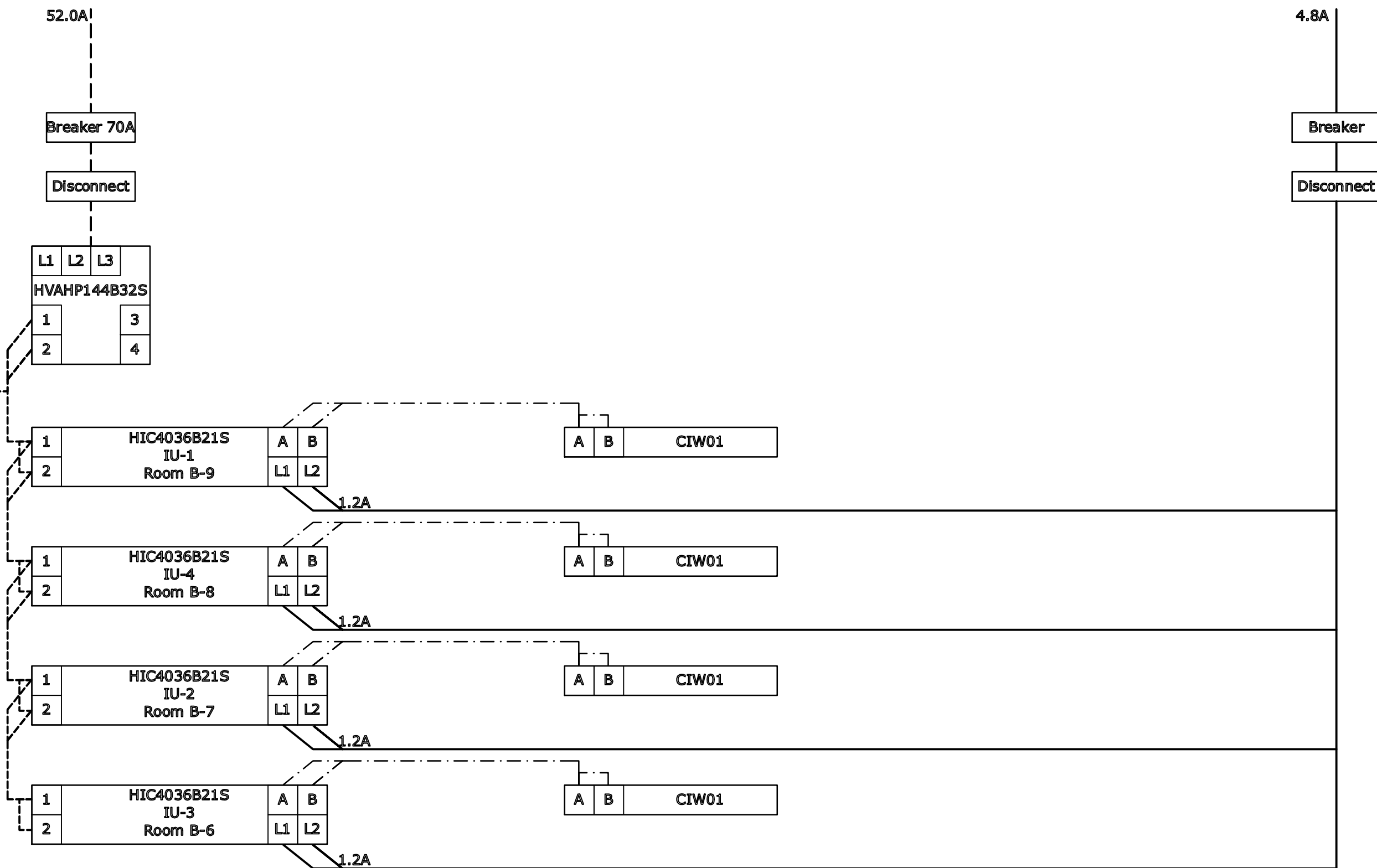
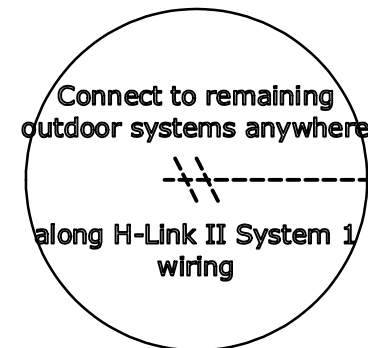
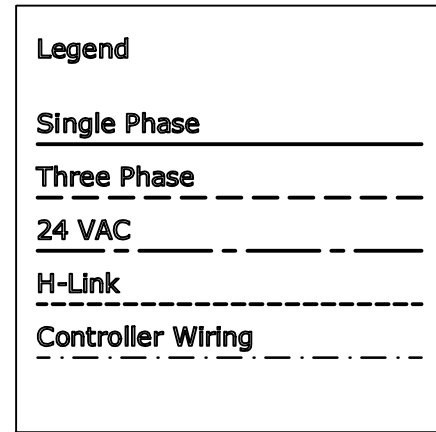
HP-1



1 Heat Pump HP-1 System Piping Diagram
M.104 Scale: NTS

NOTE:
REFRIGERANT PIPING CONFIGURATION AND SIZES ARE
SPECIFIC TO EQUIPMENT MANUFACTURER AND MAY VARY.
VERIFY PIPING SIZES AND ACTUAL PIPING LAYOUT BASED ON
FIELD CONDITIONS AND MANUFACTURER REQUIREMENTS.

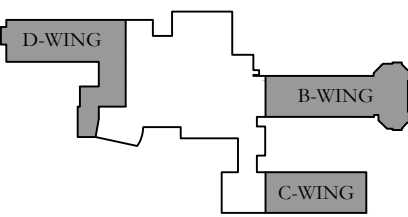
HP-1



2 Heat Pump HP-1 System Wiring Diagram
M.104 Scale: NTS

KEY PLAN:

'CORNWALL CENTRAL
MIDDLE SCHOOL'

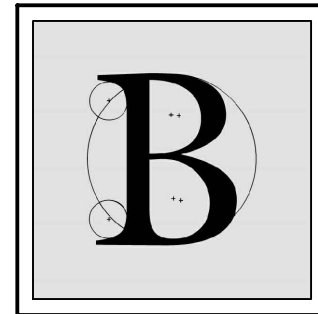


PROJECT:

CORNWALL CENTRAL
MIDDLE SCHOOL
B, C & D WING AIR-
CONDITIONING PROJECT
122 MAIN STREET
CORNWALL, NEW YORK 12518

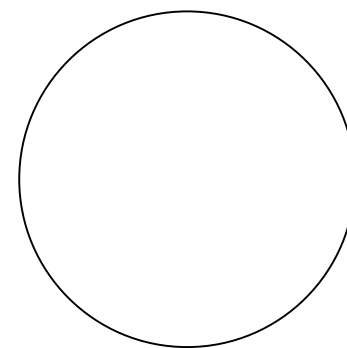
SUB-CONSULTANT:

ENGINEER:



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ENGINEERING PLLC

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WESTTOWN, NEW YORK 10998
TEL:845-467-9207 FAX:845-767-5050
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SIGNED AND SEALED BY ENGINEER

MATTHEW G. BLAKE, P.E., LEED AP
NY - 89039 NJ - GE050037 PA - PE079303
MA - 53197 CT - 32283 FL - 85928

HEAT PUMP HP-1 SYSTEM
RISER DIAGRAMS

| DATE | | DRN | CHK | DESCRIPTION |
|------------|------|-----|-----|-------------|
| 11.14.2022 | | MGB | MGB | BID SET |
| | | | | |
| | | | | |
| | | | | |
| REV. | DATE | DRN | CHK | DESCRIPTION |
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PROJECT NO.

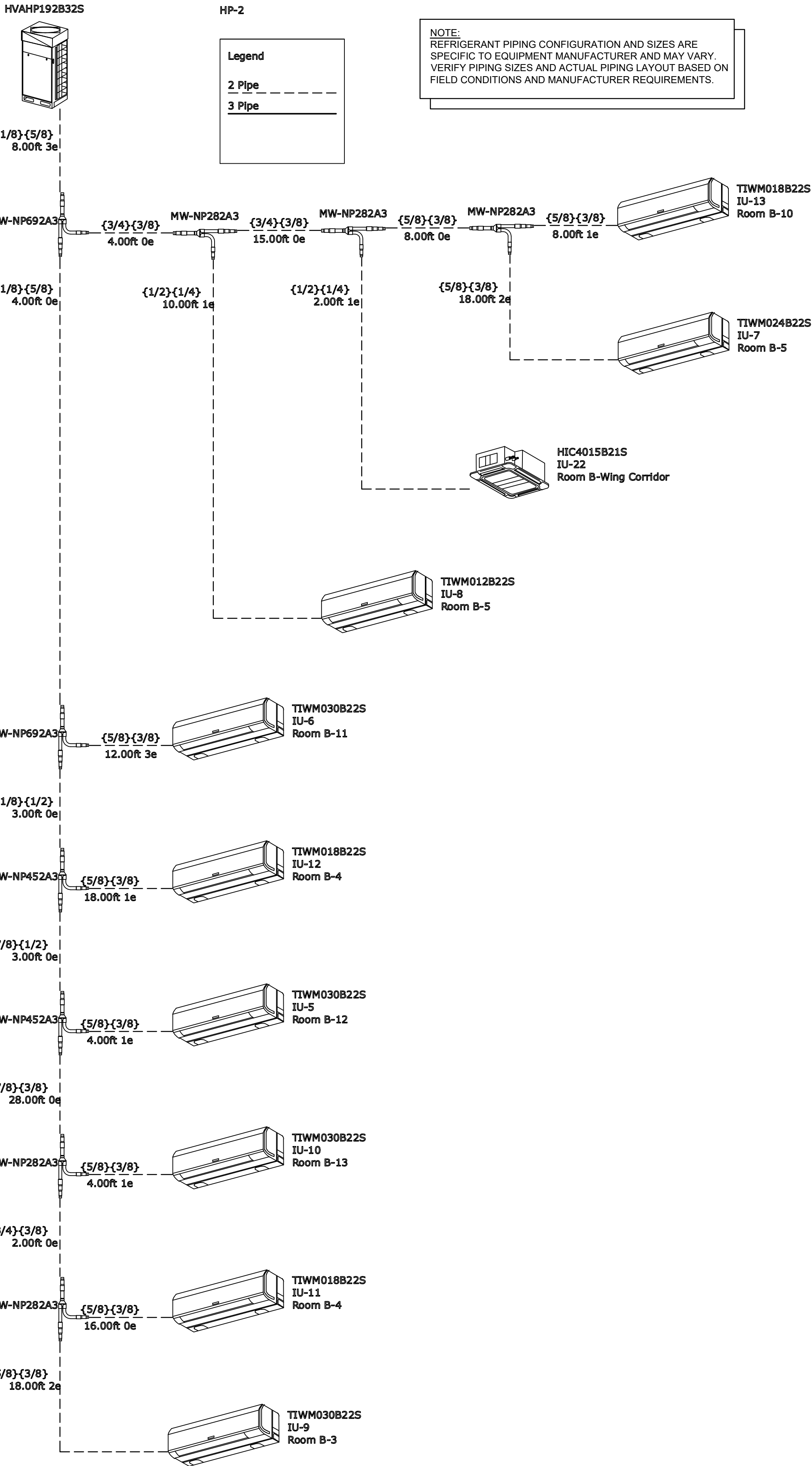
1814

SHEET NO.

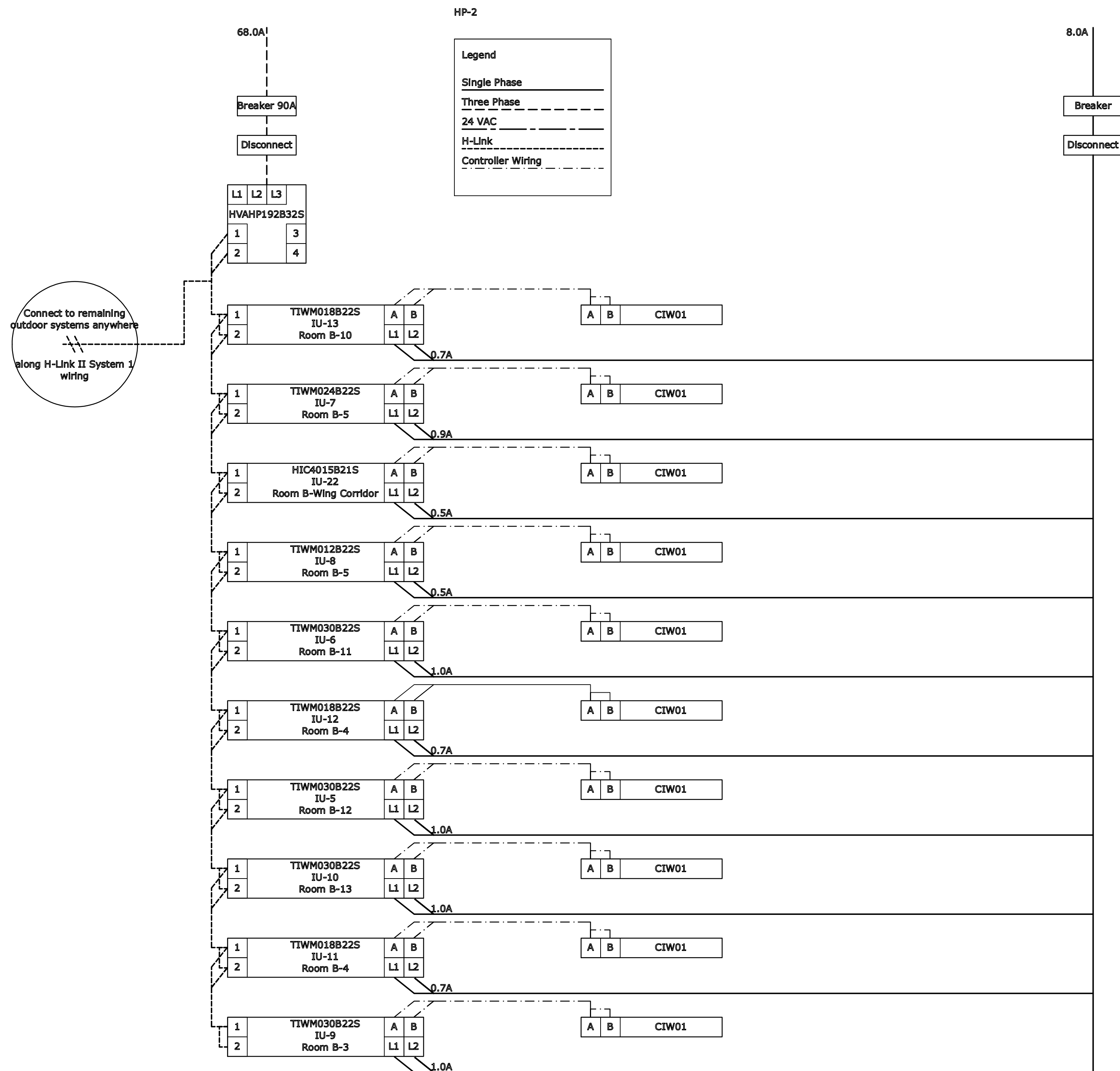
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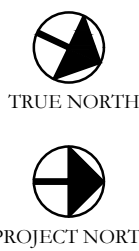
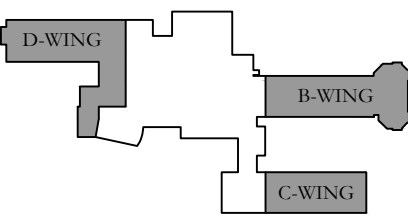
1 Heat Pump HP-2 System Piping Diagram
Scale: NTS



2 Heat Pump HP-2 System Wiring Diagram
Scale: NTS

KEY PLAN:

'CORNWALL CENTRAL
MIDDLE SCHOOL'

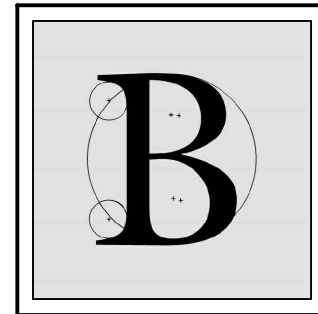


PROJECT:

CORNWALL CENTRAL
MIDDLE SCHOOL
B, C & D WING AIR-
CONDITIONING PROJECT
122 MAIN STREET
CORNWALL, NEW YORK 12518

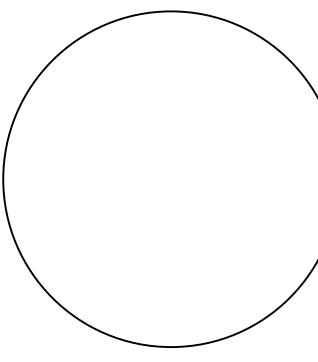
SUB-CONSULTANT:

ENGINEER:



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ENGINEERING PLLC

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SIGNED AND SEALED BY ENGINEER

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MA - 53197 CT - 32283 FL - 85928

HEAT PUMP HP-2 SYSTEM
RISER DIAGRAMS

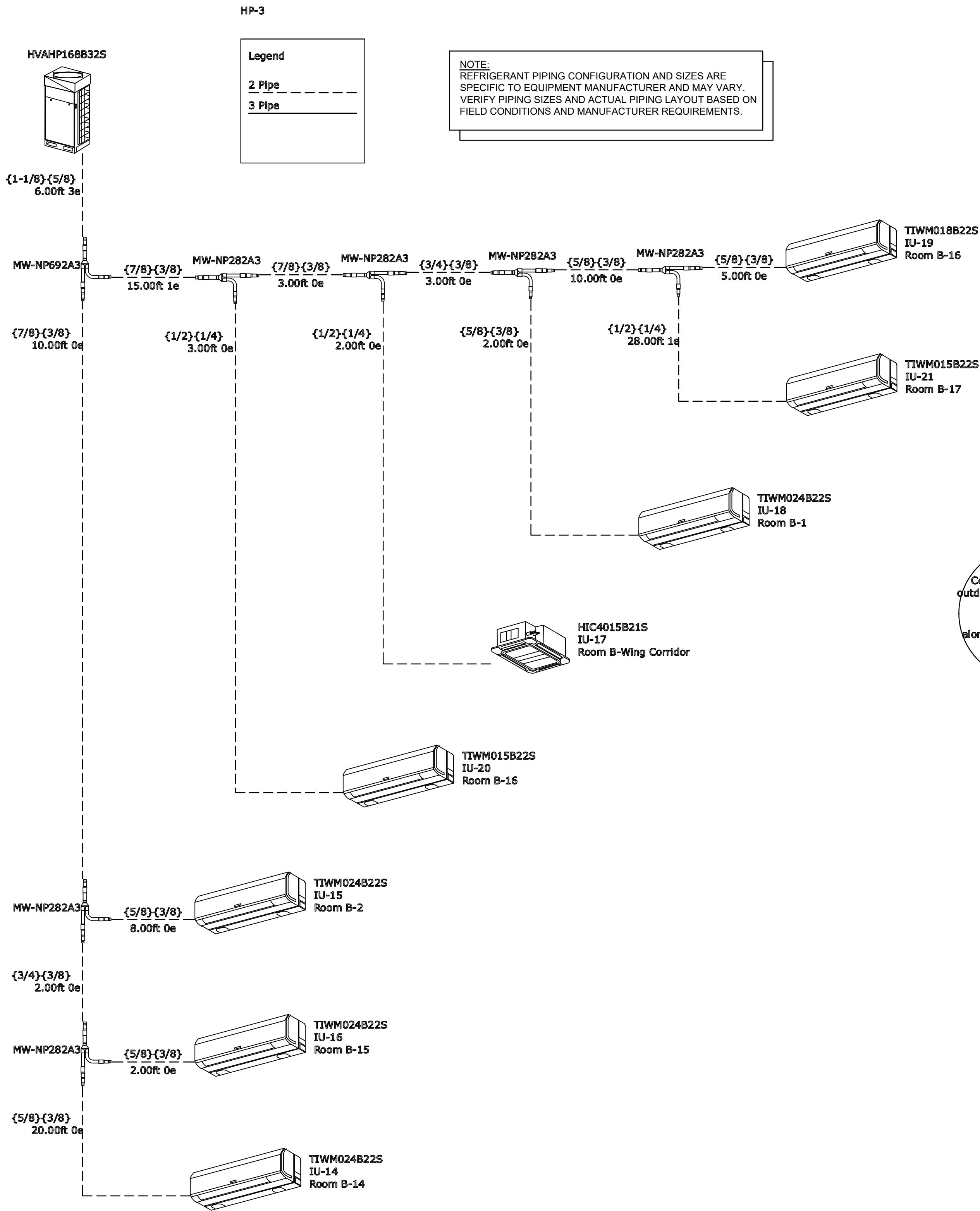
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|------------|-----|-----|-------------|
| 11.14.2022 | MGB | MGB | BID SET |

| REV. | DATE | DRN | CHK | DESCRIPTION |
|------|------|-----|-----|-------------|
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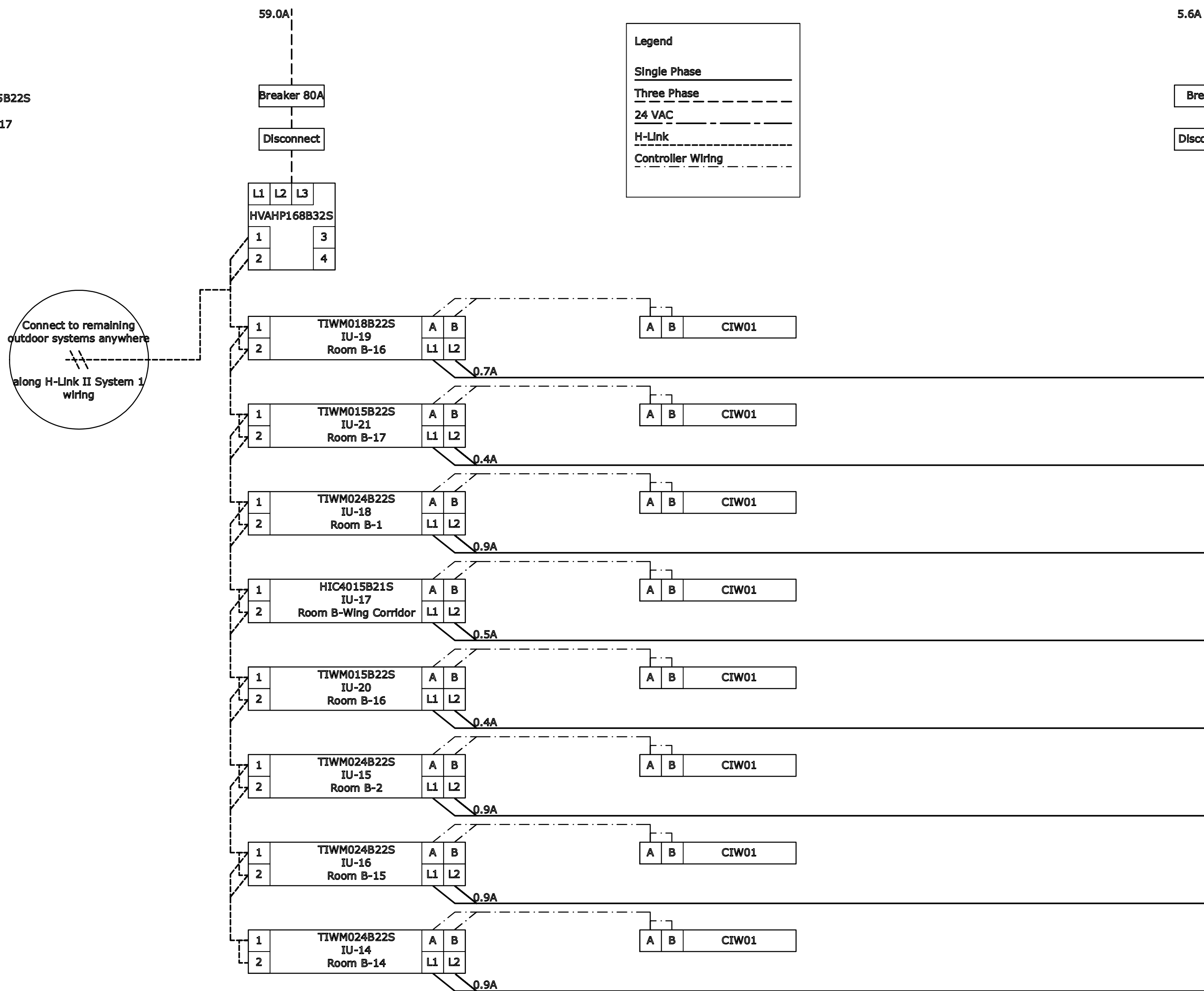
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|-------------|-----------|
| 1814 | M.105 |

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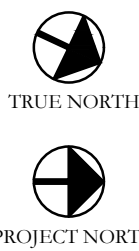
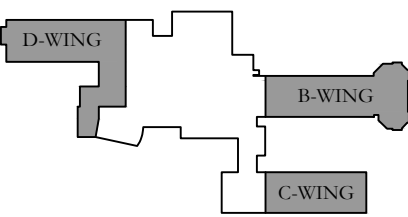
1 Heat Pump HP-3 System Piping Diagram
M.106 Scale: NTS



2 Heat Pump HP-3 System Wiring Diagram
M.106 Scale: NTS

KEY PLAN:

'CORNWALL CENTRAL
MIDDLE SCHOOL'

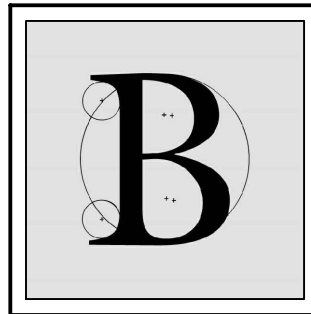


PROJECT:

CORNWALL CENTRAL
MIDDLE SCHOOL
B, C & D WING AIR-
CONDITIONING PROJECT
122 MAIN STREET
CORNWALL, NEW YORK 12518

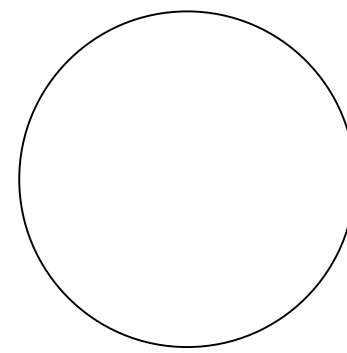
SUB-CONSULTANT:

ENGINEER:



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WESTTOWN, NEW YORK 10998
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MA - 53197 CT - 32283 FL - 85928

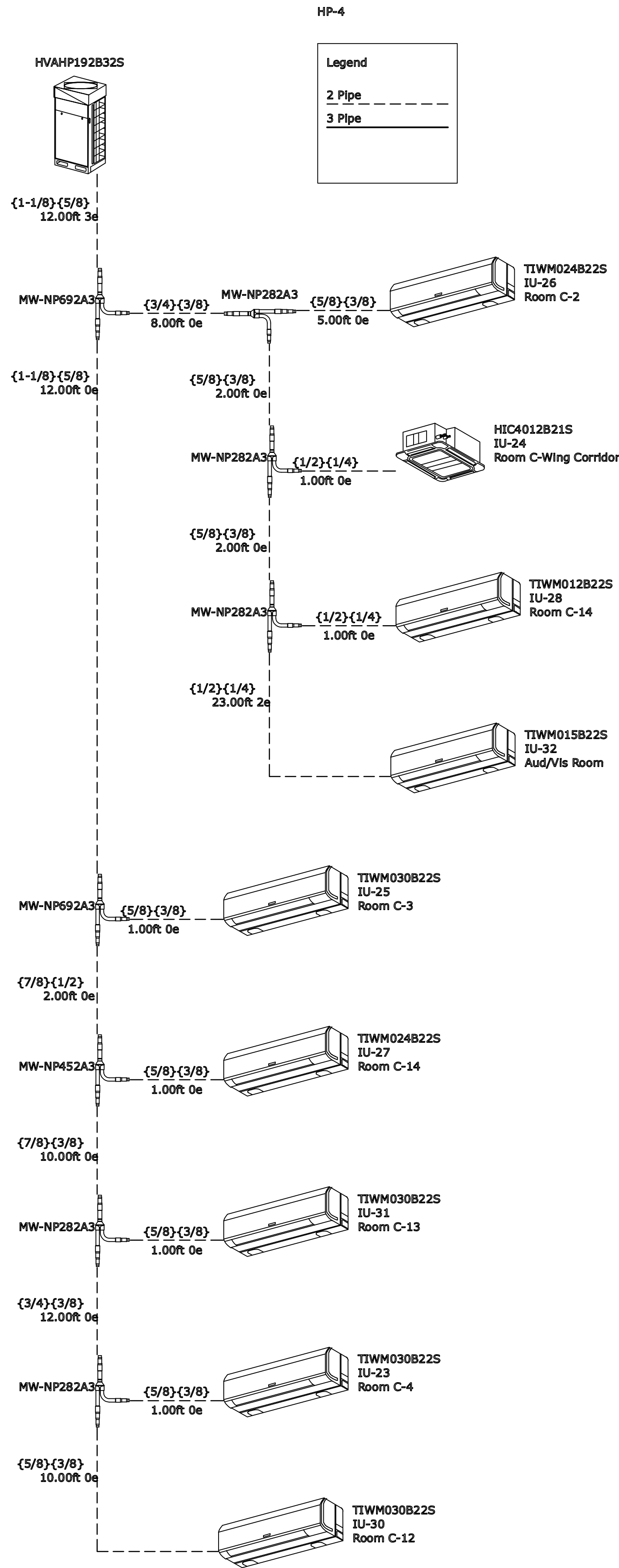
HEAT PUMP HP-3 SYSTEM
RISER DIAGRAMS

| DATE: | | DRN | CHK | DESCRIPTION |
|------------|-------|-----|-----|-------------|
| 11.14.2022 | | MGB | MGB | BID SET |
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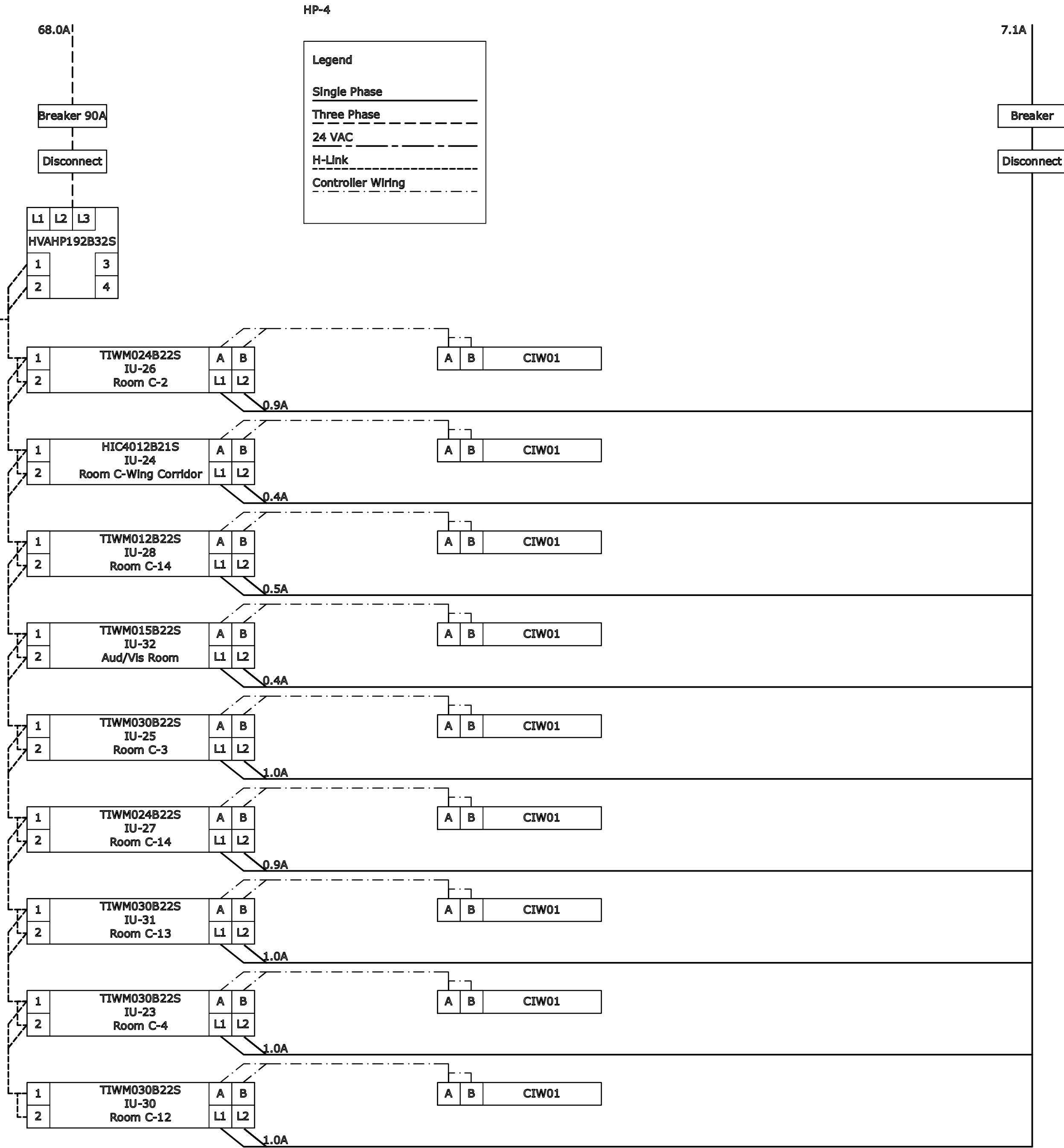
| PROJECT NO. | SHEET NO. |
|-------------|-----------|
| 1814 | M.106 |

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Connect to remaining
outdoor systems anywhere
along H-Link II System 1
wiring



2
M.107

Heat Pump HP-4 System Wiring Diagram

Scale: NTS

1
M.107

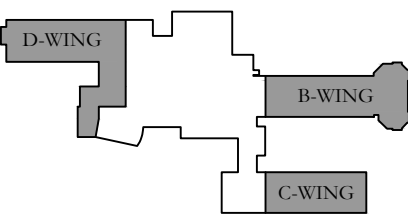
Heat Pump HP-4 System Piping Diagram

Scale: NTS

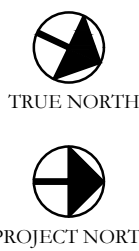
NOTE:
REFRIGERANT PIPING CONFIGURATION AND SIZES ARE
SPECIFIC TO EQUIPMENT MANUFACTURER AND MAY VARY.
VERIFY PIPING SIZES AND ACTUAL PIPING LAYOUT BASED ON
FIELD CONDITIONS AND MANUFACTURER REQUIREMENTS.

KEY PLAN:

'CORNWALL CENTRAL
MIDDLE SCHOOL'



MAIN STREET

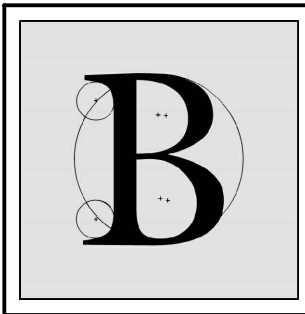


PROJECT:

CORNWALL CENTRAL
MIDDLE SCHOOL
B, C & D WING AIR-
CONDITIONING PROJECT
122 MAIN STREET
CORNWALL, NEW YORK 12518

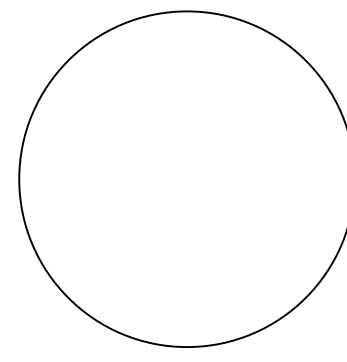
SUB-CONSULTANT:

ENGINEER:



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HEAT PUMP HP-4 SYSTEM
RISER DIAGRAMS

| DATE: | DRN | CHK | DESCRIPTION |
|------------|-----|-----|-------------|
| 11.14.2022 | MGB | MGB | BID SET |

| REV. | DATE | DRN | CHK | DESCRIPTION |
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PROJECT NO.

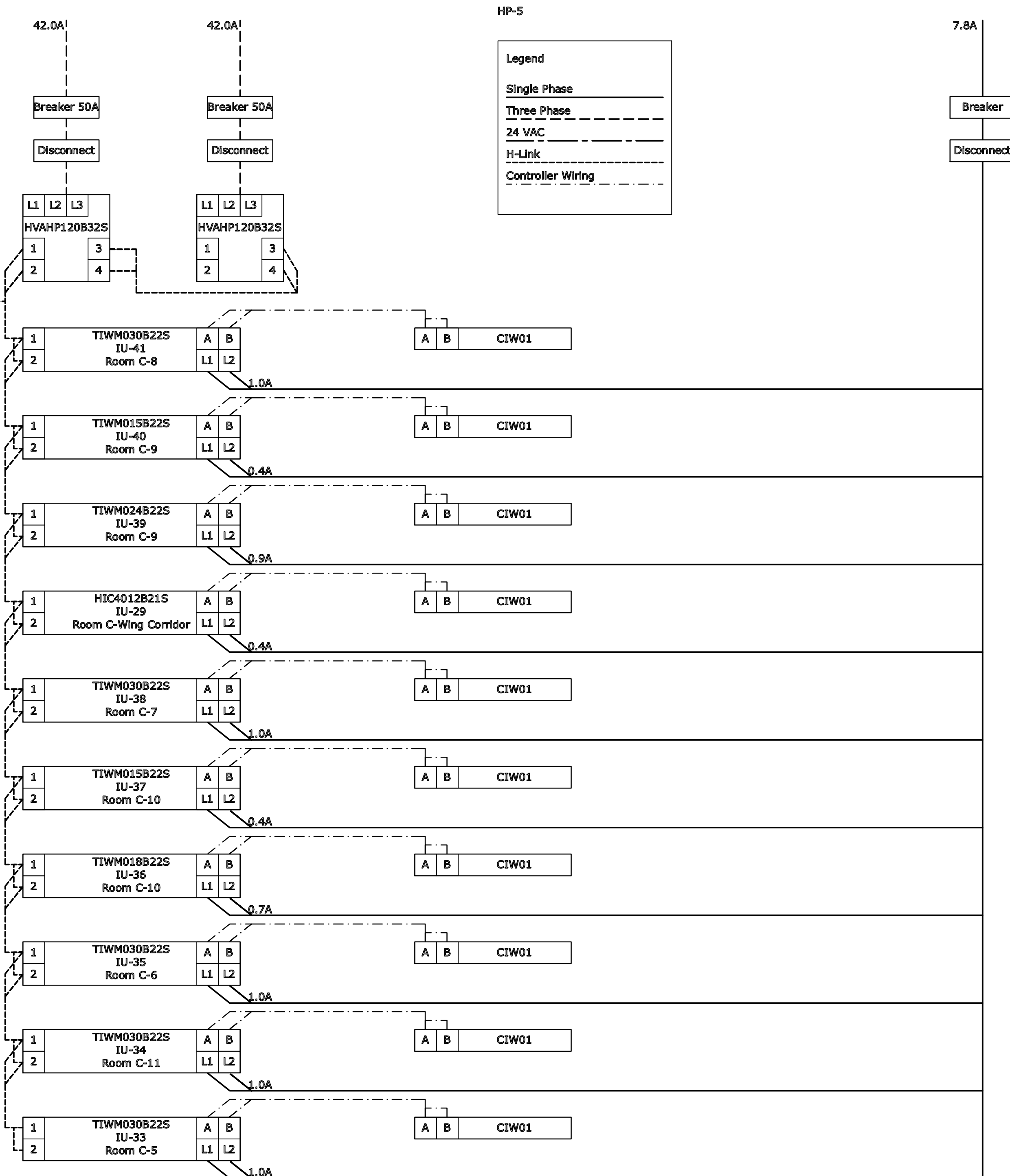
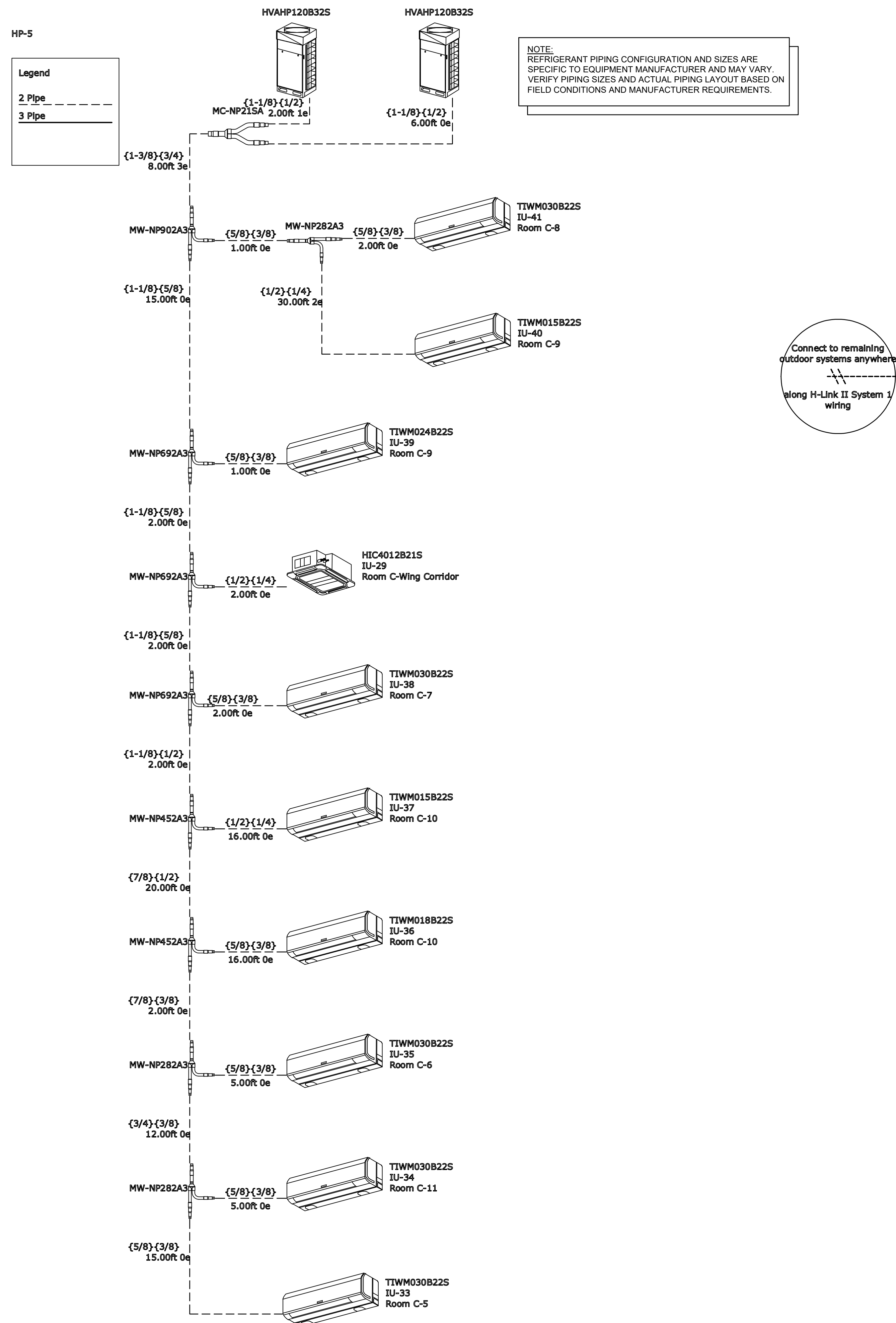
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SHEET NO.

M.107

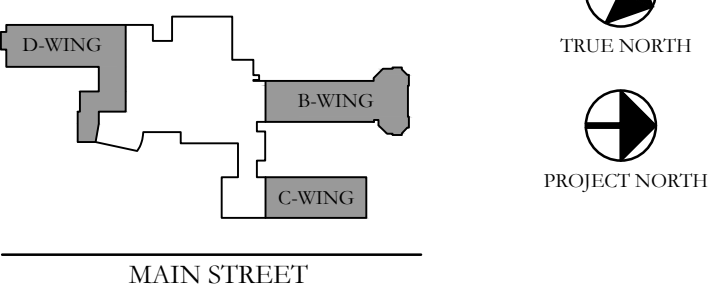
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KEY PLAN:

'CORNWALL CENTRAL
MIDDLE SCHOOL'

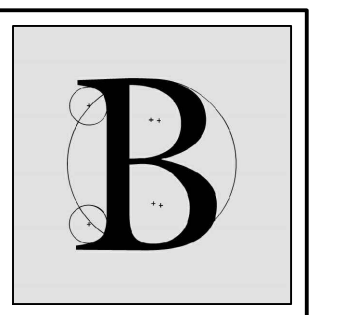


PROJECT:

CORNWALL CENTRAL
MIDDLE SCHOOL
B, C & D WING AIR-
CONDITIONING PROJECT
122 MAIN STREET
CORNWALL, NEW YORK 12518

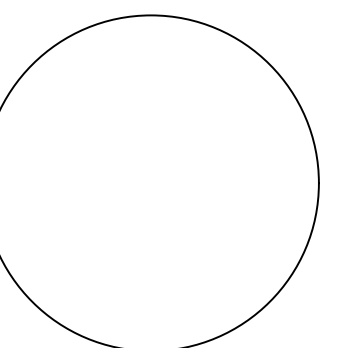
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HEAT PUMP HP-5 SYSTEM RISER DIAGRAMS

| DATE: | | DRN | CHK | DESCRIPTION |
|------------|-------|-----|-----|-------------|
| 11.14.2022 | | MGB | MGB | BID SET |
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PROJECT NO.

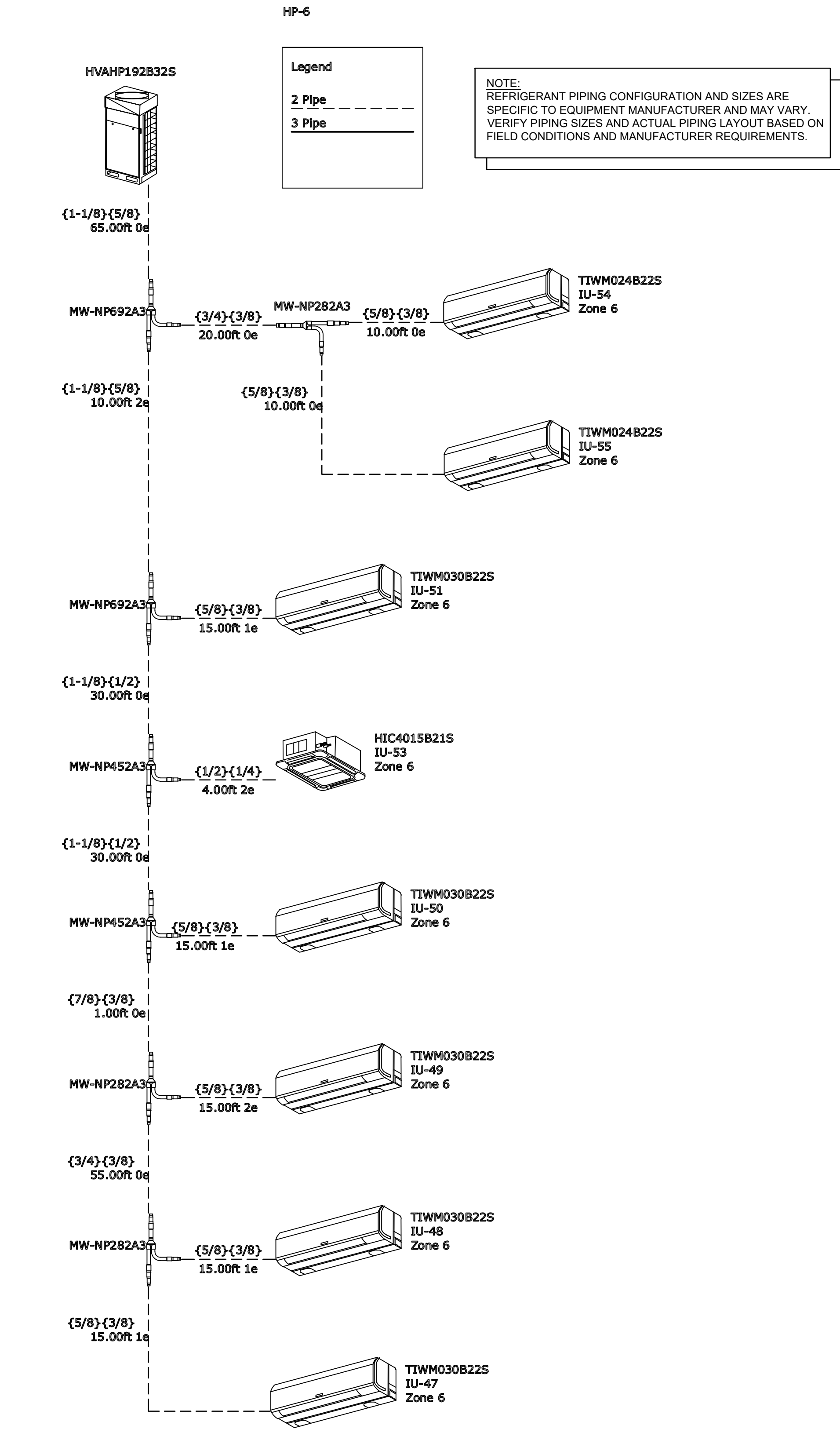
1814

SHEET NO.

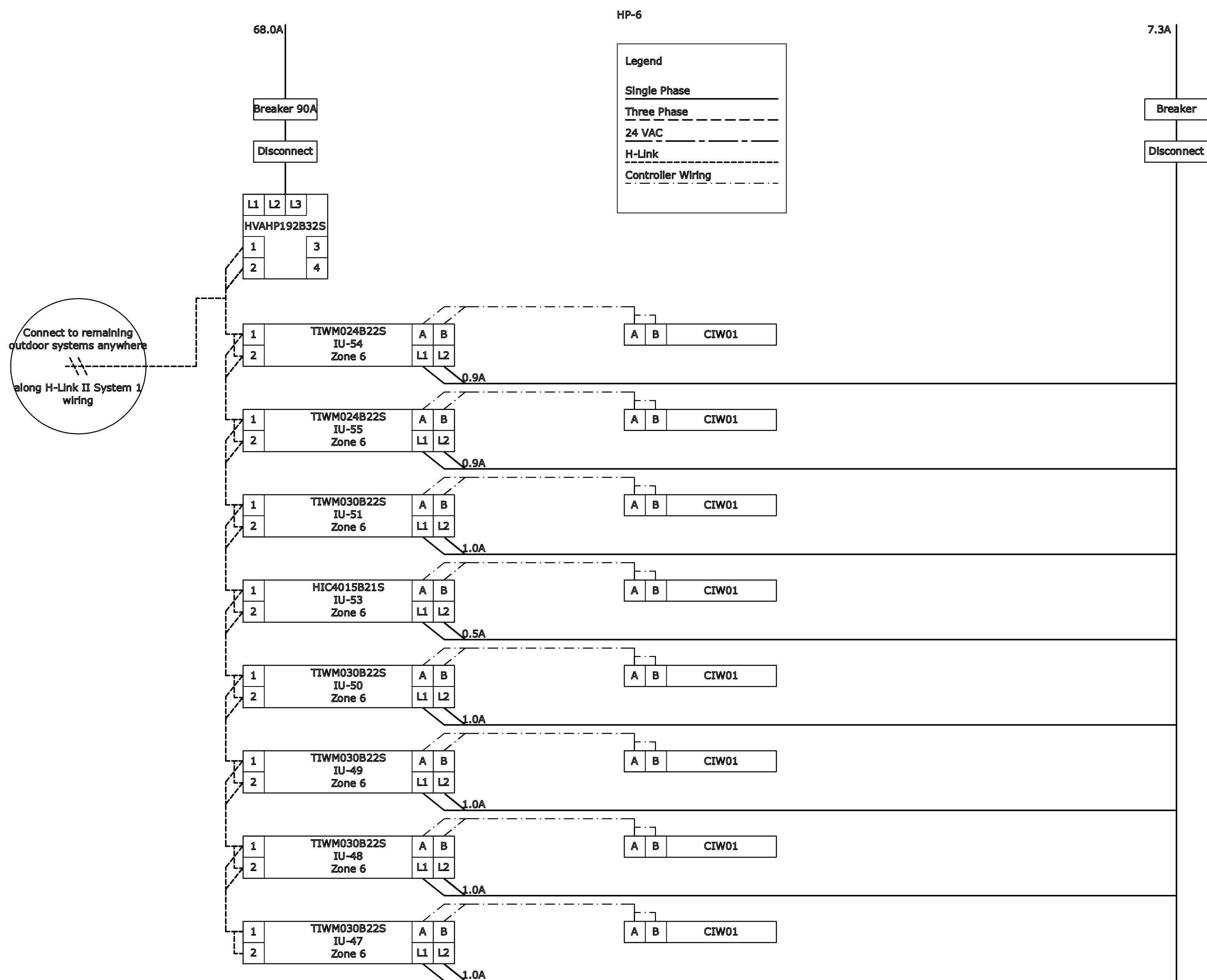
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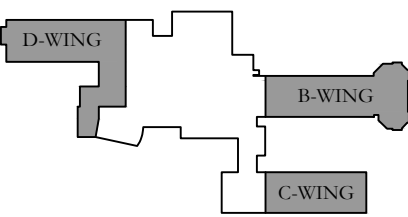
1 Heat Pump HP-6 System Piping Diagram
M.109 Scale: NTS



2 Heat Pump HP-6 System Wiring Diagram
M.109 Scale: NTS

KEY PLAN:

'CORNWALL CENTRAL
MIDDLE SCHOOL'



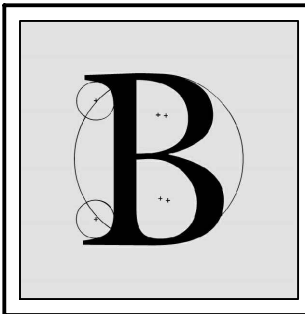
MAIN STREET

PROJECT:

CORNWALL CENTRAL
MIDDLE SCHOOL
B, C & D WING AIR-
CONDITIONING PROJECT
122 MAIN STREET
CORNWALL, NEW YORK 12518

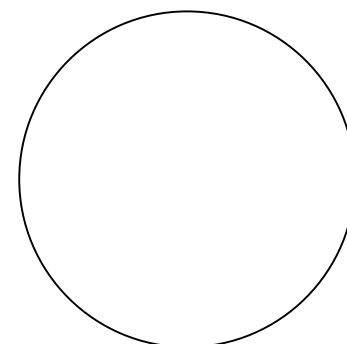
SUB-CONSULTANT:

ENGINEER:



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**HEAT PUMP HP-6 SYSTEM
RISER DIAGRAMS**

| DATE: | | DRN | CHK | DESCRIPTION |
|------------|-------|-----|-----|-------------|
| 11.14.2022 | | MGB | MGB | BID SET |
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| REV. | DATE: | DRN | CHK | DESCRIPTION |
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| PROJECT NO. | SHEET NO. |
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| 1814 | M.109 |

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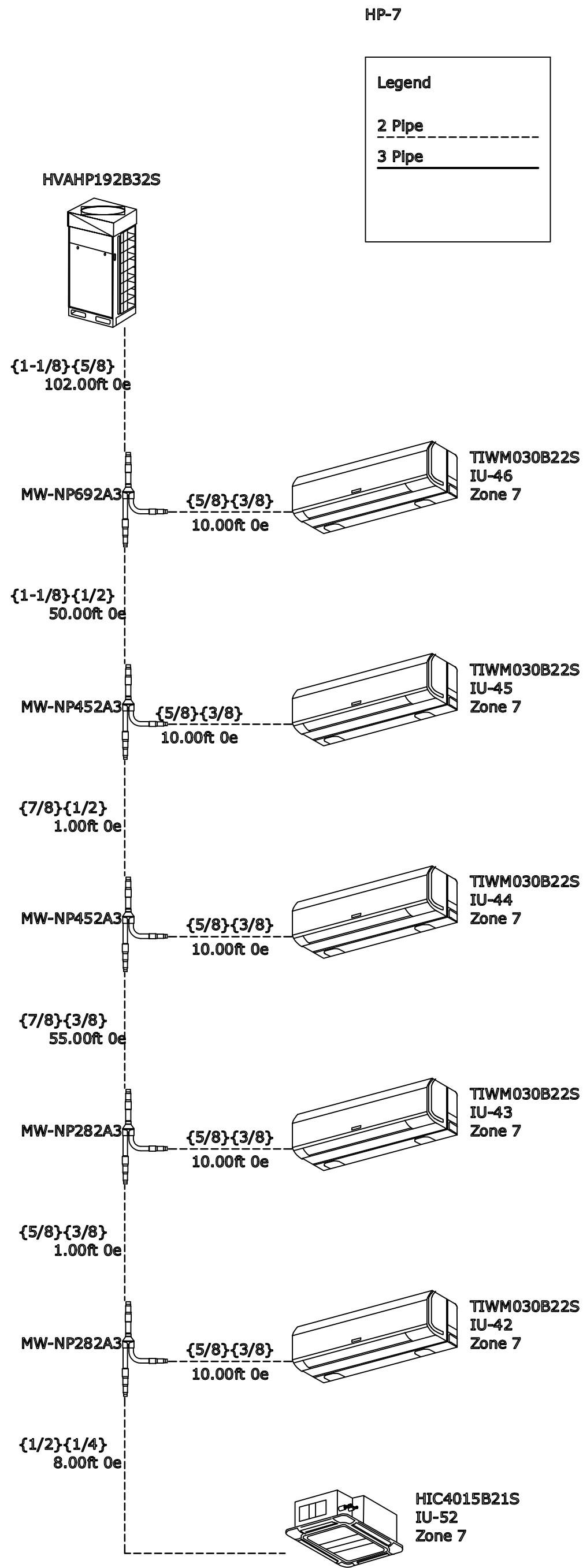
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1
M.110

Heat Pump HP-7 System Piping Diagram

Scale: NTS

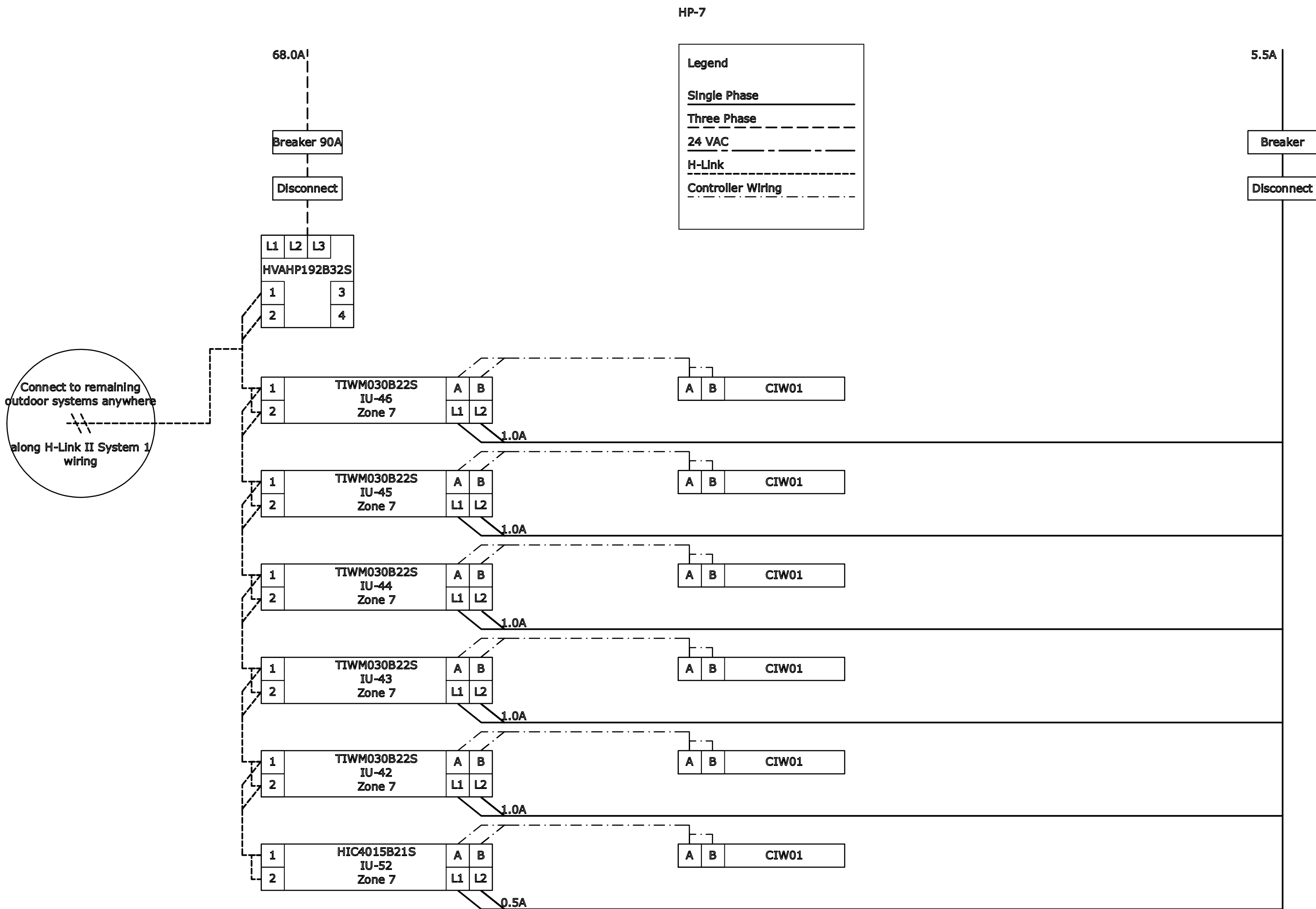
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2
M.110

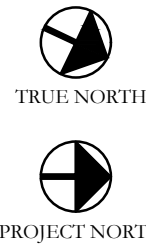
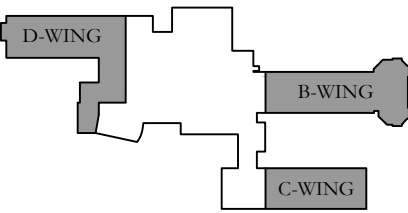
Heat Pump HP-7 System Wiring Diagram

Scale: NTS



KEY PLAN:

'CORNWALL CENTRAL
MIDDLE SCHOOL'

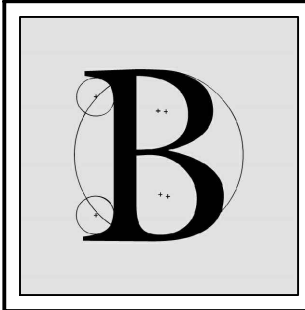


PROJECT:

CORNWALL CENTRAL
MIDDLE SCHOOL
B, C & D WING AIR-
CONDITIONING PROJECT
122 MAIN STREET
CORNWALL, NEW YORK 12518

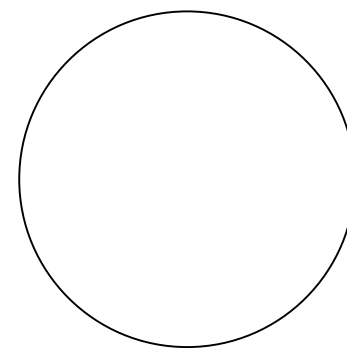
SUB-CONSULTANT:

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HEAT PUMP HP-7 SYSTEM
RISER DIAGRAMS

| DATE: | | DRN | CHK | DESCRIPTION |
|------------|-------|-----|-----|-------------|
| 11.14.2022 | | MGB | MGB | BID SET |
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PROJECT NO.

1814

SHEET NO.

M.110

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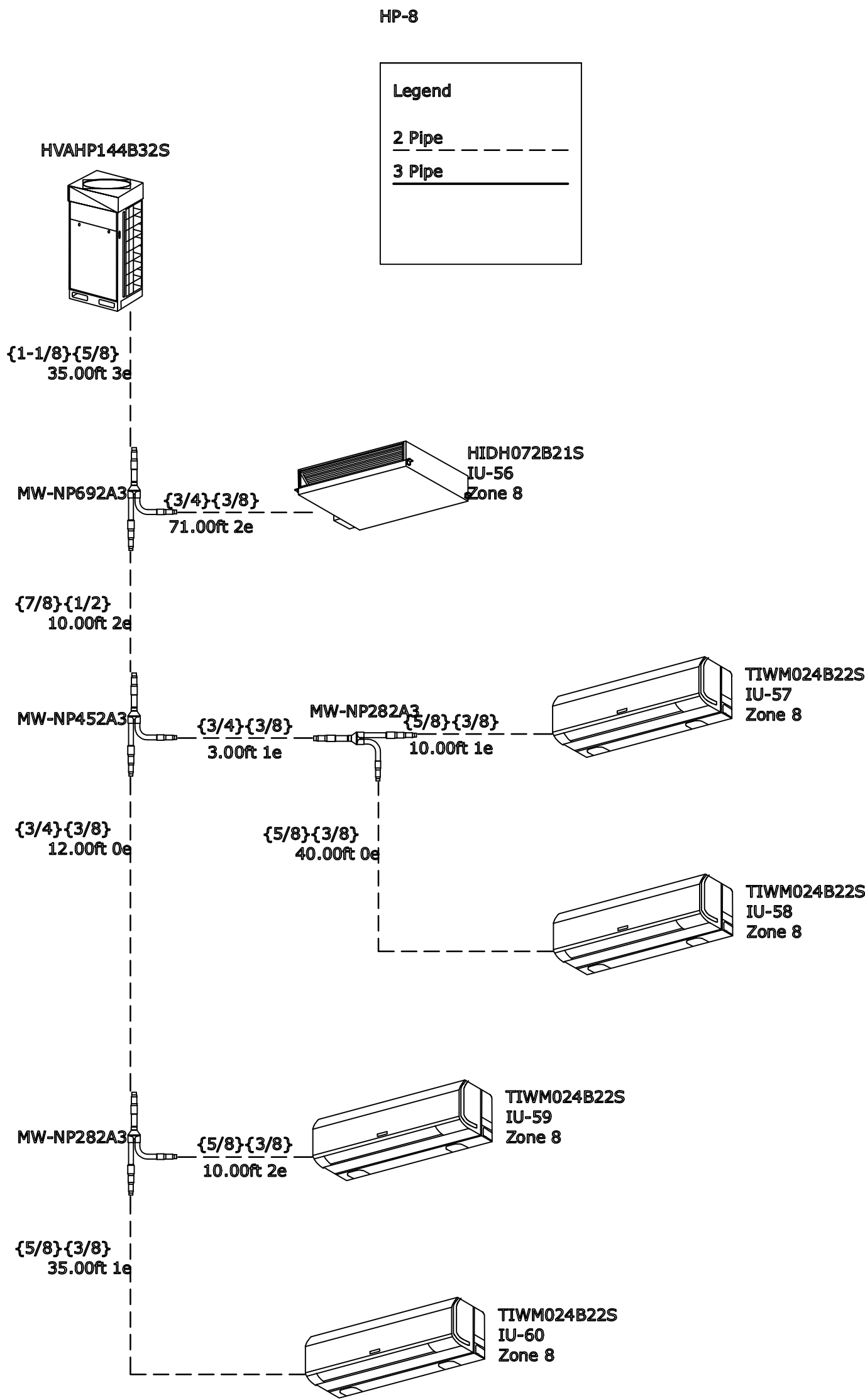
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1
M.111

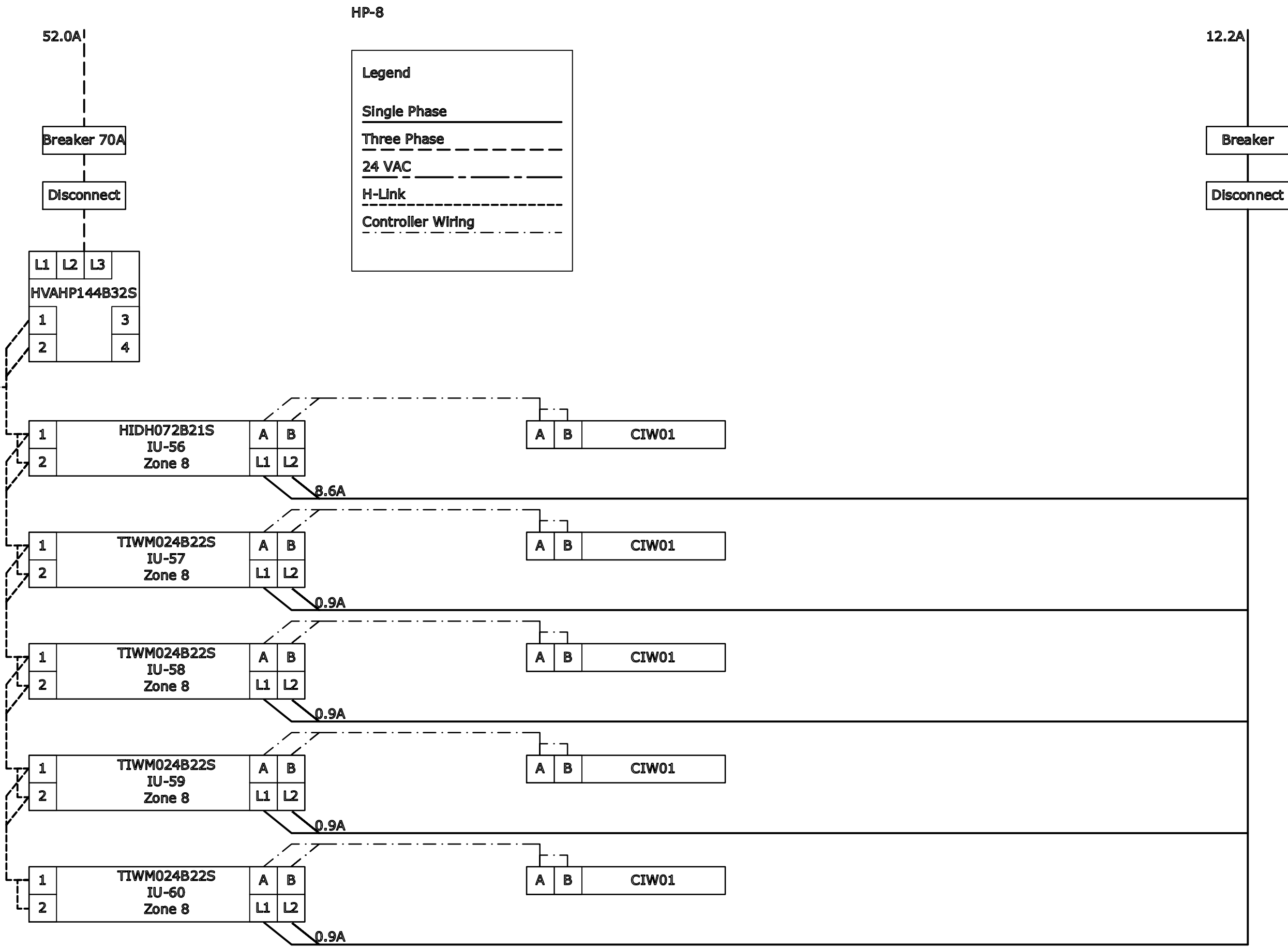
Heat Pump HP-8 System Piping Diagram

Scale: NTS

NOTE:
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VERIFY PIPING SIZES AND ACTUAL PIPING LAYOUT BASED ON
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Connect to remaining
outdoor systems anywhere
along H-Link II System 1
wiring



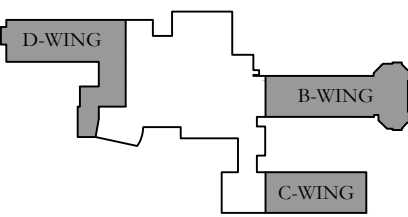
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M.111

Heat Pump HP-8 System Wiring Diagram

Scale: NTS

KEY PLAN:

'CORNWALL CENTRAL
MIDDLE SCHOOL'

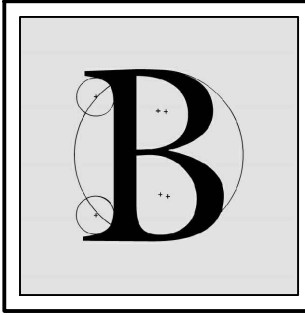


PROJECT:

CORNWALL CENTRAL
MIDDLE SCHOOL
B, C & D WING AIR-
CONDITIONING PROJECT
122 MAIN STREET
CORNWALL, NEW YORK 12518

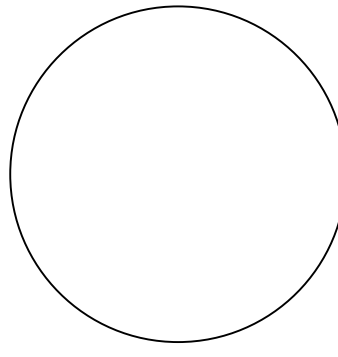
SUB-CONSULTANT:

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HEAT PUMP HP-8 SYSTEM
RISER DIAGRAMS

| DATE: | | DRN | CHK | DESCRIPTION |
|------------|-------|-----|-----|-------------|
| 11.14.2022 | | MGB | MGB | BID SET |
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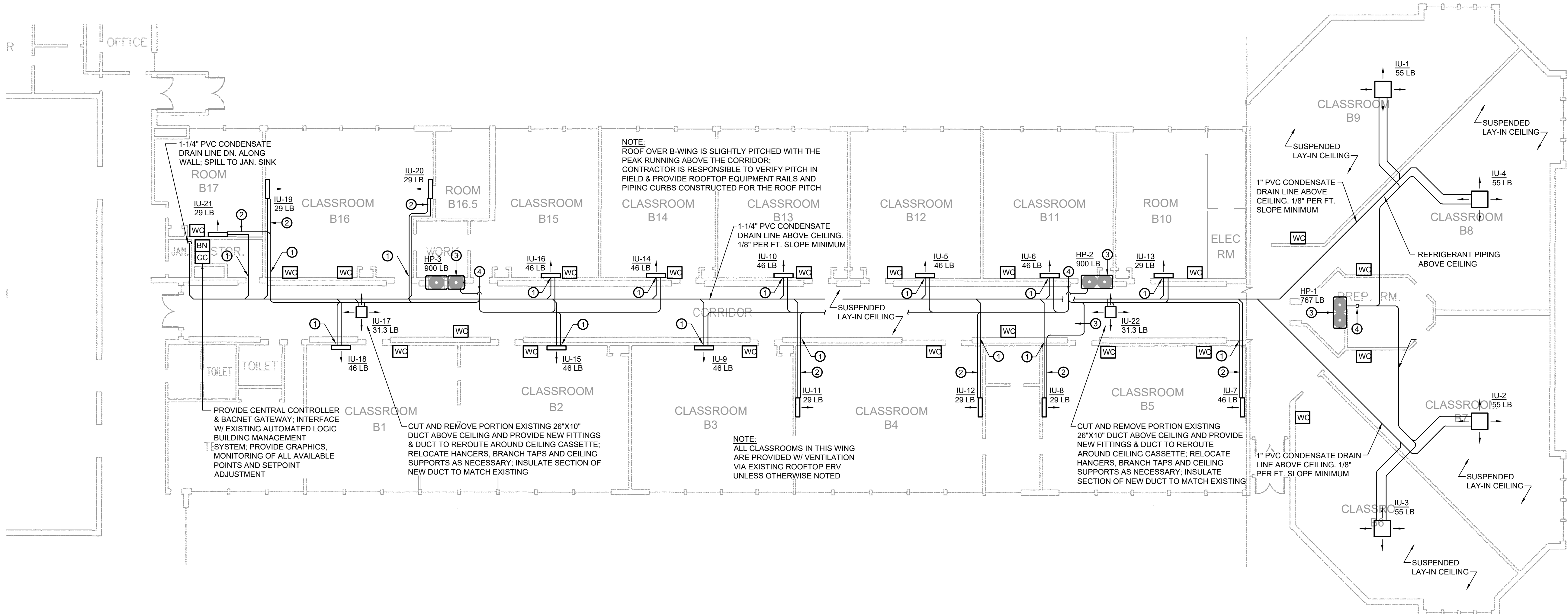
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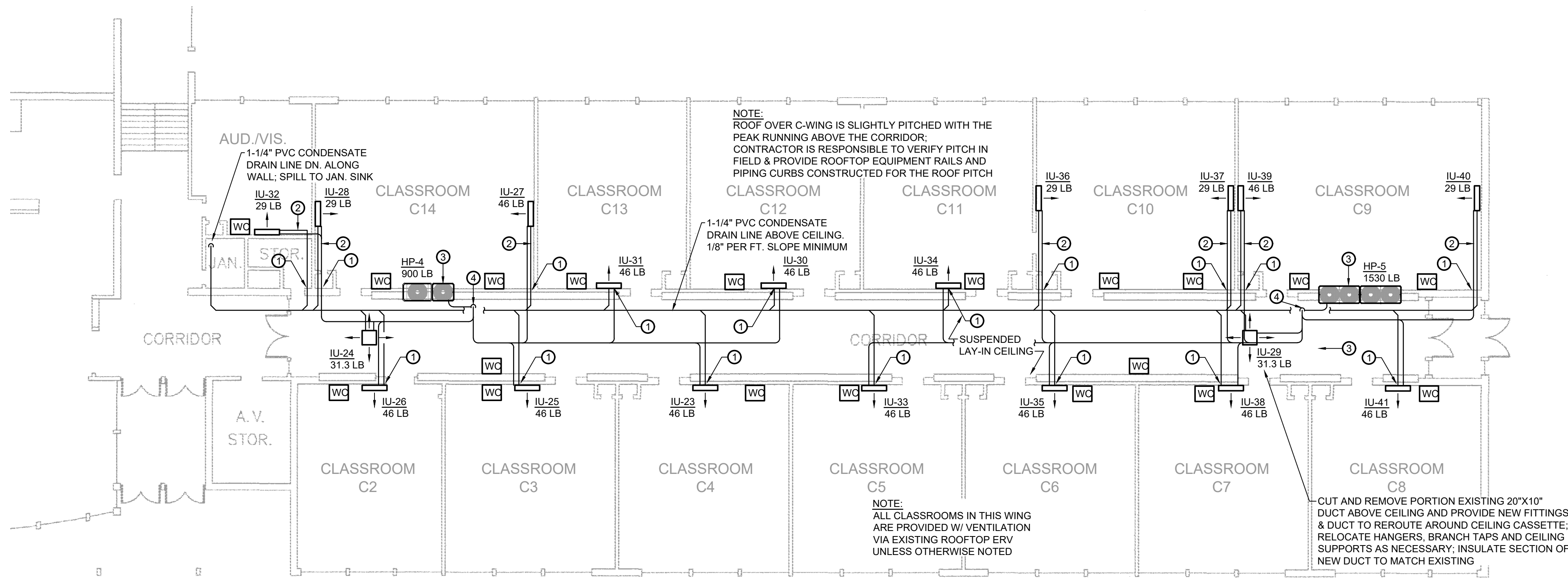
M.111

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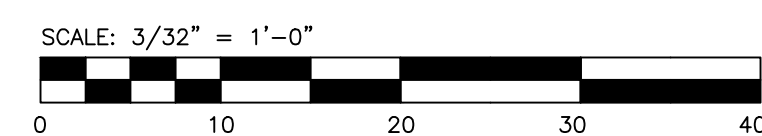
1 B-Wing Equipment Layout Plan
M.201 Scale: 3/32" = 1'-0"



2 C-Wing Equipment Layout Plan
M.201 Scale: 3/32" = 1'-0"

- GENERAL NOTES:**
- ALL SPACES WITHIN SCOPE OF WORK ARE PROVIDED WITH VENTILATION AIR DURING OCCUPIED HOURS VIA EXISTING EQUIPMENT. EXISTING SYSTEM TO BE MAINTAINED. NEW EQUIPMENT WILL OPERATE IN CONJUNCTION WITH EXISTING VENTILATION TO PROVIDE COOLING AND HEATING.
 - ALL B & C-WING CLASSROOMS HAVE INACCESSIBLE SPLINE CEILINGS UNLESS OTHERWISE NOTED.
 - ALL D-WING CLASSROOMS HAVE ACCESSIBLE SPLAY-INLINE CEILINGS UNLESS OTHERWISE NOTED.
 - ROUTE REFRIGERANT PIPING, POWER & CONTROLS ABOVE CORRIDOR SUSPENDED LAY-IN CEILING. CONTRACTOR RESPONSIBLE TO REMOVE AND REINSTALL TILES AND GRID INCLUDING LIGHTING AND ANY CEILING DEVICES AS NECESSARY TO COMPLETE INSTALLATION. ANY TILES DAMAGED DURING CONSTRUCTION SHALL BE REPLACED IN KIND TO MATCH EXISTING.
 - ALL ROOF PENETRATIONS ARE TO BE INSTALLED USING PIPE CURB ASSEMBLIES TYPICAL OF PATE (OR EQUAL) & FLASHED IN ACCORDANCE W/ ROOFING MANUFACTURER'S REQUIREMENTS TO MAINTAIN EXISTING WARRANTY.
 - REFER TO SHEET M.103 FOR REFRIGERANT PIPING DIAGRAMS. FIELD VERIFY EXACT ROUTING.

- PLAN KEY NOTES:**
- ROUTE REFRIGERANT PIPING, CONDENSATE PIPING, POWER & CONTROLS ABOVE CEILING & THRU CORRIDOR WALL TO ABOVE CORRIDOR CEILING. PROVIDE FIRESTOP ASSEMBLY AT EVERY PENETRATION OF CORRIDOR FIRE WALL, TYPICAL
 - SUSPEND AHU FROM STRUCTURE ABOVE W/ BEAM CLAMPS, 1/2" THREADED ROD & VIBRATION ISOLATION
 - FURNISH & INSTALL EQUIPMENT SUPPORT RAILS TYPICAL OF PATE (OR EQUAL); SEE DETAIL ON SHEET M.102; FLASH INTO EXISTING ROOFING SYSTEM
 - REFRIGERANT PIPING, POWER & CONTROLS UP THRU ROOF TO HEAT PUMP; FURNISH & INSTALL PIPING PORTAL & FLASH INTO EXISTING ROOFING SYSTEM



KEY PLAN:

'CORNWALL CENTRAL MIDDLE SCHOOL'

MAIN STREET

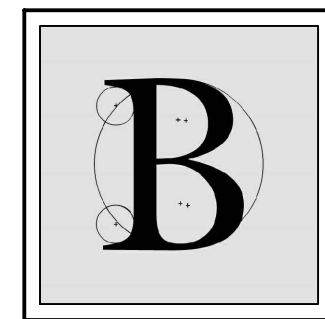
TRUE NORTH
PROJECT NORTH

PROJECT:

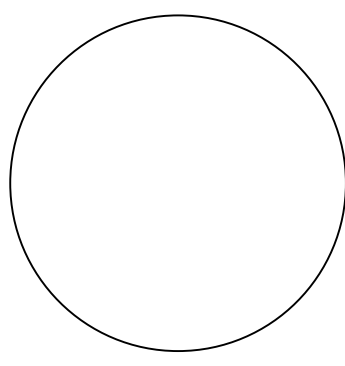
CORNWALL CENTRAL MIDDLE SCHOOL
B, C & D WING AIR-CONDITIONING PROJECT
122 MAIN STREET
CORNWALL, NEW YORK 12518

SUB-CONSULTANT:

ENGINEER:



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B & C-WING EQUIPMENT LAYOUT PLAN

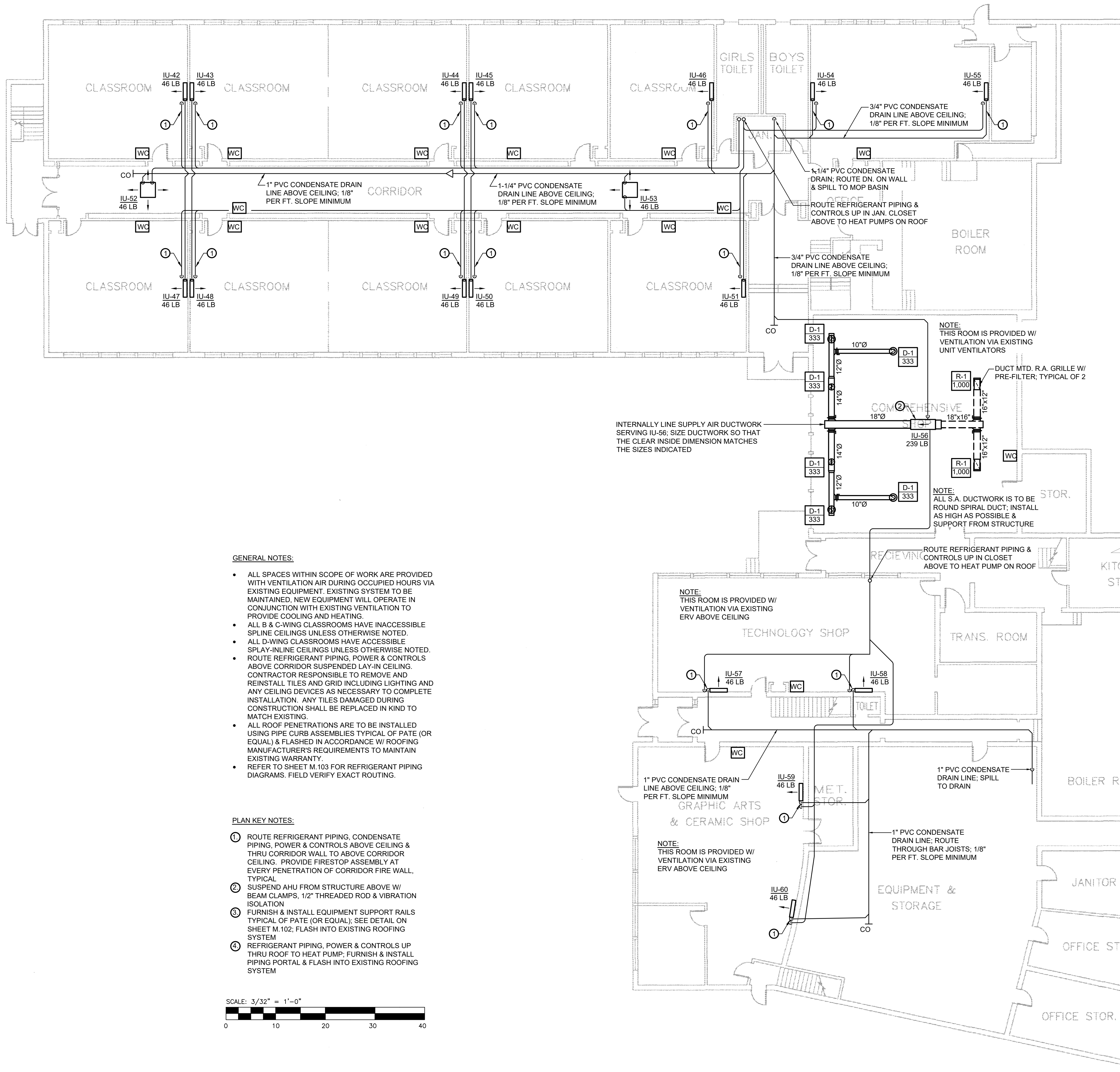
| DATE: | DRN: | CHK: | DESCRIPTION: |
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| 11.14.2022 | MGB | MGB | BID SET |

| REV. | DATE | DRN | CHK | DESCRIPTION |
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| 1814 | M.201 |

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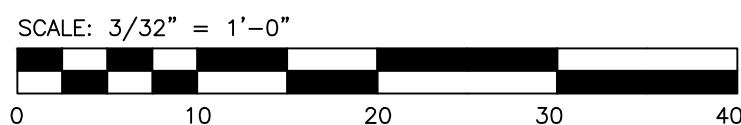


GENERAL NOTES:

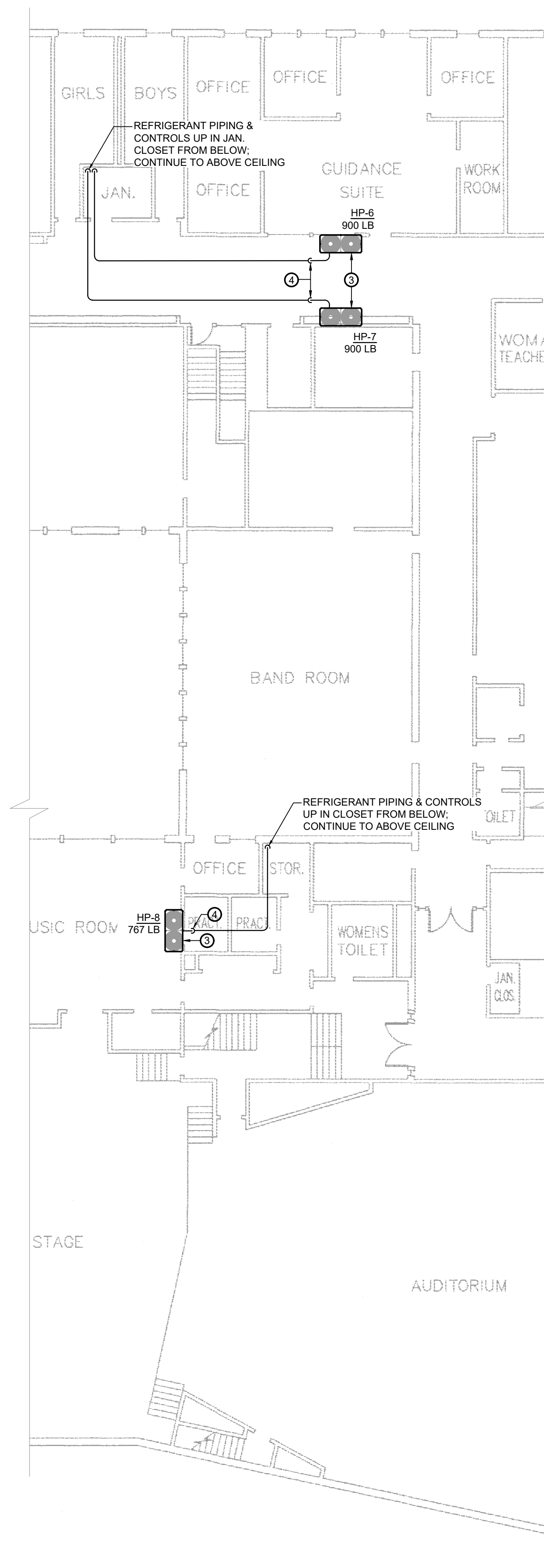
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- ALL B & C-WING CLASSROOMS HAVE INACCESSIBLE SPLINE CEILINGS UNLESS OTHERWISE NOTED.
- ALL D-WING CLASSROOMS HAVE ACCESSIBLE SPLAY-IN-LINE CEILINGS UNLESS OTHERWISE NOTED.
- ROUTE REFRIGERANT PIPING, POWER & CONTROLS ABOVE CORRIDOR SUSPENDED LAY-IN CEILING. CONTRACTOR RESPONSIBLE TO REMOVE AND REINSTALL TILES AND GRID INCLUDING LIGHTING AND ANY CEILING DEVICES AS NECESSARY TO COMPLETE INSTALLATION. ANY TILES DAMAGED DURING CONSTRUCTION SHALL BE REPLACED IN KIND TO MATCH EXISTING.
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- REFER TO SHEET M.103 FOR REFRIGERANT PIPING DIAGRAMS. FIELD VERIFY EXACT ROUTING.

PLAN KEY NOTES:

- ROUTE REFRIGERANT PIPING, CONDENSATE PIPING, POWER & CONTROLS ABOVE CEILING & THRU CORRIDOR WALL TO ABOVE CORRIDOR CEILING. PROVIDE FIRESTOP ASSEMBLY AT EVERY PENETRATION OF CORRIDOR FIRE WALL, TYPICAL
- SUSPEND AHU FROM STRUCTURE ABOVE W/ BEAM CLAMPS, 1/2\"
- FURNISH & INSTALL EQUIPMENT SUPPORT RAILS TYPICAL OF PATE (OR EQUAL). SEE DETAIL ON SHEET M.102; FLASH INTO EXISTING ROOFING SYSTEM
- REFRIGERANT PIPING, POWER & CONTROLS UP THRU ROOF TO HEAT PUMP; FURNISH & INSTALL PIPING PORTAL & FLASH INTO EXISTING ROOFING SYSTEM



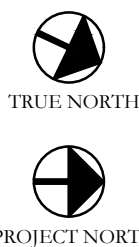
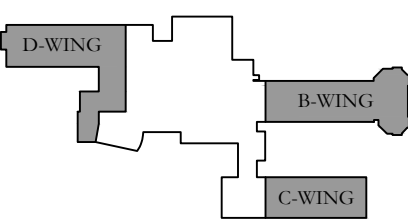
1 D-Wing Lower Level Equipment Layout Plan
M.202 Scale: 3/32\"



2 D-Wing Upper Level Equipment Layout Plan
M.202 Scale: 3/32\"

KEY PLAN:

'CORNWALL CENTRAL MIDDLE SCHOOL'

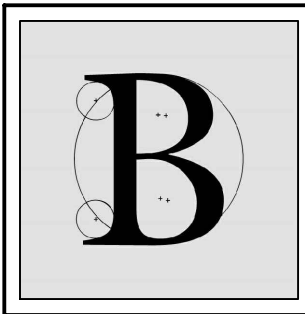


PROJECT:

CORNWALL CENTRAL MIDDLE SCHOOL
B, C & D WING AIR-CONDITIONING PROJECT
122 MAIN STREET
CORNWALL, NEW YORK 12518

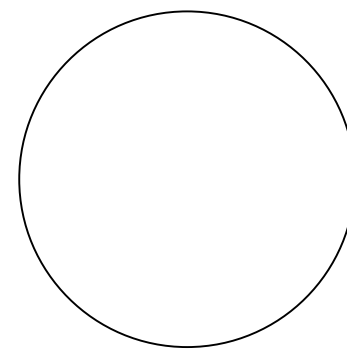
SUB-CONSULTANT:

ENGINEER:



BLAKE ENGINEERING PLLC

1898 COUNTY ROUTE 1
WESTTOWN, NEW YORK 10998
TEL:845-467-9207 FAX:845-767-5050
MBLAKE@BLAKEENGINEERINGPLLCCOM



NOT VALID FOR CONSTRUCTION UNLESS SIGNED AND SEALED BY ENGINEER

MATTHEW G. BLAKE, P.E., LEED AP
NY - 89039 NJ - GE050037 PA - PE079303
MA - 53197 CT - 32283 FL - 85928

D-WING EQUIPMENT LAYOUT PLAN

| DATE | DRN | CHK | DESCRIPTION |
|------------|-----|-----|-------------|
| 11.14.2022 | MGB | MGB | BID SET |

| REV. | DATE | DRN | CHK | DESCRIPTION |
|------|------|-----|-----|-------------|
|------|------|-----|-----|-------------|

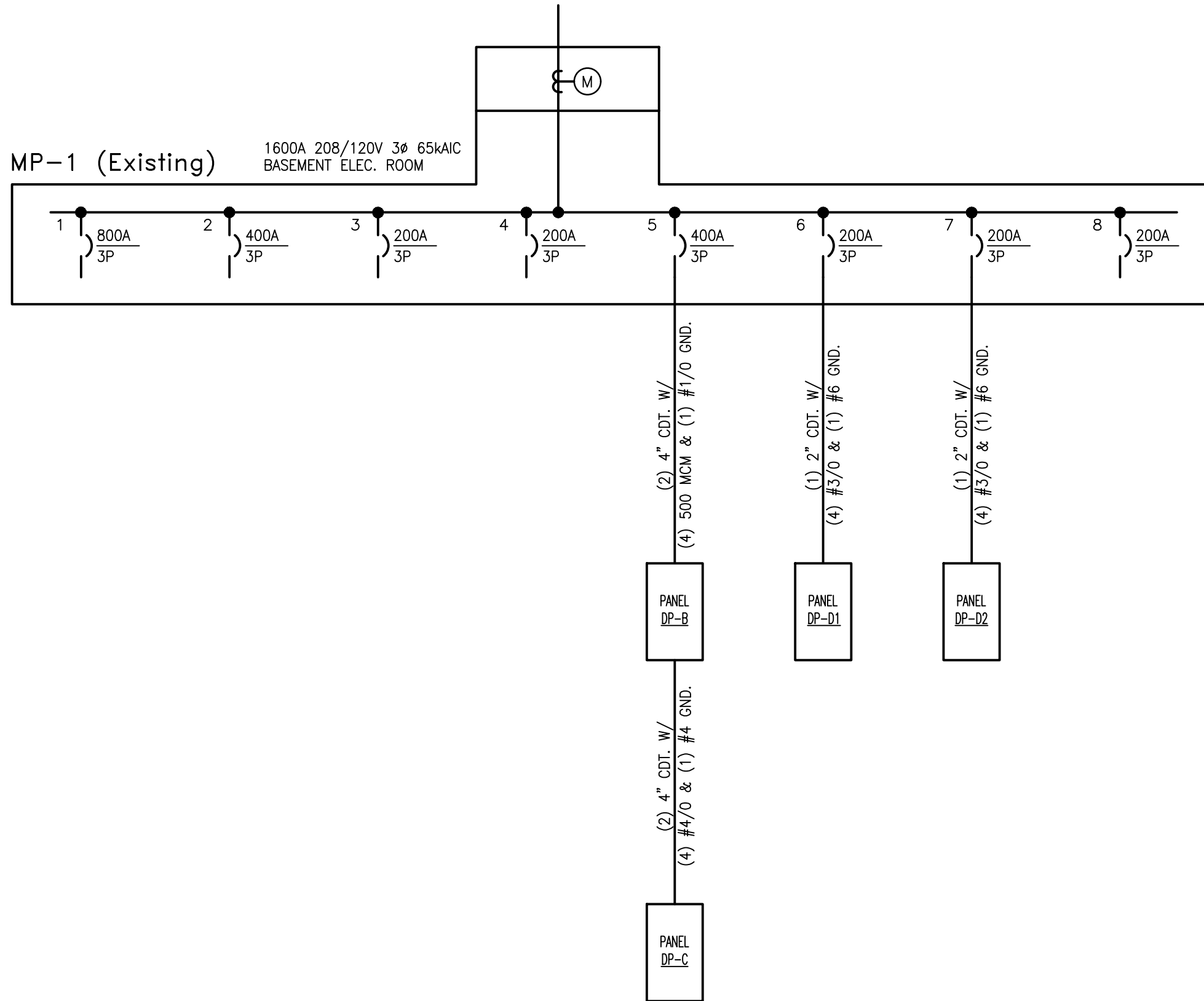
| PROJECT NO. | SHEET NO. |
|-------------|-----------|
| 1814 | M.202 |

UNAUTHORIZED ALTERATION OR ADDITION TO THIS PLAN IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

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| 120/208V 3Ø 4W+G; 65KAIC RATING | | | | BUS RATING: 1,600A | | | | 1,600A MCB | | | |
|---|---|--------------------------|----------|--------------------|--------|--------|-----------------|--------------------------|---------------------------|-------------------------|--|
| CONNECTED LOAD | CONDUCTORS | CKT. BREAKER AMPACITY | POSITION | L1 KVA | L2 KVA | L3 KVA | POSITION | CKT. BREAKER AMPACITY | CONDUCTORS | CONNECTED LOAD | |
| EXISTING 800A PANEL | EXISTING | 800 | 1 | 48.0 | | | 2 | 400 | EXISTING | EXISTING 400A PANEL | |
| | | | 3 | 24.0 | | 4 | | | | | |
| | | | 5 | | 24.0 | 6 | | | | | |
| EXISTING 200A DISC. SW. | EXISTING | 200 | 7 | 12.0 | | 48.0 | 8 | 200 | EXISTING | EXISTING 200A DISC. SW. | |
| | | | 9 | 12.0 | | 10 | | | | | |
| | | | 11 | | 12.0 | 12 | | | | | |
| NEW PANEL DP-B | (2) PARALLEL SETS OF (4) 500 MCM CU & (1) #2/0 GND. | 400 | 13 | 33.5 | | | 14 | 200 | (4) #3/0 CU & (1) #6 GND. | NEW PANEL DP-D1 | |
| | | | 15 | | 33.5 | | 16 | | | | |
| | | | 17 | | | 33.5 | 18 | | | | |
| SPARE | - | 200 | 19 | - | | | 20 | 200 | (4) #3/0 CU & (1) #6 GND. | NEW PANEL DP-D2 | |
| | | | 21 | - | | | 22 | | | | |
| | | | 23 | - | | | 24 | | | | |
| SQUARE 'D' QED-2 SWITCHBOARD W/ I-LINE DISTRIBUTION SECTION W/ BOLT ON BREAKERS | | | | 155.3 | 155.3 | 154.6 | 465.2 KVA TOTAL | | | | |

1 Existing Main Switchboard MP-1
E.101 Scale: None



2 Electric One-Line Diagram
E.101 Scale: None

ELECTRICAL LEGEND:

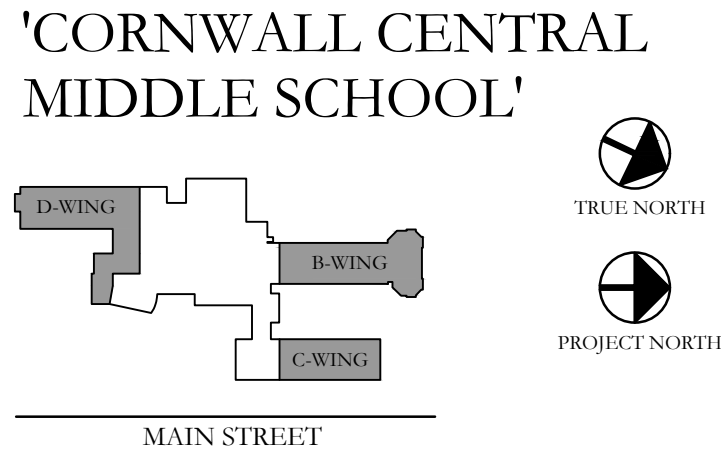
| | | | |
|--|--|--|--|
| | MOTOR | | HORN/STROBE DEVICE, ONE ASSEMBLY; MTD. 80" A.F.F. UNLESS OTHERWISE NOTED; 15 CANDELA UNLESS OTHERWISE NOTED |
| | EARTH GROUND | | STROBE DEVICE; MTD. 80" A.F.F. UNLESS OTHERWISE NOTED; 15 CANDELA UNLESS OTHERWISE NOTED |
| | JUNCTION BOX | | MANUAL PULL STATION; MTD. 48" A.F.F. |
| | PULL BOX | | WATER FLOW SWITCH |
| | FUSE WITH RATING | | VALVE TAMPER SWITCH |
| | MOLDED CASE CIRCUIT BREAKER | | DETECTOR; LETTER INDICATES AS FOLLOWS: BLANK = SMOKE DETECTOR P = PHOTOELECTRIC SMOKE M = MULTIPLE STATION SMOKE ALARM D = PHOTOELECTRIC DUCT SMOKE DETECTOR |
| | DISCONNECT SWITCH, FUSED | | RATE OF RISE HEAT DETECTOR, 135°F |
| | DISCONNECT SWITCH, UNFUSED | | CARBON MONOXIDE DETECTOR; MTD. 60" A.F.F. |
| | STARTER, COMBINATION WITH DISCONNECT SWITCH | | ADDRESSABLE FIRE ALARM CONTROL PANEL |
| | STARTER OR MOTOR CONTROLLER | | FIRE ALARM ANNUNCIATOR PANEL |
| | METER | | |
| | 20A 120V SINGLE RECEPTACLE | | |
| | 20A 120V DUPLEX RECEPTACLE | | |
| | 20A 120V DUPLEX RECEPTACLE WITH GROUND FAULT CIRCUIT INTERRUPTER | | |
| | 20A 120V QUADRAPLEX RECEPTACLE | | |
| | RECEPTACLE, SPECIAL PURPOSE | | |
| | 20A 120V USB CHARGER RECEPTACLE TYPICAL OF HUBBELL USB20X OR ACCEPTABLE EQUAL | | |
| | FLOOR BOX WITH STAINLESS COVER TYPICAL OF LEW ELECTRIC #08-1-SP OR ACCEPTABLE EQUAL; PUSH BUTTON OPEN; FULLY IP66 RATED WATER PROOF (WHEN IN CLOSED POSITION); W/ 20A 125V E80120 GFCI RECEPTACLE (UNLESS OTHERWISE NOTED) | | |
| | WALL PHONE OUTLET MTD. 48" A.F.F.; 3/4" EMT CDT. IN WALL TO ABOVE CEILING W/ PULL CORD | | |
| | WALL BOX FOR TELEVISION CONNECTION; 1-1/4" EMT CDT. IN WALL TO ABOVE CEILING W/ PULL CORD | | |
| | TELEPHONE/DATA COMMUNICATION BOX W/ (2) 3/4" EMT CDT. IN WALL TO ABOVE CEILING W/ PULL CORD; NO FACE PLATE | | |
| | BRANCH CIRCUIT HOMERUN; LINES INDICATE NUMBER OF CIRCUITS, NEUTRAL, AND SWITCH LEG CONDUCTORS; ONE SEPARATE GROUNDING CONDUCTOR SHALL BE PROVIDED FOR EACH HOMERUN; NOT SHOWN | | |
| | SWITCH BLANK = SINGLE POLE 3 = THREE-WAY D = DIMMER P = WITH PILOT LIGHT T = TIMER OPERATED X = EXPLOSION PROOF | | |
| | 2 = DOUBLE POLE 4 = FOUR-WAY K = KEY OPERATED PB= PUSH BUTTON WP= WEATHER PROOF OC= OCCUPANCY SENSOR | | |

ELECTRICAL NOTES:

- ALL MATERIALS AND EQUIPMENT ARE TO BE NEW, UNUSED, AND FREE FROM DEFECTS OF ANY KIND. THE BASIS OF QUALITY SHALL BE THE LATEST REVISION OF ASTM, ANSI, OR OTHER ACCEPTABLE STANDARDS.
- THESE DRAWINGS ARE DIAGRAMMATIC, AND INDICATE GENERAL ARRANGEMENT OF WORK. THE CONTRACTOR SHALL BE RESPONSIBLE TO HAVE REVIEWED THE SITE FOR HIS WORK PRIOR TO HAVING SUBMITTED HIS PROPOSAL. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR CONDITIONS FOUND DURING THE COURSE OF THE CONTRACT.
- THE CONTRACTOR SHALL COORDINATE HIS WORK WITH THAT OF ALL OTHER TRADES.
- ALL WORK INCLUDING LABOR AND MATERIALS SHALL BE FULLY GUARANTEED FOR ONE (1) YEAR FROM THE DATE OF PAYMENT AND FINAL ACCEPTANCE BY THE OWNER AND ENGINEER.
- ALL CUTTING, PATCHING, FIRE-STOPPING, AND SURFACE RESTORATION IN CONNECTION WITH THIS TRADE SHALL BE COMPLETED BY THIS CONTRACTOR.
- A MINIMUM OF FOUR (4) COPIES OF SHOP DRAWINGS SHALL BE SUBMITTED TO THE ARCHITECT PRIOR TO ORDERING AND INSTALLATION OF THE EQUIPMENT AND/OR MATERIALS. BY SUBMITTING SHOP DRAWINGS, THE CONTRACTOR REPRESENTS THAT ACTUAL FIELD CONDITIONS ARE VERIFIED BY HIM AND ARE REFLECTED ON HIS SUBMITTALS.
- THIS CONTRACTOR SHALL PAY ALL FEES, GIVE ALL NOTICES, FILE ALL NECESSARY DRAWINGS, AND OBTAIN ALL PERMITS, INSPECTIONS AND CERTIFICATES OF APPROVAL REQUIRED IN CONNECTION WITH WORK UNDER THIS CONTRACT.
- EQUIPMENT AND MATERIALS FOR WHICH UNDERWRITERS LABORATORIES INC. (UL) PROVIDES PRODUCT LISTING SERVICE SHALL BE LISTED AND BEAR THE LISTING MARK.
- ALL WORK IN ASSOCIATION WITH THIS CONTRACT SHALL BE COMPLETED IN STRICT COMPLIANCE WITH THE 2017 NATIONAL ELECTRIC CODE, 2020 BUILDING CODE OF NEW YORK STATE, AS WELL AS THE 2020 ENERGY CONSERVATION CONSTRUCTION CODE OF NEW YORK STATE.
- THIS CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COORDINATION, APPLICATIONS AND FEES OF ALL WORK ASSOCIATED WITH THE LOCAL UTILITY COMPANY AND/OR THE TELEPHONE COMPANY. ALL WORK INVOLVING THE UTILITY COMPANY SHALL BE COMPLETED IN ACCORDANCE WITH THEIR REGULATIONS AND GUIDELINES.
- ALL CONDUCTORS SHALL BE COPPER, SHALL NOT BE LESS THAN #12 AWG, AND SHALL NOT EXCEED 70 FEET FROM PANEL BOARD TO FURTHEST CONNECTION UNLESS OTHERWISE NOTED ON PLANS.
- WIRING SHALL CONSIST OF METALLIC ARMORED CABLES (TYPE AC) INSTALLED WHERE CONCEALED IN FRAMED WALLS, CEILINGS, OR PERMITTED BY THE NEC. OTHER AREAS SHALL CONSIST OF INSULATED CONDUCTORS INSTALLED IN RIGID STEEL CONDUIT (RGS), ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR FLEXIBLE METALLIC ARMORED CABLE (GREENFIELD).
- LIGHTING LOADS SHALL NOT BE COMBINED ON THE SAME CIRCUIT AS ANY OTHER ELECTRICAL LOADS.
- CONTRACTOR SHALL BE RESPONSIBLE TO FURNISH & INSTALL ALL SMALL DETAILS AND INCIDENTAL WORK NOT SHOWN OR SPECIFIED, BUT WHICH CAN BE REASONABLY INFERRED AS REQUIRED FOR A COMPLETE AND OPERATING SYSTEM OF HIGH QUALITY MEETING ALL APPLICABLE CODES AND REGULATIONS.
- FOR EACH NEW OR MODIFIED ELECTRICAL PANEL, THE CONTRACTOR SHALL PROVIDE A TYPE WRITTEN DIRECTORY CARD TO REFLECT ALL CIRCUITING. ADDITIONALLY, THE CONTRACTOR SHALL LABEL (WITH A PERMANENT MARKER OR LABEL) EACH RECEPTACLE ON THE INSIDE OF EACH FACE PLATE WITH PANEL AND CIRCUIT NUMBER DESIGNATION.
- MINIMUM REQUIREMENT FOR EQUIPMENT GROUNDING SHALL BE GOVERNED BY THE NEC. ALL GROUNDS, BONDING, ETC. SHALL MEET THESE REQUIREMENTS. THE CONTRACTOR SHALL FURNISH AND INSTALL ANY AND ALL ITEMS NECESSARY TO MEET THESE REQUIREMENTS AT NO EXTRA COST, EVEN IF SUCH ITEMS ARE NOT DETAILED ON THE DRAWINGS.
- ALL CONDUIT AND CABLE SHALL BE PROPERLY SUPPORTED AND ROUTED PARALLEL OR PERPENDICULAR TO BUILDING WALLS. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL SUPPORT HANGERS AND MISCELLANEOUS METALS REQUIRED FOR PROPER INSTALLATION OF WORK.
- THE CONTRACTOR IS RESPONSIBLE TO TEST ALL EQUIPMENT, WIRING, DEVICES, AND SYSTEMS INSTALLED UNDER THIS CONTRACT TO ENSURE PROPER OPERATION PRIOR TO FINAL ACCEPTANCE BY THE OWNER AND ENGINEER.
- THE CONTRACTOR IS RESPONSIBLE TO DETERMINE WHETHER SPECIAL LICENSING IS REQUIRED IN ORDER TO PERFORM THE REQUIRED WORK IN THE MUNICIPALITY WHERE THE PROJECT IS LOCATED. IF THE CONTRACTOR CANNOT OBTAIN THE REQUIRED LICENSING TO COMPLETE THE WORK WITHIN THE PROJECT SCHEDULE, THEN THE CONTRACTOR SHALL NOT BE PERMITTED TO BID ON THIS PROJECT.

| WIRE COLOR CODING TABLE | | | | | | | |
|--|-------|---------|-------|--------|--------|---------|-----------|
| PHASE | WIRES | VOLTAGE | L1 | L2 | L3 | NEUTRAL | GROUND |
| 1 | 2 (1) | 120 | BLACK | - | - | WHITE | - |
| 1 | 2 (1) | 208 | BLACK | RED | - | - | - |
| 1 | 3 | 120 | BLACK | - | - | WHITE | GREEN (2) |
| 1 | 3 | 208 | BLACK | RED | - | - | GREEN (2) |
| 3 | 4 | 208 | BLACK | RED | BLUE | - | GREEN (2) |
| 3 | 5 | 208 | BLACK | RED | BLUE | WHITE | GREEN (2) |
| 1 | 3 | 277 | BROWN | - | - | GRAY | GREEN (2) |
| 1 | 3 | 277 | BROWN | ORANGE | - | - | GREEN (2) |
| 3 | 4 | 480 | BROWN | ORANGE | YELLOW | - | GREEN (2) |
| 3 | 5 | 480 | BROWN | ORANGE | YELLOW | GRAY | GREEN (2) |
| NOTES: 1. FOR DOUBLE INSULATED EQUIPMENT ONLY. 2. GREEN/YELLOW MAY BE USED: - GREEN/YELLOW SHALL BE GREEN WITH ONE OR MORE YELLOW STRIPES. - GREEN = 50 TO 70%, YELLOW = 50 TO 30%. - GREEN/YELLOW IS THE ONLY COLOR INTERNATIONALLY ACCEPTED FOR USE AS AN EQUIPMENT GROUNDING CONDUCTOR. - GREEN OR GREEN/YELLOW MUST ONLY BE USED FOR GROUNDING CONDUCTORS. | | | | | | | |

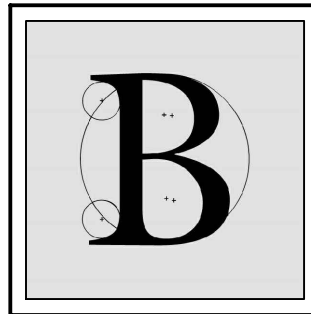
KEY PLAN:



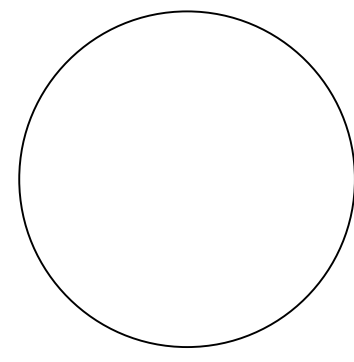
PROJECT:
CORNWALL CENTRAL
MIDDLE SCHOOL
B, C & D WING AIR-
CONDITIONING PROJECT
122 MAIN STREET
CORNWALL, NEW YORK 12518

SUB-CONSULTANT:

ENGINEER:



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ENGINEERING PLLC
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WESTTOWN, NEW YORK 10998
TEL:845-467-9207 FAX:845-767-5050
MBLAKE@BLAKEENGINEERINGPLLC.COM



MATTHEW G. BLAKE, P.E., LEED AP
NY - 89039 NJ - GE050037 PA - PE079303
MA - 53197 CT - 32283 FL - 85928

ELECTRICAL LEGEND & NOTES

| DATE: | | DRN | CHK | DESCRIPTION |
|------------|-------|-----|-----|-------------|
| 11.14.2022 | | MGB | MGB | BID SET |
| | | | | |
| | | | | |
| | | | | |
| REV. | DATE: | DRN | CHK | DESCRIPTION |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

PROJECT NO. 1814 SHEET NO. E.101

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| 120/208V 3Ø 4W+G | | | BUS RATING: 600A | | | | | | 600A MCB | | |
|--|---------------------------|--------------------------|------------------|--------|--------|--------|-----------------|--------------------------|---------------------------|---------------------|--|
| CONNECTED LOAD | CONDUCTORS | CKT. BREAKER AMPACITY | POSITION | L1 KVA | L2 KVA | L3 KVA | POSITION | CKT. BREAKER AMPACITY | CONDUCTORS | CONNECTED LOAD | |
| HEAT PUMP HP-1 | (3) #4 CU & (1) #8 GND. | 70 | 1 | 6.9 | | | 2 | | (3) #3 CU & (1) #8 GND. | HEAT PUMP HP-2 | |
| | | | 3 | | 6.9 | 9.1 | 4 | 90 | | | |
| | | | 5 | | | 6.9 | 9.1 | 6 | | | |
| HEAT PUMP HP-3 | (3) #4 CU & (1) #8 GND. | 80 | 7 | 7.8 | | | 8 | 20 | (2) #12 CU & (1) #12 GND. | ROOF MTD. RECEPT. | |
| | | | 9 | | 7.8 | | 10 | 20 | - | SPARE | |
| | | | 11 | | | 7.8 | 12 | 20 | - | SPARE | |
| SPARE | - | 20 | 13 | - | 0.4 | | 14 | 15 | (2) #12 CU & (1) #12 GND. | UNITS IU-1 THRU 4 | |
| SPARE | - | 20 | 15 | | | 0.4 | 16 | | | | |
| SPARE | - | 20 | 17 | | | | 18 | 15 | (2) #12 CU & (1) #12 GND. | UNITS IU-5 THRU 13 | |
| PANEL DP-C | (4) #4/0 CU & (1) #4 GND. | 200 | 19 | 20.9 | 0.5 | | 20 | | (2) #12 CU & (1) #12 GND. | UNITS IU-14 THRU 22 | |
| | | | 21 | | 20.9 | 0.5 | 22 | 15 | | | |
| | | | 23 | | | 20.1 | 0.5 | 24 | | | |
| SPARE | - | 20 | 25 | - | - | | 26 | 20 | - | SPARE | |
| SPARE | - | 20 | 27 | | - | - | 28 | 20 | - | SPARE | |
| SPARE | - | 20 | 29 | | | - | 30 | 20 | - | SPARE | |
| SQUARE 'D' I-LINE PANELBOARD W/ BOLT ON BREAKERS | | | | 45.6 | 45.6 | 44.9 | 136.1 KVA TOTAL | | | | |

1

E.102

New Panelboard DP-B

Scale: None

| 120/208V 3Ø 4W+G | | | BUS RATING: 200A | | | | | | | | | | MLO | |
|--|---------------------------|--------------------------|------------------|--------|--------|--------|----------------|--------------------------|---------------------------|-------------------------|--|--|-----|--|
| CONNECTED LOAD | CONDUCTORS | CKT. BREAKER AMPACITY | POSITION | L1 KVA | L2 KVA | L3 KVA | POSITION | CKT. BREAKER AMPACITY | CONDUCTORS | CONNECTED LOAD | | | | |
| HEAT PUMP HP-4 | (3) #3 CU & (1) #8 GND. | 90 | 1 | 9.1 | 5.5 | | 2 | | (3) #6 CU & (1) #10 GND. | HEAT PUMP HP-5, SECT. A | | | | |
| | | | 3 | | 9.1 | 5.5 | 4 | 60 | | | | | | |
| | | | 5 | | | 9.1 | 5.5 | 6 | | | | | | |
| ROOF MTD RECEPT. | (2) #12 CU & (1) #12 GND. | 20 | 7 | - | 5.5 | | 8 | | (3) #6 CU & (1) #10 GND. | HEAT PUMP HP-5, SECT. B | | | | |
| SPARE | - | 20 | 9 | | - | 5.5 | 10 | 60 | | | | | | |
| SPARE | - | 20 | 11 | | | - | 5.5 | 12 | | | | | | |
| UNITS IU-23 THRU 32 | (2) #12 CU & (1) #12 GND. | 15 | 13 | 0.4 | 0.4 | | 14 | 15 | (2) #12 CU & (1) #12 GND. | UNITS IU-33 THRU 41 | | | | |
| | | | 15 | | 0.4 | 0.4 | 16 | | | | | | | |
| SPARE | - | 20 | 17 | | | - | 18 | 20 | - | SPARE | | | | |
| SPARE | - | 20 | 19 | - | - | | 20 | 20 | - | SPARE | | | | |
| SPARE | - | 20 | 21 | | | - | 22 | 20 | - | SPARE | | | | |
| SPARE | - | 20 | 23 | | | - | 24 | 20 | - | SPARE | | | | |
| SPARE | - | 20 | 25 | - | - | | 26 | 20 | - | SPARE | | | | |
| SPARE | - | 20 | 27 | | | - | 28 | 20 | - | SPARE | | | | |
| SPARE | - | 20 | 29 | | | - | 30 | 20 | - | SPARE | | | | |
| SQUARE 'D' NQ PANELBOARD W/ BOLT ON BREAKERS | | | | 20.9 | 20.9 | 20.1 | 61.9 KVA TOTAL | | | | | | | |

2

E.102

New Panelboard DP-C

Scale: None

| 120/208V 3Ø 4W+G | | | BUS RATING: 200A | | | | | | | MLO | |
|--|---------------------------|--------------------------|------------------|-------------------|-------------------|--------|----------------|--------------------------|---------------------------|----------------|--|
| CONNECTED LOAD | CONDUCTORS | CKT. BREAKER AMPACITY | POSITION | L1 KVA | L2 KVA | L3 KVA | POSITION | CKT. BREAKER AMPACITY | CONDUCTORS | CONNECTED LOAD | |
| HEAT PUMP HP-6 | (3) #3 CU & (1) #8 GND. | 90 | 1 3 5 | 9.1 9.1 9.1 | 9.1 9.1 9.1 | | 2 4 6 | 90 | (3) #3 CU & (1) #8 GND. | HEAT PUMP HP-7 | |
| ROOF MTD RECEPT. | (2) #12 CU & (1) #12 GND. | 20 | 7 | - | - | - | 8 | 20 | - | SPARE | |
| SPARE | - | 20 | 9 | - | - | - | 10 | 20 | - | SPARE | |
| SPARE | - | 20 | 11 | - | - | - | 12 | 20 | - | SPARE | |
| INDOOR UNITS | (2) #12 CU & (1) #12 GND. | 15 | 13 15 | 0.4 0.4 | 0.4 0.4 | | 14 16 | 15 | (2) #12 CU & (1) #12 GND. | INDOOR UNITS | |
| SPARE | - | 20 | 17 | - | - | - | 18 | 20 | - | SPARE | |
| SPARE | - | 20 | 19 | - | - | - | 20 | 20 | - | SPARE | |
| SPARE | - | 20 | 21 | - | - | - | 22 | 20 | - | SPARE | |
| SPARE | - | 20 | 23 | - | - | - | 24 | 20 | - | SPARE | |
| SPARE | - | 20 | 25 | - | - | - | 26 | 20 | - | SPARE | |
| SPARE | - | 20 | 27 | - | - | - | 28 | 20 | - | SPARE | |
| SPARE | - | 20 | 29 | - | - | - | 30 | 20 | - | SPARE | |
| SQUARE 'D' NQ PANELBOARD W/ BOLT ON BREAKERS | | | | 19.0 | 19.0 | 18.2 | 56.2 KVA TOTAL | | | | |

3

E.102

New Panelboard DP-D1

Scale: None

| 120/208V 3Ø 4W+G | | | BUS RATING: 200A | | | | | | | | | | MLO | |
|--|---------------------------|--------------------------|------------------|--------|--------|--------|----------------|--------------------------|---------------------------|----------------|---|--|-----|--|
| CONNECTED LOAD | CONDUCTORS | CKT. BREAKER AMPACITY | POSITION | L1 KVA | L2 KVA | L3 KVA | POSITION | CKT. BREAKER AMPACITY | CONDUCTORS | CONNECTED LOAD | | | | |
| HEAT PUMP HP-8 | (3) #4 CU & (1) #8 GND. | 70 | 1 | 6.9 | | | 2 | 15 | (2) #12 CU & (1) #12 GND. | INDOOR UNITS | | | | |
| | | | 3 | | 6.9 | 0.4 | 4 | | | | | | | |
| | | | 5 | | | 6.9 | 0.4 | | | | 6 | | | |
| ROOF MTD RECEPT. | (2) #12 CU & (1) #12 GND. | 20 | 7 | 0.4 | | | 8 | 15 | (2) #12 CU & (1) #12 GND. | INDOOR UNITS | | | | |
| SPARE | - | 20 | 9 | - | - | - | 10 | 20 | - | SPARE | | | | |
| SPARE | - | 20 | 11 | - | - | - | 12 | 20 | - | SPARE | | | | |
| SPARE | - | 20 | 13 | - | - | - | 14 | 20 | - | SPARE | | | | |
| SPARE | - | 20 | 15 | - | - | - | 16 | 20 | - | SPARE | | | | |
| SPARE | - | 20 | 17 | - | - | - | 18 | 20 | - | SPARE | | | | |
| SPARE | - | 20 | 19 | - | - | - | 20 | 20 | - | SPARE | | | | |
| SPARE | - | 20 | 21 | - | - | - | 22 | 20 | - | SPARE | | | | |
| SPARE | - | 20 | 23 | - | - | - | 24 | 20 | - | SPARE | | | | |
| SPARE | - | 20 | 25 | - | - | - | 26 | 20 | - | SPARE | | | | |
| SPARE | - | 20 | 27 | - | - | - | 28 | 20 | - | SPARE | | | | |
| SPARE | - | 20 | 29 | - | - | - | 30 | 20 | - | SPARE | | | | |
| SQUARE 'D' NQ PANELBOARD W/ BOLT ON BREAKERS | | | | 7.7 | 7.3 | 7.3 | 22.3 KVA TOTAL | | | | | | | |

4

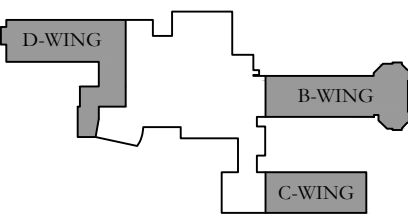
E.102

New Panelboard DP-D2

Scale: None

KEY PLAN:

'CORNWALL CENTRAL
MIDDLE SCHOOL'

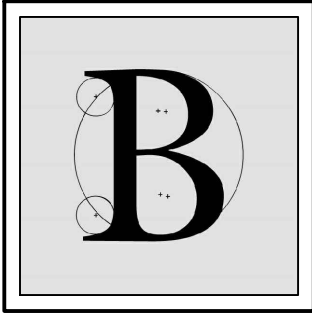


PROJECT:

CORNWALL CENTRAL
MIDDLE SCHOOL
B, C & D WING AIR-
CONDITIONING PROJECT
122 MAIN STREET
CORNWALL, NEW YORK 12518

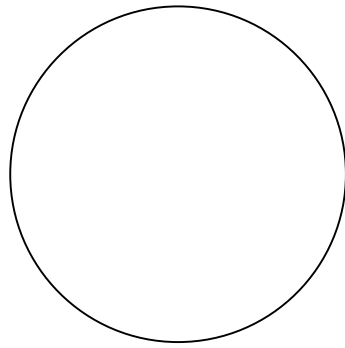
SUB-CONSULTANT:

ENGINEER:



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ENGINEERING PLLC

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WESTTOWN, NEW YORK 10998
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MBLAKE@BLAKEENGINEERINGPLLCCOM



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NY - 89039 NJ - GE050037 PA - PE079303
MA - 53197 CT - 32283 FL - 85928

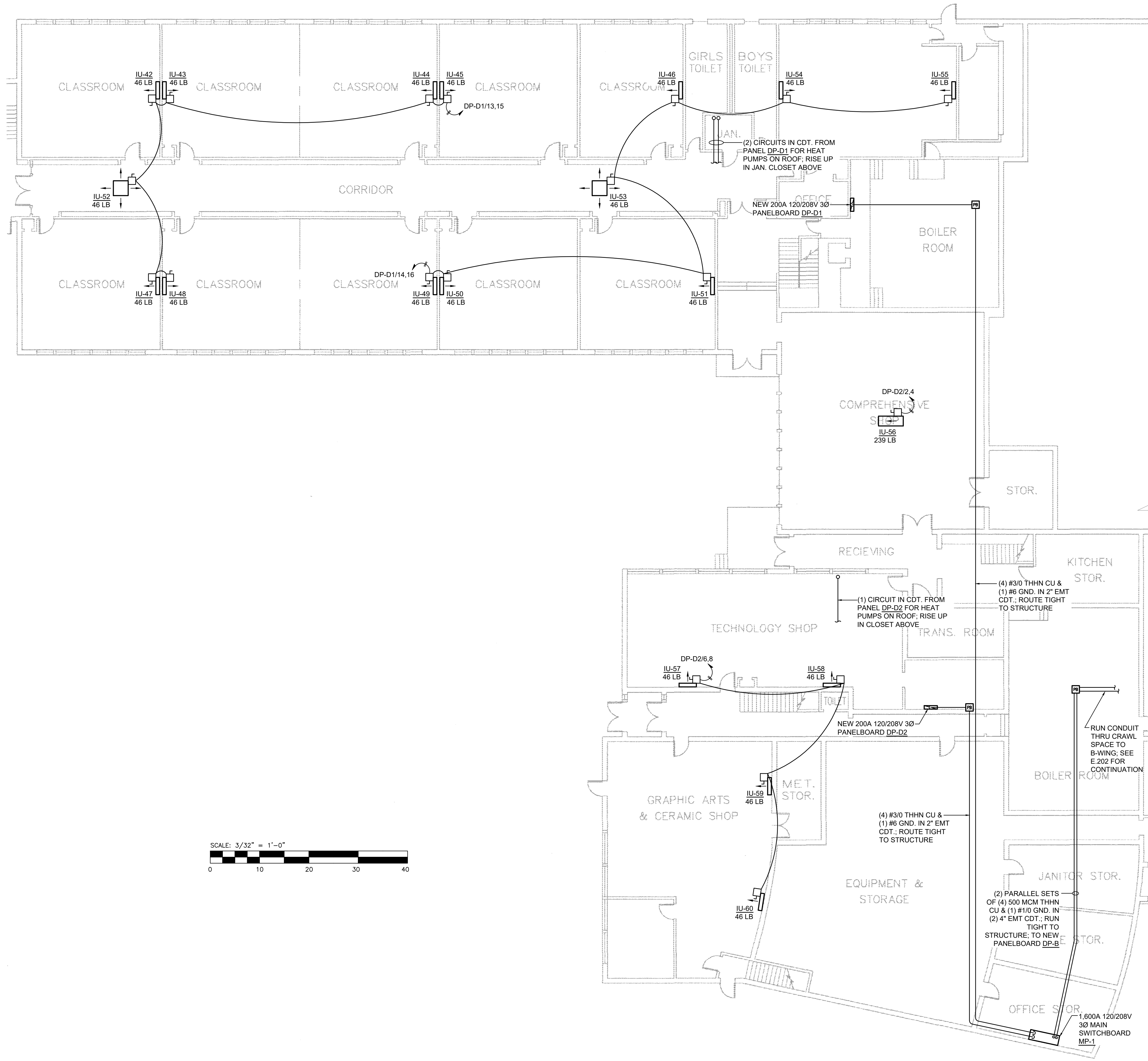
NEW ELECTRIC PANEL
SCHEDULES

| DATE: | | DRN | CHK | DESCRIPTION |
|------------|-------|-----|-----|-------------|
| 11.14.2022 | | MGB | MGB | BID SET |
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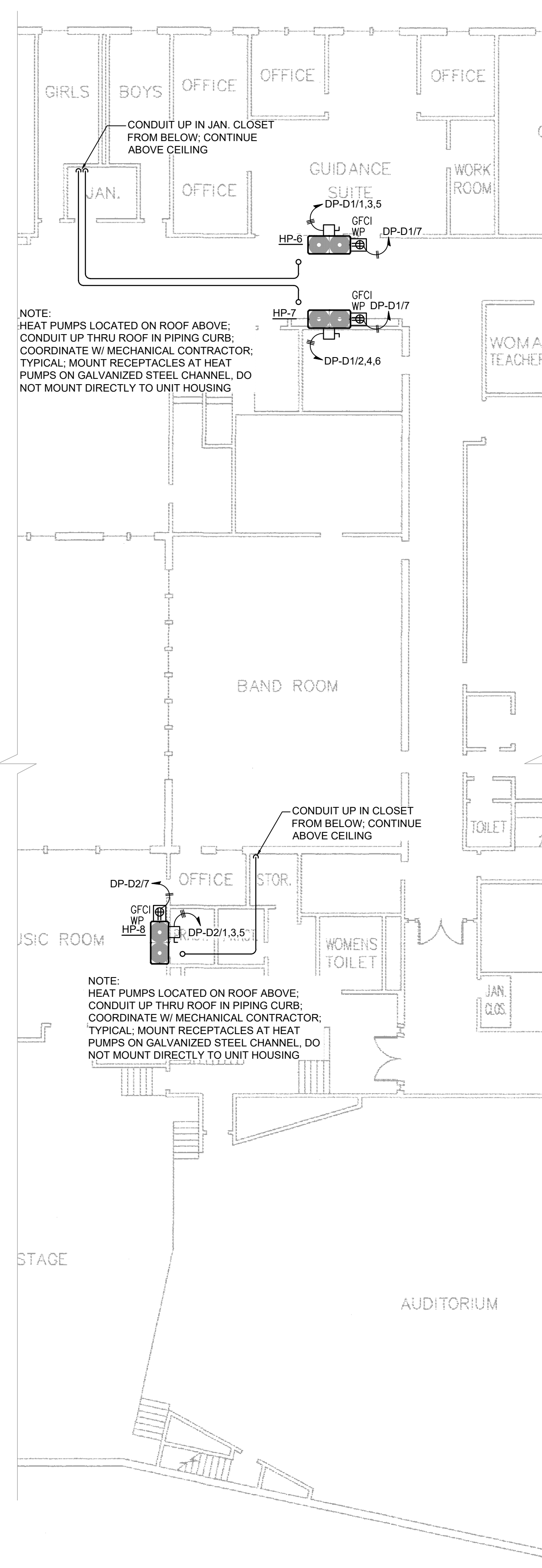
| PROJECT NO. | SHEET NO. |
|-------------|-----------|
| 1814 | E.102 |

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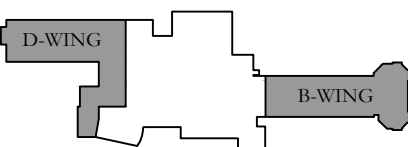
1 D-Wing Lower Level Electrical Plan
E.201 Scale: 3/32" = 1'-0"



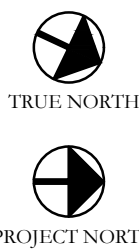
2 D-Wing Upper Level Electrical Plan
E.201 Scale: 3/32" = 1'-0"

KEY PLAN:

'CORNWALL CENTRAL
MIDDLE SCHOOL'



MAIN STREET

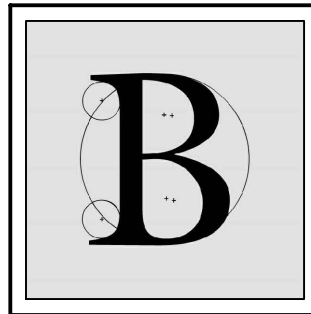


PROJECT:

CORNWALL CENTRAL
MIDDLE SCHOOL
B, C & D WING AIR-
CONDITIONING PROJECT
122 MAIN STREET
CORNWALL, NEW YORK 12518

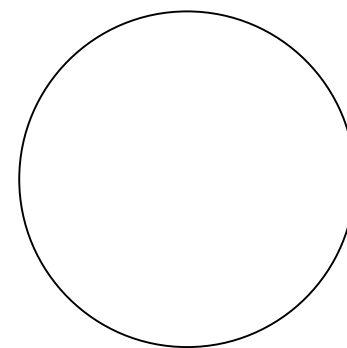
SUB-CONSULTANT:

ENGINEER:



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D-WING ELECTRICAL PLAN

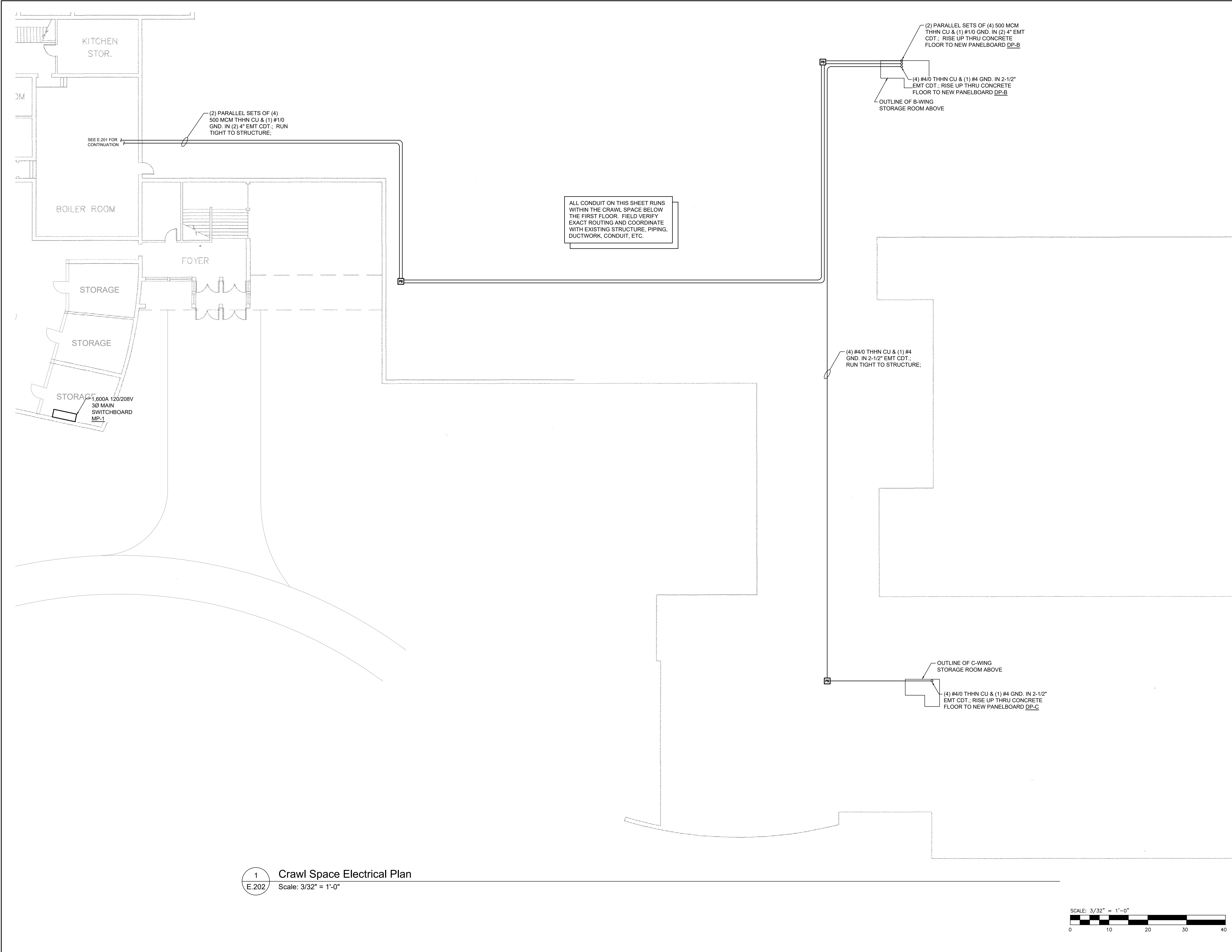
| DATE | DRN | CHK | DESCRIPTION |
|------------|-----|-----|-------------|
| 11.14.2022 | MGB | MGB | BID SET |

| REV. | DATE | DRN | CHK | DESCRIPTION |
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| PROJECT NO. | SHEET NO. |
|-------------|-----------|
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KEY PLAN:

'CORNWALL CENTRAL MIDDLE SCHOOL'

TRUE NORTH

PROJECT NORTH

PROJECT:

CORNWALL CENTRAL MIDDLE SCHOOL
B, C & D WING AIR-CONDITIONING PROJECT
122 MAIN STREET
CORNWALL, NEW YORK 12518

SUB-CONSULTANT:

ENGINEER:

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| CRAWL SPACE ELECTRICAL PLAN | | | | |
|-----------------------------|------|-----|-------------|-------------|
| DATE: | DRN | CHK | DESCRIPTION | |
| 11.14.2022 | MGB | MGB | BID SET | |
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| REV. | DATE | DRN | CHK | DESCRIPTION |
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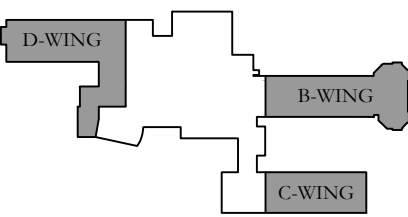
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| PROJECT NO. | SHEET NO. |
| 1814 | E.202 |

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KEY PLAN:

'CORNWALL CENTRAL
MIDDLE SCHOOL'

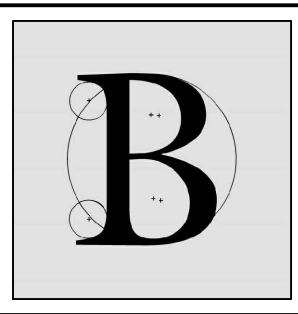


PROJECT:

CORNWALL CENTRAL
MIDDLE SCHOOL
B, C & D WING AIR-
CONDITIONING PROJECT
122 MAIN STREET
CORNWALL, NEW YORK 12518

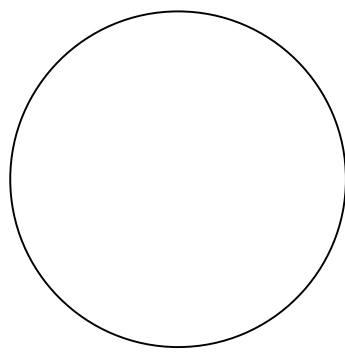
SUB-CONSULTANT:

ENGINEER:



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NY - 89039 NJ - GE050037 PA - PE079303
MA - 53197 CT - 32283 FL - 85928

**B & C WING
ELECTRICAL PLAN**

| DATE: | DRN: | CHK: | DESCRIPTION: |
|------------|------|------|--------------|
| 11.14.2022 | MGB | MGB | BID SET |

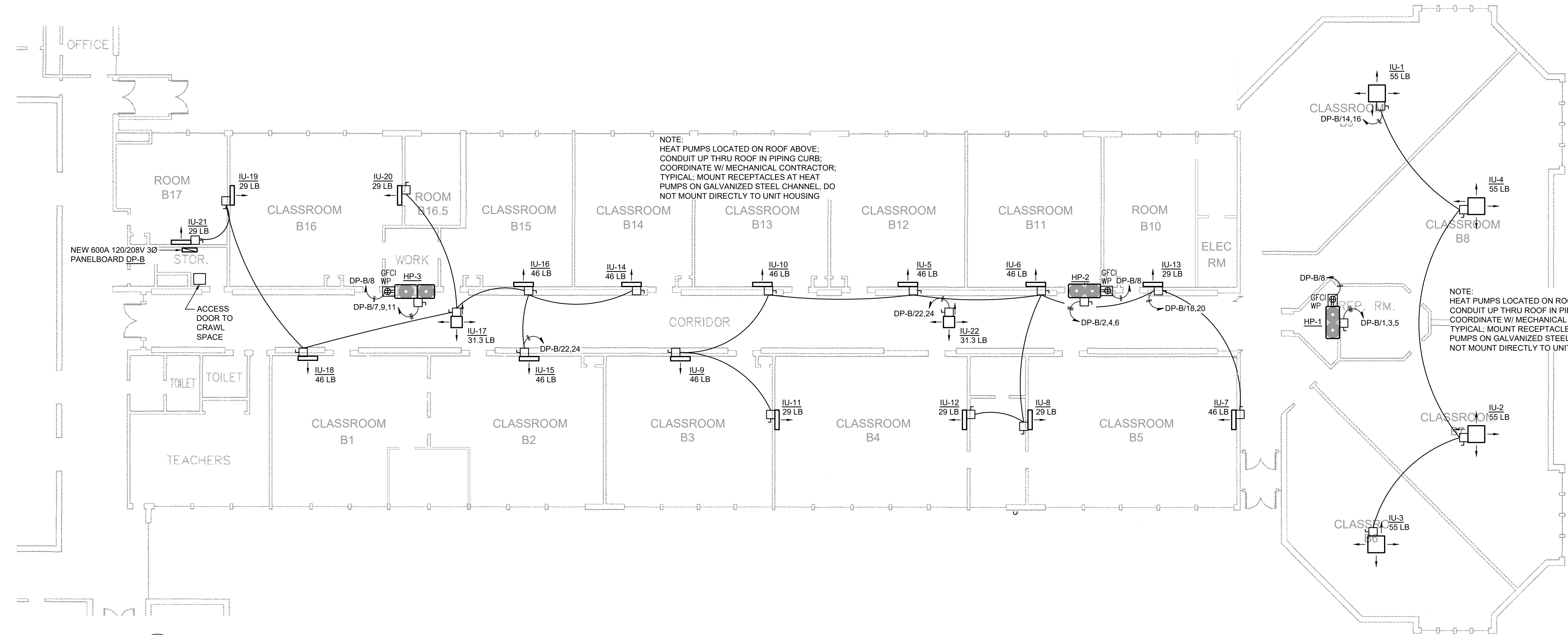
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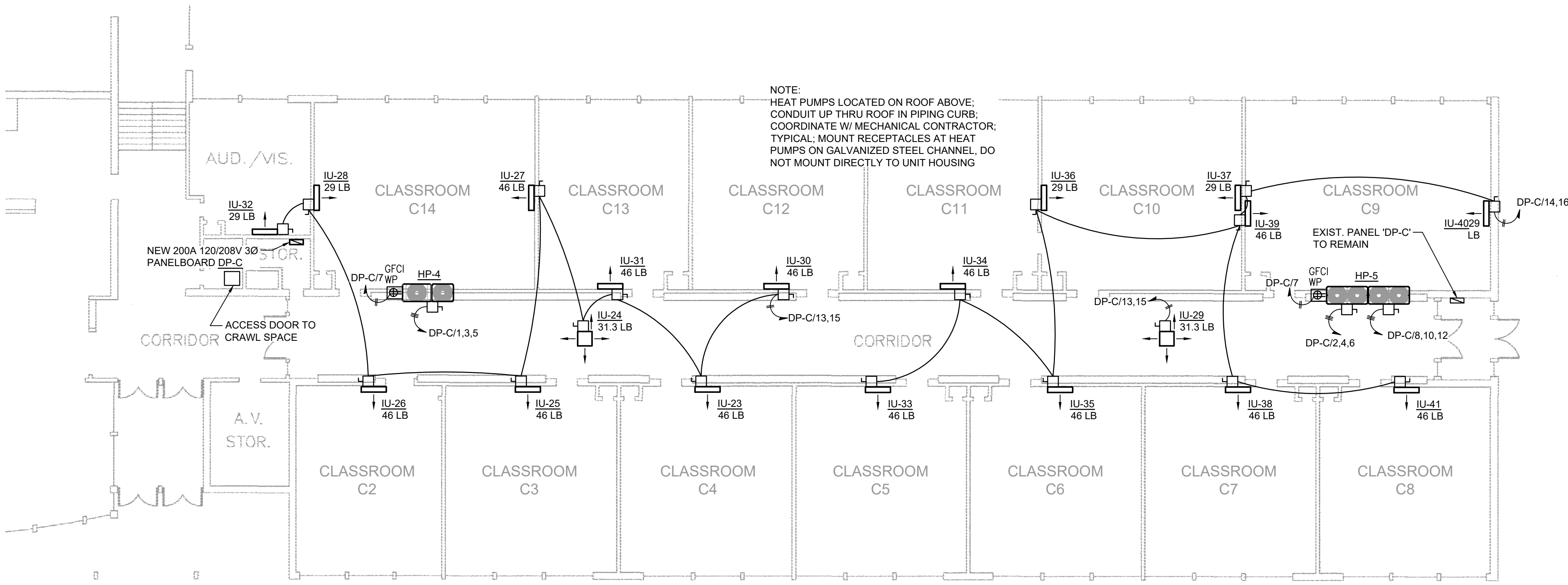
| PROJECT NO. | SHEET NO. |
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1 B-Wing Electrical Plan
E.203 Scale: 3/32" = 1'-0"



2 C-Wing Electrical Plan
E.203 Scale: 3/32" = 1'-0"