

ELECTRICAL LEGEND *

Table with 2 columns: Symbol and Description. Includes symbols for light fixtures, switches, receptacles, and outlets.

Table with 2 columns: Symbol and Description. Includes symbols for fire-rated floor boxes, distribution panels, and various electrical components.

ELECTRICAL SHEET INDEX table with columns: SHEET and DESCRIPTION. Lists sheets E-001 through E-311.



Client information for LAHC - Leaders Advancing and Helping Communities, Framework E logo, MAENGINEERING logo, project title 'LAHC Workforce Education Resource and Development Center', and a table of revision history.

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Framework E PROJ NO 2024007 ELECTRICAL LEGEND, SHEET INDEX AND DETAILS, PANEL SCHEDULE DRAWING NO E-001 © 2025 Framework E

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ELECTRICAL SPECIFICATIONS:

ALL WORK SHALL BE IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE, LATEST EDITION, AND ALL LOCAL AND STATE AUTHORITIES HAVING JURISDICTION THEREOF.

ALL EQUIPMENT SHALL BE SPECIFICATION GRADE AND SHALL HAVE U.L. LABEL FOR INTENDED USE.

ELECTRICAL SYSTEMS SHALL BE COMPLETE IN EVERY DETAIL, INCLUDING ALL INCIDENTAL ITEMS FOR A PROPER AND FUNCTIONING INSTALLATION SUBJECT TO FINAL APPROVAL OF ARCHITECT/ENGINEER.

ALL REQUIRED PERMIT AND INSPECTIONS SHALL BE OBTAINED BY CONTRACTOR AND SUCH COSTS SHALL BE INCLUDED IN BID PRICE FOR THIS WORK.

PROVIDE UL LISTED SYSTEM FOR FIRE STOPPING PENETRATIONS THROUGH FIRE RATED ASSEMBLIES. PROVIDE SYSTEM WITH EQUAL OR GREATER RATING THAN ASSEMBLY. REFER TO ARCHITECTURAL DOCUMENTS FOR RATINGS AND LOCATIONS OF ASSEMBLIES.

EXAMINATION OF SITE IS MANDATORY. CONTRACTOR IS HEREBY HELD TO HAVE EXAMINED THE SITE AND HAVE INCLUDED IN HIS BID PRICE ALL COSTS DUE TO SITE AND FIELD CONDITIONS.

COMPLETE IDENTIFICATION OF PROJECT ELECTRICAL COMPONENTS IS REQUIRED. IDENTIFY ALL PANELS, DISCONNECTS, CONTROL DEVICES, ETC., WITH THE NOMENCLATURE INDICATED ON THE DOCUMENTS AND WITH POWER SOURCE AND ELECTRICAL RATINGS USING PLASTIC LAMINATE NAMEPLATE. INSTALL TYPEWRITTEN DIRECTORIES OF ALL CIRCUITS ON INSIDE OF PANELS. IDENTIFY WIRING DEVICE COVERPLATES WITH PANELBOARD AND BRANCH CIRCUIT NUMBER SERVING DEVICE, E.G. "A-15". PROVIDE "X" MACHINE-WRITTEN BLACK LETTERING ON CLEAR PLASTIC ADHESIVE TAPE. LOCATE ON BOTTOM FRONT OF COVERPLATE, CENTERED BELOW WIRING DEVICES). SUBMIT SAMPLE OF LABELED TAPE WITH WIRING DEVICE/COVERPLATE SUBMITTAL. SAMPLE MAY BE ADHERED TO PAPERWORK IN SUBMITTAL RATHER THAN TO A COVERPLATE.

PROVIDE TEMPORARY POWER AND LIGHTING DURING CONSTRUCTION. REMOVE TEMPORARY WIRING UPON COMPLETION OF THE PROJECT. TEMPORARY SERVICES SHALL BE AS REQUIRED, BY N.E.C. AND OSHA. CONTRACTOR IS RESPONSIBLE TO MEET WITH UTILITY TO FOR TEMPORARY POWER PROVISION AND ALL REQUIRED 3RD UNITS.

GROUND CONTINUITY SHALL BE MAINTAINED THROUGHOUT THE ELECTRICAL SYSTEM. INSTALL EQUIPMENT GROUNDING CONDUCTOR WITH EVERY CIRCUIT.

COORDINATE SIZE AND LOCATION OF ANY REQUIRED ACCESS PANELS IN WALLS OR FINISHED CEILINGS WITH ARCHITECT PRIOR TO INSTALLATION.

WARRANTY: UNLESS A LONGER PERIOD IS SPECIFIED IN INDIVIDUAL PARAGRAPHS, PROVIDE A MINIMUM OF ONE YEAR WARRANTY ON ALL ELECTRICAL WORK BEGINNING THE DATE OF FINAL ACCEPTANCE OF THE PROJECT BY THE OWNER.

SUBMITTALS: SUBMIT SHOP DRAWINGS FOR ALL MAJOR COMPONENTS OR SYSTEMS OF THE PROJECT. SUBMIT ADDITIONAL SHOP DRAWINGS IF REQUESTED BY ENGINEER.

NO APPARATUS OR EQUIPMENT SHALL BE SHIPPED FROM STOCK OR FABRICATED UNTIL ITS SHOP DRAWINGS HAVE BEEN STAMPED "REVIEWED" OR "APPROVED AS NOTED". SUBMIT DATA REQUIRED FOR TRANSFORMERS SUCH AS EFFICIENCY, REGULATION, CORE LOSS AND SOUND LEVELS. (SEE APPLICABLE SECTIONS).

SUBMIT SYSTEM COMPONENTS, PRODUCT DATA AND SHOP DRAWINGS COMPLETE FOR EACH SYSTEM UNDER ONE SUBMITTAL. DO NOT BREAK OUT EQUIPMENT FOR ONE SYSTEM BETWEEN MULTIPLE SUBMITTALS.

ALL SHOP DRAWINGS MUST BE CLEARLY MARKED TO SHOW EQUIPMENT SUBMITTED AND ANY DEVIATIONS FROM SPECIFICATIONS SHALL BE NOTED THEREON. DO NOT INCLUDE ONLY MODEL NUMBERS TO INDICATE SUBMITTED EQUIPMENT. STROKE OUT ANY INFORMATION ON PRODUCT DATA THAT IS NOT PROJECT SPECIFIC, AND EDIT RELEVANT INFORMATION TO SHOW ACTUAL EQUIPMENT SUBMITTED. ELECTRICAL CONTRACTOR MUST SIGN AND APPROVE ALL SHOP DRAWINGS PRIOR TO SUBMITTAL. UNQUELTY NUMBER EACH PAGE IN SUBMITTAL.

IF DIFFERENT SYSTEMS ARE INCLUDED IN ONE SUBMITTAL, CLEARLY SEPARATE INFORMATION AND PROVIDE DIFFERENT SUB-NUMBERING OF SYSTEMS. SHOP DRAWINGS THAT ARE INCOMPLETE, UNSIGNED AND NOT PLAINLY MARKED WILL NOT BE REVIEWED.

MICHIGAN UNIFORM ENERGY CODE: THIS IS A PERFORMANCE BASED DESIGN-BUILD SPECIFICATION.

THE INTENT OF THIS SPECIFICATION ITEM IS FOR FULL COMPLIANCE WITH THE REQUIREMENTS OF THE 2015 MICHIGAN UNIFORM ENERGY CODE AND RELATED AMENDMENTS AS THEY APPLY TO THE ASHRAE 90.1-2015 STANDARDS. AUTOMATIC CONTROL APPLIES TO NEW AND TO EXISTING TO REMAIN FIXTURES.

DESIGN AND PROVIDE A COMPLETE LIGHTING CONTROL SYSTEM PER MANUFACTURER'S RECOMMENDATION AND TO COMPLY TO ENERGY CODE AS INDICATED ABOVE. INDICATE ALL COMPONENTS AND EQUIPMENT LAYOUT ON FLOOR PLANS AND SUBMIT FOR REVIEW AND APPROVAL. COORDINATE WITH ARCHITECTURAL TRADES TO PROVIDE CEILING ACCESS PANELS WHERE REQUIRED.

PROVIDE OCCUPANCY SENSOR(S) IN EVERY ROOM OR SPACE (EXCEPT WHERE TIMER CONTROL IS INDICATED) TO AUTOMATICALLY SHUTOFF ALL NON-EMERGENCY LIGHTING WITHIN ITS SPACE WITH ADJUSTABLE TIME DELAY UP TO 20 MINUTES.

OCCUPANCY SENSORS SHALL BE OF ULTRASONIC, INFRARED OR MULTI-TECHNOLOGY TYPE AS RECOMMENDED BY MANUFACTURER FOR EACH SPACE/APPLICATION CEILING MOUNTED.

INCLUDE CONTROL PANEL STARTUP/COMMISSIONING AND TRAINING BY MANUFACTURER'S FACTORY-TRAINED PERSONNEL. IN ADDITION TO OTHER STARTUP REQUIREMENTS, MANUFACTURER'S FACTORY REPRESENTATIVE IS TO OBTAIN OWNER'S DESIRED OPERATIONAL SCHEDULE FOR EACH CIRCUIT. PROGRAM MANUALS WITH SITE-SPECIFIC INFORMATION, AND CONTROL LIGHTING FIXTURES PER OWNER'S SCHEDULE IN COMPLIANCE WITH MICHIGAN UNIFORM ENERGY CODE.

PROVIDE OWNER WITH A MINIMUM OF 2 HOURS OF TRAINING AT JOBSITE BY MANUFACTURER'S FACTORY REPRESENTATIVE.

DEMOLITION AND RENOVATION WORK:

DISCONNECT, REMOVE, RELOCATE, REWIRE OR DISPOSE OF ANY EQUIPMENT INTERFERING WITH NEW CONSTRUCTION OR AFFECTED BY RENOVATION WORK.

ANY ELECTRICAL EQUIPMENT OR SYSTEMS WHICH ARE TO REMAIN, AND ARE AFFECTED BY THIS WORK, SHALL BE IMMEDIATELY RESTORED TO FULL OPERATING CONDITION AND AT NO ADDITIONAL COST TO THE CONTRACTOR.

EQUIPMENT REMOVED SHALL BE DISPOSED OF AS DIRECTED, EITHER TO STORAGE OR OFF THE PREMISES.

WHERE SERVICES OR CIRCUITS ARE DISCONNECTED OR DISCONTINUED, IT IS MANDATORY THAT ANY EXISTING UNUSED WIRING BE REMOVED TO THE SOURCE UNLESS SPECIFICALLY NOTED ON THE DRAWINGS. IT IS THE INTENT OF THIS ARTICLE TO PERMANENTLY DISCONNECT ALL UNUSED CIRCUITS AT THE MAIN SOURCE. WHENEVER POSSIBLE, NO ENERGIZED CIRCUIT SHALL BE TAPED AND ABANDONED IN OUTLET BOXES UNLESS SO SPECIFIED ON DRAWINGS.

CIRCUIT TRACE EXISTING TO REMAIN CIRCUITS AS NECESSARY FOR PROPER IDENTIFICATION, AND AS REQUIRED TO PERFORM AND DOCUMENT WORK.

REMODELING WORK INVOLVING EXISTING BRANCH CIRCUIT PANELBOARD SHALL BE SUCH THAT, WHEN ALL WORK IS COMPLETED EXISTING PANELS ARE PROVIDED WITH NEW AND UPDATED ACCURATE DIRECTORIES. ALL VACATED CIRCUITS SHALL BE MARKED SPARE. WHEN NEW BREAKERS ARE REQUIRED, THEY SHALL BE INSTALLED IN EXISTING SPACES AND SHALL MATCH THOSE THAT ARE EXISTING. PROVIDE NEW PANELS IF REQUIRED AND WHERE INDICATED.

CONTRACTOR MAY USE EXISTING CONDUITS AND OUTLET BOXES, PROVIDED THEY ARE IN GOOD ELECTRICAL CONDITION AND THE INSTALLATION IS APPROVED BY THE A.H.J. RE-SUPPORT EXISTING TO REMAIN CONDUIT AND BOXES IN RENOVATION AREA IF INADEQUATELY SUPPORTED. PROVIDE SUPPORT AS REQUIRED TO COMPLY WITH NEC AND AHJ REQUIREMENTS.

IT IS THE INTENT OF THE OVERALL DESIGN TO CONCEAL ALL WORK EXCEPT IN UNFINISHED AREAS. CUT AND PATCH EXISTING SURFACES AS REQUIRED FOR A CONCEALED INSTALLATION.

ALL ELECTRICAL OPENINGS THAT ARE ABANDONED IN WALLS, CEILINGS OR FLOOR SHALL BE PROVIDED WITH SUITABLE BLANK COVER PLATES. ABANDONED FLOOR OUTLETS AND PENETRATIONS SHALL BE FILLED TO MATCH EXISTING SURROUNDING CONDITIONS.

CONDUITS AND OTHER PARTS OF ELECTRICAL SYSTEMS THAT BECOME EXPOSED AS A PART OF NEW WORK SHALL BE REMOVED AS REQUIRED TO A POINT WHERE THE ABANDONED PORTION IS TOTALLY CONCEALED.

ALL SURFACES DAMAGED BY THIS CONTRACTOR IN THE COURSE OF PERFORMING WORK SHALL BE RESTORED TO SATISFACTORY CONDITION, AS DIRECTED BY THE ARCHITECT AND ALL COSTS OF REPAIRS SHALL BE PAID FOR BY THE CONTRACTOR.

REMOVE SERVICE TO MECHANICAL, ELECTRICAL AND BUILDING EQUIPMENT SPECIFIED AND/OR INDICATED AS REMOVED OR DISCONNECTED. MAINTAIN CIRCUITS TO EXISTING-TO-REMAIN EQUIPMENT. IDENTIFY UNUSED, REMOVED CIRCUITS ON PANEL SCHEDULE AS SPARE. COORDINATE WITH ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR EXISTING TO REMAIN EQUIPMENT AND FOR DEMOLITION WORK.

SERVICE SHUTDOWN AND POWER OUTAGES SHALL BE SCHEDULED WITH THE OWNER PRIOR TO PERFORMING ANY WORK ON EXISTING SERVICE. SCHEDULE SHALL BE PROVIDED IN WRITING 72 HOURS IN ADVANCE AND SHALL SHOW A DETAILED DESCRIPTION OF THE PROPOSED WORK AND THE DURATION OF OUTAGE.

PROVIDE LUMINAIRE DISCONNECTING MEANS PER LIGHTING SPECIFICATIONS.

UTILITY SERVICES (EXISTING BUILDING): ELECTRIC SERVICE TO THE SITE IS EXISTING AND SHALL BE UTILIZED AS INDICATED ON THE DRAWINGS.

TELEPHONE SERVICE TO THE SITE IS EXISTING AND SHALL BE UTILIZED AS INDICATED ON THE DRAWINGS.

ELECTRICAL EQUIPMENT AND DEVICES:

RECEPTACLES SHALL BE SPECIFICATION GRADE, GROUNDING TYPE, 2-POLE, 3-WIRE, AND POLARIZED. RECEPTACLES IN GENERAL SHALL BE 20A, 125 V., HUBBELL #HRLS362 OR EQUAL MOUNTED 16" AFF IN OFFICES AREAS AND 48" AFF IN SHOP AREAS EXCEPT AT COUNTERS WHERE THEY SHALL BE 6" ABOVE COUNTER AND IN TOILET ROOMS AT 48" AFF. RECEPTACLES ON SINGLE CIRCUIT SHALL BE 20 AMPERE, HUBBELL #HRLS362. HIGH AMPERE RATINGS AND VOLTAGES ARE INDICATED ON DRAWINGS.

RECEPTACLES DESIGNATED "GFI" SHALL BE GROUND FAULT RECEPTACLES, SIMILAR TO HUBBELL #6F-5362, FOR OUTDOOR OR WET LOCATIONS, PROVIDE WEATHERPROOF BOX AND GASKETED COVER PLATE. WIRE "GFI" RECEPTACLES FOR LEAK PROTECTION AND NOT DOWNSTREAM PROTECTION OF OTHER WIRING DEVICES.

SWITCHES SHALL BE SINGLE POLE, TWO POLE, OR THREE-WAY, AS INDICATED, TOGGLE TYPE, 20A, 120/277V, QUIET TYPE, HUBBELL #1221/1222/1223 OR APPROVED EQUAL. PILOT TYPE SWITCHES HUBBELL #1251.

PROVIDE DIMMERS RATED FOR LOAD WATTAGE AND VOLTAGE CONTROLLED. CONTRACTOR TO COORDINATE RATING BASED ON APPROVED FIXTURE SUBMITTALS AND ACTUAL FIXTURE QUANTITIES. PROVIDE DIMMERS

DESIGNED FOR CONTROLLED LOAD CONSULT LIGHT FIXTURE MANUFACTURER FOR COMPATIBLE DIMMER SWITCHES.

WIRING DEVICE COLORS SHALL BE WHITE OR AS SELECTED BY OWNER/ARCHITECT.

DEVICE COVER PLATES SHALL BE OF TYPE AND NUMBER OF DEVICES INSTALLED, SMOOTH EGED 302/304 GRADE BRUSHED STAINLESS STEEL. PROVIDE BRANCH CIRCUIT IDENTIFICATION ON ALL COVERPLATES AS SPECIFIED UNDER "GENERAL REQUIREMENTS". COVERPLATES FOR DEVICES CONNECTED TO THE EMERGENCY SYSTEM SHALL ALSO BE FACTORY LABELED WITH BLACK LETTERING TO READ "EMERGENCY".

PROVIDE TELEPHONE/DATA OUTLETS AND STUBS AS INDICATED. TELEPHONE/DATA OUTLETS SHALL CONSIST OF TWO GANG OUTLET BOX WITH PLASTER RING AND NO COVER PLATE. JACK AND COVER PLATE ARE SUPPLIED BY OTHERS. HEIGHT OF OUTLET FOR DESK PHONE IS 16" AFF AND FOR WALL PHONE 48" AFF. TELEPHONE/DATA OUTLETS SHALL CONTAIN OF 3/4" CONDUIT FROM OUTLET TO AN ACCESSIBLE PORTION OF CEILING SPACE. TERMINATE WITH INSULATING BUSHING.

CONDUCTORS: ALL CONDUCTORS SHALL BE SOFT-DRAWN COPPER OF SIZES INDICATED ON THE DRAWINGS. ALL CONDUCTORS SHALL BE INSULATED FOR 600 VOLTS AND WITH 75 DEGREES (CENTIGRADE) CODE GRADE INSULATION.

CONDUCTORS SIZED #10 AND SMALLER SHALL BE SOLID. ALL CONDUCTORS LARGER THAN #10 SHALL BE MADE UP OF STRANDED SINGLE CONDUCTOR CABLE. CONDUCTORS SHALL HAVE THHN OR THHN INSULATION AS APPLICABLE. CONDUCTORS IN UNDERGROUND CONDUIT AND FOR SERVICE ENTRANCE CONDUCTOR SHALL HAVE XHHW OR THWN INSULATION.

#12 AWG SHALL BE THE MINIMUM WIRE SIZE ALLOWED EXCEPT #14 AWG MAY BE USED FOR CONTROL WIRING.

TYPICAL BRANCH CIRCUITS FROM 20A, 1-POLE BRANCH OVERCURRENT DEVICES ARE 1/2" C, 2#12 AND 1#12G.

STARTERS, SAFETY SWITCHES, FUSES AND HEATERS: MANUAL MOTOR STARTERS SHALL BE 600V TOGGLE TYPE WITH THERMAL OVERLOAD ELEMENT FOR MOTOR PROTECTION STAINLESS STEEL COVER PLATE AND PILOT LIGHT; FLUSH IN ALL AREAS EXCEPT IN UNFINISHED SPACES. CONTRACTOR TO COORDINATE AND PROVIDE QUANTITY OF POLES AS REQUIRED FOR BRANCH CIRCUIT AND LOAD SERVED. MANUAL MOTOR SWITCHES SHALL BE THE SAME AS MANUAL STARTERS EXCEPT WITHOUT OVERLOADS AND USED AS DISCONNECTING MEANS.

MAGNETIC MOTOR STARTERS SHALL BE 600 VOLT 3-PHASE WITH 3 THERMAL OVERLOAD ELEMENTS, HOA SWITCH AND RESET BUTTON IN COVER AND GREEN RUNNING PILOT LIGHT, NEMA ENCLOSURE AND SIZE AS INDICATED. COMBINATION STARTERS SHALL HAVE BUILT-IN FUSED DISCONNECT. PROVIDE START-STOP PUSH BUTTONS FOR USE IN HAND MANUAL MODE.

PROVIDE THERMAL ALLOY MELTING TYPE HEATER ELEMENTS FOR ALL MOTORS BASED ON MOTOR NAMEPLATE DATA.

SAFETY AND DISCONNECT SWITCHES SHALL BE 250 OR 600 VOLTS AS REQUIRED, HEAVY DUTY, TWO OR THREE POLE "QUICK-MAKE" "QUICK-BREAK" SWITCH MECHANISM AND COVER INTERLOCK. SWITCHES SHALL BE FUSED OR UNFUSED AS INDICATED AND SHALL HAVE PAD LOCK PROVISIONS, WITH NEMA TYPE ENCLOSURE FOR LOCATION USED. SWITCHES SHALL BE SQUARE "D" CLASS 3110 OR APPROVED EQUAL.

PROVIDE ALL NECESSARY FUSES AND REPLACE ALL THOSE BLOWN DURING CONSTRUCTION. ALL FUSES SHALL BE TIME LAG, DUAL ELEMENT, BUSMAN "LOW PEAK YELLOW" OR EQUAL.

PANELBOARDS: LIGHTING PANELS SHALL BE OF VOLTAGE, PHASE, SERVICE AND NUMBER OF WIRES INDICATED ON THE DRAWINGS. BREAKERS SHALL BE THERMAL MAGNETIC, TRIP FREE, SINGLE OR MULTIPOLE, BOLTED DESIGN, MOLDED CASE, MINIMUM 10,000 A.I.C. AT 240 VOLTS. DEVICES SHALL BE AS INDICATED ON THE DRAWINGS OR AS SCHEDULED.

LIGHTING PANELS RATED FOR 120/208V, 3-PHASE, 4-WIRE SERVICE SHALL BE SQUARE D TYPE "NOOD" OR EQUAL. LOAD CENTERS ARE NOT PERMITTED.

CONTRACTOR, MANUFACTURER MAY RE-ARRANGE CIRCUIT ORDER IN PANELS, HOWEVER CIRCUIT NUMBERS FROM PANELBOARD SCHEDULES IN CONTRACT DOCUMENTS MUST BE INDICATED ON ANY SUBMITTED PANELBOARD ELEVATIONS, DRAWINGS, TABLES AND SCHEDULES.

ARC FLASH: REFER TO AVAILABLE FAULT CURRENTS NOTED ON THE DRAWINGS AND PERFORM CALCULATIONS AS REQUIRED TO APPLY FIELD MARKINGS FOR ARC FLASH INCLUDING RECOMMENDED MARKING REQUIREMENTS, BOUNDARIES AND DESCRIPTIONS. FIELD MARK DISTRIBUTION EQUIPMENT (CONTROLBOARDS, PANELBOARDS, CONTROL PANELS, AND MOTOR CONTROL CENTERS) WITH FLASH PROTECTION INFORMATION PER NATIONAL ELECTRICAL CODE ARTICLE 110.16. FLASH PROTECTION: INCLUDE CALCULATED RATINGS ON MARKINGS. PROVIDE ANY ADDITIONAL MARKINGS ON EQUIPMENT AS REQUIRED BY LOCAL AUTHORITY HAVING JURISDICTION. FIELD MARK FLASH PROTECTION BOUNDARIES RESULTING FROM CALCULATIONS PER NFPA 70E.

INSTALLATION AND METHODS OF EXECUTION: ALL WIRING SHALL BE IN CONDUIT, MINIMUM 3/4" FLEXIBLE METAL CONDUIT SHALL BE USED FOR SHORT CONNECTION TO MOTORS. FINAL CONNECTION TO RECESSED LIGHTING FIXTURES FROM ROBBILY MOUNTED OUTLET BOX (NOT BETWEEN FIXTURES), VIBRATING EQUIPMENT, ETC., BUT NEVER LONGER THAN 6 FEET. PROVIDE LIQUID TIGHT FLEXIBLE METAL CONDUIT FOR ALL APPLICATIONS EXPOSED TO WATER OR WEATHER. PROVIDE ANTI-SHOCK BUSHINGS FOR ALL FLEXIBLE CONDUIT ARMOR TERMINATIONS. PROVIDE SEPARATE EQUIPMENT GROUND WIRE IN ALL CONDUIT RUNS.

CONDUIT CONCEALED IN CEILING, WALLS OR FURRED SPACES OR EXPOSED IN DRY LOCATIONS SHALL BE EMT, THIN WALL ELECTRIC METALLIC TUBING, CONDUIT EXPOSED TO WEATHER, IN CONTACT WITH CONCRETE, BURIED IN SLAB, OR IN HAZARDOUS AREAS, SHALL BE HEAVY WALL, RIGID. ALL CONDUITS SHALL BE HOT DIPPED GALVANIZED STEEL.

ALL WORK IN HAZARDOUS LOCATIONS SHALL BE DONE IN STRICT CONFORMANCE WITH NEC ARTICLE 500.

PLASTIC CONDUIT, PVC-40, SHALL BE USED ONLY AS INDICATED ON THE DRAWINGS. PLASTIC CONDUIT SHALL BE APPROVED FOR UNDERGROUND USE. PVC BURIAL DEPTH SHALL BE 36" MINIMUM BELOW FINISH GRADE. IN PVC CONDUIT SYSTEMS, RISERS ABOVEGROUND SHALL BE RIGID HEAVY WALL STEEL.

CONDUIT RUNS SHOWN ON DRAWINGS ARE DIAGRAMMATIC. EXACT ROUTING OF CONDUIT RUNS SHALL SUIT JOB CONDITIONS. EXPOSED CONDUIT SHALL BE RUN ONLY IN UNFINISHED AREAS SUBJECT TO FINAL APPROVAL OF ENGINEER AND SHALL RUN PARALLEL TO BUILDING LINES, NEVER DIAGONALLY.

CONNECTION TO EQUIPMENT SHALL BE DONE IN ACCORDANCE WITH MANUFACTURER'S SHOP AND INSTALLATION DRAWINGS. REQUIREMENTS GENERALLY VARY FROM ONE MANUFACTURER TO ANOTHER AND CONTRACTOR IS BOUND TO COMPLY AND PROVIDE ALL WORK AS REQUIRED ALTHOUGH CERTAIN DISCREPANCIES MAY EXIST REGARDING THE REQUIREMENT FROM ONE MANUFACTURER TO ANOTHER.

PROVIDE POWER WIRING, DISCONNECTS, AND PROTECTION DEVICES TO ALL MECHANICAL EQUIPMENT AND MAKE FINAL CONNECTIONS, INCLUDING TESTING OF MOTORS FOR PROPER ROTATION.

OUTLET BOXES MAY-BE SURFACE MOUNTED ON EXISTING WALLS (CMU, BRICK OR CONCRETE) WITH SMALLEST SURFACE RACEWAY AS REQUIRED FOR WIRING INSTALLED. PROVIDE FLUSH OUTLET BOXES AND CONDUIT AT NEW CONSTRUCTION WALLS AND AT EXISTING WALLS WHICH ARE NOT CMU BRICK OR CONCRETE CONSTRUCTION. CUT AND PATCH EXISTING WALLS AS REQUIRED FOR FLUSH INSTALLATION.

PROVIDE 4" TALL CONCRETE HOUSEKEEPING PADS FOR ALL FLOOR MOUNTED ELECTRICAL EQUIPMENT.

ALL WIRING LOCATED ABOVE THE SUSPENDED CEILING MUST BE SUPPORTED INDEPENDENTLY OF THE SUPPORT WIRES FOR THE SUSPENDED CEILING.

OUTLET BOXES ON OPPOSITE SIDES OF FIRE RESISTANT WALLS OR PARTITIONS SHALL BE SEPARATED BY A HORIZONTAL DISTANCE OF TWENTY FOUR (24) INCHES.

ELECTRICAL OPENINGS AROUND ELECTRICAL PENETRATIONS THROUGH FIRE RESISTANT RATED WALLS, PARTITIONS, FLOORS, OR CEILINGS SHALL BE FIRESTOPPED USING APPROVED METHODS TO MAINTAIN THE FIRE RESISTANCE RATING PER ARTICLE 300.21 2017 NEC.

PROVIDE PROPER WORKING CLEARANCES FOR ELECTRICAL EQUIPMENT AS REQUIRED PER NEC.

LIGHTING SPECIFICATIONS:

LED LIGHTING FIXTURES SHALL HAVE 5 YEAR WARRANTY, A COLOR RENDERING INDEX OF 90 OR HIGHER, 3500K COLOR TEMPERATURE UNLESS OTHERWISE INDICATED ON DRAWINGS, LIFETIME: 50,000 HOURS OR GREATER AND MAINTAIN AT LEAST 70% OF INITIAL LUMEN OUTPUT. RATED FOR OUTDOOR USE AND WET LOCATION, IF IN OPEN FIXTURE.

SHALL POSSESS COLOR MANAGEMENT SYSTEM TO MAINTAIN COLOR CONSISTENCY OVER TIME AND TEMPERATURE OF NO GREATER THAN #100K OVER LIFE.

REFER TO LIGHTING FIXTURE SCHEDULE ON ARCHITECTURAL REFLECTED CEILING PLANS FOR LED FIXTURES WITH DIMMING CONTROLS.

LED DRIVERS TO BE ELECTRONIC, HIGH POWER FACTOR, MIN. 0.9; UNIVERSAL VOLTAGE 120-277V; 5 YEAR WARRANTY, COMPATIBLE WITH THE LED LAMP OR MODULE USED.

Client

LAHC - Leaders Advancing and Helping Communities



Architect

Framework E Architects Leaders Community Builders



Framework E, LLC 155 W Congress Street, Suite 602, Detroit, MI 48226 info@framework-e.com (313) 498-1814

Consultant



Project Title

LAHC Workforce Education Resource and Development Center

5275 Kenilworth St Dearborn, MI 48126

Seal



TAG	ISSUED	DATE
	Schematic Design Development	02-28-25
	50% CD	04-10-25
	85% CD	05-08-25
	90% Construction Documents	05-29-25
	Permit Review	06-13-25
	Issued For Construction	08-01-25

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ELECTRICAL SPECIFICATION

DRAWING NO E-002

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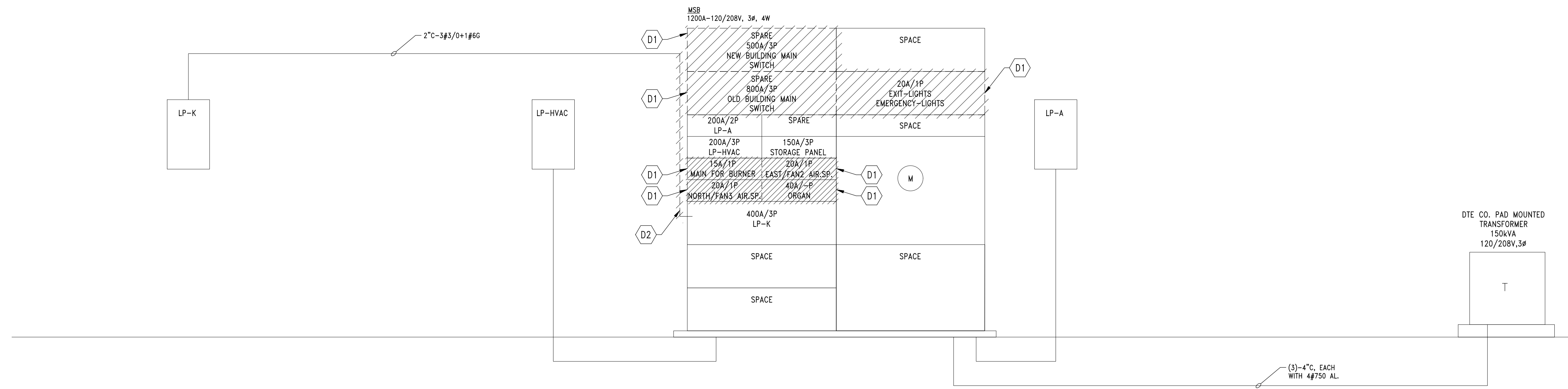
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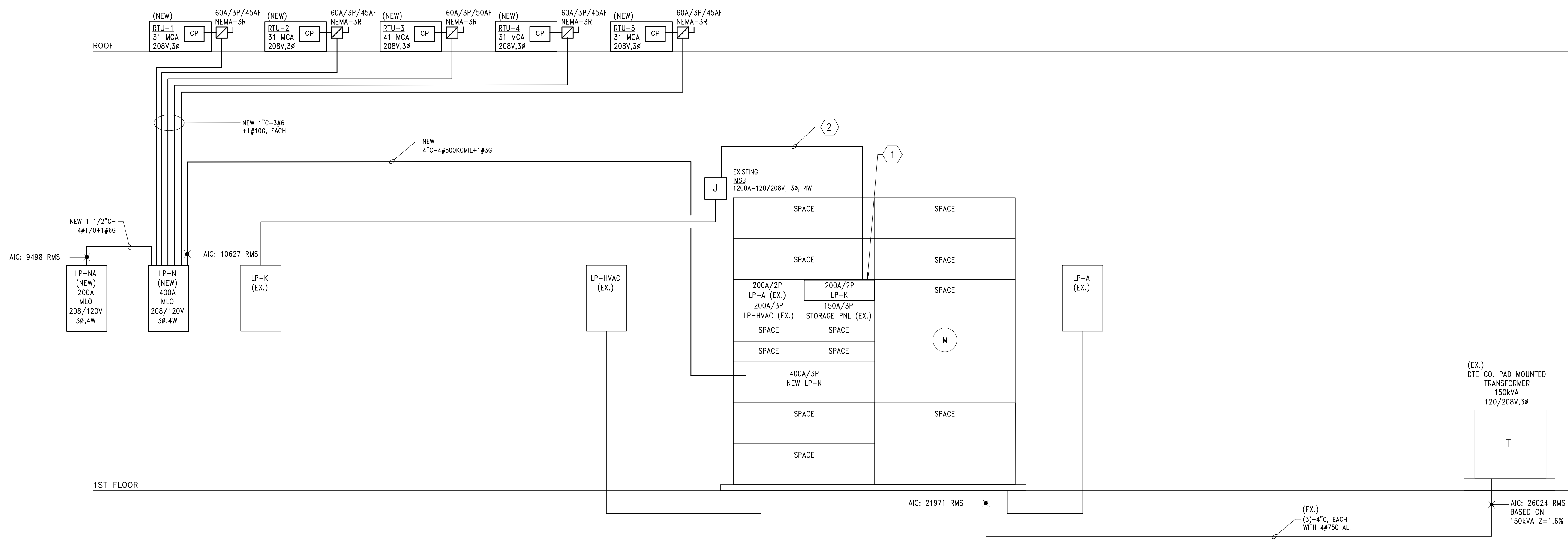
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EXISTING PARTIAL RISER DIAGRAM-DEMO
SCALE: NONE

DEMO KEY NOTES :

- D1) DISCONNECT AND REMOVE EXISTING BREAKERS SHOWN HATCHED AND TURN OVER TO OWNER, PROVIDE CUSTOM BLANK COVERS.
- D2) DISCONNECT FEEDER TO EXISTING LP-K FROM 400A BREAKER AND PREPARE TO BE FED FROM NEW BREAKER AS SHOWN ON NEW WORK RISER DIAGRAM.



EXISTING PARTIAL RISER DIAGRAM-NEW WORK *
SCALE: NONE

* EXISTING WORK IS SHOWN LIGHT LINE, NEW WORK IS SHOWN DARK AND LABELED (NEW)

NEW WORK KEY NOTES :

- 1) PROVIDE NEW 200A,2P BREAKER IN EXISTING SPACE TO RE-FEED EXISTING LP-K, NEW BREAKER SHALL BE 65KAIC.
- 2) EXTEND EXISTING FEEDER TO NEW 200A,2P BREAKER AS REQUIRED.

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Framework E, LLC
155 W Congress Street, Suite 602, Detroit, MI 48226
info@framework-e.com
(313) 456-1814

Consultant

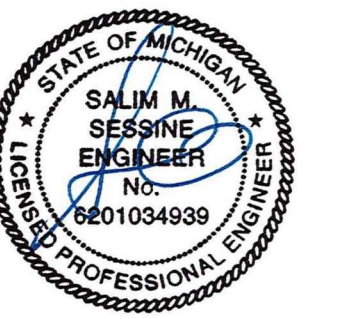


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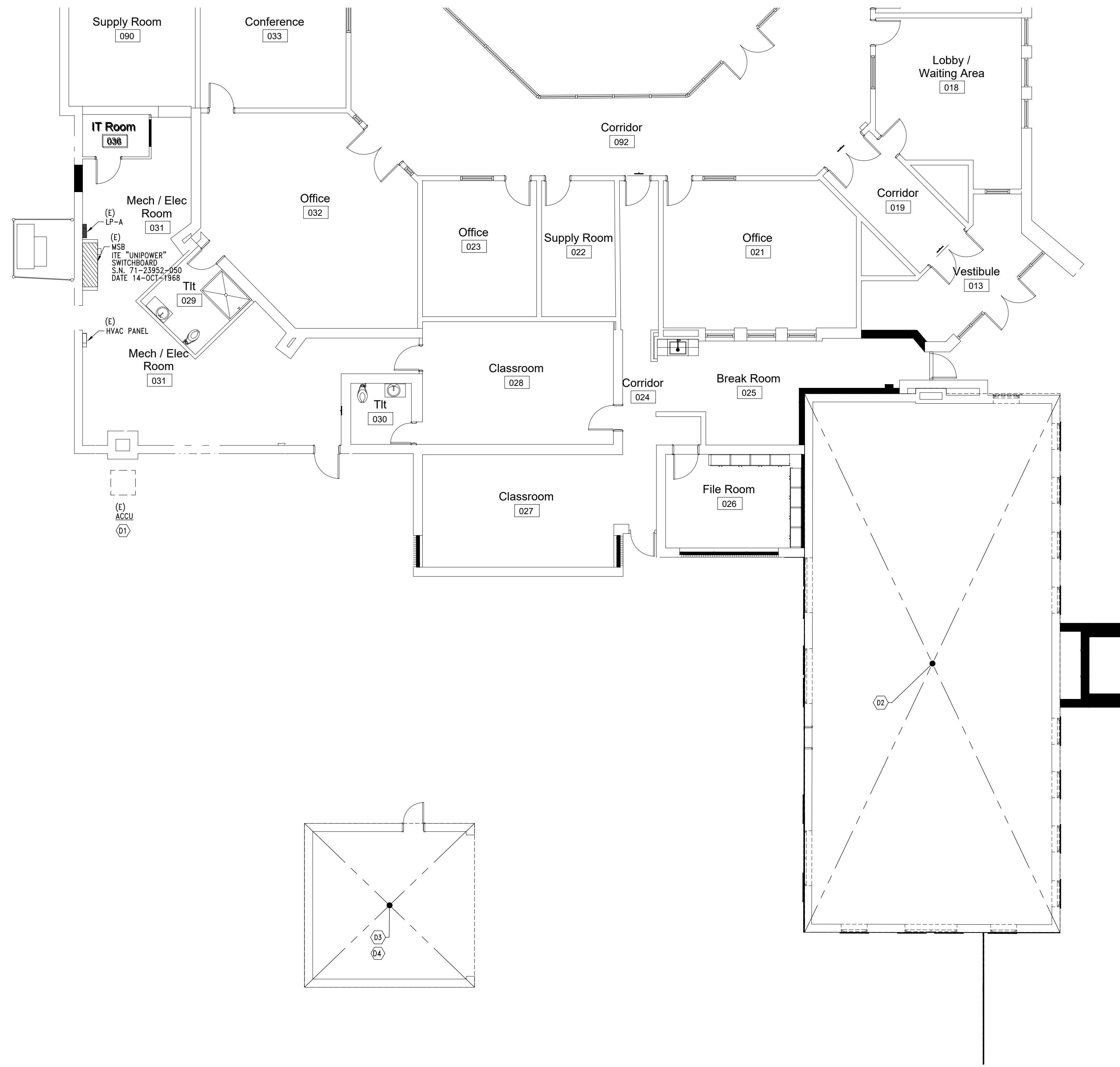
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**ELECTRICAL
RISER DIAGRAM**

DRAWING NO:
E-003

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DEMOLITION KEYED NOTES:

- (D1) DISCONNECT POWER TO EXISTING ACQU TO ALLOW FOR RELOCATION BY OTHERS. EXTEND EXISTING FEEDER AND RELOCATE DISCONNECT SWITCH TO NEW LOCATION. MAKE FINAL CONNECTION AS REQUIRED.
- (D2) VERIFY THAT ALL POWER CIRCUITS HAVE BEEN TERMINATED AND DISCONNECTED IN EXISTING PORTION OF BUILDING INDICATED. REMOVE WIRING BACK TO SOURCE.
- (D3) VERIFY THAT ALL POWER CIRCUITS HAVE BEEN TERMINATED AND DISCONNECTED IN EXISTING GARAGE. REMOVE WIRING BACK TO SOURCE.
- (D4) DISCONNECT AND REMOVE EXISTING RECEPTACLES AND CONDUIT. REMOVE BRANCH CIRCUIT WIRING BACK TO SOURCE.

FIRST FLOOR PLAN - ELECTRICAL DEMOLITION
 SCALE: 1/8" = 1'-0"

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 (313) 458-1814

Consultant

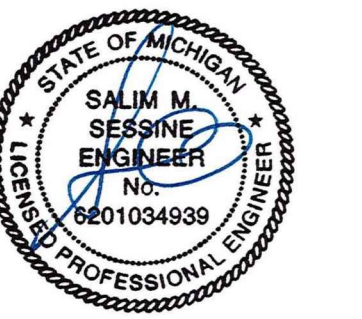


Project Title

LAHC Workforce Education Resource and Development Center

5275 Kenilworth St.
 Dearborn, MI 48126

Seal



TAG	ISSUED	DATE
	Schematic Design Development	02-28-25
	50% CD	04-10-25
	85% CD	05-08-25
	90% Construction Documents	05-29-25
	Permit Review	06-13-25
	Issued For Construction	08-01-25

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Framework E PROJ NO: 2024007

ELECTRICAL DEMOLITION - FIRST FLOOR PLAN

DRAWING NO: ED-111

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NORTH
1
FIRST FLOOR PLAN - LIGHTING
SCALE: 1/8" = 1'-0"

LIGHTING NOTES:

1. WIRE EXIT LIGHTS TO SAME ROOM OR AREA NORMAL LIGHTING CIRCUIT AHEAD OF ANY LOCAL SWITCHING AND/OR AUTOMATIC LIGHTING CONTROL.
2. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION OF ALL CEILING MOUNTED LIGHTING FIXTURES.
3. WIRE EMERGENCY SENSING UNIT IN SWITCHED LED FIXTURES WITH BUILT-IN EMERGENCY BATTERY BACK-UP TO ROOM OR AREA NORMAL LIGHTING CIRCUIT AHEAD OF ANY LOCAL SWITCHING AND/OR AUTOMATIC LIGHTING CONTROL.

KEY NOTES:

PROVIDE OCCUPANCY SENSOR CONTROL IN ALL AREAS INDICATED WITH SYMBOLS TO COMPLY WITH ASHRAE 90.1-2013. CEILING SYMBOLS ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL DETERMINE QUANTITY AND LOCATION PER MANUFACTURER'S RECOMMENDATIONS TO PROVIDE PROPER COVERAGE IN ALL AREAS INDICATED.

LIGHTING FIXTURE SCHEDULE :

- "A" LED RECESSED HIGH LUMEN FLAT PANEL, 4' L X 2' W X 2" D SHALLOW HOUSING, GRID CEILING MOUNTED, BACKLIT DESIGN, LOW GLARE LENS, MULTI-VOLT INPUT VOLTAGE, MULTI LUMEN AND COLOR TEMPERATURE SELECTOR, MAX 5000 LUMENS, 3000-5000°K, 40W, SET AT 4000 DELIVERED LUMENS, 3500K COLOR TEMPERATURE WITH OVER 85 CRI, 0-10 VOLT DIMMING. ORACLE LIGHTING #24-FPL-BL-LED-3000/4000/5000L-DIM10-MVOLT-30K/35K/40K-85 OR APPROVED EQUAL.
- "AEM" SAME AS TYPE "A" EXCEPT WITH BUILT-IN EMERGENCY BATTERY TO PROVIDE MINIMUM 1400 LUMENS FOR 90 MINUTES.
- "B" LED RECESSED DOWNLIGHT, 6" APERTURE, SEMI SPECULAR LOW RIDGESCENT ALZAK FINISH REFLECTOR AND WHITE TRIM, 277V DRIVER, 0-10V DIMMING CAPABILITY, WIDE DISTRIBUTION, 18W WITH MINIMUM 1500 LUMEN PACKAGE WITH 4000°K COLOR. 60THAM #EVO-40/15-6AR-WD-LSS-277-E210- OR APPROVED EQUAL.
- "C" 4" WALL MOUNTED, LED STRIP FIXTURE WITH FLAT DIFFUSE LENS, MVOLT, 0-10V DIMMING DRIVER, 80 CRI, WHITE FINISH. 4000K, 4576 LUMENS, 35 WATTS. LITHONIA: #CLX-L48-5000LM-SET-FDL-MVOLT-40K-80CRI-WH-HC36, OR APPROVED EQUAL.
- "D" LED OUTDOOR WALL PACK, TRAPEZOIDAL SHAPE, SINGLE PIECE DIE-CAST ALUMINUM HOUSING, DARK BRONZE FINISH, WET LOCATION LISTED, UNIVERSAL VOLTAGE DRIVER, TYPE 3 DISTRIBUTION, 47W, 4200 LUMENS, 4000°K. LITHONIA: #WDEZ-LED-F4-40K-80CRI-MVOLT-SRM-DOBX3 OR APPROVED EQUAL.
- "X" LED EXIT SIGN, SINGLE FACE, POLYCARBONATE HOUSING CONSTRUCTION, UNIVERSAL DIRECTIONAL ARROW KNOCKOUTS, FULLY OVERLAPPING LIGHT SEAL, 6" HIGH RED LETTERS, 25 YEAR LIFE LED LAMPS, 120/277 VOLT, NICKEL CADMIUM BATTERY, 90 MINUTE DISCHARGE, 24 HOUR RECHARGE, UNIVERSAL MOUNT, INTEGRAL TEST SWITCH, LITHONIA: #LDM-S-W-RG-MVOLT-M6, OR APPROVED EQUAL.
- "X1" SAME AS "X" EXCEPT COMBO UNIT WITH (2)-SIDE MOUNTED HEADS AND EXTRA BATTERY REMOTE CAPACITY. LITHONIA: #LDM-S-W-RG-MVOLT-HO-M6, OR APPROVED EQUAL.
- "RE" REMOTE SINGLE HEAD EMERGENCY LIGHT FIXTURE, FINISHED IN BLACK, WET LOCATION, 1-1.2W LED, LITHONIA: #ELMRW-LP220L-B-SGL-WPVS-SML-B, OR APPROVED EQUAL.

Client

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Architect

Framework E
Architects Leaders Community Builders



Framework E, LLC
155 W Congress Street, Suite 602, Detroit, MI 48226
info@framework-e.com
(313) 498-1814

Consultant



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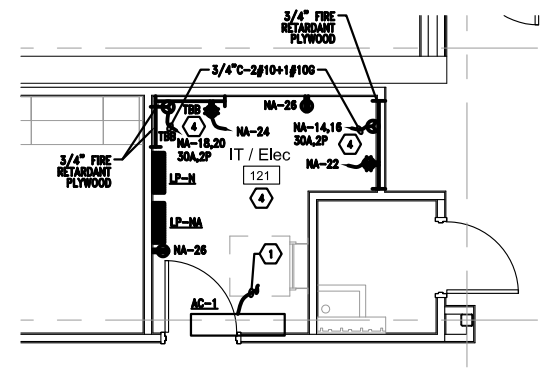
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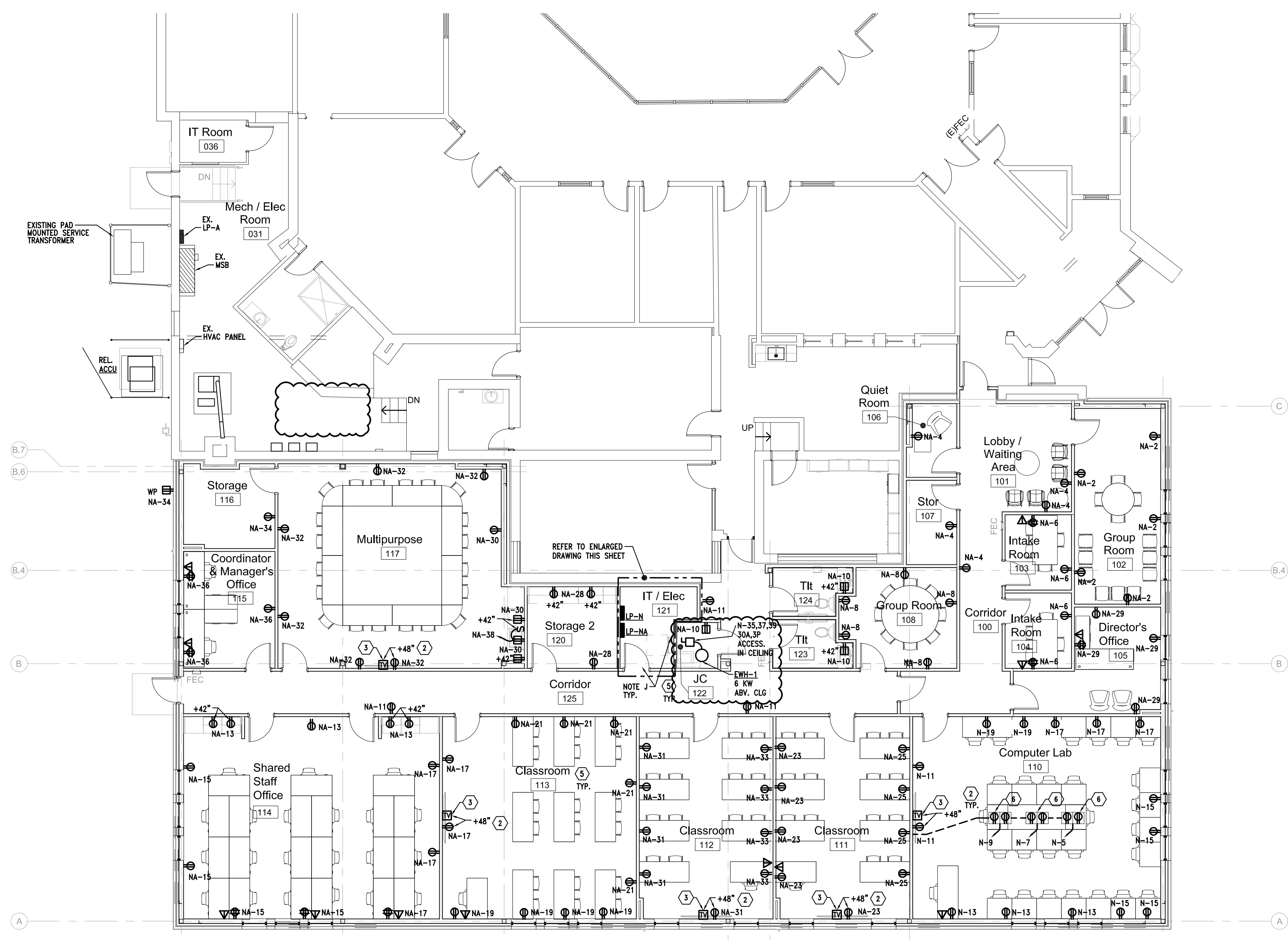
LIGHTING - FIRST FLOOR PLAN

DRAWING NO E-111
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2 ENLARGED IT/ELEC ROOM POWER PLAN
SCALE: 1/4" = 1'-0"



1 POWER - FIRST FLOOR PLAN
SCALE: 1/8" = 1'-0"

ELECTRICAL GENERAL NOTES:

- A. PROVIDE FIRE STOPPING WHERE REQUIRED.
- B. COORDINATE EXACT LOCATION AND QUANTITIES OF POWER AND DATA/PHONE OUTLETS WITH FINAL FURNITURE AND EQUIPMENT LAYOUT AND AS DIRECTED BY ARCHITECT/OWNER.
- C. ALL EQUIPMENT WILL BE SINGLE PHASE, UNLESS OTHERWISE NOTED.
- D. ALL WIRING WILL BE CONCEALED WITHIN THE WALLS AND/OR FLOOR, UNLESS OTHERWISE NOTED.
- E. THE ELECTRICIAN WILL TAG ALL WIRES AT TERMINATION POINTS.
- F. THE ELECTRICIAN WILL REMOVE ALL EXISTING RECEPTACLES AND SWITCHES IN THE AREA OF WORK. THE ELECTRICIAN WILL EITHER INSTALL A BLANK PLATE OVER RECEPTACLE OR SWITCH BOX OR REMOVE BOX ENTIRELY. THE ELECTRICIAN WILL TERMINATE WIRING AND CONDUIT IN A MANNER IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE.
- G. IN THE EVENT OF ANY EQUIPMENT BEING RELOCATED TO ANOTHER LOCATION, ANY AND ALL CIRCUITS MUST BE TERMINATED BY THE ELECTRICIAN IN ACCORDANCE WITH LOCAL CODE. VERIFY RESPONSIBILITY WITH THE OWNER.
- H. ALL 120 VOLT, 20 AMP OUTLETS INSTALLED WITHIN 6 FEET OF A SINK AND THOSE LOCATED OUTDOORS SHALL HAVE GFCI PROTECTION.
- I. ELECTRICAL OPENINGS AROUND ELECTRICAL PENETRATIONS THROUGH FIRE RESISTANT RATED WALLS, PARTITIONS, FLOORS, OR CEILING SHALL BE FIRESTOPPED USING APPROVED METHODS TO MAINTAIN THE FIRE RESISTANCE RATING PER ARTICLE 300.21 2023 NEC.
- J. PROVIDE PROPER WORKING CLEARANCES FOR ELECTRICAL EQUIPMENT PER ARTICLE 110.26 2023 NEC.
- K. MAINTAIN A MINIMUM OF 24" HORIZONTAL SEPARATION BETWEEN BOXES INSTALLED ON OPPOSITE SIDES OF FIRE RATED WALLS TO COMPLY WITH NEC 300.21.
- L. ALL WIRING LOCATED ABOVE SUSPENDED CEILING MUST BE SUPPORTED INDEPENDENTLY OF THE SUPPORT WIRES FOR THE SUSPENDED CEILING PER ARTICLE 300.11 2023 NEC.
- M. PROVIDE COMPLETE SYSTEM GROUNDING AND BONDING PER ARTICLE 250 2023 NEC.

KEY NOTES:

- ① INDOOR UNIT AC-1 IS POWERED FROM THE OUTDOOR UNIT ACCU-1.
- ② VERIFY WITH ARCHITECT FOR EXACT HEIGHT AND LOCATION.
- ③ PROVIDE WALL RECESSED TV BOX, SIMILAR TO CHIEF PAC 525, EXACT HEIGHT AND LOCATION TO BE VERIFIED WITH THE ARCHITECT. INSTALL IN BOX ONE DUPLEX RECEPTACLE AND ONE TELECOM/DATA JACK, RUN 1 1/4" UP TO CEILING SPACE, TERMINATE WITH BUSHING.
- ④ VERIFY LOCATION AND QUANTITY OF OUTLETS LOCATED IN THE I.T. CLOSET WITH OWNER AND I.T. CONSULTANT BEFORE ROUGH-IN. OUTLETS SHOWN ON THESE DRAWINGS ARE FOR REFERENCE ONLY. PROVIDE 3/4" THICK FIRE RATED PLYWOOD ON WALL AS DIRECTED.
- ⑤ PROVIDE TAMPER PROOF LISTED RECEPTACLES IN ALL PUBLIC ACCESSED AREAS ON THIS FLOOR.
- ⑥ PROVIDE IN FLOOR (2)-COMPARTMENT FLOOR BOX COMPLETE WITH (2)-DUPLEX RECEPTACLE, FLANGE AND COVER, RUN 1 1/4" FROM DATA COMPARTMENTS UNDER THE FLOOR AND UP NEAREST WALL AND TERMINATE IN ACCESSIBLE CEILING SPACE. VERIFY EXACT LOCATION WITH OWNER/FURNITURE VENDOR, SAW CUT THE FLOOR TO NEAREST WALL TO RUN FEEDERS CONCEALED TO CEILING SPACE. LEGRAND OWNBOX OR APPROVED EQUAL.

Client

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Architect

Framework E
Architects Leaders Community Builders™



Framework E, LLC
155 W Congress Street, Suite 602, Detroit, MI 48226
info@framework-e.com
(313) 486-1814

Consultant



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	Addendum #1	06-27-25
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POWER - FIRST FLOOR PLAN

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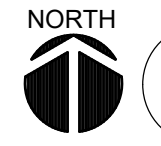
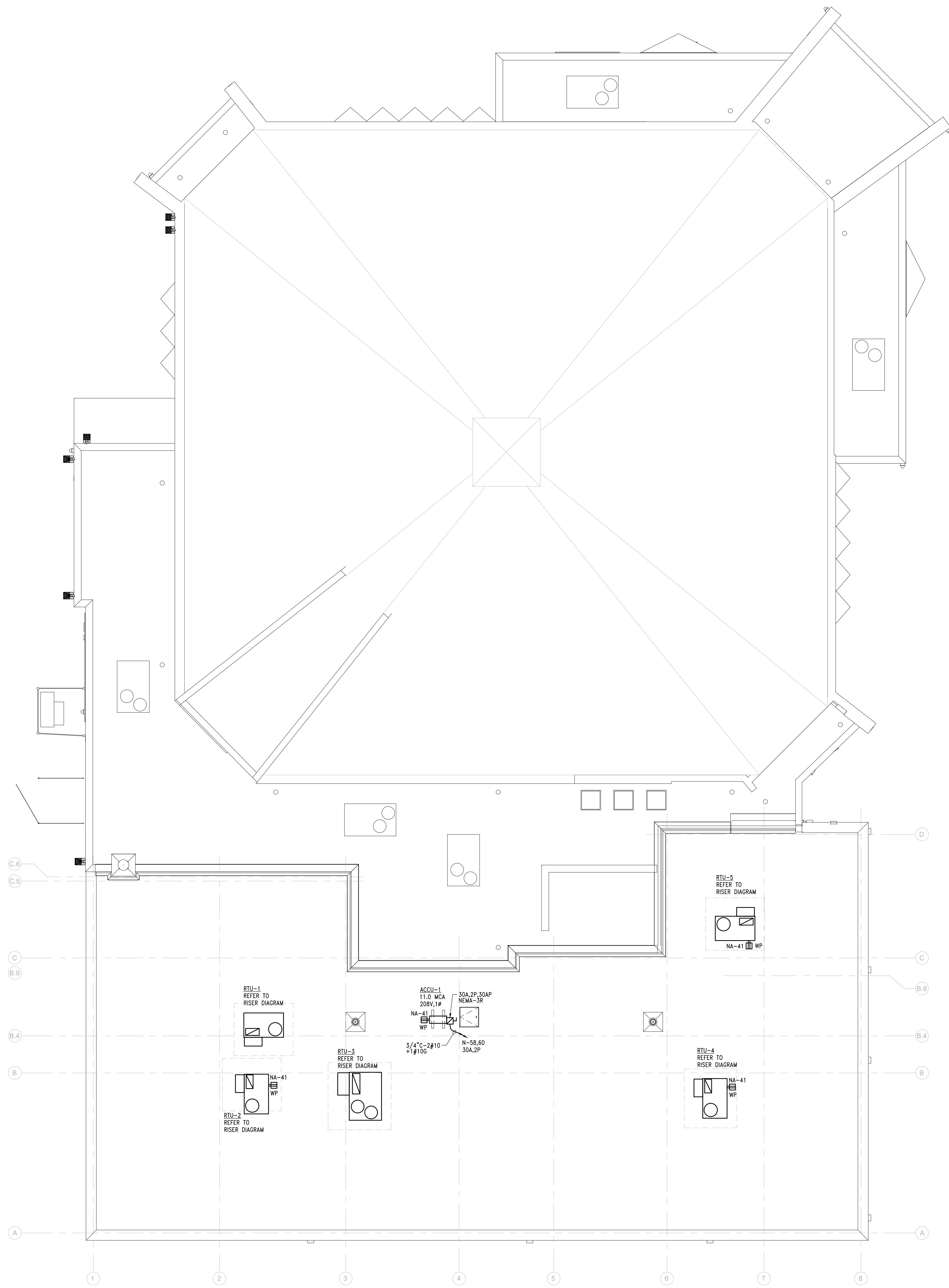
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1 POWER - ROOF PLAN
SCALE: 1/8" = 1'-0"

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Architect

Framework E
Architects Leaders Community Builders™



Framework E, LLC
155 W Congress Street, Suite 602, Detroit, MI 48226
info@framework-e.com
(313) 484-1814

Consultant



MAENGINEERING
MECHANICAL ELECTRICAL
160 High Oak Road
Bloomfield Hills, Michigan 48304 T: 248.258.9530

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POWER - ROOF PLAN

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