Ramirez - Simon Engineering, LLC

ADDENDUM 01

Project Title: **Blinn Mechanical Project – Brenham – Melcher + BCPA Phase 2**
RSE Project #: **1540**

This **ADDENDUM** shall modify, amend, extend and become a part of the Contract Documents dated 1/13/25 prepared by Ramirez Simon Engineering, LLC (RSE) in accordance with the terms therein, as if written out in full therein and bound originally therewith.

Questions concerning this **ADDENDUM** or the Contract Documents, should be addressed to Ross Schroeder at Blinn by email (ross.schroeder@blinn.edu).

In cases of conflict, the **ADDENDUM** shall take precedence over previously issued Contract Documents.

Proposers shall acknowledge receipt of this **ADDENDUM** when they submit their proposal.

SPECIFICATIONS

Section 00 41 14 – Bid Form – Stipulated Sum

1. Section 1.7 – add Alternate Bid Form Supplement to bid forms

Section 00 43 23 – Alternates Form

1. Added section

Section 26 2416 – Panelboards

1. Added acceptable manufacturers.
2. Added part for panelboard fabrication.
3. Added part for panelboard short circuit rating.
4. Added part for lighting and appliance branch-circuit panelboards.

Section 26 0543 – Underground Ducts & Raceways

1. Added Section.

Section 26 0573 – Power System Analysis

1. Added Section.

PLANS

PLUMBING

1. P201-PLUMBING MELCHER FLOOR PLANS
    a. Updated Fixture Tag from B-3 to B-1 for new boiler.
    b. Added notes to floor plan and to general note sections.

2. P202 – PLUMBING BCPA2 FLOOR PLAN
    a. Updated number of tankless water heaters to 8 for base bid.
    b. Added a alternate design to add a additional.
    c. Updated piping on demo and new floor plans
    d. Removed note referring to heat trace all pipes in area.
    e. Added a note to remove insulation to softener.
    f. Added note to demo existing expansion tank.
    g. Added a note to remove existing flu back to roof penetration and abandon in place.
    h. Added note to general note and to plans

3. P501- PLUMBING DETAILS
    a. Changed sheet name to PUMBING SCHEDULES & DETAILS
    b. Updated Fixture schedule to show new expansion tank.
    c. Updated Water heater schedule to reflect owner specific tankless manufacture.
    d. Updated tags on Water heater Schedule to reflect new tagging changes.
    e. Updated Pump schedule to reflect owner Specific manufacture for pumps.
    f. Updated detail to show alternate #1

ELECTRICAL

1. E301-ELECTRICAL MELCHER FLOORPLAN
    a. Updated Fixture Tag from B-3 to B-1 for new boiler.

2. E302-ELECTRICAL BCPA2 FLOORPLAN
    a. Added scope to replace panel LM under Alternate #1. This includes replacing the existing feeder served from panel 5L.
    b. Added demo floor plan to demolish the existing feeder for panel LM under Alternate #1.
    c. Added routing for new feeder to serve panel LM under Alternate #1 to the overall floor plan.
    d. Qty of tankless heaters has changed from 14 to 8. Tags for tankless heaters was changed from BI-1 and BI-2 to TWH-1.
    e. Added power for additional tankless heaters TWH-2 under Alternate #1.
    f. Circulation pump CP-2 has been removed.

g. Updated circuiting for CP-1.
h. Removed power for heat tracing control panel HTCP-1.

3. E501-ELECTRICAL DETAILS
    a. Added details for conduit stub-ups, pullbox mounting and feeder ductbank.

4. E601- ONE LINE DIAGRAMS AND SCHEDULES
    a. Updated BCPA2 electrical one-line diagram to include upstream equipment serving panel 5L.
    b. Added BCPA2 electrical demo one line diagram for Alternate #1.
    c. Added BCPA2 electrical reno one line diagram for Alternate #1.
    d. Added panel schedule for new panel LM for Alternate #1.
    e. Updated circuit names for boilers in panel LM.
    f. Removed circuit for CP-2.
    g. Circuit for CP-1 has been updated to a 20/A 2 pole circuit.
    h. Relocated panel schedule for panel PA to new sheet E701.

5. E701 – ELECTRICAL SCHEDULES
    a. New sheet added to show panel schedule for 5L, short circuit and voltage drop calcs.
    b. Panel schedule for PA has been relocated to this sheet.

End of Addendum 01

DOCUMENT 000115 – SPECIFICATIONS

ADDENDUM 1

1. Section 004113 - BID FORM – STIPULATED SUM
2. Section 004323 - ALTERNATES FORM
3. Section 260543 - UNDERGROUND DUCTS & RACEWAYS
4. Section 260573 - POWER SYSTEM ANALYSIS
5. Section 262416 - PANELBOARDS

DOCUMENT 00411 - BID FORM - STIPULATED SUM (SINGLE-PRIME CONTRACT)

A. Bidder: _____.

B. Project Name: Blinn Brenham Mechanical FY25 R&R Projects – Melcher Hall & BCPA Phase 2 Water Heaters

C. Project Location: 902 College Avenue, Brenham, TX 77833

D. Owner: Blinn College District

E. Architect: Ramirez-Simon Engineering, LLC

F. Architect Project Number: 1540.

1.2 CERTIFICATIONS AND BASE BID

A. **Base Bid, Single-Prime (All Trades) Contract: Blinn College Park Apartments (BCPA) Phase 2 Water Heaters:** The undersigned Bidder, having carefully examined the Procurement and Contracting Requirements, Conditions of the Contract, Drawings, Specifications, and all subsequent Addenda, as prepared by Ramirez-Simon Engineering, LLC and Architect's consultants, having visited the site, and being familiar with all conditions and requirements of the Work, hereby agrees to furnish all material, labor, equipment and services, including all scheduled allowances, necessary to complete the construction of the above-named project, according to the requirements of the Procurement and Contracting Documents, for the stipulated sum of:

1. _____ Dollars ($_____).

2. The above amount shall include the sum of Ten Thousand Dollars and Zero Cents ($10,000.00) for use as Owner’s Contingency.

3. Lead time for materials: _____ calendar days

4. Construction Schedule in calendar days to complete from start of 5/12/25: _____ calendar days

B. **Base Bid, Single-Prime (All Trades) Contract: Melcher Hall Water Heaters and Install OFCI Storage Tank:** The undersigned Bidder, having carefully examined the Procurement and Contracting Requirements, Conditions of the Contract, Drawings, Specifications, and all subsequent Addenda, as prepared by Ramirez-Simon Engineering, LLC and Architect's consultants, having visited the site, and being familiar with all conditions and requirements of the Work, hereby agrees to furnish all material, labor, equipment and services, including all scheduled allowances, necessary to complete the construction of the above-named project, according to the requirements of the Procurement and Contracting Documents, for the stipulated sum of:

1. _____ Dollars ($_____).

2. The above amount shall include the sum of Twelve Thousand Five Hundred Dollars and Zero Cents ($12,500.00) for use as Owner's Contingency.

3. Lead time for materials: _____ calendar days

4. Construction Schedule in calendar days to complete from start of 5/12/25: _____ calendar days

1.3 BID GUARANTEE

A. The undersigned Bidder agrees to execute a contract for this Work in the above amount and to furnish surety as specified within [**10**] days after a written Notice of Award, if offered within [**60**] days after receipt of bids, and on failure to do so agrees to forfeit to Owner the attached cash, cashier's check, certified check, U.S. money order, or bid bond, as liquidated damages for such failure, in the following amount constituting five percent (5%) of the Base Bid amount above:

1. _____ Dollars ($_____).

B. In the event Owner does not offer Notice of Award within the time limits stated above, Owner will return to the undersigned the cash, cashier's check, certified check, U.S. money order, or bid bond.

1.4 SUBCONTRACTORS AND SUPPLIERS

A. The following companies shall execute subcontracts for the portions of the Work indicated:

1. Concrete Work: _____.
2. Roofing Work: _____.
3. Plumbing Work: _____.
4. HVAC Work: _____.
5. Electrical Work: _____.

1.5 TIME OF COMPLETION

A. The undersigned Bidder proposes and agrees hereby to commence the Work of the Contract Documents on a date specified in a written Notice to Proceed to be issued by Architect and shall fully complete the Work within by August 1, 2025.

1.6 ACKNOWLEDGEMENT OF ADDENDA

A. The undersigned Bidder acknowledges receipt of and use of the following Addenda in the preparation of this Bid:

1. Addendum No. 1, dated _____.
2. Addendum No. 2, dated _____.
3. Addendum No. 3, dated _____.

4. Addendum No. 4, dated _____.

1.7 BID SUPPLEMENTS

A. The following supplements are a part of this Bid Form and are attached hereto.
1. Bid Form Supplement – Alternates.
2. Bid Form Supplement – Bid Bond Form (AIA Document A310).

1.8 CONTRACTOR'S LICENSE

A. The undersigned further states that it is a duly licensed contractor, for the type of work proposed, in **City of Brenham** and that all fees, permits, etc., pursuant to submitting this proposal have been paid in full.

1.9 SUBMISSION OF BID

A. Respectfully submitted this ____ day of _____, 2025.

B. Submitted By:_____(Name of bidding firm or corporation).

C. Authorized Signature:_____(Handwritten signature).

D. Signed By:_____(Type or print name).

E. Title:_____(Owner/Partner/President/Vice President).

F. Witness By:_____(Handwritten signature).

G. Attest:_____(Handwritten signature).

H. By:_____(Type or print name).

I. Title:_____(Corporate Secretary or Assistant Secretary).

J. Street Address:_____.

K. City, State, Zip:_____.

L. Phone:_____.

M. License No.:_____.

N. Federal ID No.:_____(Affix Corporate Seal Here).

END OF DOCUMENT 004113

DOCUMENT 004323 - ALTERNATES FORM

1.1 BID INFORMATION

A. Bidder: _____.

B. Project Name: Blinn Brenham Mechanical FY25 R&R Projects – Melcher Hall & BCPA Phase 2 Water Heaters

C. Project Location: 902 College Avenue, Brenham, TX 77833

D. Owner: Blinn College District

E. Architect: Ramirez-Simon Engineering, LLC

F. Architect Project Number: 1540

1.2 BID FORM SUPPLEMENT

A. This form is required to be attached to the Bid Form.

1.3 DESCRIPTION

A. The undersigned Bidder proposes the amount below be added to or deducted from the Base Bid if particular alternates are accepted by Owner. Amounts listed for each alternate include costs of related coordination, modification, or adjustment.

B. If the alternate does not affect the Contract Sum, the Bidder shall indicate "NO CHANGE."

C. If the alternate does not affect the Work of this Contract, the Bidder shall indicate "NOT APPLICABLE."

D. The Bidder shall be responsible for determining from the Contract Documents the effects of each alternate on the Contract Time and the Contract Sum.

E. Owner reserves the right to accept or reject any alternate, in any order, and to award or amend the Contract accordingly within [**60**] days of the Notice of Award unless otherwise indicated in the Contract Documents.

F. Acceptance or non-acceptance of any alternates by the Owner shall have no effect on the Contract Time unless the "Schedule of Alternates" Article below provides a formatted space for the adjustment of the Contract Time.

1.4 SCHEDULE OF ALTERNATES

A. Alternate No. 1: BCPA Phase 2 Redundancy

1. ADD____ DEDUCT____ NO CHANGE____ NOT APPLICABLE____.
2. _____ Dollars ($_____).
3. ADD____ DEDUCT____ calendar days to adjust the Contract Time for this alternate.

1.5 SUBMISSION OF BID SUPPLEMENT

A. Respectfully submitted this ____ day of _____, 2025.

B. Submitted By:_____(Insert name of bidding firm or corporation).

C. Authorized Signature:_____(Handwritten signature).

D. Signed By:_____(Type or print name).

E. Title:_____(Owner/Partner/President/Vice President).

END OF DOCUMENT 004323

SECTION 260543 - UNDERGROUND DUCTS AND RACEWAYS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications Sections, apply to this section.

1.2 SUMMARY

A. This Section includes the following:
   1. Handholes and handhole accessories.

B. Related Sections include the following:
   1. Division 26, Section 26 05 20, Grounding and Bonding for Electrical Systems for grounding electrodes, counterpoise conductors, clamps and connectors for grounding metallic manhole and handhole accessories and testing of grounds.

1.3 SUBMITTALS

A. Product Data: For the following:
   1. Handhole hardware.
   2. Conduit and ducts, including elbows, bell ends, bends, fittings, and solvent cement.
   3. Duct bank materials, including spacers and miscellaneous components.
   4. Warning tape.

B. Shop Drawings: Show fabrication and installation details for underground ducts and utility structures and include the following:

1.4 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFP A 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with ANSI C2.

C. Comply with NFPA 70.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver ducts to project site with ends capped. Store nonmetallic ducts with supports to prevent bending, warping, and deforming.

B. Store precast concrete units at project site as recommended by manufacturer to prevent physical damage. Arrange so identification markings are visible.

C. Lift and support precast concrete units only at designated lifting or supporting points.

1.6 PROJECT CONDITIONS

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated.
   1. Notify Architect as least two (2) days in advance of proposed utility interruptions.
   2. Do not proceed with utility interruptions without Architect's written permission.

1.7 COORDINATION

A. Coordinate layout and installation of ducts, manholes, and handholes with final arrangement of other utilities and site grading, as determined in the field.

B. Coordinate elevations of ducts and duct bank entrances into manholes and handholes with final profiles of conduits as determined by coordination with other utilities and underground obstructions. Revise locations and elevations from those indicated as required to suit field conditions and to ensure duct runs drain to manholes and handholes, and as approved by Architect.

PART 2 - PRODUCTS

2.1 PRODUCTS AND MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Nonmetallic Ducts and Accessories:
      a. Arnco Corporation
      b. Beck Manufacturing Inc.
      c. Cantex, Inc.
      d. Certainteed Corporation, Pipe & Plastics Group
      e. ElecSys, Inc.
      f. Electri-Flex Company
      g. Ipex, Inc.
      h. Lamson & Sessions; Carlon Electrical Products
      i. Manhattan/CDT/Cole-Flex
      j. Spiraduct/AFC Cable Systems, Inc.

2.2 CONDUIT

A. Conduit and fittings are specified in Division 26, Section 26 05 33, Raceways and Boxes for Electrical Systems.

2.3 DUCTS

A. Rigid Nonmetallic Conduit: NEMA TC 2, Type EPC-40-PVC, UL 651, with matching fittings by the same manufacturer as the conduit, complying with NEMA TC 3 and 514B.

B. Rigid Nonmetallic Conduit: NEMA TC 2, Type EPC-80-PVC, UL 651, with matching fittings by the same manufacturer as the conduit, complying with NEMA TC 3 and UL 514B.

2.4 HANDHOLES

A. Cast Metal Boxes: Cast aluminum, with outside flanges and recessed, gasketed cover for flush mounting and with nonskid finish and legend on cover. Unit, when buried, shall be designed to support AASHTO H10 loading.

B. Precast Handholes: Reinforced concrete, monolithically poured walls and bottom, with steel frame and access door assembly as the top of handhole. Duct entrances and windows shall be located near corners to facilitate racking. Pulling-in irons and other built-in items shall be installed before pouring concrete. Cover shall have nonskid finish and legend. Unit, when buried, shall be designed to support AASHTO H10 loading.

C. Cover Legend: 'ELECTRIC.'

2.5 ACCESSORIES

A. Duct Spacers: Rigid PVC interlocking spacers, selected to provide minimum duct spacings and cover depths indicated while supporting ducts during backfilling; produced by the same manufacturer as the ducts.

B. Grounding Materials: Comply with Division 26, Section 26 0526, Grounding and Bonding for Electrical Systems.

C. Duct Sealing Compound: Nonhardening, safe for contact with human skin, not deleterious to cable insulation, and workable at temperatures as low as 35 degrees F. Capable of withstanding temperature of 300 degrees F without slump and of adhering to clean surfaces of plastic ducts, metallic conduits, conduit coatings, concrete, masonry, lead, cable sheaths, cable jackets, insulation materials, and common metals.

D. Warning Tape: Underground line warning tape specified in Division 26, Section 26 05 53, Identification for Electrical Systems.

PART 3 - EXECUTION

3.1 APPLICATION

A. Underground Ducts for Electrical Cables Higher than 600V: Type EPC-40-PVC. Type RPC-80-PVC, duct bank under streets, driveways, parking lots, etc.

B. Underground Ducts for Electrical Feeders: Type EPC-40-PVC, duct bank. Type RPC-80-PVC, duct bank under streets, driveways, parking lots, etc.

3.2 EARTHWORK

A. Excavation and Backfill: Comply with Division 2 Section, Earthwork, but do not use heavy duty hydraulic operated, compaction equipment. The entire depth of trench shall be backfilled in 12-inch layers, and each layer shall be moistened and compacted to 95% below any walks, paving or structures and to 90% in open areas. Compaction shall be based on Standard Proctor Tests conducted on the materials used.

B. Restore surface features at areas disturbed by excavation and re-establish original grades, unless otherwise indicated. Replace removed sod immediately after backfilling is completed.

C. Restore all areas disturbed by trenching, storing of dirt, cable laying, and other work. Restore

vegetation and include necessary top soiling, fertilizing, liming, seeding, sodding, sprigging, and mulching. Comply with Division 2 Section 'Landscaping.'

D. Restore disturbed pavement. Refer to Division 1 Section, Cutting and Patching.

3.3 CONDUIT AND DUCT INSTALLATION

A. Slope: Pitch ducts a minimum slop of 1:300 down toward manholes and handholes and away from buildings and equipment. Slope ducts from a high point in runs between two (2) manholes to drain in both directions.

B. Curves and Bends: Use manufactured elbows for stub-ups at equipment and at building entrances. Use manufactured long sweep bends with a minimum radius of 25 feet, both horizontally and vertically, at other locations.

C. Use solvent cement joints in ducts and fittings and make watertight according to manufacturer's written instructions. Stagger couplings so those of adjacent ducts do not lie in the same plane.

D. Duct Entrances to Handholes: Space end bells approximately 10 inches o.c. for 5-inch ducts and vary proportionately for other duct sizes. Change from regular spacing to end bell spacing 10 feet from the end bell without reducing duct line slope and without forming a trap in the line. Grout end bells into manhole walls from both sides to provide watertight entrances.

E. Building Entrances: Make a transition from underground duct to conduit at least ten feet outside the building wall. Use fittings manufactured for this purpose. Follow the appropriate installation instructions below.
   1. Waterproofed Wall and Floor Penetrations: Install a watertight entrance sealing device with sealing gland assembly on the inside. Anchor device into masonry construction with one or more integral flanges. Secure membrane waterproofing to the device to make permanently watertight.

F. Warning Tape: Bury warning tape approximately 12 inches above all concrete encased duct banks. Align tape parallel to and within 3 inches of the centerline of duct bank.

G. Stub Ups: Use rigid steel conduit for stub ups to equipment. For equipment mounted on outdoor concrete bases, extend steel conduit a minimum of 5 feet from edge of base. Install insulated grounding bushings on terminations. Couple steel conduits to ducts with adapters designed for this purpose and encase coupling with 3 inches of concrete.

H. Sealing: Provide temporary closure at terminations of ducts that have cables pulled. Seal spare ducts at terminations. Use sealing compound and plugs to withstand at least 15 PSIG hydrostatic pressure.

I. Pulling Cord: Install 100 lbf test nylon cord in ducts, including spares.

3.4 HANDHOLE INSTALLATION

A. Elevation: Install hand holes with depth as indicated. Where indicated, cast handhole cover frame directly into roof of handhole and set roof surface one (1) inch above grade.

B. Drainage: Install drains in bottom of units where indicated. Coordinate with drainage provisions indicated.

C. Access: Install cast iron frame and cover.
   1. Set frames in paved areas and trafficways flush with finished grade. Set other frames one (1) inch above finished grade.

D. Hardware: Install removable hardware, including pulling eyes, cable stanchions, cable arms, and insulators, as required for installation and support of cables and conductors and as indicated.

E. Field Installed Bolting Anchors: Do not drill deeper than 3-7/8 inches for anchor bolts installed in the field. Use a minimum of two (2) anchors for each cable stanchion.

F. Grounding: Install ground rod through floor in each structure and top protruding 4 inches above floor. Seal floor opening against water penetration with waterproof nonshrink grout. Ground exposed metal components and hardware with bare copper ground conductors. Train conductors neatly around corners. Use cable clamps secured with expansion anchors to attach ground conductors.

3.5 FIELD QUALITY CONTROL

A. Testing: Demonstrate capability and compliance with requirements on completion of installation of underground ducts and utility structures.

B. Grounding: Test manhole grounding to ensure electrical continuity of grounding and bonding connections. Measure and report ground resistance as specified in Division 26, Section 26 0526, Grounding and Bonding for Electrical Systems.

C. Duct Integrity: Pull aluminum or wood test mandrel through duct to prove joint integrity and test for out-of-round duct. Provide mandrel equal to 80% fill of the duct. If obstructions are indicated, remove obstructions and retest.

D. Correct installations if possible and retest to demonstrate compliance. Remove and replace defective products and retest.

3.6 CLEANING

A. Pull leather washer type duct cleaner, with graduated washer sizes, through full length of ducts. Follow with rubber duct swab for final cleaning and to assist in spreading lubricant throughout ducts.

B. Clean internal surfaces of manholes, including sump. Remove foreign material.

END OF SECTION 260543

SECTION 260573 - POWER SYSTEM ANALYSIS

PART 1 - GENERAL

1.1 SUMMARY

A. Scope: This Section covers the furnishing of an electrical short circuit and overcurrent protective device coordination study for the building electrical system installed under this contract, including as much of existing system as required for a complete study.

B. Provide time-current coordination studies for all projects that provide or modify a low-voltage service or feeder rated 800A and higher.

1.2 SUBMITTALS

A. Industry Standards: Provide, for each section of the study, an identification and description of the industry testing standards on which the study is based.

1.3 SHORT CIRCUIT STUDY REQUIREMENTS

A. Perform studies using procedures outlined in IEEE 241 and IEEE 242.

B. Following approval of switchgear construction submittals, perform a final short circuit study for the actual equipment.

C. Power Company: The study shall include the utility power company’s system and relay characteristics.

D. General Content: Provide calculations, impedance diagrams, conclusions and recommendations as part of the general content of the study.

E. Ground Fault Study: Include a ground fault study for each low voltage switchgear line-up, switchboard, motor control center, distribution panelboard, branch circuit panelboards and other significant locations throughout the system.

F. Short Circuit: Provide short circuit tabulations which include the system impedances, X/R ratio, asymmetry factor, kVA, symmetrical and asymmetrical fault currents.

G. Preparer: The system studies shall be prepared and signed by a registered engineer experienced in providing such studies.

H. Contract Drawings: The drawings and specifications indicate the general requirements for the low voltage equipment. Determine additional specific characteristics of equipment furnished in accordance with the results of the short circuit.
   1. Submit any equipment design discrepancies and the proposed corrective modifications, if required, with the short circuit study. Identify any variations clearly on the subsequent shop drawings.
   2. Provide the necessary field settings, adjustments and minor modifications for conformance with the approved short circuit and protective device coordination study, without additional expense.

3. Do not submit equipment shop drawings until the short circuit study has been approved.

1.4 ARC-FLASH HAZARD ANALYSIS REQUIREMENTS

A. Preform preliminary and final arch-flash analyses for new installations using procedures outlined in NFPA 70E and IEEE 1584.

B. Preform preliminary arc-flash calculations in the selection of equipment to reduce or eliminate the risk of arch-flash hazards.

C. Prepare arc-flash studies in accordance with the scope and deliverable requirements in IEEE 1584.1.

D. An arc-flash hazard analysis is not required for equipment that operates at 240V and below unless it involves at least one 125 kVA or larger low-impedance transformer in its immediate power supply.

E. Extend arc-flash hazard calculations to points in the distribution system where the calculated incident energy at the assumed working distance is less than 1.2 calories per square centimeter.

F. Where possible, the electrical system shall be designed to limit arc-flash incident energy to a level that does not exceed Category 2 personal protective equipment (PPE) per NFPA 70E, latest edition.

G. Specify overcurrent protective device settings to achieve the required arc-flash results.

H. Reconcile arc-flash protective device setting recommendations with time-current coordination study.

I. Conduit final arc-flash analysis as part of the fault-current and device coordination study.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

3.1 FIELD DATA

A. Collect all required data from utility, existing conditions, existing transformers, fuses and circuit breakers.

3.2 SUBMISSION

A. Submit preliminary study with submittals of electrical protective devices.

B. Submit final study including all as-built conditions prior to acceptance of project.

C. Renovation Projects: Install arc-flash warning labels on existing equipment where lock-out/tag-out will be required for the renovation work.

D. Prepare arc-flash signage for all of the following:
   1. Switchgear
   2. Switchboards
   3. Panelboards
   4. Meter socket enclosures
   5. Fused and non-fused disconnect switches
   6. Motor terminal boxes
   7. Other Equipment required by NEC 110.16

E. Arc-flash labels shall be orange warning labels for incident energy levels equal to or less than 40 calories per square centimeter and red danger label for incident energy levels above 40 calories per square centimeter. Label must be readable in both indoor and outdoor environments for at least 3 years and contact the following minimum information:
   1. Arc hazard boundary (inches)
   2. Working distance (inches)
   3. Arc flash incident energy at the working distance (calories per square centimeter)
   4. Available (maximum) fault current at the equipment/bus (kA)
   5. PPE category (1, 2, 3, or 4) and description including the glove rating
   6. Voltage rating of the equipment
   7. Limited approach distance (inches)
   8. Restricted approach distance (inches)
   9. Prohibited approach distance (inches)
   10. Equipment/bus name
   11. Date prepared
   12. Supplier name and address

END OF SECTION 260573

SECTION 262416 - PANELBOARDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes lighting and power panelboards and associated auxiliary equipment rated 600 V and less.

B. Related Sections include the following:
1. Division 26, Section 26 0500, Common Work Results for general materials and installation methods.
2. Division 26, Section 26 0553, Identification for Electrical Systems for labeling materials.

1.3 SUBMITTALS

A. Product Data: For each type of product and component specified.

1.4 QUALITY ASSURANCE

A. Testing Agency Qualifications: In addition to the requirements specified in Division 1 Section "Quality Control," a testing agency shall meet OSHA criteria for accreditation of testing laboratories, Title 29, Part 1907, or shall be a full member company of the InterNational Electrical Testing Association.
1. Testing Agency's Field Supervisor: Person currently certified by the InterNational Electrical Testing Association or National Institute for Certification in Engineering Technologies, to supervise on-site testing specified in Part 3.

B. Listing and Labeling: Provide products specified in this Section that are listed and labeled.
1. The Terms "Listed" and "Labeled": As defined in the National Electrical Code, Article 100.

C. Comply with NFPA 70.

D. Comply with NEMA PB 1.

E. Comply with UL 67.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by the following:

1. Panelboards:
   a. Eaton Corporation & Cutler-Hammer Products
   b. General Electric Company; Electrical Distribution & Control Div.
   c. Siemens Energy & Automation, Inc.
   d. Square D Co.

2.2 PANELBOARD FABRICATION

A. Enclosures: Flush- or surface-mounted cabinets as indicated. NEMA PB 1, Type 1, unless otherwise indicated to meet environmental conditions at installed location.

B. Directory Frame: Metal, mounted inside each panelboard door.

C. Bus: Hard drawn copper of 98 percent conductivity.

D. Main and Neutral Lugs: Compression type suitable for use with conductor material.

E. Equipment Ground Bus: Adequate for feeder and branch-circuit equipment ground conductors. Bonded to box.

F. Future Devices: Equip with mounting brackets, bus connections, and necessary appurtenances, for the overcurrent protective device ampere ratings indicated for future installation of devices.

G. Special Features: Include the following features for panelboards as indicated:
   1. Hinged Front Cover: Entire front trim hinged to box with standard door within hinged trim cover. The door over the interior of the panel shall be provided with hinge and combination lock and latch. The outside door over the panel gutters shall have a hinge on one side and combination lock and latches. All locks shall be keyed alike. Front for surface mounted panelboards shall be same dimensions as box. Fronts for flush panelboards shall overlap box, unless otherwise indicated. Required for NEMA 1 panelboards unless otherwise indicated.

2.3 PANELBOARD SHORT-CIRCUIT RATING

A. UL label indicating series connected rating with integral or remote upstream devices. Include size and type of upstream device allowable, branch devices allowable, and UL series connect short-circuit rating.

B. Fully rated to interrupt symmetrical short-circuit current available at terminals.

2.4 LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS

A. Branch Overcurrent Protective Devices: Bolt-on circuit breakers, replaceable without disturbing adjacent units.

B. Doors: Door-in-door in panelboard front, with concealed hinges. Secure with flush catch and tumbler lock, all keyed alike.

2.5 OVERCURRENT PROTECTIVE DEVICES

A. Molded-Case Circuit Breaker: NEMA AB 1, handle lockable.

1. Characteristics: Frame size, trip rating, number of poles, and auxiliary devices as indicated and interrupting capacity rating to meet available fault current.
a. 10,000A RMS symmetrical minimum for 208Y/120V and 120/240V applications.
b. 14,000A RMS symmetrical minimum for 480V and 480Y/277V applications.
2. Application Listing: Appropriate for application, including Type SWD for switching fluorescent lighting loads and Type HACR for heating, air-conditioning, and refrigerating equipment.
3. Use common-trip type 2- and 3-pole breakers so that an overload or fault on one pole will trip all poles simultaneously; hand ties are not acceptable.
4. Stab on breakers is not acceptable.
5. Do not use tandem circuit breakers.
6. Current-Limiting Trips: Where indicated, let-through ratings less than NEMA FU 1, Class RK-5.
7. Current Limiters: Where indicated, integral fuse listed for circuit breaker.
8. Lugs: Mechanical lugs and power-distribution connectors for number, size, and material of conductors indicated.

2.6 IDENTIFICATION

A. Identify field-installed wiring and components and provide warning signs as specified in Division 26, Section 26 0553, Identification for Electrical Systems.

B. Update existing circuit directory per NEC 408.4 and as follows:
1. Neatly typed.
2. Text no smaller than 1/8” high.
3. Clear heat-resistant plastic cover.
4. Metal frame on inside door of the equipment.
5. No adhesive-mounted directory pockets.
6. Must contain all information contained in the panel schedule except load calculations.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Labels for identifying the breakers shall be engraved laminated plastic strips attached by screws or Phenolic buttons or small window frame type. Adhesive stick-on labels will not be acceptable.

B. Update circuit directory after field modifications and new circuiting.

3.2 CONNECTIONS

A. Tighten electrical connectors and terminals, including grounding connections, according to manufacturer's published torque-tightening values. Where manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

3.3 FIELD QUALITY CONTROL

A. Prepare for acceptance tests as follows:

1. Make continuity tests of each new circuit.

B. Testing: After modifications to existing panelboard is completed and after electrical circuitry has been energized, demonstrate product capability and compliance with requirements.
   1. Procedures: Perform each visual and mechanical inspection and electrical test stated in NETA ATS, Section 7.6 for molded-case circuit breakers for each new circuit. Certify compliance with test parameters.
   2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, remove and replace with new units, and retest.

C. Balancing Loads: After Substantial Completion, but not more than 2 months after Final Acceptance, conduct load-balancing measurements and make circuit changes as follows:
   1. Perform measurements during period of normal working load as advised by Owner.
   2. Perform load-balancing circuit changes outside normal occupancy/working schedule of the facility. Make special arrangements with Owner to avoid disrupting critical 24-hour services such as fax machines and on-line data processing, computing, transmitting, and receiving equipment.
   3. Recheck loads after circuit changes during normal load period. Record all load readings before and after changes and submit test records.
   4. Tolerance: Difference exceeding 1 percent between average of the phase current, within a distribution panelboard, is not acceptable. Difference existing 10 percent between average of the phase current, within a branch-circuit panelboard, is not acceptable. Rebalance and recheck as required to meet this minimum requirement.

3.4 CLEANING

A. On completion of installation, inspect interior and exterior of panelboards. Remove paint splatters and other spots, dirt, and debris. Touch up scratches and mars of finish to match original finish.

END OF SECTION 262416

GENERAL NOTES

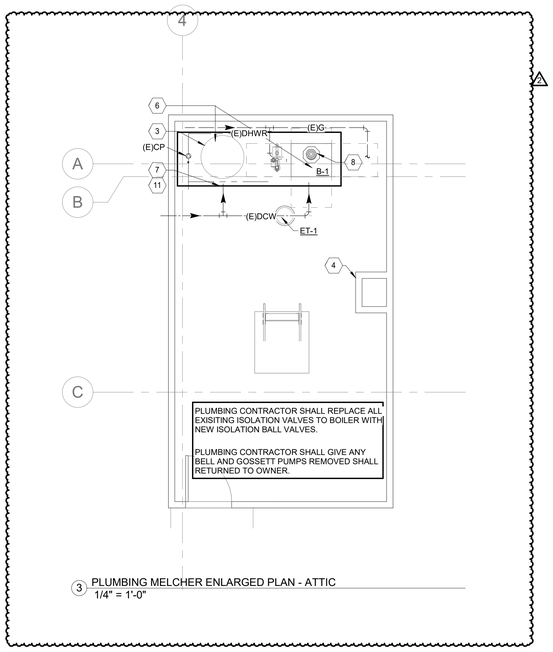
A. REFER TO SHEET P001 FOR SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.

B. CLEAN AND REPAIR EXISTING MATERIALS AND EQUIPMENT WHICH BECOME DAMAGED OR CONTAMINATED BY CONSTRUCTION ACTIVITY.

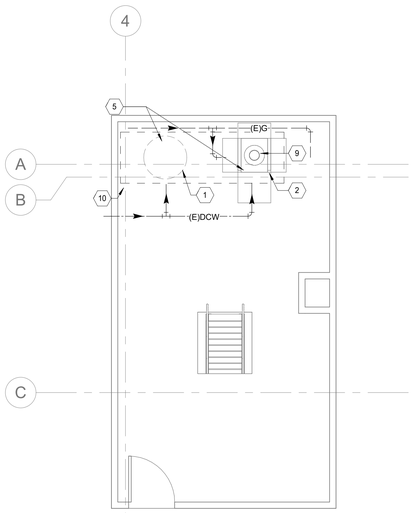
2 C. CONTRACTOR SHALL ENSURE THAT ALL EXISTING TEMPERATURE WEILS REMAIN OR ARE REPLACED IN NEW PIPING TO MATCH EXISTING FUNCTIONS. EXISTING TEMPERATURE SENSOR TIE IN TO DDC CONTROLS SHALL REMAIN IN PLACE.

SHEET KEYED NOTES

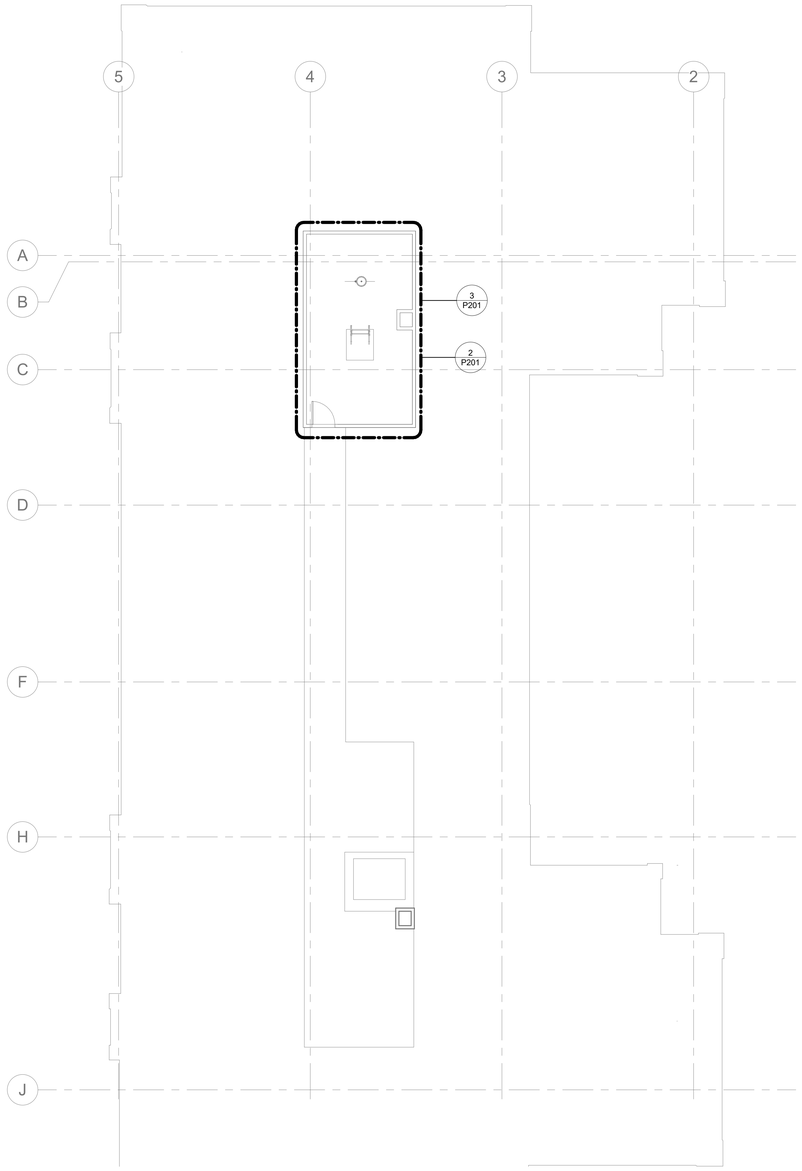
Key Value	Keynote Text
1	TANK TO BE REMOVED.
2	BOILER TO BE REMOVED.
3	OWNER FURNISHED 200 GALLON STORAGE TANK.
4	INSTALL CARBON MONOXIDE SENSOR AT 48" ABOVE FINISHED FLOOR. REFER TO WATER HEATER SCHEDULE FOR MAKE AND MODEL ON SHEET P501.
5	DEMO ALL EXISTING ISOLATION VALVES DCW, GAS, DHW, AND DHWR.
6	INSTALL ALL NEW ISOLATION VALVES DCW, GAS, DHW, AND DHWR.
7	PLUMBING CONTRACTOR SHALL INSTALL PAN UNDER NEW STORAGE TANK AND BOILER AND DRAIN LINE TO BE RAN TO NEAREST FLOOR SINK OR DRAIN.
8	RECONNECT NEW BOILER FLUE TO EXISTING FLUE PIPE THROUGH ROOF.
9	EXISTING FLUE THROUGH ROOF TO REMAIN.
10	DEMO EXISTING PAN.
11	FOR PAN REPLACEMENT PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL OF (E) CP AND SHALL RE-INSTALL (E) CP REPLACE ALL GASKETS AND BOLTS TO ENSURE NO LEAKS.



3 PLUMBING MELCHER ENLARGED PLAN - ATTIC
1/4" = 1'-0"



2 PLUMBING MELCHER ENLARGED DEMO PLAN - ATTIC
1/4" = 1'-0"



1 PLUMBING MELCHER PLUMBING PLAN - ATTIC
1/8" = 1'-0"

Ramirez - Simon Engineering, LLC

Mechanical • Electrical • Plumbing
Texas Registered Engineering Firm F-14781
9805 Whithorn Dr. | Houston, TX 77095
Office: 832.261.1420

PROFESSIONAL SEAL

STATE OF TEXAS
KRISTEN OWEN
93868
LICENSED PROFESSIONAL ENGINEER
01/13/2025

CONSULTANTS

PROJECT INFORMATION

CLIENT NAME:

BLINN COLLEGE DISTRICT

BLINN MECHANICAL PROJECTS - BRENHAM - MELCHER + BCPA2

902 COLLEGE AVE,
BRENHAM, TX 77833

PROJECT ISSUE

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No.	DATE	DESCRIPTION
1	12.13.2024	ISSUE FOR CONSTRUCTION
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RSE PROJECT NO:	1540
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CHECKED BY:	Checker

SHEET TITLE

PLUMBING MELCHER FLOOR PLAN

SHEET NUMBER

P201

GENERAL NOTES

A. REFER TO SHEET P001 FOR SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.

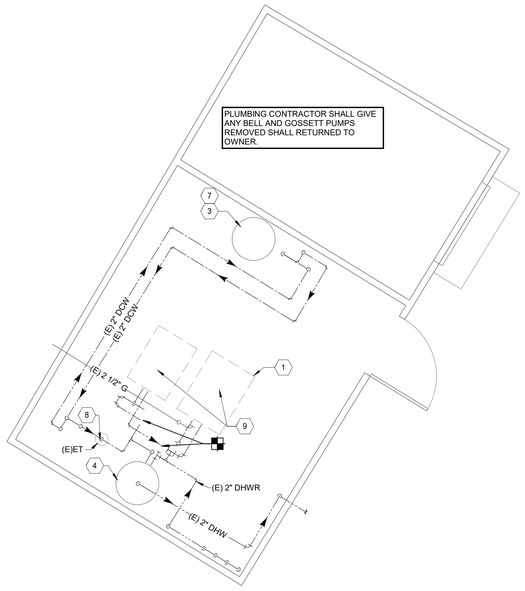
B. CLEAN AND REPAIR EXISTING MATERIALS AND EQUIPMENT WHICH BECOME DAMAGED OR CONTAMINATED BY CONSTRUCTION ACTIVITY.

1 C. CONTRACTOR SHALL ENSURE THAT ALL EXISTING TEMPERATURE WEILS REMAIN OR ARE REPLACED IN NEW PIPING TO MATCH EXISTING FUNCTIONS. EXISTING TEMPERATURE SENSOR TIE IN TO DDC CONTROLS SHALL REMAIN IN PLACE.

SHEET KEYED NOTES

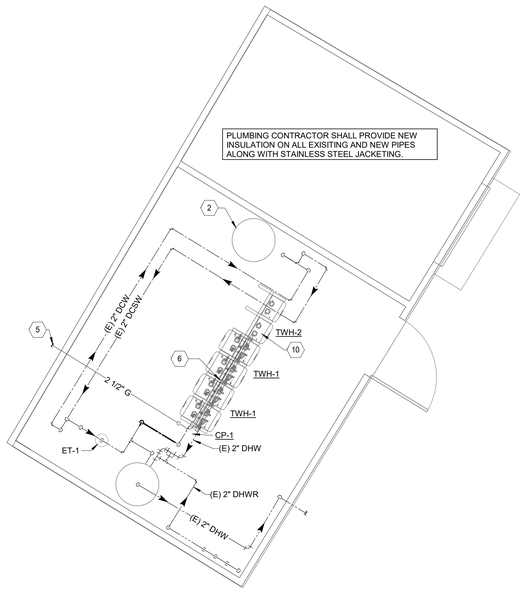
Key Value	Keynote Text
1	BOILER TO BE REMOVED.
2	WATER SOFTENER TO BE INSULATED.
3	EXISTING WATER SOFTENER TO REMAIN.
4	EXISTING 200 GALLON HOT WATER STORAGE TANK TO REMAIN.
5	NEW GAS PIPE FROM METER TO TANKLESS HEATER. TOTAL DEVELOPMENTAL LENGTH OF 50' @ LESS THEN 2PSI WITH A PRESSURE DROP OF .5 W.C. WITH A TOTAL LOAD OF 1,990 CFH.
6	REMOVE 3 1/2" GAS HEATER TO FEED ALL TANKLESS WATER HEATERS.
7	REMOVE INSULATION ON SOFTENER.
8	DEMO EXITING EXPANSION TANK.
9	DEMO FLUE UP TO EXISTING CEILING. ABANDON PORTION OF FLUE ABOVE CEILING AND THROUGH ROOF IN PLACE.
10	TWH-2 TO BE PROVIDED AND INSTALLED UNDER ALTERNATE #1.

PLUMBING CONTRACTOR SHALL GIVE ANY BELL AND GOSSETT PUMPS REMOVED SHALL RETURNED TO OWNER.

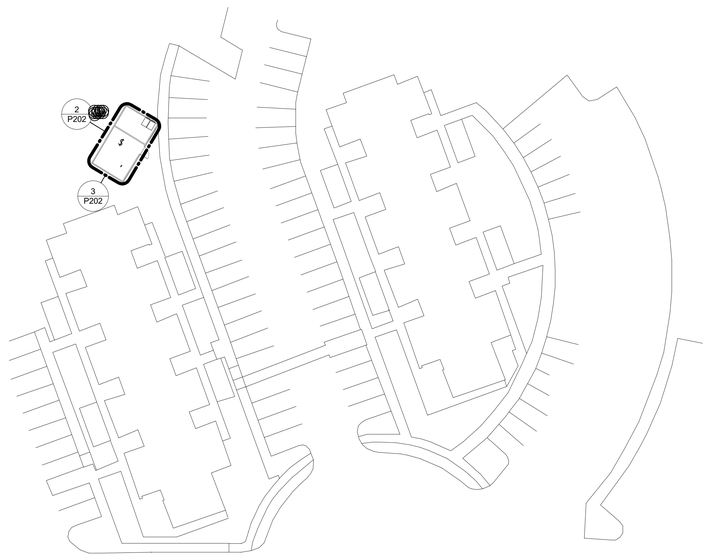


3 PLUMBING BCPA2 ENLARGED DEMO FLOOR PLAN
1/4" = 1'-0"

PLUMBING CONTRACTOR SHALL PROVIDE NEW INSULATION ON ALL EXISITING AND NEW PIPES ALONG WITH STAINLESS STEEL JACKETING.



2 PLUMBING BCPA2 ENLARGED FLOOR PLAN
1/4" = 1'-0"



1 PLUMBING BCPA2 FLOOR PLAN
1" = 30'-0"

Ramirez - Simon Engineering, LLC
Mechanical • Electrical • Plumbing
Texas Registered Engineering Firm F-14781
9805 Whithorn Dr. | Houston, TX 77095
Office: 832.261.1420

PROFESSIONAL SEAL

STATE OF TEXAS
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93868
LICENSED PROFESSIONAL ENGINEER
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SHEET TITLE

PLUMBING BCPA2 FLOOR PLAN

SHEET NUMBER

P202

PLUMBING FIXTURE SCHEDULE

ID	ID TYPE	MANUFACTURER	MODEL NUMBER	DESCRIPTION
FCV-1	FLOW CONTROL VALVE	BELL & GOSSETT	# LF-CB	"CIRCUIT SETTER PLUS", LEAD FREE CAST BRONZE BODY, BRASS BALL, CALIBRATED BALANCE VALVE, DIFFERENTIAL PRESSURE READOUT PORTS, DRAIN PORT, MEMORY STOP, NAMEPLATE AND 1/2" VALVE BODY SIZE UNLESS SHOWN OTHERWISE ON PLANS. SET AND BALANCE TO 4 GPM FLOW RATE UNLESS SHOWN OTHERWISE ON PLANS AND PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.
ET-1	EXPANSION TANK	AMTROL	ST-30V-C	WELDED STEEL PRESSURE TANK, POLYPROPYLENE LINING, FLEXIBLE BUTYL DIAPHRAGM, AIR CHARGING VALVE, 150 PSI MAXIMUM WORKING PRESSURE, 14.0 GALLON CAPACITY, 0.45 MAXIMUM ACCEPTANCE FACTOR. 1" PIPE CONNECTION. SET THE AIR CHARGE PRESSURE TO MATCH EXISTING WATER SYSTEM PRESSURE.

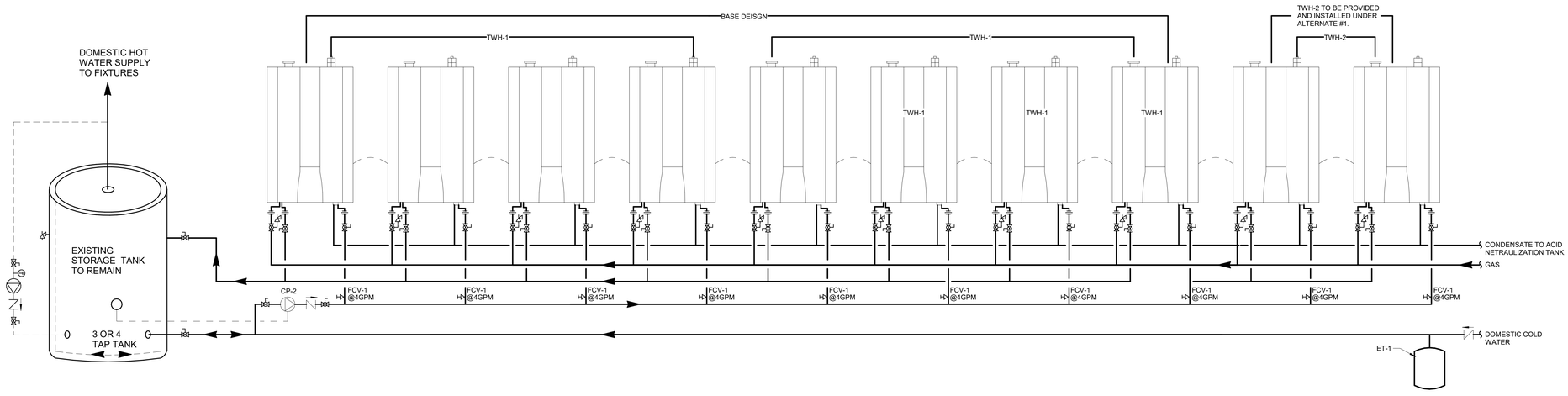
WATER HEATER SCHEDULE

TAG ID	LOCATION	MANUFACTURER	MODEL #	QUANTITY	CFH	RECOVERY	ELECTRICAL REQUIREMENTS			NOTES
							VOLTS	PH	HZ	
TWH-1	PHASE 2 MECHAINCAL YARD	RINNAI	TRS04CXIN (2)	8	199 (EACH)	32 GPM	120	1	60	CONTRACTOR SHALL PROVIDE: 8 OUTDOOR VENT KITS (RXOVC)
ALT#1 TWH-2	PHASE 2 MECHAINCAL YARD	RINNAI	TRS02CXIN	2	199 (EACH)	8 GPM	120	1	60	CONTRACTOR SHALL PROVIDE: 2 OUTDOOR VENT KITS (RXOVC)
B-1	MELCHER ATTIC	RAYPAK	HD-301	1	299 (EACH)	426 GPM	120	1	60	CONTRACTOR SHALL PROVIDE: CARBON MONOXIDE SENSOR WITH SWITCH, INTERLOKED WITH BOILER. OPERA MODEL # 6002 BOILER SHALL COME WITH INTERGRATED PUMP

HOT WATER RETURN PUMP SCHEDULE

MARK	DESCRIPTION	MANUFACTURER	MODEL NO.	TYPE	FLOW RATE (GPM)	HEAD (TOTAL FT)	MOTOR DATA				NOTES
							HP	V	PHASE	HZ	
CP-1	HOT WATER RETURN PUMP	BELL & GOSSETT	ECOCIRC XL 65-130	CANNED ROTOR TYPE	32	21	1	230	1	60	ALL

NOTES:
1. ALL OF PUMPS WETTED PARTS TO BE OF STAINLESS STEEL CONSTRUCTION.
2. PUMP TO HAVE INTEGRAL VARIABLE FREQUENCY DRIVE AND TEMPERATURE SENSOR.



1 TANKLESS WATER HEATER RACK (10)
NO SCALE

Ramirez - Simon Engineering, LLC
Mechanical • Electrical • Plumbing
Texas Registered Engineering Firm F-14781
9805 Whithorn Dr. | Houston, TX 77095
Office: 832.261.1420

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93868
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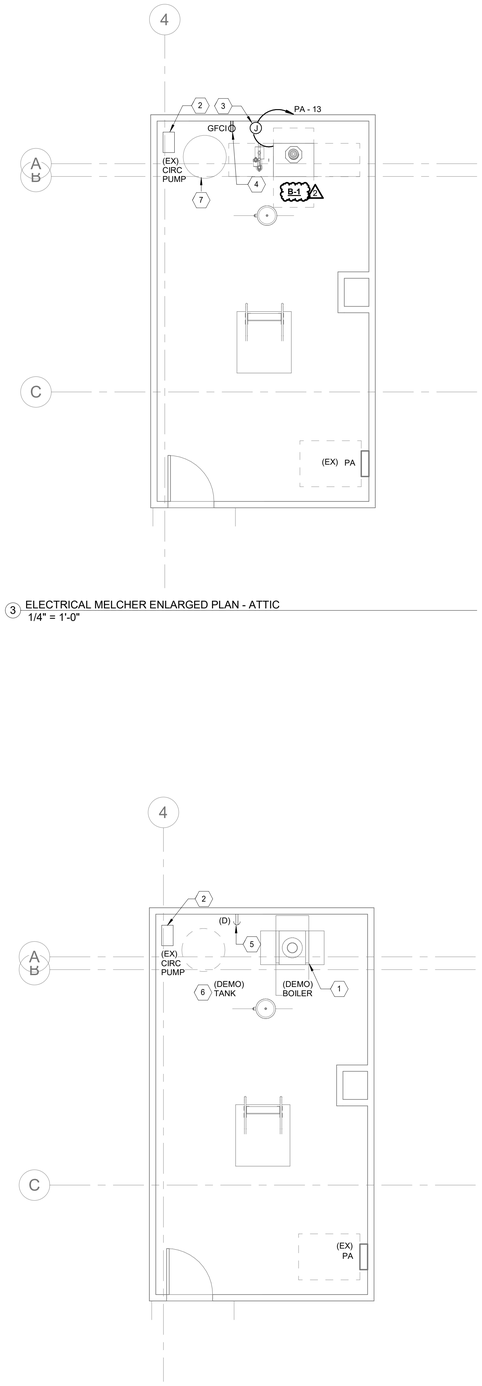
PLUMBING SCHEDULES & DETAILS

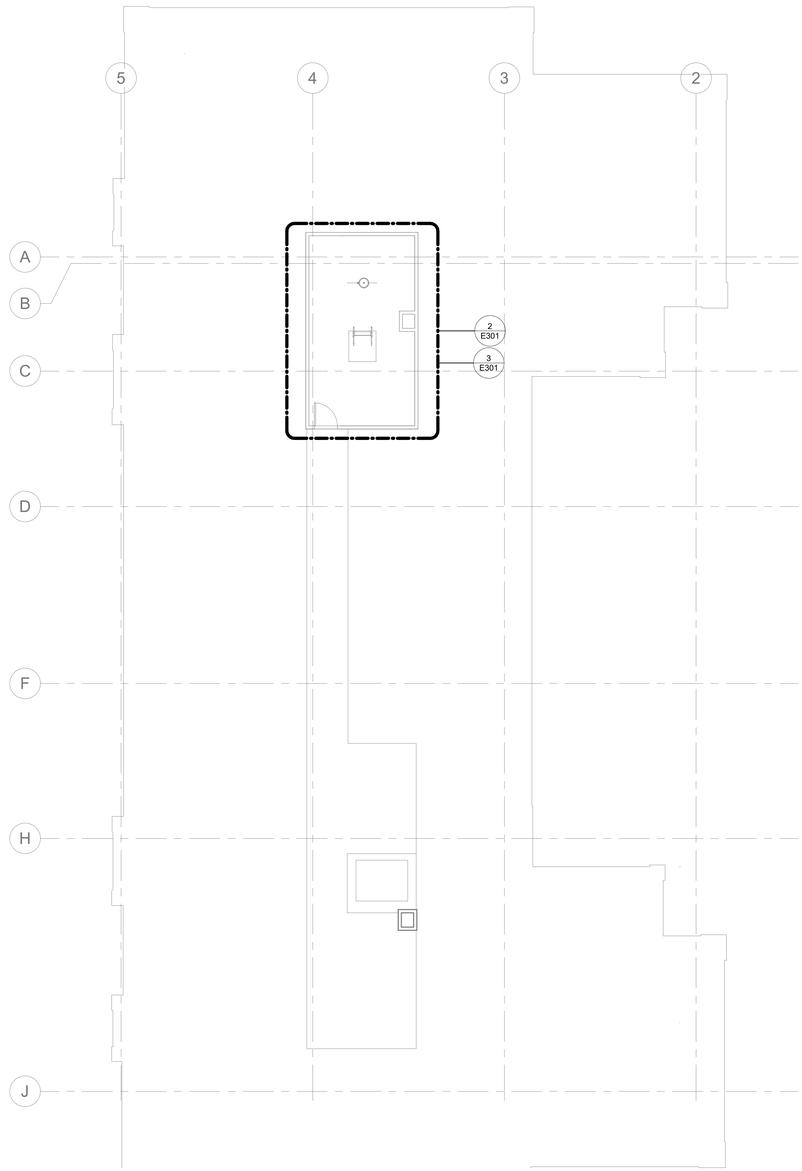
SHEET NUMBER

P501



3 ELECTRICAL MELCHER ENLARGED PLAN - ATTIC
1/4" = 1'-0"

2 ELECTRICAL MELCHER ENLARGED DEMO PLAN -ATTIC
1/4" = 1'-0"



1 ELECTRICAL MELCHER FLOOR PLAN - ATTIC
1/8" = 1'-0"

GENERAL NOTES

A. REFER TO ELECTRICAL LEGEND AND PROJECT GENERAL NOTES ON SHEET E001.

B. DRAWINGS ARE SCHEMATIC IN NATURE; VERIFY DIMENSIONS AND EQUIPMENT LOCATIONS IN THE FIELD. CONTRACTOR SHALL VERIFY EXACT LOCATION AND CONFIGURATION OF INSTALLATIONS TO REMAIN.

SHEET KEYED NOTES

Key Value	Keynote Text
1	EXISTING BOILER AND ASSOCIATED PUMP TO BE DEMOLISHED. DEMO BRANCH CIRCUIT WIRING AND CONDUIT BACK TO SOURCE. TURN OFF BREAKER AND LABEL AS SPARE.
2	EQUIPMENT/FIXTURE IS EXISTING TO REMAIN. SHOWN FOR REFERENCE ONLY.
3	INSTALL POWER TO SERVE BOILER. LOCAL DISCONNECTING MEANS SHALL BE PROVIDED VIA THE CIRCUIT BREAKER IN PANEL.
4	PROVIDE GFCI TYPE RECEPTACLE. CONNECT TO EXISTING CIRCUIT.
5	EXISTING STANDARD RECEPTACLE TO BE DEMOLISHED AND REPLACED WITH A GFCI RECEPTACLE.
6	EXISTING TANK TO BE DEMOLISHED. NO SCOPE FOR ELECTRICAL. JUST SHOWN FOR REFERENCE.
7	NEW TANK TO BE INSTALLED. NO SCOPE FOR ELECTRICAL. JUST SHOWN FOR REFERENCE.

TRUE NORTH PROJECT NORTH

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

0' 2' 4' 8'

Ramirez - Simon Engineering, LLC

Mechanical • Electrical • Plumbing
Texas Registered Engineering Firm F-14781
9805 Whithorn Dr. | Houston, TX 77095
Office: 832.261.1420

PROFESSIONAL SEAL

STATE OF TEXAS
DIMITRI BYRON YORDANOPOULOS
133807
LICENSED
PROFESSIONAL ENGINEER

01/13/2025

CONSULTANTS

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BLINN COLLEGE DISTRICT

BLINN MECHANICAL PROJECTS - BRENHAM - MELCHER + BCPA2

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CHECKED BY:	TLG

SHEET TITLE

ELECTRICAL MELCHER FLOORPLAN

SHEET NUMBER

E301

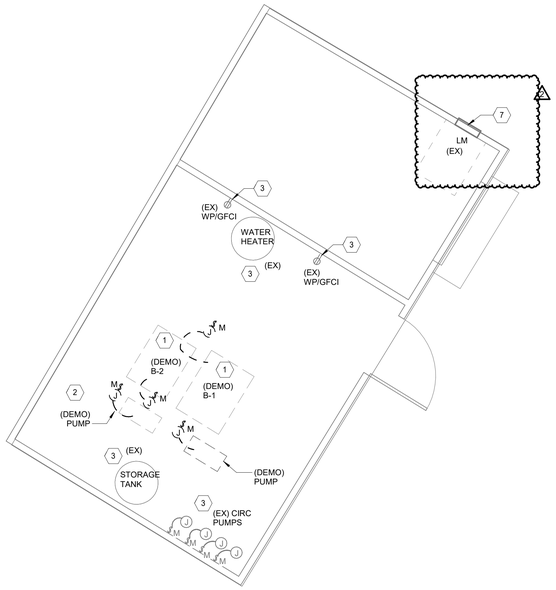
GENERAL NOTES

A. REFER TO ELECTRICAL LEGEND AND PROJECT GENERAL NOTES ON SHEET E001.

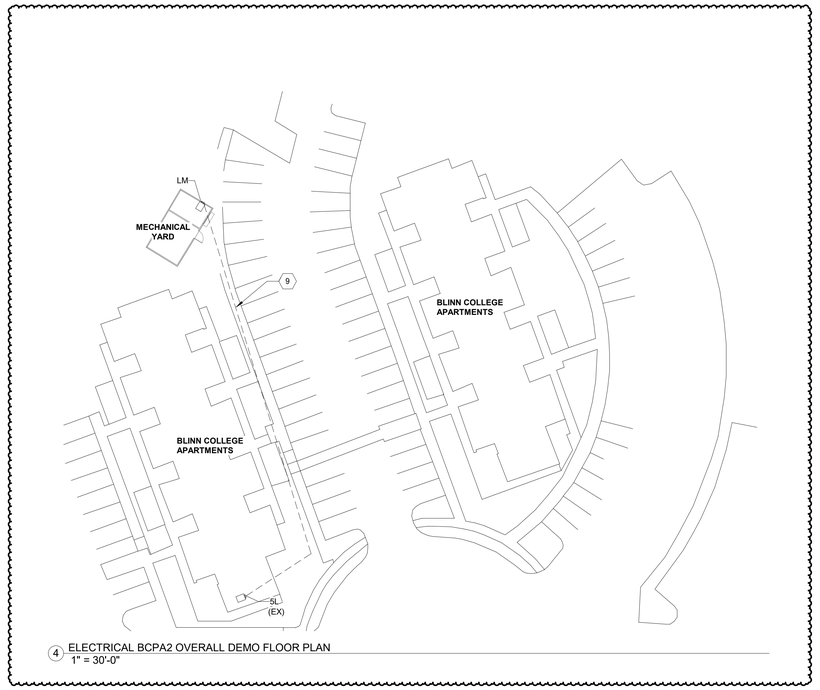
B. DRAWINGS ARE SCHEMATIC IN NATURE; VERIFY DIMENSIONS AND EQUIPMENT LOCATIONS IN THE FIELD. CONTRACTOR SHALL VERIFY EXACT LOCATION AND CONFIGURATION OF INSTALLATIONS TO REMAIN.

SHEET KEYED NOTES

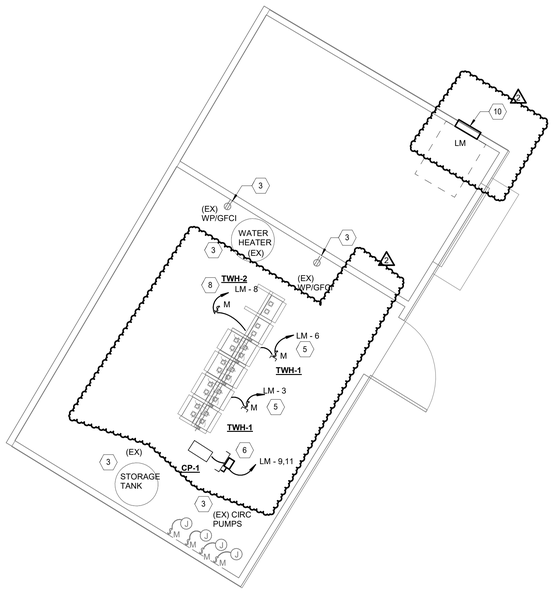
Key Value	Keynote Text
1	EXISTING BOILERS TO BE DEMOLISHED. DEMO BRANCH CIRCUIT WIRING AND CONDUIT BACK TO SOURCE. TURN OFF BREAKER AND LABEL AS SPARE. APPROXIMATE LOCATION OF CEILING MOUNTED MOTOR RATED SWITCH SHOWN. FIELD VERIFY EXACT LOCATION.
2	EXISTING PUMP TO BE DEMOLISHED. DEMO BRANCH CIRCUIT WIRING AND CONDUIT BACK TO SOURCE. TURN OFF BREAKER AND LABEL AS SPARE. APPROXIMATE LOCATION OF CEILING MOUNTED MOTOR RATED SWITCH SHOWN. FIELD VERIFY EXACT LOCATION.
3	EQUIPMENT/FIXTURE IS EXISTING TO REMAIN. SHOWN FOR REFERENCE ONLY.
4	APPROXIMATE LOCATION OF PANEL 5L IN ELECTRICAL ROOM. ACCORDING TO EXISTING DRAWINGS PANEL 5L SUBFEEDS PANEL LM IN MECHANICAL YARD. CONTRACTOR TO FIELD VERIFY.
5	INSTALL POWER TO SERVE BOILER RACK SYSTEM. PROVIDE NEMA 3R MOTOR RATED SWITCH LOCATED ON UNISTRUT NEXT TO SKID FOR LOCAL DISCONNECTING MEANS.
6	INSTALL POWER TO SERVE CIRCULATION PUMP. HOMERUN CIRCUIT VIA 2#12,1#12G,3/4"C. LOCAL DISCONNECT SHALL BE 30A/240V/2P/NEMA 3R. MOUNT DISCONNECT ON UNISTRUT NEXT TO SKID.
7	EXISTING PANEL TO BE REPLACED AS PART OF ALTERNATE #1. DEMO FEEDER AND CONDUIT BACK TO SOURCE. BRANCH CIRCUITS THAT ARE EXISTING TO REMAIN SHALL BE RE-TERMINATED ONTO NEW PANEL. REFER TO DEMO ONE-LINE DIAGRAM ON SHEET E601 FOR MORE INFORMATION.
8	POWER FOR TWH-2 SHALL BE INSTALLED UNDER ALTERNATE #1. PROVIDE NEMA 3R MOTOR RATED SWITCH LOCATED ON UNISTRUT NEXT TO SKID FOR LOCAL DISCONNECTING MEANS.
9	FEEDER SERVING PANEL LM TO BE REPLACED AS PART OF ALTERNATE #1. DEMO FEEDERS AND CONDUIT BACK TO SOURCE PANEL 5L. ANY UNDERGROUND CONDUIT SHALL BE LEFT IN PLACE, TAGGED AS ABANDONED AND CAPPED.
10	EXISTING PANEL TO BE REPLACED UNDER ALTERNATE #1. RE-TERMINATE EXISTING BRANCH CIRCUITS ONTO NEW PANEL. REFER TO RENO ONE-LINE DIAGRAM ON SHEET E601 FOR MORE INFORMATION.
11	PROPOSED ROUTING OF NEW FEEDER TO SERVE PANEL LM TO BE INSTALLED UNDER ALTERNATE #1. FIELD COORDINATE EXACT ROUTE TO AVOID CONFLICTS WITH OTHER UTILITIES. PROVIDE A PULL BOX FOR EVERY 270 DEGREES WORTH OF CONDUIT BENDS. X-RAY SLAB PRIOR TO SAWCUT FOR TRENCHING. PATCH AS REQUIRED. REFER TO ONE-LINE DIAGRAM FOR REQUIRED FEEDER AND CONDUIT SIZE.



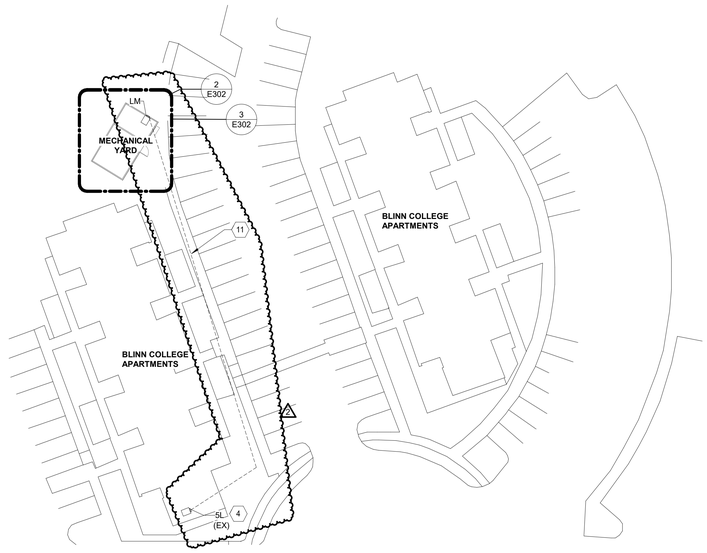
2 ELECTRICAL BPCA2 ENLARGED DEMO FLOOR PLAN
1/4" = 1'-0"



4 ELECTRICAL BCPA2 OVERALL DEMO FLOOR PLAN
1" = 30'-0"



3 ELECTRICAL BCPA2 ENLARGED FLOOR PLAN
1/4" = 1'-0"



1 ELECTRICAL BCPA2 OVERALL FLOOR PLAN
1" = 30'-0"

TRUE NORTH PROJECT NORTH

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

0' 2' 4' 8'

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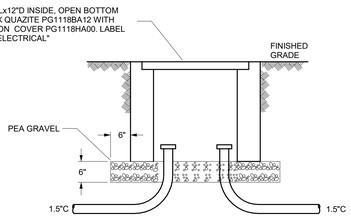
DRAWN BY:	DBY
CHECKED BY:	TLG

SHEET TITLE

ELECTRICAL BCPA2 FLOOR PLAN

SHEET NUMBER

E302

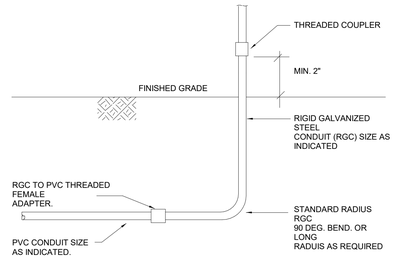


1. ALL CONDUCTORS SHALL WRAP AROUND PULLBOX 360 DEGREES.

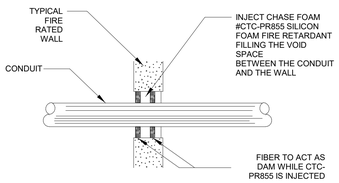
2. ALL SPLICES SHALL BE MADE IN PULLBOX. USE A 1KV RATED RESIN SPLICE KIT SIMILAR TO 3M PRODUCTS 85 SERIES.

3. BURY CONDUIT MINIMUM 24" BELOW GRADE.

5 PULLBOX MOUNTING DETAIL
SCALE = NONE



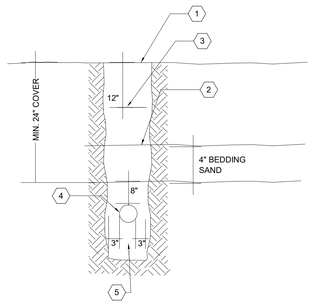
3 CONDUIT STUB-UP DETAIL
SCALE = NONE



NOTE

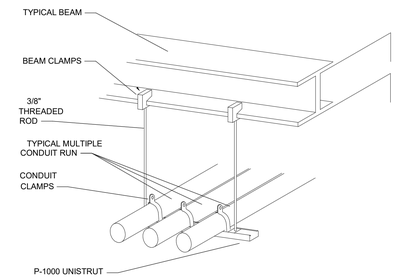
FIRE RATING OF COMPLETED FIREPROOFED ASSEMBLY SHALL EQUAL OR EXCEED THE FIRE RATING OF THE WALL

2 FIREWALL PENETRATION DETAIL
SCALE = NONE



1. BACKFILL TO GRADE USING EXCAVATED MATERIAL COMPACTED TO 95% STANDARD PROCTOR. RE: SPECIFICATIONS.
2. BACKFILL WITH CLEAN EARTH, SAND OR SCREENING FREE OF DEBRIS. 12" ABOVE TOP OF BEDDING SAND. PLACE & COMPACT IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS RE: SPECIFICATIONS.
3. WARNING TAPE.
4. PVC SCHEDULE 40 CONDUIT. CONDUIT RUN WILL TRANSITION TO GALVANIZED RIGID STEEL (GRS) FOR BENDS AND WHERE IT STUB UP ABOVE GROUND. (1) 1.5" CONDUIT FOR FEEDER SERVING PANEL LM.
5. WASHED BEDDING SAND AROUND CONDUIT.

4 FEEDER DUCTBANK DETAIL
SCALE = NONE



1 TRAPEZE MOUNTED CONDUIT DETAIL
SCALE = NONE

Ramirez - Simon Engineering, LLC
Mechanical • Electrical • Plumbing
Texas Registered Engineering Firm F-14781
9805 Whithorn Dr. | Houston, TX 77095
Office: 832.261.1420

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DIMITRY BYRON YORDANOPOULOS
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LICENSED
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01/13/2025

CONSULTANTS

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CLIENT NAME:

BLINN COLLEGE DISTRICT

BLINN MECHANICAL PROJECTS - BRENHAM - MELCHER + BCPA2

902 COLLEGE AVE, BRENHAM, TX 77833

PROJECT ISSUE

ISSUE FOR CONSTRUCTION

REVISIONS

No.	DATE	DESCRIPTION
1	12.13.2024	ISSUE FOR CONSTRUCTION
2	01/13/2025	ADDENDUM 1

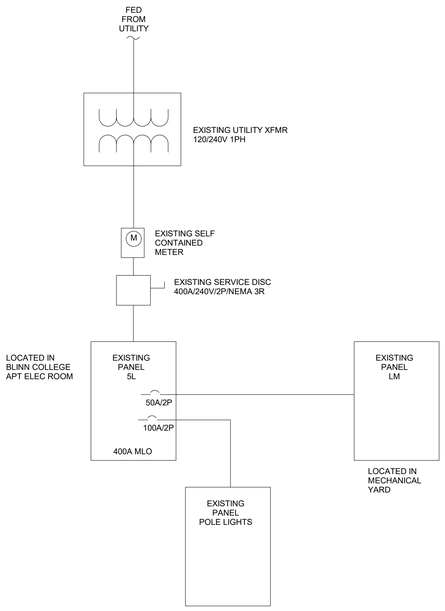
RSE PROJECT NO:	1540
DRAWN BY:	Author
CHECKED BY:	Checker

SHEET TITLE

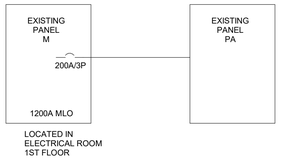
ELECTRICAL DETAILS

SHEET NUMBER

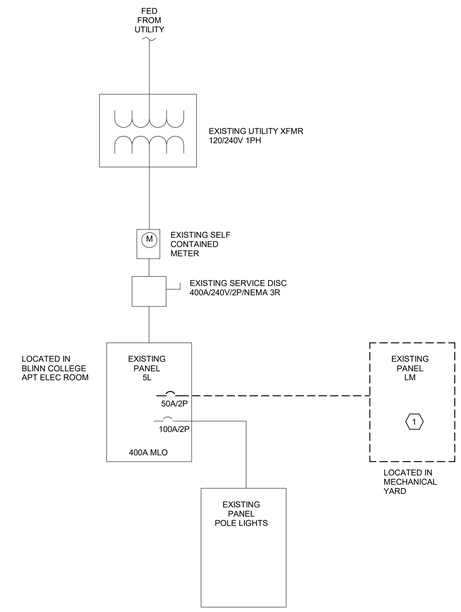
E501



1 BCPA2 ELECTRICAL ONE-LINE DIAGRAM
NTS



2 MELCHER ELECTRICAL ONE-LINE DIAGRAM
NTS



3 BCPA2 ELECTRICAL DEMO ONE-LINE DIAGRAM ALTERNATE #1
NTS

4 BCPA2 ELECTRICAL RENO ONE-LINE DIAGRAM ALTERNATE #1
NTS

GENERAL NOTES

A. REFER TO ELECTRICAL LEGEND AND GENERAL INFORMATION ON SHEET E001.

SHEET KEYED NOTES

1. EXISTING PANEL LM TO BE DEMOLISHED AND REPLACED UNDER ALTERNATE #1. EXISTING BRANCH CIRCUITS TO REMAIN SHALL BE RE-TERMINATED ONTO NEW PANEL.
2. PROVIDE NEW PANEL UNDER ALTERNATE #1. RETERMINATE EXISTING CIRCUITS FROM PREVIOUS PANEL UNTO NEW PANEL.
3. PROVIDE BREAKER TO SERVE NEW CIRCUIT. AIC RATING OF BREAKER SHALL MATCH EXISTING BREAKERS IN PANEL.
4. PANEL SCHEDULE PROVIDED FOR NEW PANEL UNDER ALTERNATE #1.
5. REFER TO SHEET E701 FOR FAULT CURRENT CALCULATIONS.
6. REFER TO SHEET E701 FOR VOLTAGE DROP CALCULATIONS.

Branch Panel: LM

Location: Mechanical Yard
Supply From:
Mounting: Recessed
Enclosure: Type 1
Volts: 120/240 Single
Phases: 1
Wires: 3
A.I.C. Rating: Existing
Mains Type: MLO
Mains Rating: 50 A

Notes:

CKT	Circuit Description	Load Amps	Trip	Poles	A		B		Poles	Trip	Load Amps	Circuit Description	CKT
1	Existing Circulation Pumps	3 A	20 A	1	344 VA	500 VA			1	20 A	4 A	Existing Lights	2
3	TWH-1	16 A	20 A	1			1920 VA	1000 VA	1	20 A	8 A	Existing Load	4
5	Existing Irrigation	4 A	20 A	1	500 VA	1920...			1	20 A	16 A	TWH-1	6
7	Existing Receptacles	6 A	20 A	1			720 VA	0 VA	1	20 A	0 A	Spare	8
9	CP-1	8 A	20 A	2	920 VA	--			1	--	0 A	Space	10
11							920 VA	--	1	--	0 A	Space	12
13	Space	0 A	--	1	--	--			1	--	0 A	Space	14
15	Space	0 A	--	1			--	--	1	--	0 A	Space	16
17	Space	0 A	--	1	--	--			1	--	0 A	Space	18
19	Space	0 A	--	1			--	--	1	--	0 A	Space	20
21	Space	0 A	--	1	--	--			1	--	0 A	Space	22
23	Space	0 A	--	1			--	--	1	--	0 A	Space	24
25	Space	0 A	--	1	--	--			1	--	0 A	Space	26
27	Space	0 A	--	1			--	--	1	--	0 A	Space	28
				Total Load:	4184 VA		4560 VA						
				Total Amps:	35 A		38 A						

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Receptacle	720 VA	100.00%	720 VA		
Lighting	0 VA	0.00%	0 VA	**Total Conn. Load:**	8744 VA
Motor	2184 VA	100.00%	2184 VA	**Total Est. Demand:**	9119 VA
Miscellaneous	4340 VA	100.00%	4340 VA	**Total Conn. Current:**	36 A
Continuous	0 VA	0.00%	0 VA	**Total Est. Demand Current:**	38 A
Kitchen	0 VA	0.00%	0 VA		
Existing Load	1500 VA	125.00%	1875 VA		

Notes:

Branch Panel: LM (4)

Location: Mechanical Yard
Supply From: 5L
Mounting: Recessed
Enclosure: Type 1
Volts: 120/240 Single
Phases: 1
Wires: 3
A.I.C. Rating: 10,000 A
Mains Type: MCB
Mains Rating: 80 A

Notes:

CKT	Circuit Description	Load Amps	Trip	Poles	A		B		Poles	Trip	Load Amps	Circuit Description	CKT
1	Existing Circulation Pumps	3 A	20 A	1	344 VA	500 VA			1	20 A	4 A	Existing Lights	2
3	TWH-1	16 A	20 A	1			1920 VA	1000 VA	1	20 A	8 A	Existing Load	4
5	Existing Irrigation	4 A	20 A	1	500 VA	1920 VA			1	20 A	16 A	TWH-1	6
7	Existing Receptacle	6 A	20 A	1			720 VA	960 VA	1	20 A	8 A	THW-2	8
9	CP-1	8 A	20 A	2	920 VA	0 VA			1	20 A	0 A	Spare	10
11							920 VA	0 VA	1	20 A	0 A	Spare	12
13	Spare	0 A	20 A	1	0 VA	0 VA			1	20 A	0 A	Spare	14
15	Spare	0 A	20 A	1			0 VA	0 VA	1	20 A	0 A	Spare	16
17	Spare	0 A	20 A	1	0 VA	0 VA			1	20 A	0 A	Spare	18
19	Spare	0 A	20 A	1			0 VA	0 VA	1	20 A	0 A	Spare	20
21	Spare	0 A	20 A	1	0 VA	--			1	--	0 A	Space	22
23	Space	0 A	--	1			--	--	1	--	0 A	Space	24
25	Space	0 A	--	1	--	--			1	--	0 A	Space	26
27	Space	0 A	--	1			--	--	1	--	0 A	Space	28
29	Space	0 A	--	1	--	--			1	--	0 A	Space	30
				Total Load:	4184 VA		5520 VA						
				Total Amps:	35 A		46 A						

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Receptacle	720 VA	100.00%	720 VA		
Lighting	0 VA	0.00%	0 VA	**Total Conn. Load:**	9704 VA
Motor	2184 VA	100.00%	2184 VA	**Total Est. Demand:**	10079 VA
Miscellaneous	5300 VA	100.00%	5300 VA	**Total Conn. Current:**	40 A
Continuous	0 VA	0.00%	0 VA	**Total Est. Demand Current:**	42 A
Kitchen	0 VA	0.00%	0 VA		
Existing Load	1500 VA	125.00%	1875 VA		

Notes:

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ISSUE FOR CONSTRUCTION

REVISIONS

No.	DATE	DESCRIPTION
1	12.13.2024	ISSUE FOR CONSTRUCTION
2	01/13/2025	ADDENDUM 1

RSE PROJECT NO:	1540
DRAWN BY:	DBY
CHECKED BY:	TLG

SHEET TITLE

ONE LINE DIAGRAMS AND SCHEDULES

SHEET NUMBER

E601

FAULT CURRENT CALCULATOR

Source: **UNKNOWN**

DESCRIPTION: **Assumes infinite primary. Fault Current at Service entrance transformer secondary**

Assumptions: 1) 600 Volt rated conductors/cables only.

Fault Point	Equipment	SES Size (Amps):	XFMR Size (kVA):	XFMR mounting:	Primary Voltage:	Secondary Voltage:	Phase	Xfmr FLA (Amps):	Xfmr Impedence (Ohms):	Xfmr Impedence (user input):	Multiplier	Let-Thru Short Curcuit Current
SF	PT1	400	300	PAD	12470	240	1	1250		5.00	20.00	**25000**

KNOWN FAULT INFORMATION						SECOND TRANSFORMER IN SYSTEM (DRY-TYPE)						FEEDER/BRANCH CIRCUIT CALCULATION								RESULT
Fault Point	Equipment	Source of Fault	Available Fault Current	Voltage:	PHASE:	XFMR Size (kVA):	Secondary Voltage:	Xfmr Impedence (Ohms):	Xfmr Impedence (user input):	"I" factor	"M" factor	Conductor Type	Conductor Size	3 single conductors?	Conduit Type	Number of sets	Length to fault	"C" value	"I" factor	"M" factor	Available Short Circuit Current at Fault:
F1	SVC DISC	Utility	25000	240	1							C	600	Y	P	1	10	28033	0.074	0.931	**23271**
F2	5L	SVC DISC	23271	240	1							C	600	Y	S	1	10	22965	0.084	0.922	**21459**
F3	LM	5L	21459	240	1							C	1	Y	P	1	226	7493	5.394	0.156	**3356**

VOLTAGE DROP CALCULATIONS

Project: BLINN MECHANICAL PROJECTS - BRENHAM - MELCHER +BCPA2
Project No: 1540

Source: 2023 NEC

Maximum voltage drop for a Branch Circuit shall be less than 3%.
Maximum voltage drop for a Feeder shall be less than 3%.
Maximum combined voltage drop for a Feeder and Breaker shall be less than 5%.

Run	Feeder or Branch Circuit Run:	Type of Circuit	Voltage	Phase	Conductor Material	Length (ft)	Size	Load Current (Amps)	Qty Parrallel Runs	Load on feeder	Resistance	Voltage Drop	% Voltage Drop Feeder	% Voltage Drop Branch
1	FEEDER TO PANEL LM	Feeder	240	1	C	226	1	590	1	64	0.154	**4.45**	**1.86%**	

GENERAL NOTES

A. REFER TO ELECTRICAL LEGEND AND GENERAL INFORMATION ON SHEET E001.

SHEET KEYED NOTES

1. REPLACE EXISTING BREAKER TO SERVE NEW PANEL LM UNDER ALTERNATE #1. AIC RATING OF BREAKER SHALL MATCH EXISTING BREAKERS IN PANEL.

Branch Panel: 5L

Location: BCPA ELEC ROOM
Supply From:
Mounting: Surface
Enclosure: Type 1

Volts: 120/240 Single
Phases: 1
Wires: 3

A.I.C. Rating: Existing
Mains Type: MLO
Mains Rating: 400 A

Notes:

CKT	Circuit Description	Load Amps	Trip	Poles	A		B		Poles	Trip	Load Amps	Circuit Description	CKT
1	**LM**	40 A	**80 A**	**2**	4184...	6000...			2	100 A	50 A	Existing Pole Lights Panel	2
3							5520 VA	6000 VA					4
5	Existing Mech Room AC	20 A	40 A	2	2400...	1800...			2	30 A	15 A	Existing Dryer	6
7							2400 VA	1800 VA					8
9	Existing Dryer	15 A	30 A	2	1800...	1800...			2	30 A	15 A	Existing Dryer	10
11							1800 VA	1800 VA					12
13	Existing Dryer	15 A	30 A	2	1800...	1200...			2	20 A	10 A	Existing Wall Pack Lights	14
15							1800 VA	1200 VA					16
17	Existing Load	4 A	20 A	1	500 VA	500 VA			1	20 A	4 A	Existing Load	18
19	Existing Load	4 A	20 A	1			500 VA	500 VA	1	20 A	4 A	Existing Load	20
21	Existing Load	4 A	20 A	1	500 VA	500 VA			1	20 A	4 A	Existing Load	22
23	Existing Load	4 A	20 A	1			500 VA	500 VA	1	20 A	4 A	Existing Load	24
25	Existing Load	4 A	20 A	1	500 VA	500 VA			1	20 A	4 A	Existing Load	26
27	Space	0 A	--	1			--	--	1	--	0 A	Space	28
29	Space	0 A	--	1	--	--			1	--	0 A	Space	30
31	Space	0 A	--	1			--	--	1	--	0 A	Space	32
33	Space	0 A	--	1	--	--			1	--	0 A	Space	34
35	Space	0 A	--	1			--	--	1	--	0 A	Space	36
37	Space	0 A	--	1	--	--			1	--	0 A	Space	38
39	Space	0 A	--	1			--	--	1	--	0 A	Space	40
41	Space	0 A	--	1	--	--			1	--	0 A	Space	42
				Total Load:	23984 VA		24320 VA						
				Total Amps:	200 A		203 A						

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Receptacle	720 VA	100.00%	720 VA		
Lighting	0 VA	0.00%	0 VA	**Total Conn. Load:**	48304 VA
Motor	21384 VA	100.00%	21384 VA	**Total Est. Demand:**	53529 VA
Miscellaneous	5300 VA	100.00%	5300 VA	**Total Conn. Current:**	201 A
Continuous	0 VA	0.00%	0 VA	**Total Est. Demand Current:**	223 A
Kitchen	0 VA	0.00%	0 VA		
Existing Load	20900 VA	125.00%	26125 VA		

Notes:

Branch Panel: PA

Location: Attic
Supply From: M
Mounting: Surface
Enclosure: Type 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

A.I.C. Rating: Existing
Mains Type: MLO
Mains Rating: 225 A

Notes:

CKT	Circuit Description	Load Amps	Trip	Poles	A		B		C		Poles	Trip	Load Amps	Circuit Description	CKT
1	Existing Load	8 A	20 A	1	1000...	1801...									2
3	Existing Load	4 A	20 A	1			500 VA	1801...			3	30 A	15 A	Existing H/W Pump	4
5	Existing Load	4 A	20 A	1					500...	1801...					6
7	Existing Load	4 A	20 A	1	500...	500...					1	20 A	4 A	Existing Load	8
9	Existing Load	4 A	20 A	1			500 VA	500 VA			1	20 A	4 A	Existing Load	10
11	Existing Load	13 A	20 A	1					1500...	1500...	1	25 A	13 A	Existing Load	12
13	**B-1**	8 A	20 A	1	1000...	--					1	--	0 A	Space	14
15	Space	0 A	--	1			--	500 VA			1	20 A	4 A	Existing Load	16
17	Space	0 A	--	1					--	--	1	--	0 A	Space	18
19					9006...	--					1	--	0 A	No Space	20
21	Existing Elevator	75 A	150 A	3			9006...	--			1	--	0 A	No Space	22
23									9006...	--	1	--	0 A	No Space	24
				Total Load:	13808 VA		12808 VA		14308 VA						
				Total Amps:	116 A		107 A		121 A						

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Receptacle	0 VA	0.00%	0 VA		
Lighting	0 VA	0.00%	0 VA	**Total Conn. Load:**	40923 VA
Motor	32423 VA	100.00%	32423 VA	**Total Est. Demand:**	42798 VA
Miscellaneous	1000 VA	100.00%	1000 VA	**Total Conn. Current:**	114 A
Continuous	0 VA	0.00%	0 VA	**Total Est. Demand Current:**	119 A
Kitchen	0 VA	0.00%	0 VA		
Existing Load	7500 VA	125.00%	9375 VA		

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CHECKED BY:	**TLG**

SHEET TITLE

ELECTRICAL SCHEDULES

SHEET NUMBER

E701