

ELECTRICAL SPECIFICATIONS:

1.01 CODES AND STANDARDS

- A) ALL WORK SHALL BE SYSTEMATICALLY, CAREFULLY AND NEATLY PERFORMED AND SHALL CONFORM TO THE FOLLOWING STANDARDS:
1. 2018 IBC, NJ EDITION
2. 2017 NATIONAL ELECTRIC CODE
3. ASHRAE 90.1 2016
4. UNDERWRITERS LABORATORIES, INC. (UL)
5. OSHA AND ALL AGENCIES HAVING JURISDICTION

1.02 SUMMARY

- A) PROVIDE ALL LABOR, MATERIALS, EQUIPMENT AND SERVICES REQUIRED FOR COMPLETE INSTALLATION OF ALL WORK INDICATED ON THE DRAWINGS OR SPECIFIED HEREIN.
B) OBTAIN ALL PERMITS AND APPROVALS REQUIRED BY AUTHORITIES HAVING JURISDICTION AND PAY THE ASSOCIATED PRINTING AND FILING COSTS.
C) VERIFY EXISTING CONDITIONS IN FIELD AND INCLUDE IN THE BID PRICE ALL WORK REQUIRED TO ACCOMMODATE THE EXISTING INSTALLATION.
D) PROVIDE TEMPORARY LIGHT AND POWER SYSTEM (AS PART OF THE CONTRACT) ADEQUATE FOR THE REQUIREMENTS OF ALL TRADES DURING CONSTRUCTION. TEMPORARY SYSTEM SHALL BE DISCONNECTED AND REMOVED WHEN PERMANENT SERVICE IS IN OPERATION.

1.03 SUBMITTALS

- A) SUBMIT THE FOLLOWING INFORMATION AS APPLICABLE AND AS REQUIRED FOR ALL WORK SPECIFIED UNDER THIS DIVISION:
1. MANUFACTURERS' PRODUCT DATA SHEETS AND SAMPLES WHERE REQUIRED.
2. MANUFACTURERS' CERTIFICATIONS, WARRANTIES AND SPARE PARTS.
B) SUBMIT PROPOSED WORK SCHEDULE AND NUMBER OF WORKING DAYS PRIOR TO STARTING WORK.

1.04 AS-BUILT DRAWINGS AND MAINTENANCE MANUALS

- A) CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS INDICATING ANY DEVIATION FROM THE ORIGINAL ELECTRICAL DESIGN. THE REVISED DRAWING SHALL BE STAMPED 'AS-BUILT' WITH THE DATE AND CONTRACTOR'S SIGNATURE. ONE (1) SET OF ELECTRONIC (PDF) FILES.

1.05 QUALITY ASSURANCE

- A) MATERIALS, EQUIPMENT AND INSTALLATION SHALL CONFORM TO THE ADOPTED EDITION OF ALL APPLICABLE CODES OF ALL AUTHORITIES HAVING JURISDICTION AND BUILDING MANAGEMENT. ALL UTILITY WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE BUILDING STANDARDS AND THE REQUIREMENTS OF THE LOCAL UTILITY COMPANY.
B) MATERIALS, EQUIPMENT AND INSTALLATION SHALL CONFORM TO THE LATEST EDITION OF THE APPLICABLE REFERENCE STANDARDS PUBLISHED BY UL, ANSI, IEEE AND NEMA.
C) ALL WORK SHALL BE WARRANTED IN WRITING TO BE FREE FROM DEFECTS IN MATERIALS AND/OR WORKSMANSHIP FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE BY THE OWNER. WARRANTY SHALL INCLUDE ALL COSTS OF PARTS, LABOR, TRAVEL AND LIVING EXPENSES REQUIRED TO REPAIR OR REPLACE DEFECTIVE ITEMS.
D) CONTRACTOR SHALL PROVIDE CERTIFICATE OF INSURANCE FOR WORKMAN COMPENSATION AND GENERAL LIABILITY IN AN AMOUNT NOT LESS THAN \$5,000,000.00 PRIOR TO STARTING WORK NAMING THE BUILDING OWNER AS ADDITIONAL INSURED.

1.06 BASIC MATERIAL AND METHODS

- A) COORDINATE ALL WORK WITH THE WORK OF OTHER TRADES PRIOR TO INSTALLATION. ASSIST IN THE PREPARATION OF COORDINATION DRAWINGS AS REQUIRED BY THE GENERAL CONDITIONS.
B) ALL SHUTDOWN OF BUILDING POWER, FIRE ALARM AND SIGNAL SYSTEMS SHALL BE COORDINATED WITH BUILDING OPERATING PERSONNEL. WORK TO ACCOMMODATE OFF-HOUR SHUTDOWNS SHALL BE PERFORMED AT NO ADDITIONAL COST TO THE OWNER.
C) CUT AND PATCH NON STRUCTURAL SURFACES AS REQUIRED. REPAIRS SHALL MATCH ORIGINAL FINISH. PENETRATIONS OF FIRE RATED PARTITIONS SHALL BE SEALED WITH APPROVED MATERIAL TO PROVIDE THE SAME RATING AS THE PARTITION. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS OF FIRE RATED PARTITIONS.
D) PROVIDE EXPANSION FITTINGS WHERE RACEWAYS CROSS BUILDING EXPANSION JOINTS.
E) EQUIPMENT, DEVICES AND ENCLOSURES SHALL BE RATED NEMA 1 FOR INTERIOR LOCATIONS, NEMA 3R FOR DAMP LOCATIONS AND WET LOCATIONS.

1.07 RACEWAYS

- A) RIGID GALVANIZED STEEL (RGS) CONDUIT SHALL CONFORM TO UL 6. FITTINGS SHALL BE THREADED.
B) ELECTRICAL METALLIC TUBING (EMT) SHALL CONFORM TO UL 797. FITTINGS SHALL BE GLAND AND RING COMPRESSION TYPE.
C) LIQUID TIGHT FLEXIBLE METAL CONDUIT SHALL CONFORM TO UL 360.
D) ALL CONDUIT FITTINGS AND CONNECTORS SHALL BE STEEL WITH INSULATED THROATS. DIE-FORMED ZINC OR MALLEABLE IRON FITTINGS ARE NOT ACCEPTABLE. BUSHINGS SHALL BE PROVIDED AT ALL CONDUIT TERMINATIONS. BUSHINGS LARGER THAN 1" SHALL BE GROUNDING TYPE. PVC BUSHINGS MAY BE UTILIZED ONLY FOR 3/4" BRANCH CIRCUIT CONDUITS TERMINATING AT PANELBOARDS.
E) MINIMUM RACEWAY SIZE SHALL BE 3/4". RACEWAYS SHALL BE RUN PARALLEL TO BUILDING STRUCTURAL LINES. RACEWAYS SHALL NOT BE RUN HORIZONTALLY BELOW 8'-0" AFF IN PARTITIONS. ALL EMPTY RACEWAYS SHALL BE FURNISHED WITH A 200LB TEST NYLON DRAG LINE.
F) ALL WIRING BETWEEN JUNCTION BOXES AND FOR CIRCUIT HOMERUNS BETWEEN FIRST OUTLET SERVED BY THE BRANCH CIRCUIT AND THE PANELBOARD SHALL BE RUN IN EMT OR RGS AS REQUIRED.
G) RACEWAY UTILIZATION SHALL BE AS FOLLOWS:
1. RIGID GALVANIZED STEEL (RGS) - EXPOSED EXTERIOR LOCATIONS, BURIED IN CONCRETE OR DIRECT CONTACT WITH EARTH WHERE PROTECTED BY CORROSION PROTECTION AND JUDGED SUITABLE FOR THE CONDITION.
2. ELECTRICAL METALLIC TUBING (EMT) - INTERIOR CONCEALED AND EXPOSED LOCATIONS, (EXCEPT AS NOTED ABOVE) INTERIOR COMMUNICATIONS WIRING. EMT FITTINGS SHALL BE STEEL, CONNECTORS SHALL HAVE INSULATED THROATS.
3. LIQUID TIGHT FLEXIBLE CONDUIT - FINAL CONNECTIONS TO MOTORS MECHANICAL EQUIPMENT AND SYSTEMS FURNITURE.
4. ARMORED CABLE (MC OR AC WITH INSULATED GROUND CONDUCTOR) - BRANCH CIRCUITING IN CONCEALED LOCATIONS ONLY.
5. RIGID NONMETALLIC CONDUIT - WET LOCATIONS, INSTALLED AND EQUIPPED SO AS TO PREVENT WATER FROM ENTERING CONDUIT, ALL SUPPORTS, STRAPS, SCREWS, ETC., SHALL BE OF CORROSION RESISTANT MATERIAL OR PROTECTED BY CORROSION RESISTANT MATERIAL. DRY AND DAMP LOCATIONS, UNDERGROUND INSTALLATIONS.
H) ALL CONDUIT AND TUBING SHALL BE CUT SQUARE AND REAMED AT THE ENDS.
I) CONDUIT AND TUBING RUNS SHALL BE MECHANICALLY AND ELECTRICALLY CONTINUOUS FROM SERVICE STARTING TO ALL OUTLETS AND EQUIPMENT. CONDUIT SHALL ENTER AND BE SECURELY CONNECTED TO A CABINET, JUNCTION BOX, PULLBOX OR OUTLET BOX BY MEANS OF LOCKNUTS ON THE OUTSIDE AND INSIDE AND AN INSULATED BUSHING ON THE INSIDE. IN TUBING OR FLEXIBLE METAL CONDUIT THE ONE COMPRESSION LOCKNUT SHALL BE MADE WRENCH-TIGHT. ALL LOCKNUTS SHALL BE THE BONDING TYPE WITH SHARP EDGES FOR DIGGING INTO THE METAL WALL OF AN ENCLOSURE AND SHALL BE INSTALLED IN A MANNER THAT WILL ASSURE A LOCKING AND ELECTRICALLY CONTINUOUS INSTALLATION. LOCKNUTS AND BUSHINGS ARE NOT REQUIRED WHERE CONDUITS ARE SCREWED INTO TAPPED CONNECTIONS.
J) ALL VERTICAL RUNS OF CONDUIT OR TUBING TERMINATING IN THE BOTTOMS OF WALL BOXES OR CABINETS, OR SIMILAR LOCATIONS, SHALL BE PROTECTED FROM THE ENTRANCE OF FOREIGN MATERIAL PRIOR TO THE INSTALLATION OF CONDUCTORS.
K) UNLESS OTHERWISE SPECIFIED, ALL CONDUIT AND TUBING SHALL BE INSTALLED CONCEALED. IN GENERAL, ALL CONDUIT AND TUBING SHALL BE RUN IN HUNG CEILINGS AND FURRED SPACES WHERE THEY EXIST. WHERE CONDUIT IS RUN EXPOSED IT SHALL BE SECURELY SUPPORTED WITH ZINC COATED MALLEABLE IRON PIPE STRAPS OR OTHER APPROVED MEANS. ALL CONDUITS SHALL BE SUPPORTED FROM STRUCTURAL MEMBERS.
L) CONDUIT SYSTEM SHALL BE INSTALLED COMPLETE BEFORE ANY CONDUCTORS ARE DRAWN IN. WIRE PULLING

LUBRICANTS, WHEN UTILIZED, SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF UNDERWRITERS' LABORATORIES, INC., APPLICABLE TO THE SPECIFIC CONDUCTOR OR CABLE INSULATION AND RACEWAY MATERIAL.

- M) WHERE REQUIRED BY THE ENGINEER, EXTRA DEEP OR EXTRA SHALLOW OUTLET BOXES SHALL BE USED TO FACILITATE THE INSTALLATION OF THE CONDUIT SYSTEM.

1.08 BOXES

- A) OUTLET, PULL AND JUNCTION BOXES SHALL BE FABRICATED FROM STEEL AND CONFORM TO UL 50, UL 514 AND NEMA OS1. BOXES FOR INTERIOR LOCATIONS SHALL BE CODE GAUGE, GALVANIZED SHEET STEEL. BOXES FOR MECHANICAL ROOMS SHALL BE CAST STEEL WITH GASKETED COVERS.
B) BOXES SHALL CONTAIN SUITABLE KNOCKOUTS. BARRIERS SHALL BE FURNISHED AS REQUIRED BY CODE AND TO SEPARATE SWITCHES FOR 277 VOLT CIRCUITS ON DIFFERENT PHASES.
C) BOXES SHALL BE SIZED AS REQUIRED BY CODE FOR NUMBER AND GAUGE OF CONDUCTORS THEREIN, EXCEPT WHERE NOTED TO BE LARGER. THE MINIMUM BOX SHALL BE 4" SQUARE BY 1-1/2" DEEP. COVERS GREATER THAN 50LB SHALL BE DIVIDED INTO MULTIPLE SECTIONS.

1.09 FASTENERS

- A) PROVIDE INSERTS, EXPANSION SHIELD LUGS, ANCHORS, BOLTS WITH NUTS AND WASHERS, SHIMS OR ANY OTHER TYPE OF FASTENING DEVICES REQUIRED TO FASTEN PANELS OR OTHER EQUIPMENT TO FLOORS, WALLS OR CEILINGS. UNLESS OTHERWISE SPECIFIED HEREIN OR SHOWN ON THE CONTRACT DRAWINGS, ALL FASTENERS SHALL BE HOT DIP GALVANIZED OF SIZES AND TYPES RECOMMENDED BY THE EQUIPMENT MANUFACTURER AND AS APPROVED BY THE ENGINEER.

1.10 WIRES, CABLES, SPLICES AND TERMINATIONS

- A) POWER AND CONTROL WIRING SHALL BE COPPER, MINIMUM 98% CONDUCTIVITY, WITH TYPE THIN/TW/N INSULATION RATED 600 VOLTS. MINIMUM WIRE SIZE SHALL BE #12 AWG. CONDUCTORS SHALL BE SOLID FOR WIRE SIZED #10 AWG AND SMALLER AND STRANDED FOR WIRE SIZES #8 AWG AND LARGER.
B) METAL CLAD CABLE SHALL BE 90°C RATED CODE TYPE AC/THH WITH A SEPARATE GREEN INSULATED GROUND CONDUCTOR IN ACCORDANCE WITH UL 4. JACKET SHALL BE GALVANIZED STEEL ARMOR.
C) CONDUCTORS SHALL BE COLOR CODED AS FOLLOWS:
200/120V BLACK PHASE A
RED PHASE B
WHITE BLUE C
GREEN NEUTRAL GROUND
WHITE WITH TRACER NEUTRAL FOR GFI CIRCUIT
D) CONDUCTOR SIZES SHALL BE INCREASED WHERE REQUIRED BY CODE AND/OR THE ENGINEER TO COMPENSATE FOR VOLTAGE DROP AND HIGH AMBIENT TEMPERATURE.
E) SPLICES FOR WIRE SIZES #10 AWG AND SMALLER SHALL BE MADE WITH SPRING CONNECTORS AND TAPE. SPLICES FOR WIRE SIZES #8 AWG AND LARGER SHALL BE HYDRAULIC COMPRESSION TYPE WITH PRE-MOLDED COVER AND TAPE.
F) TERMINATIONS OF POWER AND CONTROL WIRING SHALL BE COMPRESSION TYPE, WITH TWO-HOLE LUGS FOR WIRE SIZES #8 AWG AND LARGER. MECHANICAL LUGS MAY ONLY BE UTILIZED FOR TERMINATIONS AT BRANCH CIRCUIT PANELBOARDS.

1.11 WIRING DEVICES

- A) WIRING DEVICES SHALL BE DECORA STYLE WITH NEMA CONFIGURATIONS AS INDICATED ON THE DRAWINGS. COLOR OF DEVICES SHALL BE AS SELECTED BY THE ARCHITECT. WIRING DEVICES SHALL BE MANUFACTURED BY ARROW-HART, HUBBELL, LEVITON, PASS & SEYMOUR OR APPROVED EQUAL.
B) FACEPLATES SHALL BE NYLON, COLOR TO MATCH DEVICE. WEATHERPROOF DEVICES SHALL BE PROVIDED WITH GASKETTED, WEATHERTIGHT, IN-USE COVER.
C) SAFETY DISCONNECT SWITCHES SHALL BE 250V OR 600V AS REQUIRED, HEAVY DUTY, HORSEPOWER RATED, QUICK MAKE-QUICK BREAK DESIGN WITH HANDLES LOCKABLE IN THE OPEN (OFF) POSITION. SWITCH HOUSINGS SHALL INCLUDE COVER. INTERLOCK AND LINE SIDE TERMINAL SHIELD AND GROUNDING LUG. FUSE CLIPS SHALL BE REJECTION TYPE. INTERRUPTING RATINGS SHALL BE A MINIMUM OF 100,000 AIC WHEN FUSED AND 12 TIMES THE CONTINUOUS CURRENT RATING WHEN UNFUSED AT RATED VOLTAGE.

1.12 GROUNDING

- A) THE DISTRIBUTION SYSTEM SHALL BE COMPLETELY AND PROPERLY GROUNDED USING APPROVED FITTINGS. SEPARATE INSULATED GROUND CONDUCTORS SHALL BE RUN WITH ALL FEEDERS WHERE INDICATED. RECEPTACLE BRANCH CIRCUITS AND FLEXIBLE CONNECTIONS TO LIGHTING FIXTURES AND EQUIPMENT.
B) METAL RACEWAYS, METAL ENCLOSURES OF ELECTRICAL DEVICES AND OTHER EQUIPMENT SHALL BE COMPLETELY GROUNDED IN AN APPROVED MANNER. PROPER HARDWARE REQUIRED FOR A COMPLETE GROUNDING SYSTEM SHALL BE INSTALLED BY THE CONTRACTOR.

1.13 IDENTIFICATION OF WORK

- A) ALL DISCONNECT SWITCHES, PANELBOARDS, EQUIPMENT AND CABINETS SPECIFIED HEREIN SHALL BE CLEARLY IDENTIFIED WITH THE EQUIPMENT DESIGNATION, VOLTAGE AND AMPERE RATING, FUSE RATING, EQUIPMENT SERVED AND ORIGIN OF THE INCOMING FEED. IDENTIFICATION SHALL BE WHITE ON BLACK PLASTIC NAMEPLATE WITH 1/8" MINIMUM LETTERING ATTACHED BY SCREWS.
B) ALL WIRES SHALL BE IDENTIFIED BY PANEL AND CIRCUIT NUMBER AT ALL TERMINATION AND SPLICE POINTS BY THE USE OF BRADY 9-500 VINYL CLOTH TAPE OR EQUIVALENT METHOD.
C) ALL JUNCTION BOXES SHALL BE IDENTIFIED WITH PANEL AND CIRCUIT NUMBERS OF ALL CIRCUITS OR NAME OF COMMUNICATIONS SYSTEM CABLING CONTAINED WITHIN. JUNCTION BOXES IN EXPOSED LOCATIONS SHALL BE CLEARLY MARKED WITH IDENTIFYING LABELS. JUNCTION BOXES IN CONCEALED LOCATIONS SHALL BE MARKED WITH A BOLD, INDELIBLE MARKING PEN. LETTERING SHALL BE NEATLY AND LEGIBLY PRINTED. JUNCTION BOXES ON EMERGENCY SERVICE SHALL BE PAINTED RED AND LABELED AS EMERGENCY.

1.14 HANGERS AND SUPPORTS

- A) THREADED RODS SHALL BE FULLY GALVANIZED, MINIMUM 3/8" DIAMETER, MODULAR CHANNEL SUPPORTS SHALL BE GALVANIZED STEEL. SUPPORT CLIPS AND FASTENERS SHALL BE LISTED AND APPROVED FOR THE APPLICATION. STRAPS AND CLAMPS SHALL BE MALLEABLE IRON.
B) SUPPORTS SHALL BE SIZED TO ACCOMMODATE THE LOAD REQUIRED. ALL WORK SHALL BE SUPPORTED INDEPENDENTLY OF THE WORK OF OTHER TRADES, INCLUDING CEILING SYSTEM SUPPORTS.
C) PANELS AND EQUIPMENT LOCATED ON OTHER THAN MASONRY WALLS SHALL BE MOUNTED WITH MODULAR CHANNEL SUPPORTS SECURED TO THE BUILDING STRUCTURE.

1.15 FINAL CLEANUP AND FIELD TESTS

- A) AFTER COMPLETION OF THE ENTIRE ELECTRICAL INSTALLATION:
1. THE CONTRACTOR, PRIOR TO FINAL ACCEPTANCE, SHALL CLEAN ALL PANELS, SWITCHES, CABINETS, DEVICES PLATES, FIXTURES AND OTHER ITEMS FURNISHED UNDER THIS CONTRACT AND SHALL ENSURE THAT ALL PANELBOARD DIRECTORIES ARE IN PLACE AND COMPLETED OR REVISED AS REQUIRED BY THE WORK, AND THAT ALL IDENTIFICATION AND MARKING OF EQUIPMENT, CABLES, ALL JUNCTION BOXES AND OTHER ITEMS IS COMPLETED.
B) IN ADDITION TO OTHER TESTS WHICH MAY BE REQUIRED BY OTHER DIVISIONS, PERFORM FIELD TESTS IN THE PRESENCE OF THE ENGINEER, TO DEMONSTRATE THE PROPER FUNCTIONING OF THE ELECTRICAL INSTALLATION. THE ENGINEER SHALL BE GIVEN A MINIMUM OF 48 HOURS ADVANCE NOTICE OF ALL TESTS. REQUIRED FIELD TESTS SHALL INCLUDE, BUT NOT BE LIMITED TO THE FOLLOWING:
1. OPERATION OF ALL ELECTRICAL EQUIPMENT FOR A PERIOD FOR A PERIOD OF 24 HOURS WITHOUT INTERRUPTION.
C) ALL DEFECTIVE FIXTURES CABLES OR OTHER EQUIPMENT ENCOUNTERED DURING THE COURSE OF TESTING SHALL BE PROMPTLY REPLACED AND RETESTED TO THE SATISFACTION OF THE ENGINEER.

1.16 PROJECT CLOSEOUT

- A) AFTER COMPLETION OF PROJECT AND PRIOR TO REQUESTING FINAL PAYMENT, THE CONTRACTOR SHALL GIVEN WRITTEN NOTICE THAT THE FOLLOWING ITEMS HAVE BEEN COMPLETED.
1. REQUIRED AGENCY APPROVALS.
2. RESOLUTION OF OUTSTANDING SUBMITTALS AND PUNCH LIST ITEMS.
3. AS-BUILT DRAWINGS.
4. MANUFACTURERS CERTIFICATIONS, WARRANTIES AND O&M MANUALS.

DEMOLITION NOTES:

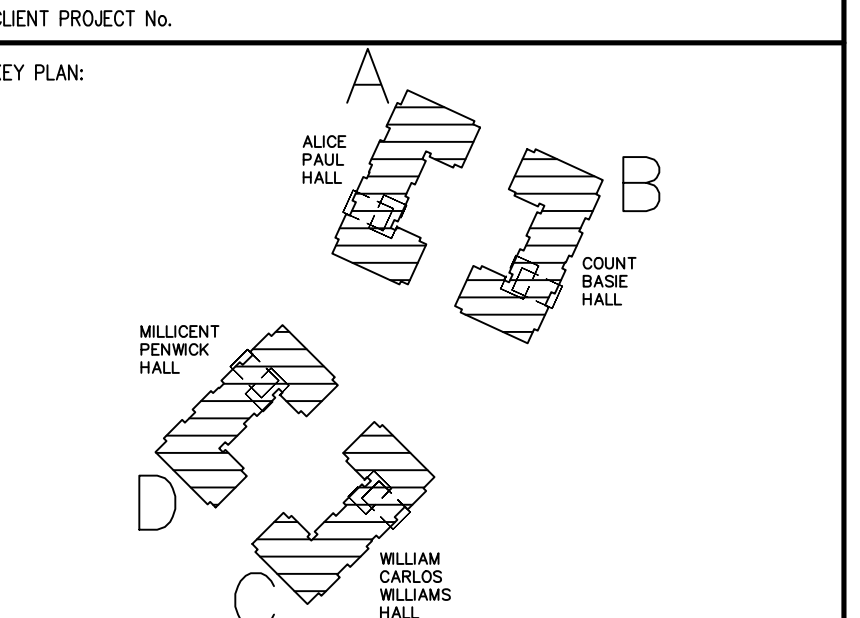
- 1. NOTES AND GRAPHIC REPRESENTATIONS SHALL NOT LIMIT THE EXTENT OF DEMOLITION REQUIRED. CONTRACTOR SHALL VISIT THE SITE, CAREFULLY EXAMINE EXISTING CONDITIONS AND SHALL PERFORM ALL DEMOLITION REQUIRED TO ACHIEVE THE FINAL DESIGN INTENT AS REQUIRED BY THE CONTRACT DOCUMENTS. EXTENT OF ALL DEMOLITION WORK SHALL BE COORDINATED WITH THE ARCHITECT AND CONSTRUCTION MANAGER.
2. EQUIPMENT AND WIRING TO BE REMOVED SHALL BE DE-ENERGIZED PRIOR TO ANY DEMOLITION WORK.
3. UNLESS OTHERWISE NOTED, DISCONNECT AND REMOVE ALL FIXTURE RECEPTACLES, OUTLETS AND OTHER ELECTRICAL DEVICES ALONG WITH ASSOCIATED WIRING, CONDUIT RACEWAYS, BOXES AND SUPPORTS IN AREA OF WORK. EXISTING ELECTRICAL DEVICES SHALL INCLUDE, BUT NOT LIMITED TO, TEL/DATA OUTLETS, LIGHTING SWITCHES, RECEPTACLES, ETC.
4. WHERE SPECIFIC DEVICES ARE INDICATED:
'E' - EX - DENOTES EXISTING TO REMAIN.
'ER' - DENOTES EXISTING TO BE REMOVED.
'RR' - EXISTING TO BE REMOVED AND RELOCATED.
'R' - RELOCATED EXISTING.
5. UNLESS OTHERWISE INDICATED, EXISTING SERVICES, SYSTEMS AND WIRING SERVING EXISTING AREAS OUTSIDE OF DEMOLITION AREA SHALL REMAIN OR BE RELOCATED AS REQUIRED TO MAINTAIN OPERATION OF EXISTING SYSTEMS AND AVOID CONFLICT WITH NEW CONSTRUCTION.
6. IN PROCESS OF REMOVING WIRING DEVICES, LIGHTING FIXTURES AND OTHER ELECTRICAL EQUIPMENT AND MATERIALS, THIS CONTRACTOR SHALL EXERCISE EXTREME CAUTION TO PREVENT DAMAGE TO THE ARCHITECTURAL SURFACES AND MATERIALS WHICH ARE TO REMAIN, INCLUDING WALLS, FLOORS, CEILINGS, WINDOWS, DOORS, MOLDINGS, STRUCTURAL MEMBERS, ETC. THE COST TO REPAIR OR ANY MATERIAL DEEMED BY THE ARCHITECT TO HAVE BEEN UNDULY DAMAGED BY THIS CONTRACTOR DURING DEMOLITION OR CONSTRUCTION SHALL BE PAID BY THIS CONTRACTOR AT THIS ADDITIONAL COST TO THE OWNER.
7. FEEDERS AND BRANCH CIRCUITS TO BE REMOVED - WIRING, CONDUIT AND SUPPORTS SHALL BE REMOVED TO THE PANEL OF ORIGIN.
8. PROVIDE TEMPORARY SUPPORTS FOR ALL DEVICES, EQUIPMENT, AND CABLING THAT ARE TO REMAIN. COORDINATE ALL WORK WITH BUILDING OPERATING PERSONNEL AND BUILDING'S FIRE ALARM, SECURITY AND TELECOM CONTRACTORS.
9. ALL WORK SHALL BE PROPERLY IDENTIFIED AFTER DEMOLITION.
10. PROVIDE BLANK PLATES AT ALL OPEN BOXES WHERE DEVICES ARE REMOVED AND SURFACE IS NOT SCHEDULED TO BE PATCHED AND RE-FINISHED.
11. COORDINATE WITH ARCHITECT AND CONSTRUCTION MANAGER WHICH FIXTURES, DEVICES AND EQUIPMENT, IF ANY, ARE TO BE REMOVED, KEPT INTACT AND RETURNED TO THE OWNER, IN GENERAL, ALL DEVICES, WIRING, RACEWAYS, BOXES, SUPPORTS AND OTHER EQUIPMENT WHICH ARE TO BE REMOVED FROM SITE SHALL BE PROPERLY DISPOSED OF.
12. EQUIPMENT INDICATED TO BE REMOVED SHALL BE TAKEN FROM THE SITE AND DISPOSED OF IN ACCORDANCE WITH APPLICABLE LAWS AND ENVIRONMENTAL REGULATIONS. EQUIPMENT REQUIRED TO BE TURNED OVER TO THE OWNER SHALL BE PLACED IN A MUTUALLY ACCEPTABLE LOCATION.

GENERAL NOTES:

- 1. CONTRACTOR SHALL VISIT THE JOB SITE, REVIEW THE ARCHITECTURAL DRAWINGS AND BE RESPONSIBLE FOR REVIEWING A FULL SET OF BID DOCUMENTS TO MAKE HIMSELF AWARE OF THE TOTAL JOB BEFORE SUBMITTING HIS PRICE.
2. VERIFY ALL EXISTING CONDITIONS IN THE FIELD AND INCLUDE IN BID THE PRICE OF ALL WORK REQUIRED TO ACCOMMODATE THE EXISTING INSTALLATION.
3. ALL WORK SHALL BE INSTALLED CONCEALED, UNLESS OTHERWISE NOTED. BRANCH WIRING SHALL BE CONCEALED IN WALLS AND ABOVE HUNG CEILING, U.O.N.
4. CONTRACTOR SHALL FIELD VERIFY DIMENSIONS OF FINISHED CONSTRUCTION PRIOR TO FABRICATION AND INSTALLATION OF FIXTURES AND EQUIPMENT.
5. CIRCUIT NUMBERS INDICATED ON POWER AND LIGHTING PLANS ARE FOR IDENTIFICATION PURPOSES ONLY. CONTRACTOR SHALL VERIFY THE EXACT CIRCUIT NUMBER IN THE FIELD WHEN BRANCH CIRCUITS ARE INDICATED TO BE CONNECTED TO EXISTING PANELBOARDS.
6. ALL LOW VOLTAGE WIRING SHALL BE INSTALLED IN CONDUIT. PROVIDE EMPTY CONDUIT WITH PULL STRING FOR WIRING BY OTHERS.
7. DETERMINE THE EXACT LOCATION OF EQUIPMENT TO BE INSTALLED BY OTHER TRADES BEFORE STARTING CONDUIT WORK.
8. CONTRACTOR SHALL PROVIDE AND CONNECT ALL RACEWAYS AND WIRING FROM EQUIPMENT AND DEVICES TO THEIR SOURCE OF POWER. PROVIDE ALL REQUIRED CONDUITS, WIRING AND JUNCTION BOXES TO ENERGIZE EQUIPMENT AS INDICATED.
9. PULL AND JUNCTION BOXES SHALL BE SURFACE TYPE IN ULTIMATELY UNFINISHED AREAS UNLESS OTHERWISE NOTED. LOCATIONS APPROXIMATELY WHERE INDICATED. ON WALLS, CEILINGS, BEAMS OR SUSPENDED FROM CEILINGS, TO SUIT CONDUIT ENTRANCE, TO AVOID INTERFERENCE WITH EQUIPMENT OF OTHER TRADES AND TO LEAVE COVERS READILY ACCESSIBLE.
10. PULL BOXES WHETHER SIZED OR NOT SHALL BE MODIFIED BY THIS CONTRACTOR TO MEET FIELD CONDITIONS AND CODE REQUIREMENTS. ADDITIONAL PULL BOXES, IF REQUIRED TO SATISFY FIELD CONDITIONS AND CODE REQUIREMENTS, SHALL BE SUPPLIED AND INSTALLED BY THIS CONTRACTOR AT NO EXTRA COST.
11. THE MINIMUM RATING OF DISCONNECT SWITCHES SHALL BE EQUAL TO OR GREATER THAN THE RATING OF THE PROTECTIVE DEVICE ON THE SUPPLY SIDE OF THE DISCONNECT SWITCH.
12. CONTRACTOR SHALL PROVIDE AND CONNECT ALL RACEWAYS AND WIRING FROM EQUIPMENT AND DEVICES TO THEIR SOURCE OF POWER. PROVIDE ALL REQUIRED CONDUITS, WIRING AND JUNCTION BOXES TO ENERGIZE EQUIPMENT AS INDICATED.
13. AFTER HIS WORK IS COMPLETED, CONTRACTOR SHALL TEST THE ELECTRICAL DISTRIBUTION SYSTEM FOR SHORT CIRCUITS, ETC., TO THE SATISFACTION OF THE OWNER. ALL COSTS FOR THIS TEST SHALL BE BORNE BY THE CONTRACTOR.
14. MINIMUM RACEWAY SIZE SHALL BE 3/4" AND SHALL BE RUN PARALLEL TO BUILDING STRUCTURAL LINES. RACEWAYS SHALL NOT BE RUN HORIZONTALLY BELOW 8'-0" IN PARTITIONS. ALL EMPTY RACEWAYS SHALL BE FURNISHED WITH A 200 LB. TEST NYLON DRAG LINE.
15. ALL BRANCH CIRCUITS SHALL BE CLEARLY MARKED IN THE PANEL AS TO LOCATION AND PURPOSE.
16. A GROUND CONDUCTOR SHALL BE PROVIDED IN ALL BRANCH CIRCUIT RACEWAYS.
17. WHERE EQUIPMENT, LIGHTING FIXTURES AND WIRING DEVICES ARE SHOWN WITH CIRCUIT NUMBERS ONLY, THE MINIMUM BRANCH CIRCUITING REQUIREMENTS SHALL BE AS FOLLOWS, U.O.N.:
A. LIGHTING FIXTURES - 2#12, 1#12 GRD-3/4"C.
B. RECEPTACLES - 2#12, 1#12 GRD-3/4"C.
18. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TEMPORARY LIGHT AND POWER TO INSURE THE SAFETY OF PERSONNEL AND POWER REQUIREMENTS OF THE VARIOUS TRADES.
19. ALL ELECTRICAL DEVICES SHALL BE RATED FOR WET LOCATIONS.

ELECTRICAL SYMBOLS LIST
CONDUIT SYSTEM
WIRING DEVICES
PANELBOARD AND CABINETS
ABBREVIATIONS
LEGEND

PROJECT NAME
MONTCLAIR STATE UNIVERSITY - VILLAGE APT - IDF ROOM AC UNIT REPLACEMENT



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DRAWING TITLE:
ELECTRICAL SPECIFICATIONS, NOTES, SYMBOL LIST & ABBREVIATIONS

GRAPHIC SCALE:

SEAL: Vincent Ffresse, PE
N.J. Professional Engineer No. 43960
DRAWN: DS
CHECKED: DS
APPROVED: LORING JOB No.: 12284
DATE: 03/--/202b/yy
SHEET NUMBER: E-001

**GENERAL NOTES:**

- CONTRACTOR SHALL EXAMINE CONDUITS INTENDED FOR RE-USE AND CONFIRM CONDITION. PROVIDE SEPARATE ALLOWANCE COST TO REPLACE INTERIOR CONDUIT FROM PANEL SOURCE TO UNIT SERVED.

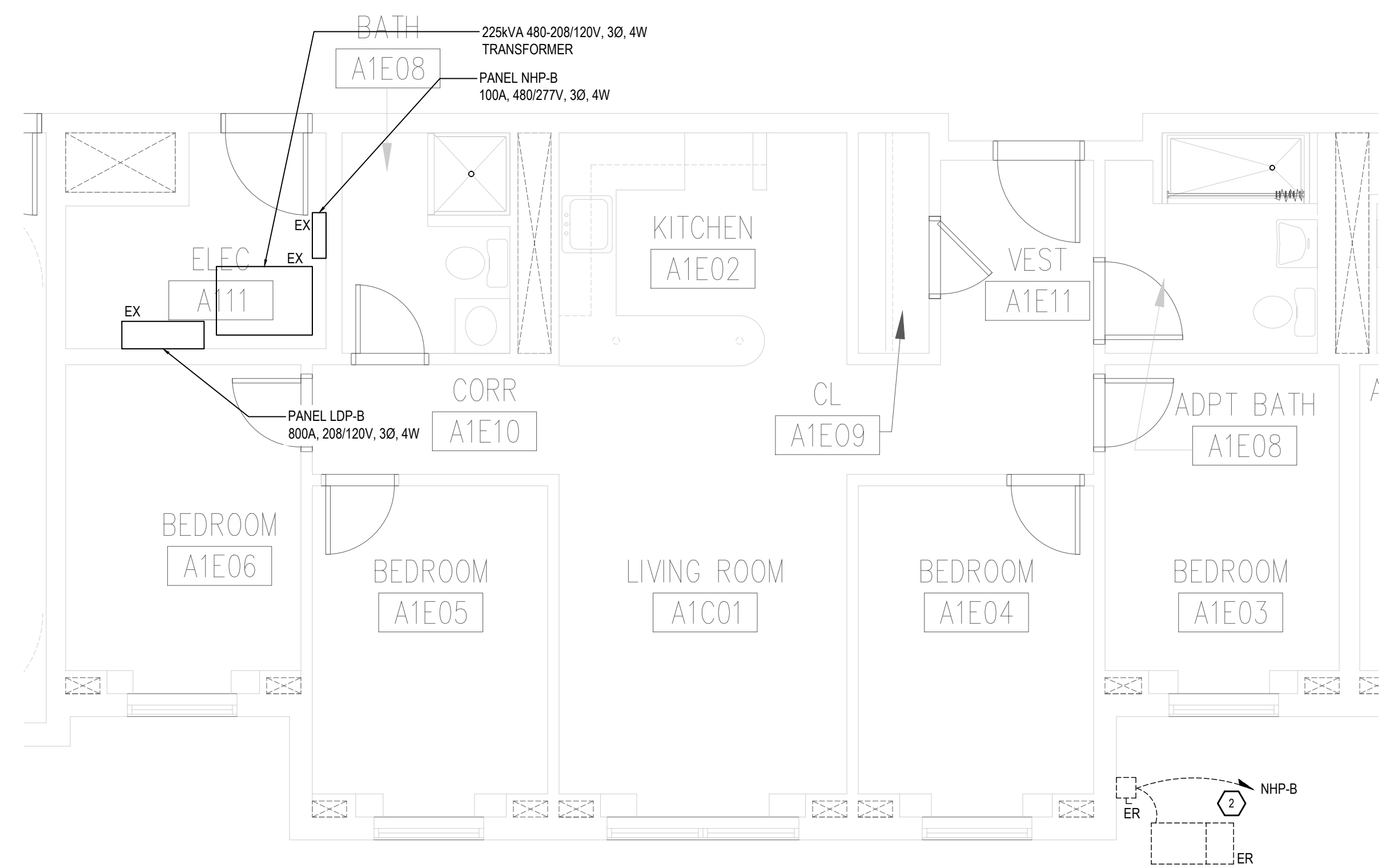
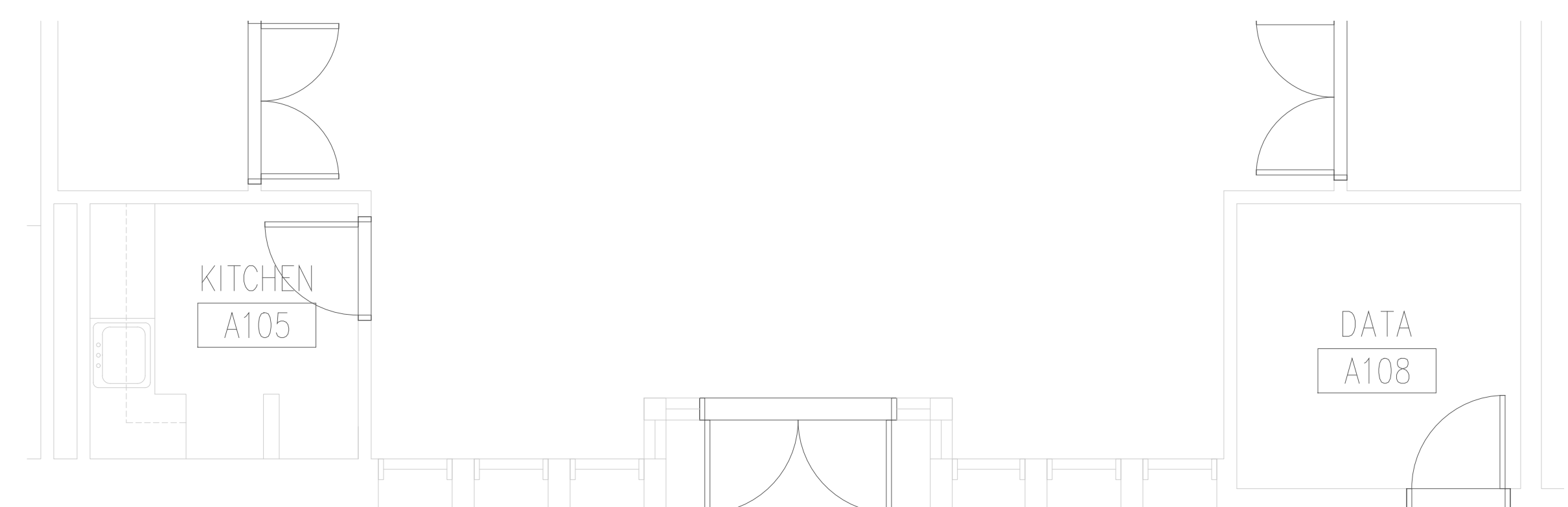
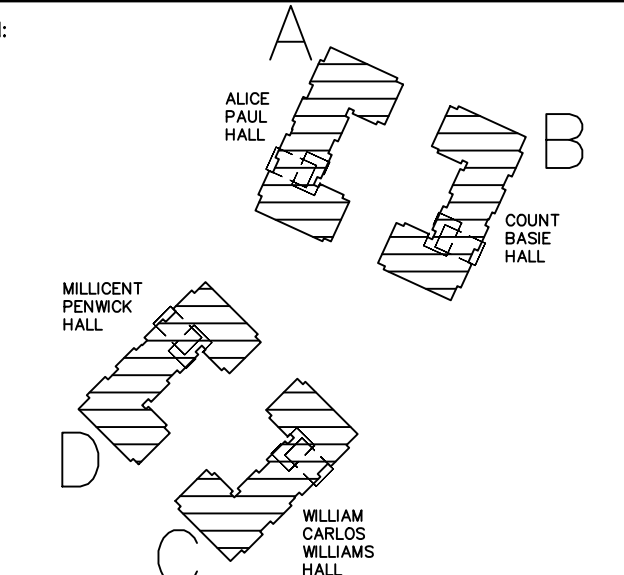
**KEYED NOTES**

- REMOVE EXISTING DISCONNECT SWITCH AND ASSOCIATED BRANCH CIRCUITING BACK TO PANELBOARD.
- REMOVE EXISTING DISCONNECT SWITCH AND ASSOCIATED WIRING BACK TO PANELBOARD. EXISTING EXTERIOR FLEXIBLE CONDUIT SHALL BE REMOVED FROM DISCONNECT SWITCH TO UNIT. EXISTING INTERIOR EMT CONDUIT SHALL REMAIN AND BE RE-USED IN NEW WORK.

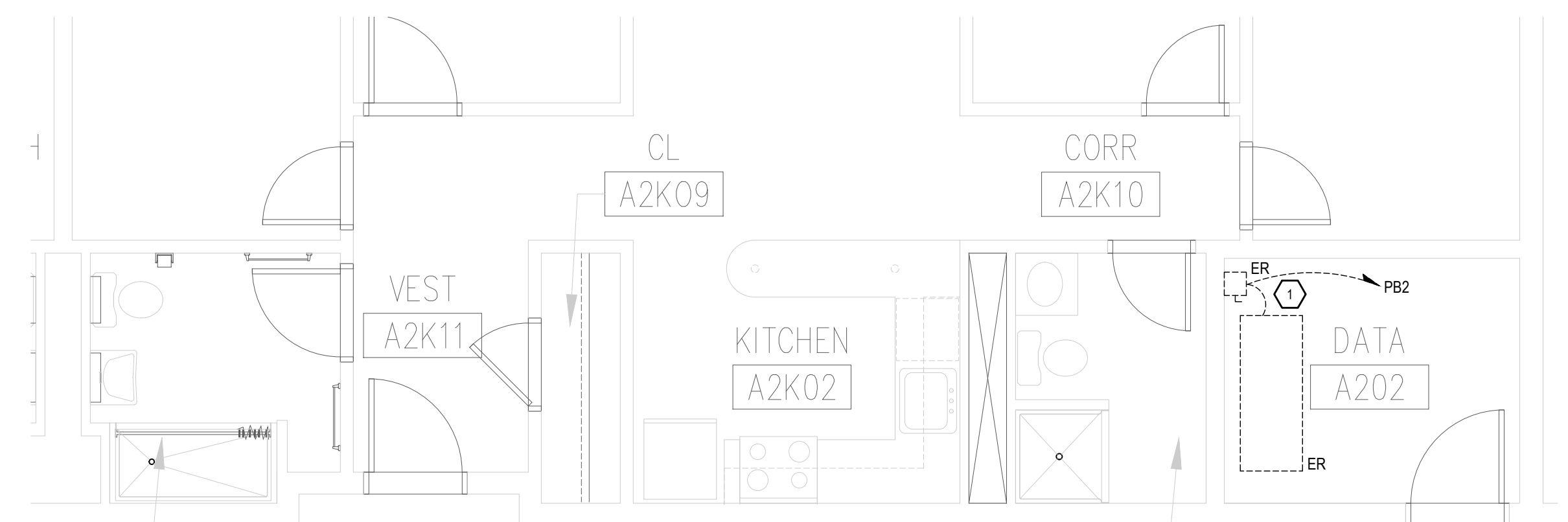
PROJECT NAME  
**MONTCLAIR STATE UNIVERSITY – VILLAGE APT – IDF ROOM AC UNIT REPLACEMENT**

CLIENT PROJECT No.

KEY PLAN:



1 FIRST FLOOR PARTIAL PLAN - DEMOLITION  
 1/4"=1'-0"



2 SECOND FLOOR PARTIAL PLAN - DEMOLITION  
 1/4"=1'-0"

| REV.# | DATE    | ISSUE DESCRIPTION |
|-------|---------|-------------------|
| 1     | 4/15/21 | ISSUE FOR BID     |

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 CERTIFICATE OF AUTHORIZATION NO. 24GA27952700  
 Loring No. 12284

DRAWING TITLE:  
**ELECTRICAL FIRST & SECOND FLOOR PARTIAL PLANS – DEMOLITION**

GRAPHIC SCALE:

|       |                 |               |
|-------|-----------------|---------------|
| SEAL: | DRAWN: DS       | CHECKED: DS   |
|       | APPROVED:       |               |
|       | LORING JOB No.: | 12284         |
|       | DATE:           | 03/11/2021    |
|       | SHEET NUMBER:   | <b>ED-100</b> |

1/2284.MSU - VILLAGE COMPLEX-IT-FCU REPLACEMENTS-ED-100-1ST & 2ND FLRS.DWG 4/15/2021 5:34 PM PRINTED BY: KAREIC

**GENERAL NOTES:**

1. CONTRACTOR SHALL EXAMINE CONDUITS INTENDED FOR RE-USE AND CONFIRM CONDITION. PROVIDE SEPARATE ALLOWANCE COST TO REPLACE INTERIOR CONDUIT FROM PANEL SOURCE TO UNIT SERVED.

**KEYED NOTES**

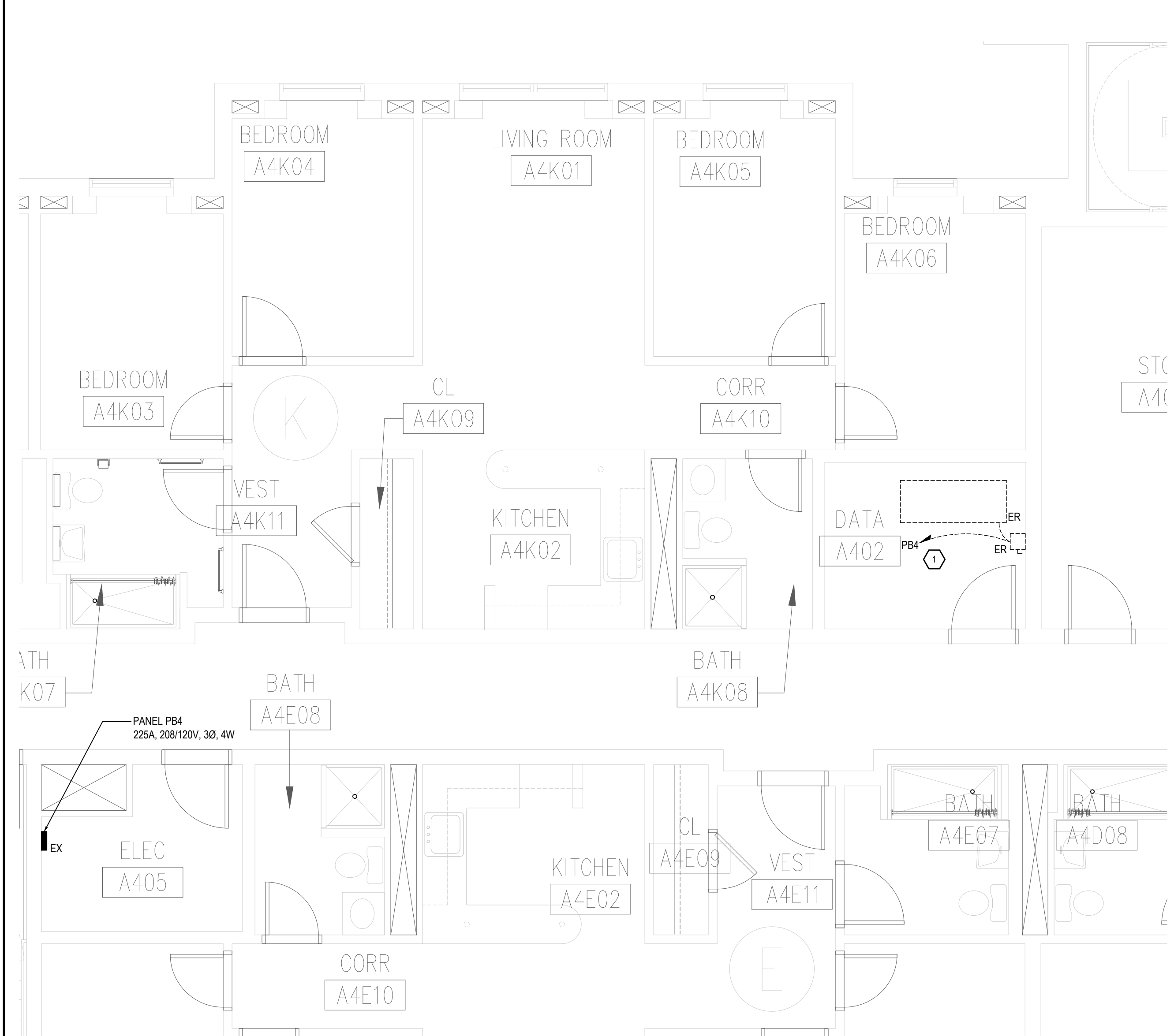
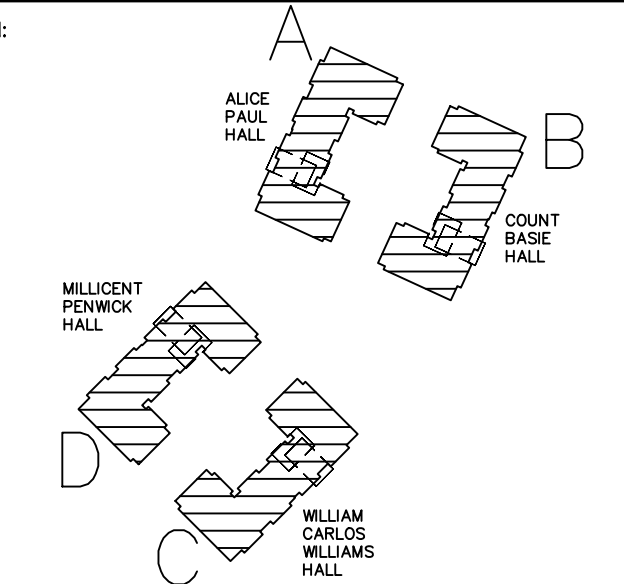
1. REMOVE EXISTING DISCONNECT SWITCH AND ASSOCIATED BRANCH CIRCUITING BACK TO PANELBOARD.
2. REMOVE EXISTING DISCONNECT SWITCH AND ASSOCIATED WIRING BACK TO PANELBOARD. EXISTING EXTERIOR FLEXIBLE CONDUIT SHALL BE REMOVED FROM DISCONNECT SWITCH TO UNIT. EXISTING INTERIOR EMT CONDUIT SHALL REMAIN AND BE RE-USED IN NEW WORK.

PROJECT NAME

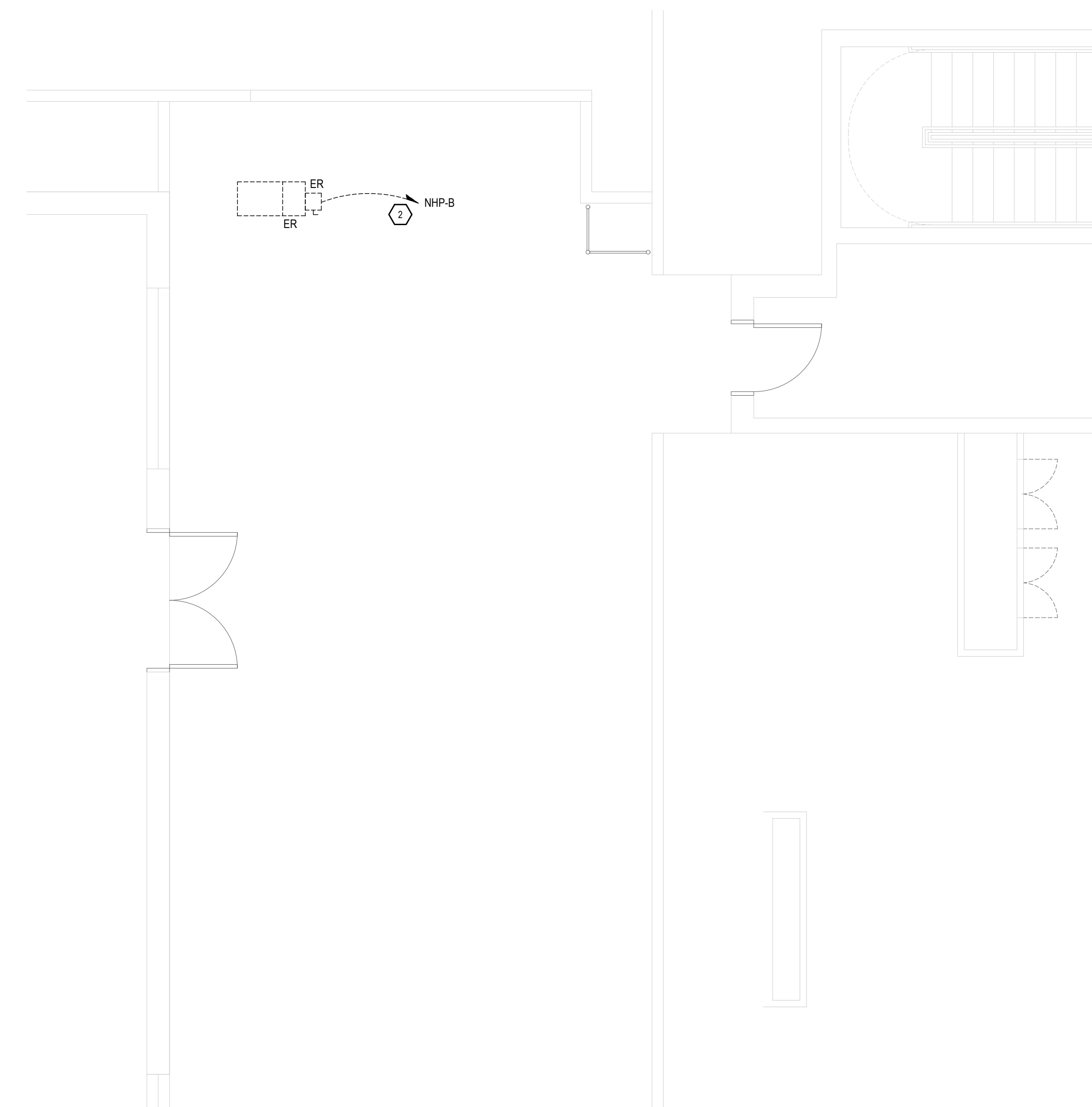
**MONTCLAIR STATE UNIVERSITY – VILLAGE APT – IDF ROOM AC UNIT REPLACEMENT**

CLIENT PROJECT No.

KEY PLAN:



1 FOURTH FLOOR PARTIAL PLAN - DEMOLITION  
1/4"=1'-0"



1 ROOF PARTIAL PLAN - DEMOLITION  
1/4"=1'-0"

| REV.# | DATE    | ISSUE DESCRIPTION |
|-------|---------|-------------------|
| 1     | 4/15/21 | ISSUE FOR BID     |

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Loring No. 12284

DRAWING TITLE:

**ELECTRICAL  
FOURTH FLOOR & ROOF  
PARTIAL PLAN –  
DEMOLITION**

GRAPHIC SCALE:

|       |                 |               |
|-------|-----------------|---------------|
| SEAL: | DRAWN: DS       | CHECKED: DS   |
|       | APPROVED:       |               |
|       | LORING JOB No.: | 12284         |
|       | DATE:           | 03/--/2021    |
|       | SHEET NUMBER:   | <b>ED-101</b> |

P:\12284 MSJ - VILLAGE COMPLEX-IT-FCU REPLACEMENTS\... ED-101 4TH FLR & ROOF.DWG 4/15/2021 3:34 PM PRINTED BY: KARENIC

**KEYED NOTES**

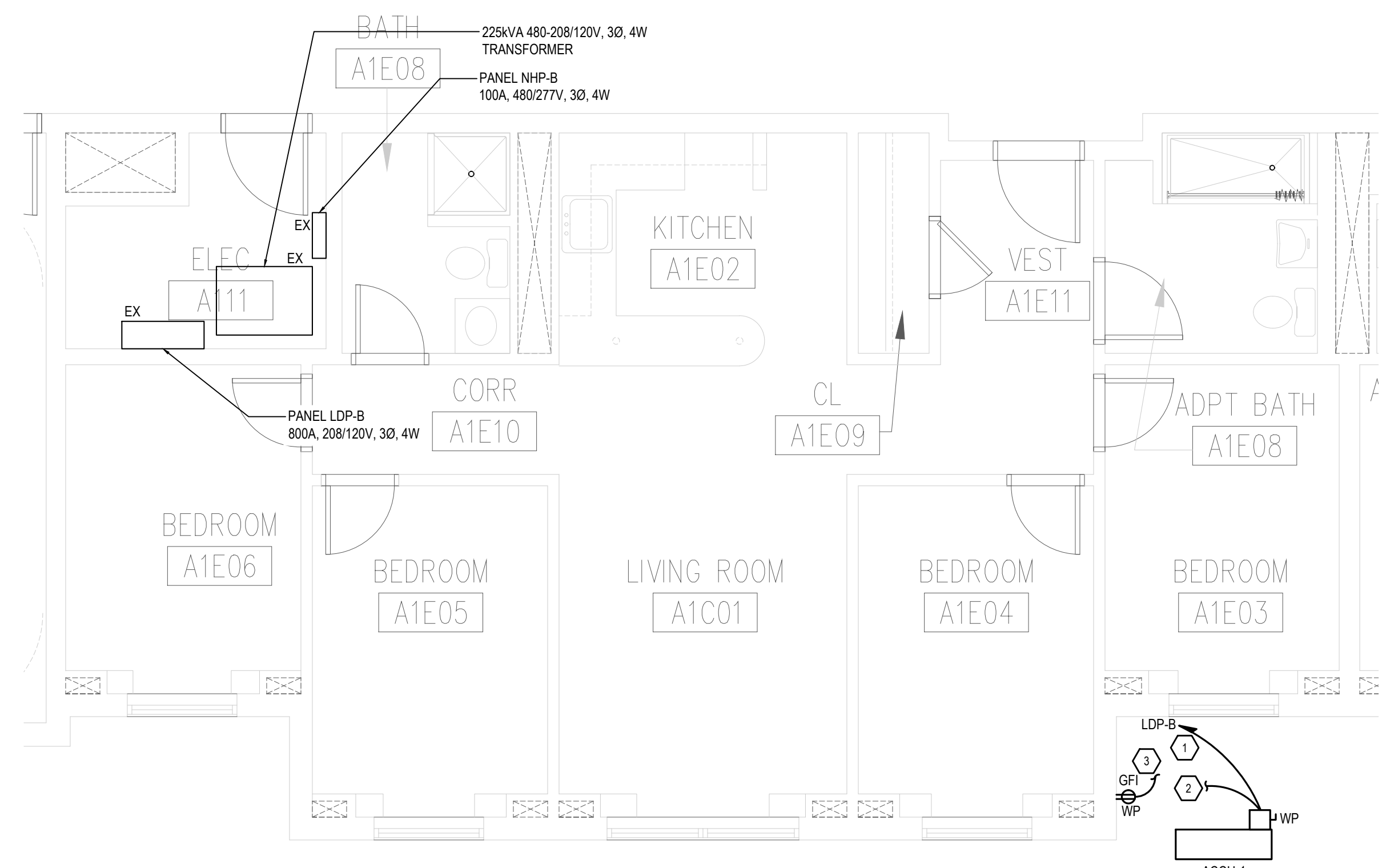
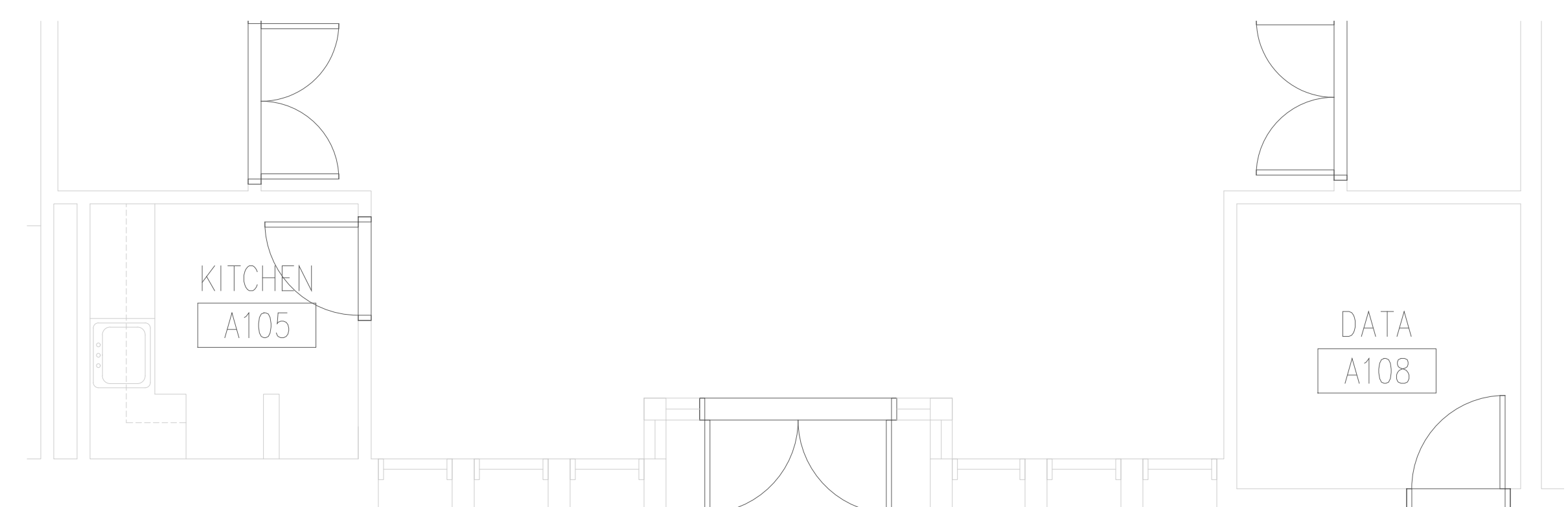
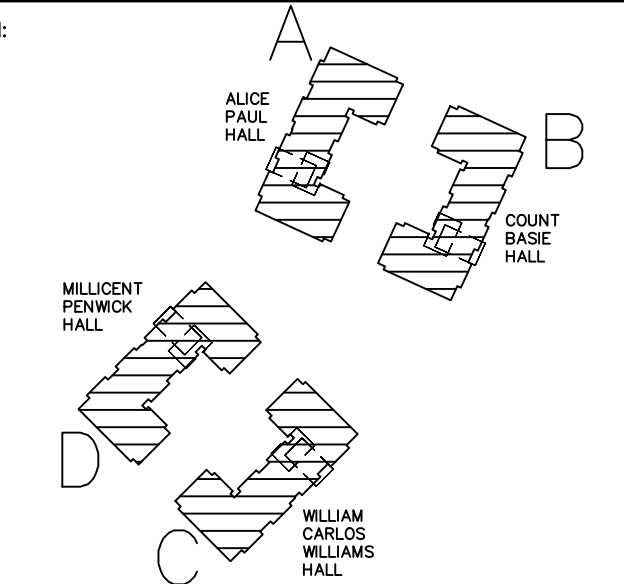
- 1 PROVIDE 3#10-1#10G-3/4" TO NEW 30A/2P CIRCUIT BREAKER IN EXISTING SPACE OF PANEL INDICATED. NEW CIRCUIT BREAKER SHALL MATCH EXISTING PANEL CHARACTERISTICS. UTILIZE EXISTING INTERIOR CONDUIT AND RE-WORK TO PANEL INDICATED.
- 2 PROVIDE 4#12-1#12G-3/4" FROM CONDENSING UNIT TO FAN COIL UNIT FOR POWER AND CONTROLS. ROUTE NEW CONDUIT WITH REFRIGERANT PIPING.
- 3 CONNECT TO EXISTING 20A, 1P CONVENIENCE RECEPTACLE CIRCUIT.
- 4 PROVIDE 2#12-1#12G-3/4" TO NEW 20A/1P CIRCUIT BREAKER IN EXISTING SPACE OF PANEL INDICATED. NEW CIRCUIT BREAKER SHALL MATCH EXISTING PANELBOARD CHARACTERISTICS.

PROJECT NAME

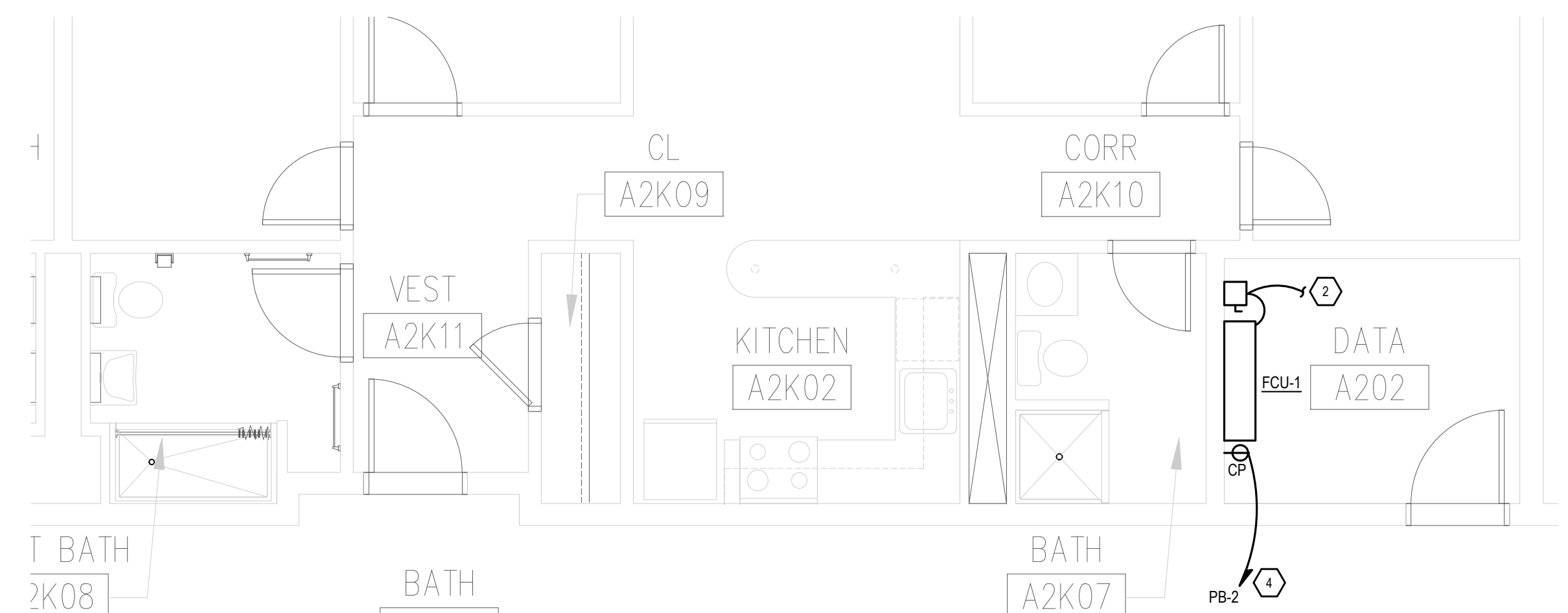
**MONTCLAIR STATE UNIVERSITY - VILLAGE APT - IDF ROOM AC UNIT REPLACEMENT**

CLIENT PROJECT No.

KEY PLAN:



1 FIRST FLOOR PARTIAL PLAN - DEMOLITION  
1/4"=1'-0"



2 SECOND FLOOR PARTIAL PLAN - DEMOLITION  
1/4"=1'-0"

| REV.# | DATE    | ISSUE DESCRIPTION |
|-------|---------|-------------------|
| 1     | 4/15/21 | ISSUE FOR BID     |

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 Loring No. 12284

DRAWING TITLE:  
**ELECTRICAL FIRST & SECOND FLOOR PARTIAL PLANS - POWER**

GRAPHIC SCALE:

|       |                 |              |
|-------|-----------------|--------------|
| SEAL: | DRAWN: DS       | CHECKED: DS  |
|       | APPROVED:       |              |
|       | LORING JOB No.: | 12284        |
|       | DATE:           | 03/11/2021   |
|       | SHEET NUMBER:   | <b>E-100</b> |

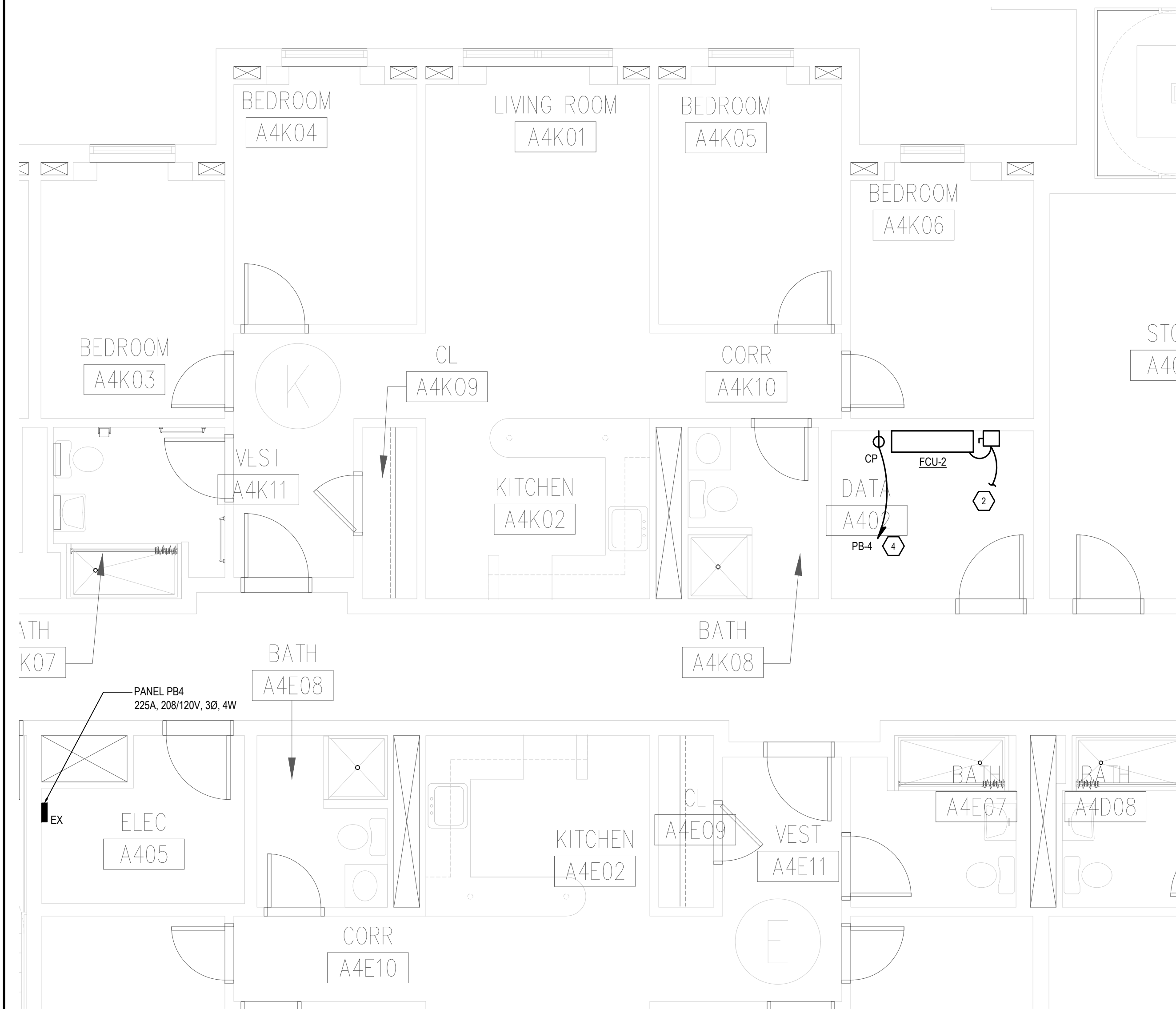
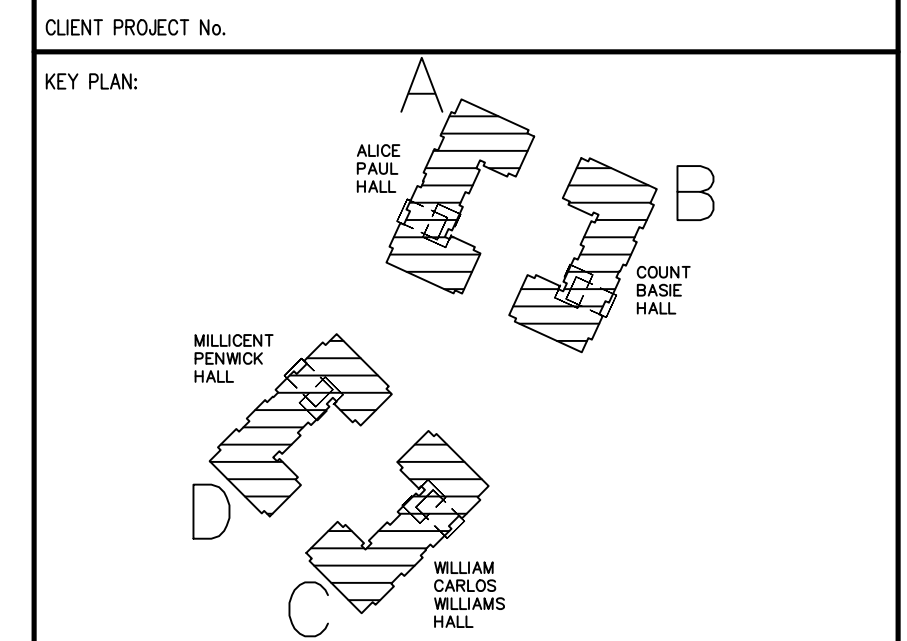
I:\12284.MSU - VILLAGE COMPLEX-IT-FCU REPLACEMENTS\... E-100\_1ST & 2ND FLOOR.DWG 4/15/2021 5:34 PM PRINTED BY: ASILVESTRE



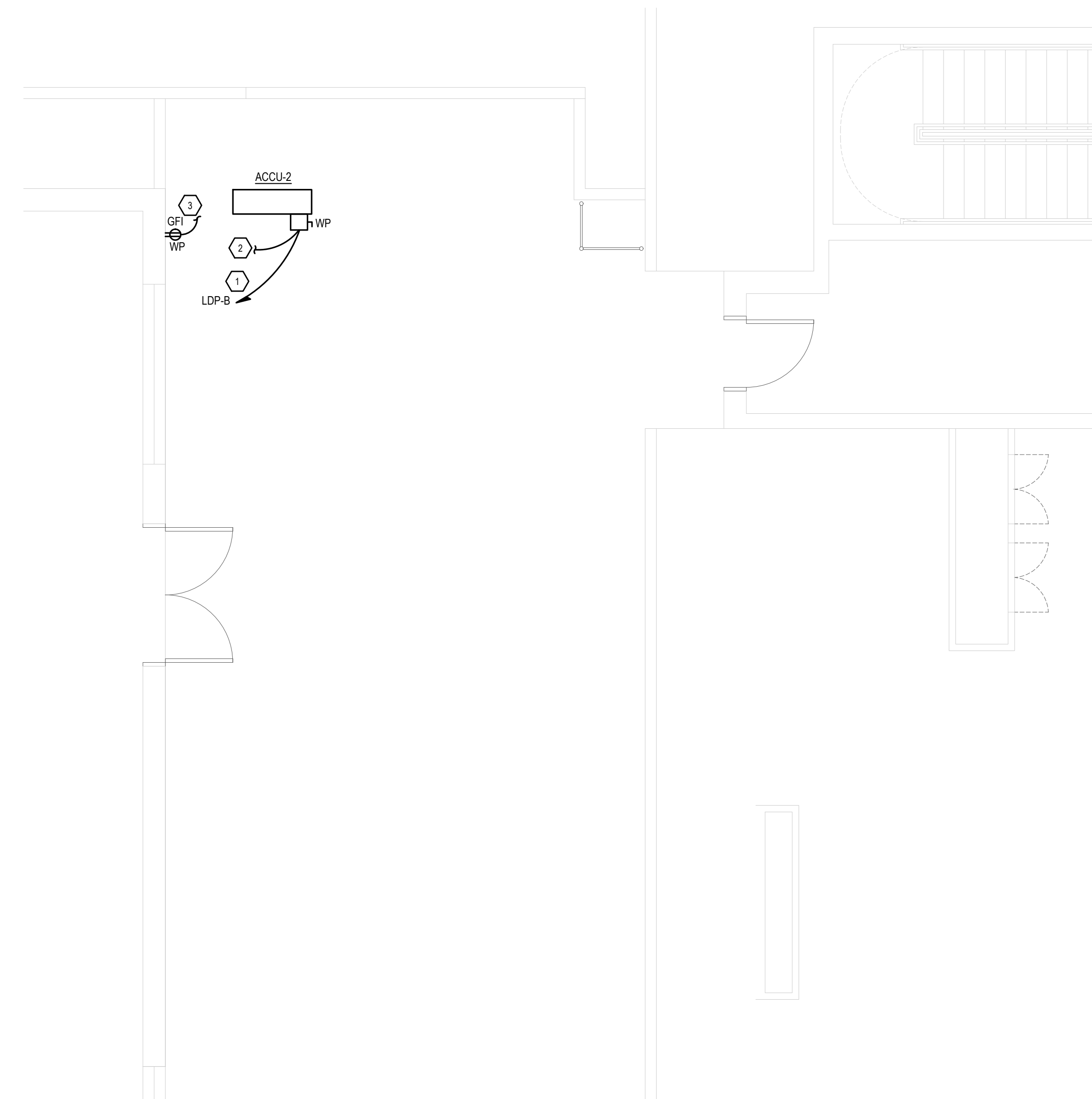
**KEYED NOTES**

- 1 PROVIDE 3#10-1#10G-3/4" TO NEW 30A/2P CIRCUIT BREAKER IN EXISTING SPACE OF PANEL INDICATED. NEW CIRCUIT BREAKER SHALL MATCH EXISTING PANEL CHARACTERISTICS. UTILIZE EXISTING INTERIOR CONDUIT AND RE-WORK TO PANEL INDICATED.
- 2 PROVIDE 4#12-1#12G-3/4" FROM CONDENSING UNIT TO FAN COIL UNIT FOR POWER AND CONTROLS. ROUTE NEW CONDUIT WITH REFRIGERANT PIPING.
- 3 CONNECT TO EXISTING 20A, 1P CONVENIENCE RECEPTACLE CIRCUIT.
- 4 PROVIDE 2#12-1#12G-3/4" TO NEW 20A/1P CIRCUIT BREAKER IN EXISTING SPACE OF PANEL INDICATED. NEW CIRCUIT BREAKER SHALL MATCH EXISTING PANELBOARD CHARACTERISTICS.

PROJECT NAME  
**MONTCLAIR STATE UNIVERSITY – VILLAGE APT – IDF ROOM AC UNIT REPLACEMENT**



1 FOURTH FLOOR PARTIAL PLAN - DEMOLITION  
 1/4"=1'-0"



1 ROOF PARTIAL PLAN - DEMOLITION  
 1/4"=1'-0"

| REV.# | DATE    | ISSUE DESCRIPTION |
|-------|---------|-------------------|
| 1     | 4/15/21 | ISSUE FOR BID     |

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 Loring No. 12284

DRAWING TITLE:  
**ELECTRICAL  
 FOURTH FLOOR & ROOF  
 PARTIAL PLAN –  
 POWER**

GRAPHIC SCALE:

|       |                 |               |
|-------|-----------------|---------------|
| SEAL: | DRAWN: DS       | CHECKED: DS   |
|       | APPROVED:       |               |
|       | LORING JOB No.: | 12284         |
|       | DATE:           | 03/11/2021/YY |
|       | SHEET NUMBER:   | <b>E-101</b>  |